The primary difficulty that we see with the Endangered Species Act is that it places the preservation of any and all fish, animal and plant species above the needs of mankind no matter what their kind, extent or importance. We are aware of limited but significant public works projects which are already being stopped by the presence of obscure species of fish and plants. Because forests cover vast areas, it is inevitable that substantial acreages of productive commercial forest land will also be affected by the designation of endangered and threatened species.

Recently, the U. S. Fish and Wildlife Service moved to identify 13 million acres of forest land in the Rocky Mountains as critical habitat for the grizzly bear. The U. S. Forest Service felt that two million acres were sufficient; however, even two million acres is a huge area. This becomes expecially significant if it unduly restricts timber management activities on commercial forest land areas.

We have also been alarmed by the possible consequences of listing hundreds of plants as endangered or threatened. The initial proposed rule making listed 1,767 plant species, including 479 in the nine mountain states mentioned earlier. Many of these plants grow in forested areas where timber management is practiced. If it is found that some of these species may be adversely effected by timber management activities, limitations may be imposed which will likely result in serious socio-economic consequences.

It is for reasons such as those recited above, that we believe the socio-economic consequences of any proposed listing must be thoroughly identified, measured, and evaluated before any species receives final listing. Listings should not be determined solely upon whether or not a species is endangered or threatened. Species should be protected only if essential activities of mankind are not adversely affected.

One means of ensuring consideration of economic consequences and broadening the responsibility for the identification of endangered or threatened species could be attained by requiring the concurrence of the Secretary of Commerce. We strongly recommend that the Act be so amended in order that economic interests are more fairly balanced with environmental interests.

We also believe that mandatory consultation with the Secretary of Interior by all other federal departments and agencies is unnecessary and counter-productive. Some federal agencies, such as the U. S. Forest Service, are well-staffed with wildlife specialists and would benefit little from consultation with the U. S. Fish and Wildlife Service. Government is already encumbered by needless duplication and unnecessary costs. Therefore, Section 7 should be revised accordingly.

This concludes our remarks. We ask that our comments be given thoughtful consideration and urge that our recommendations be adopted. We thank you for this opportunity to provide you with our thoughts on this very important matter and ask that this statement be entered into the record of the hearings.

96-141 O - 78 - 51

July 1977

Future species listing: plants

The proposed listing of 1,840 (approx) plants has caused some alarm for the potential impact of protection under the Endangered Species Act. However the facts tend to assauge any of this premature concern.

1) The plants proposed occur generally in very localized areas. Thus we're not speaking of vast acres where potential projects will be excluded, but more likely of small plots necessitating fence construction around the last stand of an endangered flower, or a small readjustment of a site location. These are plausible, available modifications which do not require project elimination, and preserve species.

2) As well as being highly localized in distribution, the majority of plants appear to be situated in areas where project conflicts are not anticipated. In Hawaii, for example, where approximately 1/2 of the proposed plants exist, most of the plants are located above the 3,000 feet level. They are in the highlands away from most development and for the most part in protected areas such as park, plantations, and grazing lands.

Their existence in the highlands is not however indicative of species characteristic, but testimony to the fact that those in the lowlands , where development is extensive, have already been extinquished, depriving Hawaii of the native flora for which the islands are so prized. It is important to take steps to preserve the survivors.

Many of the factual points that are applicable to Hawaii can be extended to include a consideration of California which contains the second largest number of proposed plants.

3) Many of the plants which have been promulgated for listing as endangered or threatened, have been proposed cautiously. The studies necessary for confirming their status are lacking. However the listing of the plants will stimulate studies which may very well result in their eventual delisting. But the initial protection is necessary to guarantee preservation. It is in keeping with the purpose of the ESA to protect species believed endangered until such a time as they are self sufficient. Listing is the first step in this process of regenerating the species.

4) Still more alarmist statements have centered around Dickey-Lincoln and the existence of the furbish lousewort, a plant proposed for listing in the dam area. However the project is currently undergoing NEPA procedures , awaiting the draft EIS. It is under attack for other reasons than an endangered species conflict. If Dickey-Lincoln should ever reach the stage of the ESA and consultations under section 7, it will follow the administrative procedures laid out by the act and work for modifications in which project and species will co-exist.

As recognition of the value of preserving our species increases, so most likely will the numbers and diversity of those proposed for protection. However there has been very few problems in the past and it appears that solutions are readily available if good faith consultation is accomplished.

Deborah LaBelle

Friends of the Earth August, 1977

The University of Iowa
Iowa City, Iowa 52242

College of Medicine
Department of Microbiology

(319) 353-5596

27 June 1977

Senator John Culver, Chairman
Subcommittee on Resource Protection
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Senator Culver:

Re: Oversight Hearings on the Endangered Species Act

I am pleased that you are chairman of the Subcommittee on Resource Protection because I know the topic will receive careful and fair treatment.

Even though I am a microbiologist I have been working in international science for several years, and I know some of the biological problems we face in the world today; one of which is endangered species.

I have read the Endangered Species Act (1973), and I believe the two following items need consideration when you hold your hearings:

1) Greater stress needs to be placed on bringing to the attention of the public the great importance of conserving strains (varieties) and species of plants and animals. This is of significance not merely for ecological purposes, but even more so to have "wild" strains for genetic purposes. We are entering one of the great eras (referred to as genetic engineering) known to mankind and if we do not conserve the basic genetic stocks that have evolved over the years we may face many problems as we try to feed and clothe the masses of the world.

2) In Section 1538(b) relating to animals in captivity, under controlled environments, it is not too clear about the date for obtaining a permit. The date 28 December 1973 may be satisfactory for earlier exemptions. But it would seem that new permits should be judged as of the specific date that the individual species was first listed as endangered.

With kind regards. I am proud of the way you and Senator Clark represent our State, and the people of our country in general.

Sincerely,

J. R. Porter
Professor and Chairman

JRP:lz

7201 Tyner Road
Chattanooga, Tennessee 37421
July 30, 1977

Ms. Kathleen Korpon, Hearings Officer
Subcommittee on Resource Protection
4206 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Ms. Korpon:

Please insert the attached paper on Tellico Dam opposition, existing Little Tennessee River potentials and alternatives to Tellico Dam, into the Little Tennessee River - Tellico Dam hearing record as my testimony.

Respectfully yours,

Kirk Johnson

Kirk Johnson

Opposition to Damming the Little "T" Not New

1. Fort Loudoun Extension at the mouth of the Little Tennessee River stopped by War Production Board in 1942.

2. Little "T" dam not brought up again in the 1940's or 1950's because of apparent non-support by Tennessee Congressional delegation.

3. When presenting the Tellico Dam proposal to the Little Tennessee River Valley Development Association on September 22, 1964, TVA Chairman Aubrey Wagner stated, "...the agency definitely wouldn't carry the project through without a mandate from the people in the area..." The LTRVDA, TVA's tributary area group in 1963 and 1964 which elected three directors each from Loudon, Blount and Monroe Counties, refused to endorse Tellico Dam.

4. Opposition to funding for Tellico Dam was intense in 1965. No appropriations were granted. The Association for the Preservation of the Little Tennessee River, the Tennessee Game and Fish Commission and farm groups led the fight.

5. TVA submitted the Tellico Project again in 1966. There was great opposition this time with at least sixty organizations on the list. But Congress voted funds for the dam.

6. On August 10, 1971, a suit was filed to halt construction of Tellico Dam on the basis that TVA violated the National Environmental Policy Act.

7. On February 18, 1976, the suit was filed to protect the snail darter habitat in the Little Tennessee River through the endangered species act.

Existing Little Tennessee River Resource Potentials

1. Agricultural - Farms in the 38,000 acre project area produced $1,900,000 of products in 1964. Much of the 30,874 acres of farmable land should be put back into crops and livestock.

2. Historic Significance - At the time the white man began crossing the Appalachian Mountains in the early 1700's, the lower Little Tennessee River valley was the primary Indian habitation in the State of Tennessee. Approximately a dozen Cherokee villages were located in the project area including Echota, the sacred city of refuge and capitol, and Tennefsee, located at the end of the trade path and from which the name of the river and our state was derived. Virtually the entire history of Tennessee centered around this area for a period of at least sixty years. Fort Loudoun, which is a National Registered Historic Landmark, was the first permanent British settlement west of the Appalachians. Others include the Tellico Block House site, the Charles McClung McGhee mansion, the Bowman House and the Davis House. Archaeological excavations on Rose Island revealed some of the earliest human occupation found in the Southeast dating back to between 6110 and 6850 B.C.

   A historical park should be established to preserve the more important of these sites.

3. Scenic Stream - The Little "T" is a clear, cold fast flowing stream which is located in view of the Great Smokey Mountains. It is a popular float stream. It is also a trophy trout stream with a record to date of 23 ½ pounds.

   At present, there is a national surge in popularity in stream recreation. Larger streams are more important because they can accomodate more people. In the Tennessee River basin, more than 80% of the river miles in streams the size of the Little "T" or larger are already impounded by reservoirs. Large man-made reservoirs in Tennessee currently total more than 500,000 acres

   Access for recreational use of the river has always been limted in the past. Recreational use of the river should be developed.

4. Endangered Species - The Little Tennessee River with its swift currents and gravelly bottom is home of the snail darter which is on the critically endangered list of the Department of Interior.

(over)

Alleged Tellico Dam Benefits and Alternatives

1. Flood Control - TVA has issued claims that if it had not been for environmentalists that Tellico Dam could have saved $15 million in the March 1973 flood at Chattanooga. This is a purely emotional charge because according to TVA's own schedule issued in 1970 (prior to the first Tellico Dam suit in August 1971) filling of the Tellico Reservoir would not begin until at least January 1975. If TVA had been left to their own devices, the Tellico reservoir would not have been ready for the March 1973 flood.

   Flood Control Alternative - Since Tellico Dam is nearly complete, it could be kept for supervised emergency, temporary flood storage. TVA was planning to keep only 126,000 acre-feet of Tellico's space for flood control. As happened in the March 1973 flood when many reservoirs were not at minimum drawdown levels, there are no assurances the full 126,000 acre-feet could be utilized in the event of a large flood. If the full 447,300 acre-feet of Tellico space would be available, larger reductions in crests like the 1957 and 1973 floods would be possible than with the current TVA plan. This is similar to the concept of temporary flood storage reservoirs that Arthur Morgan, the first TVA Board Chairman, developed for the Miami River basin of Ohio.

   With respect to the Chattanooga flood damage problem, the current TVA leadership has not been too concerned. In March 1972, just a year before the last major flood, TVA enticed the city of Chattanooga to remove 2,600 acres from the flood plane ordinance opening it up for development. TVA also removed 1,713,000 acre-feet of flood storage in the tributary reservoirs above Chattanooga by raising minimum drawdown levels in 1971.

   It should also be pointed out that in the March 1973 flood that local streams at Chattanooga reached record discharges for the period since accurate records have been kept. A 1961 TVA report states that even with the extensive reservoir system that the maximum probable flood for Chattanooga would be 486,000 cfs compared to 267,000 cfs in March 1973. TVA has previously warned Chattanooga that Tennessee River levees are required for additional substantial flood protection. Former TVA Chairman Herbert D. Vogel reiterated this in a letter published in the March 25, 1973 Chattanooga Times. Testimony on TVA calculations in the 1973 NEPA hearing indicated that Tellico Dam would lower the maximum probable flood at Chattanooga by only 4.8 inches.

2. Recreation and Alternative - In the previous cost/benefit analysis, TVA has reported that 38% of the justification for Tellico Dam is in the reservoir recreation and fish and wildlife category. The alternative to development of Tellico reservoir for recreation and fishing is to continue use of the 154,190 water surface acres in the existing TVA reservoirs in the vicinity of Knoxville which include Watts Bar (39,000 acres), Fort Loudoun (14,600 acres), Melton Hill (5,690 acres), Cherokee (30,300 acres), Norris (34,200 acres) and Douglas (30,400 acres).

3. Power Generation - By increasing flow through Fort Loudoun generators, the Tellico would produce 200,000,000 kwh of electricity per year. This would increase TVA's system output by only 0.18% or about 1% of the expected generation of Sequoyah or Watts Bar nuclear plants that are under construction.

   TVA is required to repay to the Federal Treasury the portion of the project cost allotted to power facilities. In the Tellico case, this should constitute about one third of the cost of the reservoir, nearly one half of the canal cost and a minority but substantial percentage of the cost of the dam proper. An investigation should be made to determine if over the project life that the net value of the electricity generated is worth more than the capital expenditures mentioned above.

4. Navigation and Shoreline Development - TVA has essentially claimed that new industry can be attracted to the region only if a navigable channel is created to Vonore.

   TVA's Duck River Project, that is currently being built in Middle Tennessee, has "Enhanced Employment" as its major justification. TVA states that because of adequate water supply created by the project approximately 3,000 jobs will result on the waterfront sites even though in the Duck River case, the sites are at least 125 miles from an navigable channel.

   The potentials that TVA is spending $78,500,000 of public funds to develop in Middle Tennessee exist at Vonore without Tellico D[illegible]

Aug. 8, 1977

Ms. Kathleen Korpon
Rm. 4206
Dirksen Off. Bldg.
Washington, D. C. 20510

Please see that this is entered as testimony for the Senate's hearing on the Endangered Species Act.

For the public record:

Members of the Tennessee Endangered Species Committee and the Little Tennessee River Alliance, representing a total membership of over twenty thousand people, came to Washington for the Senate hearings on the Endangered Species Act to give their thoughts and views on the Tellico Project. In addition, the Eastern Band of the Cherokee, representing 8,000 people, has passed several resolutions which share the views and concerns of these conservation organizations. The hearing was a democratic opportunity for us to offer our ideas on how the project could best benefit us, the people.

After carefully examining the pros and cons for a dam and resevoir in the project, experts from a variety of diverse fields, and the GAO study, bear out the need to consider alternatives to impoundment of the river.

TVA insists that since the dam has already been built, it should be closed. But this has always been a controversial project, against the will of many people, and against economic good sense. If one should work cleaning out an attic and piling up old furniture to burn, and suddenly find out that the furniture includes many valuable antiques, it would be foolish to go ahead and burn it anyway, just because it's all piled up and ready to go. The Tellico Dam is a similiar situation, and this controversy is a conflict between the preservation or the destruction of a valuable resource.

In spite of warnings and protests from innumerable federal and state authorities, TVA has wielded a frightening amount of power in pursuit of development of the project and completion of the dam. By condemning over twice as much land as was needed for the resevoir, TVA was able to justify the high cost of the project from the profit they would make on land re-sale. This is an outrage to people who believe in the rights of individual property

owners - especially those who owned farms which would only have a few acres flooded, but were forced to sell their entire holdings. The bulldozing of the snail darter's breeding grounds (the day after it was placed on the Endangered Species List), the leveling of ancient Cherokee archeological sites and use of sacred burial mounds for fill dirt, and a 24 hour cost-overtime construction schedule (which increased already unreasonable project costs), all seem to indicate a destructive and narrow-minded approach by TVA.

Unfortunately, this approach has shut out the opportunity to choose from a variety of options. By ignoring court injunctions to halt construction on the dam, TVA has tried to use the money of the taxpayer to tilt the scales of justice and buy the basis of its arguments - at the expense of our nation's laws. Sixty-five million dollars was spent on the project after the Endangered Species Act was passed and the snail darter's existence established. That's like saying, "If TVA does it, then that makes it legal - and we're putting down 65 million to prove it!"

However, agriculture in the valley would pay for the dam in a few years, and recreational development of the river would ensure employment to many residents of this area. Most probably, there is a stronger possibility of job materialization from this sort of development than from industrial lakeshore development, which, like the lakes themselves, already exists in a surplus well beyond the demand. This is one of the few remaining rivers of its kind in the country, and the home of a species which may become forever extinct from this earth. How can we say that it's too late to change plans for using this land? We should be flexible and open-minded about alternative ideas, instead of limiting ourselves to past decisions which might not be as wise in light of new evidence.

Please do not make the mistake of assuming that only a small minority opposes the dam, and that if the majority would just as soon see it closed, then the solution is to close it. In the first place, no reliable or unbiased attempts have been made to assess public opinion on this issue (although the majoritz of speakers at all four of Congressman John Duncan's local hearings opposed the dam, and at a 1964 meeting between Aubrey Wagner and the area's residents, the vote was over 600 to 0 against it). To a growing number of people, it is becoming more evident that the use of a

dam in the project will disinherit a fruitful and sacred land from future generations, and will forever separate us from the treasures of knowlege and spirit which this land holds. We now have the opportunity to demonstrate wise stewardship in the use of the land with a continuation of its life and habitats, and a chance to make this project something we can all be proud of. We must move away from the prevailing trends of wasteful spending on destructive and uneeded projects, and towards the "building of a better enviroment" based on preserving and caring for those enviroments we depend upon - especially an enviroment as unique and rich as the Little T Valley.

Sincerely,

James Lyle

James Lyle
Knoxville, Tennessee

A Report to

The Senate Committee on

Environment And Public Works

regarding

The Endangered Species Crisis

from Paul G. Miller

Contents:

1. Introduction
2. The Scope of Our Concern
3. The Problems We are Experiencing
4. Additional Observations
5. Recommendations
6. Closing Statement

INTRODUCTION

The following testimony is respectfully presented on behalf of the Wisconsin Bird and Game Breeders Association, which represents over 300 bird and animal breeding operations.

With many species of birds and animals becoming rare in the wild state, we feel that captive propagation is becomming more important and more necessary in preserving these rare species of animals. We consider captive propagation of rare species a very constructive form of conservation. Our members are very dedicated to this form of constructive conservation; their operations represent considerable financial investments, years of daily care and attention, and very firm emotional commitments to the preservation and enhancement of various species of animals.

In recent years, our efforts to carry out this very constructive form of conservation have come under severe criticism and strangling regulation by the Fish and Wildlife Service through the enforcement of the Endangered Species Act of 1973. The following testimony elaborates on the problems we have been experiencing, the reasons underlying these problems and some of the gross inconsistencies relating to the "endangered" species issue.

As you read the following testimony, please keep the following thought in mind:

> When all the natural habitat of a species is gone, there are two choices: captive propagation or extinction. As constructive conservationists, we are dedicated to captive propagation as a means of preserving rare species. Unfortunately, The Endangered Species Act, and its enforcement, is severely hampering our efforts, and is forcing many species

closer and closer to extinction. Which would you prefer ???

Preservation (via captive propagation)

or

Extinction (a la the Endangered Species Act).

2. THE SCOPE OF OUR CONCERN

In this testimony, our specific concern is with the interstate sale and shipment of healthy, non-native animals which are already in this country. Our sole purpose in making such sales and shipments is the preservation of such species of animals through their use in captive propagation programs.

We are not concerned, in this testimony, with any species of animal native to this country, importation or exportation of any animals, shipments of any sick animals or animals carrying parasites, or shipments of animals to non-propagators.

3. THE PROBLEMS WE ARE EXPERIENCING

Briefly stated, the licensing and permit requirements imposed upon us by the Fish and Wildlife Service in enforcing endangered species legislation are far too restrictive. The typical waiting period for a shipping permit is 4 months; it usually takes at least 3 months to get a response to a letter of inquiry requesting some information or a permit application. These time frames are far too long considering the timing involved in breeding some species. To be exact, many species have a long breeding cycle, but a relatively short period of time within that cycle when they actually breed. In many cases, an additional spare or substitute animal is required during the breeding period. If this need arises, the extra animal is needed in a hurry (say, within a week or so). Clearly four

months is far too long. Captive production of many rare species has been cut down or even stopped due to this extremely long waiting time and the total lack of understanding on the part of the enforcers. This long time delay is clearly counter-productive.

Examples illustrating the above problem are super-abundant; to be brief, consider two typical situations. A pheasant breeder applied in mid-December for a permit to ship two hens in February; the permit was received the end of April, far too late to establish a mating. In addition, the mates intended for these hens became confirmed bachelors and probably will never be productive. This is truly a waste of good breeding stock forced upon us by these permit requirements. Was this the intention of all this "endangered" species legislation??

The second example is a flock of Hawaiian Ducks. A breeder produced 40 ducklings one year and grew them out; that fall he tried to sell them and was stopped by the Fish and Wildlife Service. After a lengthy hassle with the bureaucrats, he could no longer afford to feed all these ducks, so he turned to his only alternative. He butchered all the ducklings and the parent stock- another bureaucratic victory!!! Is this conservation?? Indeed this is destructive bureaucracy in action!!

There are many more cases of gross bureaucratic inconsideration which resulted in extremely counter-productive breeding situations. Please contact me for more references.

To stave off the volume of complaints about bureaucratic abuse of the captive propagator, the Department of Interior has come out with a very bad patch to an impossible situation; it is called the Captive Self Sustaining Population (CSSP) approach. This is still nothing more

than a tangle of red tape and paperwork. Getting a species declared "self-sustaining" is even a bigger hassle than getting a permit.

Considering the names alone a Captive Self Sustaining Population of Endangered Species is a contradiction in terms. If a species is truly self sustaining in captivity, (which many "endangered" species are), then certainly they are not really endangered. As Constructive Conservationists, most animal breeders feel that the CSSP program is a farce; it is nothing more than a bureaucratic ploy to strangle us in red-tape and paperwork. The CSSP program serves no good or constructive purpose at all.

4. ADDITIONAL OBSERVATIONS

The "endangered" status of a species is determined in Berne, Switzerland by a group of nature lovers who are totally unfamiliar with the status of any species under propagation in America. Thus many species which are very numerous in captivity in America are declared "endangered" due to poor management of that species in its own natural habitat. Please note that the American people effected by these "endangered" species regulations have no say in determining the status of a species; indeed, they are victims of a group of foreigners who rather capriciously declare many very prolific species "endangered". Putting it very politely, this is a sell-out of the American animal breeders. Is this country being run from Washington, D.C. or from Berne, Switzerland?? Why are'nt taxpaying American citizens given any consideration in determining the "endangered" classification of a foreign species???

With all the zeal and ferver applied to regulate and control individuals who carry on constructive captive propagation programs, it is interesting to note the contrast in effort put forth during the latest "depopulation" of bird flocks in California by the USDA. Many endangered species specimens were killed by the USDA on the questionable basis of "exposure to Newcastle" or "suspicion of Newcastle". Where was the guardian of the endangered species, the Fish and Wildlife Service?? They certainly were not making any attempt to preserve any endangered species! This leads me to conclude that, while paying lip service to preserving rare animals, the enforcers are really only worried about conserving one thing: their jobs and the artificial "need" for them. This endangered darter fish behind the dam project appears to be another grandstand play at buoying up their job security. It is very inconsistent to fight for some endangered fish and yet let the USDA kill thousands of endangered birds.

On several occasions, I have heard that the "reason" for all this regulation is to prevent poaching and smuggling of birds and animals. The captive propagator is not a poacher or a smuggler and should not be made to suffer for the illegal activities of others. These regulations punish the constructive conservationist for the illegal activities of the destructive poacher: this is totally illogical and counter-productive. If the enforcers cannot successfully catch and prosecute poachers and smugglers, this is not the fault of the captive propagator. Why should the constructive conservationist be made to suffer because of inept police work?? Here again there seems to be a deeper reason: job justification on the pretense of "preserving animal life".

5. RECOMMENDATIONS

My first recommendation, naturally, would be that the Congress gracefully bail us out of all this "endangered" species regulation nonsense. We have no quarrel with constructive propagation programs. We just can't live with the harsh and totally unreasonable regulation. Therefore, we would like to respectfully request that all licensing and permit requirements for interstate sale and shipment of healthy, non-native species be suspended. The current regulation, and its enforcement, is totally counter-productive and unbearable.

6. CLOSING STATEMENT

It is up to the Government of the United States to decide what it wants to preserve: rare species of animals or bureaucracy;

i) if the Government is truly interested in preserving rare species of birds and animals, as most taxpayers and voters are, then allowing the constructive conservationist the freedom to carry on captive propagation programs without harassment and regulation is the obvious answer;

ii) if the Government is only interested in preserving the cancer of strangling regulation on constructive American free enterprize, then the Endangered Species Act of 1973 and its current enforcement are indeed achieving this goal.

Thousands of American citizens, hundreds in Wisconsin alone, are suffering and distressed by this critical and counter-productive approach to species preservation. Is it too much to ask to have the right to unobstructed free enterprize in this very constructive area of the conservation movement??

203 North Shore Dr.
St. Clair Shores, Mich. 48080
July 15, 1977

Honorable John Culver
Subcommittee on Resource Protection
United States Senate
Washington, D. C. 20510

Dear Senator Culver:

For the past few years, the Michigan Cactus and Succulent Society has strongly supported a meaningful program to protect endangered and threatened plant species in the wild. We would very much appreciate your accepting the following statement for the oversight hearing on the Endangered Species Act of 1973 to be held by the Subcommittee on Resource Protection, July 19-22, 1977. It serves a constructive purpose to review a program periodically in light of policy to see that the outcome is in accordance with its intent and to take such corrective action as deemed necessary.

The Endangered Species Act is a very comprehensive piece of legislation and very complicated in its detail. In our view, a program to protect endangered and threatened plants has never gotten off the ground because of the existence of serious conceptual problems of policy and administration.

When the Congress passed the Endangered Species Act, there were a number of unresolved questions concerning the treatment of endangered and threatened plants within a framework which previously had applied only to the regulation of fish and game. The Congress decided to hold these questions in abeyance pending a report to Congress by the Smithsonian Institution. Therefore, the plants were not included in several major provisions of the law such as a prohibition on taking and the federal-state cooperative program. In January, 1974, the Smithsonian Institution submitted to Congress its "Report on Endangered and Threatened Plant Species of the United States". We feel that the recommendations provided in this report present broad scientific principles that can be translated into a workable and responsible framework of governmental policy and administration. In our work on the cactus problem, we have had occasion to refer to these recommendations frequently and have found them instructive and highly relevant.

The Taking. Over the past few years, we have been painfully aware of the massive collecting of cacti from the wild for sell on the market and also the collecting of rare plants by unscrupulous persons. For a time, it seemed that only one jurisdiction--Arizona--was vigorously enforcing a law to protect native plants. Now in 1977 this situation is not as bleak as it once was because the states are beginning to take action to protect their native plants. Under the pressure of large scale commercial taking, we expect that other states will also decide that it is not in their best interest to allow "open season" on native plants.

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Further relief has been provided by Congress in the passage of the Bureau of Land Management Organic Act (PL 94-579) which among other things strengthened law enforcement authority. Since about 20 percent of the land area of the United States falls under the jurisdiction of BLM, this program has potential. Under this authorization, BLM has closed the heavily exploited Organ Mountains to removal of any vegetation by permit (El Paso Harald-Post 6-22-77) and a desert ranger unit is being organized to patrol the California desert (Arizona Republic 3-27-77). But we are not yet out of the woods (or the desert as the case may be). Many states have not yet taken action and urgent problems remain in such states as Hawaii. The problem will be resistent to remedy because of the high profits involved, a multi-million dollar business according to Arizona authorities. Thus far, it seems that the most effective approach to the problem of taking is through the states and federal agencies which have enforcement personnel available locally.

Federal-State Cooperative Programs. Section 6 (c) of the Endangered Species Act provides for federal-state cooperative programs for the animals only for which federal funding is available. Under Section 6 (c) the states are authorized to "conduct investigations to determine the status and requirements for survival of resident species of fish and wildlife," and to "establish programs, including the acquisition of land and aquatic habitat or interests therein for the conservation of resident endangered species or threatened species."

Research is necessary to define a problem in order to decide what can or should be done about it. In its report to Congress, the Smithsonian Institution called for the monitoring of plant populations and research into the causes of rarity. In addition, the Smithsonian Institution recommended that a national registry should be maintained on the status of endangered and threatened plant species in the United States. The development of informational resources from the states would facilitate the maintenance of a registry.

Michigan is among the states that have designed a program that affords protection to both animal and plant species. The Michigan Endangered Species Act of 1974 provides for the conservation, management, enhancement and protection of endangered and threatened species. Under the act, the Department of Natural Resources is authorized to develop information necessary to determine appropriate management measures which would assure the continued ability of fish, plants and wildlife to sustain themselves successfully. For plants this information includes population distribution, habitat needs, limiting factors and other pertinent biological and ecological data. We call your attention to the enclosed reprint from The Michigan Botanist, Vol 16, 1977 which describes the continuing work of the Technical Advisory Committee on Endangered Plants of the State Department of Natural Resources, Dr. John H. Beaman, Michigan State University, chairman currently.

In view of the progress of the states to provide plant protection, we urge that federal funding be made available for plant programs as well as animal programs but without the strictures which have paralyzed efforts in this area by the Fish and Wildlife Service.

Listing. Section 4 of the Endangered Species Act provides for the determination by the Secretary of the Interior of whether a species is endangered or threatened on the basis of specified criteria, and also to provide for the listing of species so determined through the administrative rule making process. According to the Fish and Wildlife Service's "Endangered Species Technical Bulletin", April, 1977, no plant species are listed at present but there are 14 plants in the prospective stage of rule-making and about 1850 plants awaiting processing.

Rare native plants have received no protection thus far under the Endangered Species Act, and there appears to be little prospect of any protection in significant numbers in the future under the existing system. Protection under the Endangered Species Act is dispensed on an all-or-nothing-at-all basis. This is because the listing of each specie activates or makes available a very broad scope of regulatory devices or remedies so as to provide the fullest kind of protection to the specie. This system has had several results. It provides a very high degree of protection to those species already listed and no protection to any species not on the list no matter how threatened. The recommendation in January 1974 of the Smithsonian Institution that urgent protection be given to commercially exploited species was ignored because it did not fit into the all-or-nothing-at-all system. The Fish and Wildlife Service has been unable or unwilling to deal in a meaningful way with rare plants because the sheer volume would break the all-or-nothing-at-all system.

But the most damaging aspect to this system is that it fails to allow the identification of a problem and the selection of alternative courses of action in light of the public interest. Occasionally compromises have to be made as a means to accommodate varying interests. An example is a report from the Albuquerque Journal which tells of the construction of Tramway Blvd. in northeast Albuquerque. When it was discovered that the rare Pediocactus papyracanthus lay in the path of construction, the city transportation department contacted scientists at the University of New Mexico so that the entire population could be transplanted out of harms way. Not all such problems can be solved with such ease but a sense of responsibility demonstrated by all parties helps.

The public interest is served not only by highways but by the survival of plants. We believe the American public understands the importance of plants to their lives and the desirability through appropriate means of assuring their survival through diversity. The United States Department of Agriculture has been involved for many years in programs to assure the survival of our crop plants through the preservation of genetic resources of wild plants.

We believe that the Endangered Species Act was meant to raise in priority the consideration of endangered species but not to consider that as the only priority. The listing process should probably be disengaged from automatically invoking such broad remedies. We speculate that the Fish and Wildlife Service cannot predict the consequences of listing and that is why they "go slow".

Holding Federal Agencies Responsible for Their Actions. The Endangered Species Act recognizes that the agencies of the federal government are among the chief culprits in the destruction of habitats of wild animals and plants. Recognition of that fact is there in Section 7 which states that "All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act...and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species...."

We feel that Section 7 is addressed to a very real problem and believe that there is a need for a watchdog function in this area. State and local governments live in glasshouses. Public corporations have to deal with the complaints of their local customers. But the large federal bureaucracies are clothed with a degree of anonymity that inspires considerable distrust by the ordinary citizen. We urge that the Subcommittee on Resource Management preserve the intent of this section and give consideration to the proper location of such a watchdog function.

Seeds. The Endangered Species Act in Section 3 (9) provides that "The term 'plant' means any member of the plant kingdom including seeds, roots and other parts thereof." The regulation of seed should be stricken from the Act due to the fact that government lacks the institutional capability to regulate tiny seeds, many ofwhich cannot be positively identified without microscopic examination by a professional biologist. Moreover, some botanists have said that such regulations are pointless because the over abundance of seed production in nature. While the Fish and Wildlife Service is charged with regulating seed, the United Stated Department of Agriculture is collecting it and storing it. See enclosed article from Horticulture, April 1977, "Breeding Crisis for our Food Crops--Is the Gene Pool Drying Up?" by Dr. Garrison Wilkes, University of Massachusetts.

Sincerely yours,

Kathleen Kepner

Kathleen Kepner
Conservation Chairman
MICHIGAN CACTUS AND SUCCULENT SOCIETY

Enclosure 2

(From Horticulture, April 1977)

Breeding Crisis For Our Crops Is the Gene Pool Drying Up?

Only 15 major crops stand between mankind and starvation, and the genetic diversity they depend on is threatened

by Garrison Wilkes

Never before in human history has a nation been as well fed with such a diversity of foods as the United States. Yet we are far more vulnerable than many of us realize because few of these foods are native to this country. Most of our important crops–wheat, soybeans, tomatoes, and citrus–originated in regions outside our borders. If we were to exist on native plants alone we would have a diet of such minor crops as blueberries, sunflower seeds, cranberries and Jerusalem artichokes. Our agricultural wealth consists not only of good crop land but of plants that have been specifically selected and bred for high yield. These yields would never have been possible without diverse genetic resources to draw on, but those resources are now in danger of disappearing.

The genetic diversity of the crops in the United States is a national wealth which the varied racial and ethnic immigrants brought to our nation from their homelands and acclimated in fields and gardens across the country. With the arrival of the earliest settlers barley from England suddenly began to grow beside barley from Germany in fields at Lexington and Concord. Ship captains brought back cargoes of tea and spices, but also wheat from Calcutta or rice from China. Spanish missions across the West introduced grapes, figs and oats ideally suited for arid lands. All these crops were the culmination of thousands of years of human cultivation in the far-flung regions where they had once been wild but less productive plants. Wheat had once been a wild plant in the Near East, soybeans in China, corn in Mexico, the cole vegetables in the region bordering the Mediterranean.

Today the entire world is fed by domesticated plants which did not exist except as wild progenitors 400 human generations ago. Most of our present food plants are the products of a very long selection process by which they have become completely dependent on our care for their survival. We call this change domestication and in the course of this process food plants have crossed a threshold. Their survival is now keyed to human preparation of the ground, diminished competition with other plants, sowing of the seed in the right season, protection of the plants during growth, and finally the collection of their seed. Domestication has made these plants our captives, but the human population has increased so dramatically that now we could not meet our food needs with wild plants. So, ironically, we are held captive by the food plants that we have domesticated.

The actual number of plants that feed the human population is amazingly small. A list of as few as fifteen plants accounts for three-quarters of all plant calories consumed. They include five grasses: rice, wheat, corn, barley and sorghum; three legumes: soybean, common bean and peanuts; two sources of sugar: sugar cane and sugar beets; two tropical tree crops: coconuts and bananas; and also three starchy root crops: potatoes, sweet potatoes and cassava. Though the list does not account for many vegetables (which are high in vitamins and minerals but relatively low in calories), these fifteen food plants stand between health and starvation for the human population. Not only is the number of plants that feed the world becoming smaller–so is the genetic variation which is the basis of breeding new varieties. These trends are coming at a time when the human population is expanding rapidly and we are going to need all available options to meet world food demand.

The reasons for this contraction are complex, but they have to do in part with an ever-increasing population, rising expectations of rural peoples, and intensive efforts to increase production on all the world's arable land. The result has been a drive to develop plants that respond to fertilizers, require less water to develop, and are very uniform so that they can be easily machine harvested. Plant breeders have collected germplasm from the native plants in very specific areas of the world for breeding and selecting. For the most part, the emphasis has been on breeding new, improved and usually genetically uniform varieties. In terms of yield, the benefits of this process have been obvious. But the price has been the genetic limitation–and the increased vulnerability–of our major food crops.

During domestication many of our crop plants have been so genetically altered that they can no longer compete in a natural plant community in the wild. For many, the wild plant from which the domesticated crop was derived no longer exists. The varieties which are closest to the ancestral form today are the primitive "land races" still being grown in those regions of the world where the plant was originally domesticated or where the crops subsequently acclimatized a long time ago.

Each of the basic food plants that we now grow originated in a relatively confined geographic region which in many cases has remained the area of greatest genetic diversity. These regions of origin (see map, p. 52) are called Vavilov Centers after the Russian plant breeder and genetist N. I. Vavilov, who first studied and identified the nine major centers of origin, and in some cases, secondary centers where the crop had undergone rapid

evolution. According to this geneticist, these centers cover less than 1/40 of the land area of the world but from them have come almost all our food plants. They are located in mountainous regions near the two tropics (Cancer and Capricorn) in regions long populated by agricultural peoples, but isolated by steep terrain, arid regions or other natural barriers. In the 1920s Vavilov found these areas to be essentially untouched by the changing world and still practicing ancient agricultural customs.

Over the last half century, these regions have become the genetic bank accounts to which the plant breeders have turned to improve our food plants. Each has been tapped for useful genes which have intensified or changed some plant characteristic, increased resistance to fungus diseases or insect attack, or improved the durability or the nutritional qualities of the harvest. Yet the rapidly expanding human population and changing agricultural technology throughout the world threaten the very existence of these genetic reservoirs, an irreplaceable heritage which has been the only hope of freedom from want and hunger for every civilization.

Genes can only be stored in living tissue, living seeds or bud wood. Once a plant dies, its genetic inheritance is lost forever: hence the concern to preserve those indigenous varieties and land races found in the centers of origin. These plants contain a thousand times more variation than highly bred varieties of genetically uniform fields in advanced agriculture.

Cultivated plants have not always existed as the genetically uniform populations of the industrial nations. The crops that are in current use have generally undergone a very rigorous selection process by which the plant breeder has made them genetically identical for each trait. These are the plants grown as dense pure stands (monocultures) in the straight rowed, carefully tended and fenced fields with which we are familiar. These varieties possess a "highly tuned" set of genes but a considerably narrower gene base than the land races of indigenous agriculture from which they have been developed. The narrowness of the genetic base of advanced cultivars is responsible for the higher yields in the United States. But it is also responsible for much greater risks of crop failure.

Primitive varieties or land races are the largest depository of genes for food crops. Generally these land races perform poorly under the large doses of fertilizer, water and intensive cultivation because they are the product of a long evolutionary history lacking these factors. However, they have a wide range of ability to withstand cold temperatures, drought, disease, insect damage and other variables. These are the raw clay with which the plant breeder works.

In most indigenous agricultures there is usually a considerable diversity between fields since different cultivators maintain their own seed supplies. (These supplies reflect their own selection policies, the vagaries of adaptation to their fields and the true length of the genetic history for the "family seed," which may trace back a millenia.)

As a result of the distinction between fields, hybrids and their segregates that do occur represent considerable and repeated explosions of gene recombinations. Although the yields of fields such as these are seldom high, they are reasonably stable year in and year out under varying environmental conditions.

More important, perhaps, the risk of disease and insects is much less pronounced with land races.

Throughout the world there exists an unstable "truce" between our basic food plants and their pathogens. Genetic changes, whether mutations or new recombinations, are constantly taking place in individual pathogens and if one grows successfully on a previously resistant plant host, it will be able to spread across the entire populations of genetically uniform plants. In many parts of the world still, entire plant populations may be in a single field, in the fields of a village, or in a district. As a result, the pathogen can make only small inroads on the crop. But in advanced agricultures, such as ours, the high density of crops creates ideal conditions for insects, nematodes, bacteria, viruses, fungi and rodents. In our agribusiness-managed system, the plants' genetic uniformity–and vulnerability–extends nationwide. The price for maintaining high yields is a whole arsenal of insecticides, fungicides, herbicides and a constant change in the genetic material and breeding for resistance.

The wheat stem rust which took 65 percent of the Durum wheat crop in 1953 and 75 percent of it in 1954 (and 25 percent of the bread wheat the same year) was a demonstration of the danger of genetic uniformity. The case of the southern corn blight of 1970 is a more recent example of the existing problem.

The southern corn blight resulted in the destruction of approximately one-fifth of the American corn crop. Since the blight was highly virulent only on a certain advanced cultivar, the problem was corrected the following year by returning to seeds of obsolete cultivars for resistance. Fortunately, the effect of the blight was higher food costs rather than human starvation. Yet in countries such as Guatemala or Kenya, where the people obtain half their calories directly from corn, such a crop failure would have been disastrous.

Such disasters have occurred. In the 18th century, the potato, a new food plant from the Andes of South America, was introduced into Ireland. The genetic diversity of the introduction was small, but, isolated from some of its diseases, the potato yielded well and the Irish population increased. In the 1830s, with the population increased three-fold to eight million, a previously unknown disease of the potato plant caused by the fungus *Phytophthora infestans* appeared in Ireland. Within ten years, two million Irish emigrated, two million died and four million remained, many in abject poverty. The Irish had inadvertently narrowed the genetic base of the crop and there remained little or no resistance to the devastating fungus. Since then, genes for resistance from the Andes have been bred into the crop.

Following the 1970 American corn blight, the National Academy of Sciences discovered that a dangerously

restricted genetic base exists in many of our basic crops. For hard red winter bread wheat about 40 percent of the acreage had been planted with just two varieties and their derivatives. In soybeans the genetic base was limited to just six seed collections. For sorghum, as with corn prior to the blight, all then current hybrids were of a single advanced cultivar. Nearly all our basic crops, the Academy found, were on such a narrow genetic base as to be highly vulnerable to a new race of pathogen, a new biotype of an insect pest or a common environmental stress. Some changes have been made in the last six years but the situation remains essentially unaltered.

There is nothing biologically unsound about using a narrow genetic base to breed for high yields in the shortest period of time; but it is unthinkable not to preserve and maintain the ready reserves of genetic diversity in native agriculture for future plant breeding needs. Up to now, we have been able to return to areas of genetic diversity, usually located in third world nations, to collect germplasm for further breeding programs. Suddenly, in the 1970s, we are discovering that Mexican farmers are planting hybrid corn seed from a midwestern seed firm, Tibetan farmers are planting barley from a Scandinavian plant breeding station, and Turkish farmers are planting wheat from the Mexican Wheat Program. Each of these classic areas of genetic diversity within crops is rapidly becoming an area of uniformity.

The reason for alarm about the loss of native strains is the irreplaceable nature of the genetic wealth. Because genes can be stored only in living systems, the native varieties can become extinct once they are dropped in favor of introduced seed. The extinction can take place in a single year if the seeds are cooked and eaten instead of saved as seed stock. Quite literally, the genetic heritage of a millennium in a particular valley can disappear in a single bowl of porridge.

In an age of substitutes and alternate materials the optimistic look to induced mutation for crop improvement. Indeed, this can be a source of variation. But it compares poorly with the resources found in land races. After all, most of the major crops represent the living biographies of 8000 years of accumulated mutation integrated and balanced in a genetic system. We have synthetic fibers replacing cotton and linen, synthetic rubber replacing natural rubber but no synthetic foods yet or in the immediate future replacing the basic crop plants. Clearly realizing our dependence on the genetic resources of plants ought to instill a sense of humility which in the arrogance of our accomplishments we have tended to lose.

Positive steps toward germplasm preservation are now being taken. Two methods are possible: one is the establishment of gene banks of collected material; the other is *in situ*, or on site, preservation.

Preservation through gene banks is now being undertaken by both national governments and the International Board for Plant Genetic Resources, an autonomous non-profit organization under the aegis of the United Nations and World Bank. The international effort involves a world system of germplasm banking that includes centers in eight countries. And on the national level the United States maintains a genetic bank at the National Seed Storage Laboratory in Fort Collins, Colorado. Here, in controlled storage rooms, seeds from around the world are stored in a half million air-tight metal cans for long-term preservation. In addition there is an active plant exploration program and crop-specific collections at regional plant introduction stations. The apples are at Geneva, N.Y.; the wheats at Pullman, Washington; the corn at Ames, Iowa; and the national potato collection at Sturgeon Bay, Wisconsin.

In gene banks seeds are stored under conditions which insure long-term viability and accessibility. But gene banks are vulnerable to human error and to equipment failure resulting in loss of seed viability. One of the drawbacks of seed storage is the fact that just one error can wipe out the entire collection.

The second method, preservation on site, should be a priority in international agricultural and environmental management. Because plant populations, rather than entire ecosystems, are being preserved, *in situ* preservation need not encompass large amounts of land. Maintaining native agriculture in as few as 100 carefully chosen strips of 4 by 8 kilometers (approximately 2 by 4 miles) around the world might be a start. The agriculturalists would be, in essence, curators of living collections where genetically diverse plantings and hybridization with the wild relatives would continue. A number of national governments have already set aside areas of natural beauty or of historical significance. Equally, these genetic resource areas could be set aside to preserve crop plant diversity and be administered by an international body such as the U.N. Food and Agricultural Organization.

To reach our current production of food crops, we have already cleared most arable land. The course conventional agriculture has taken is more intensified land-use, more pesticides, herbicides, chemical fertilizers, water and specialized uniform seed. This method has worked in the industrialized nations because we have been able to breed new, more resistant and productive strains and to afford a heavy investment in agricultural technology. But the sudden increase in the cost of energy in the past two years indicates that there are limits to the use of energy (pesticides, herbicides and fertilizers). The threatening loss of genetic resources demands increased attention to the conservation, evaluation and open distribution of crop plant germplasm.

Our increased influence over the environment to maintain an abundance of food in the face of an increasing population has decreased our margin for error. It is clearly in our interest to maintain a strong agricultural research program to insure that massive losses arising from the genetic vulnerability of our major crops do not take place.

To fail to anticipate change is to be ill-prepared for the future. The kind of agriculture we are now practicing requires the preservation of germplasm diversity if future breeding is to meet the ever changing threats of pathogens, insects, and environments and a dwindling genetic heritage. ☙

Garrison Wilkes is an associate professor of biology at University of Massachusetts in Boston and has a long-standing interest in germplasm resources.

Native crops and wild food plants still exist in the regions where they were first domesticated, providing a source of genetic diversity for modern agriculture. These centers of origin, shown on the map above, were identified by the Russian plant breeder N. I. Vavilov in the 1920s and include (from left): Mexico-Guatemala, Andean South America, the Mediterranean, Ethiopia, the Near East, Afghanistan, India, Malaysia-Indonesia, and China.

ELMER SMITH

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July 16, 1977

Senator John Culver
Chairman,
Sub-committee on Resource Protection
Committee on Environment and Public Works
United State Senate
Washington, D.C. 20510

Dear Senator Culver:

It is with pleasure that I was informed of the Congressional Oversight Hearings on the Endangered Species Act of 1973. This is a most important piece of legislation and I am gratified that the Congress is continuing to evaluate progress made and possible modifications that might improve its effectiveness.

If you would permit me, I would like to address myself here to one specific implication of the act, namely, its impact on investigation of the organisms considered to be threatened or endangered.

To indicate my background, I note that I am a professional biologist, now a Professor of Zoology of the Division of Biological Sciences, The University of Michigan in Ann Arbor, and former Chairman of the Department of Zoology at this institution. This year I am president of the American Society of Zoologists, and I have served as consultant and staff member of several natural history museums and public (non-profit) zoological parks here and abroad.

One point that has been admitted in numerous preliminary hearings is our limited knowledge regarding most of the organisms actually or potentially affected by the legislation: Their ranges, physiological and reproductive response to environmental alterations, and interactions with other organisms are poorly understood. Yet, one counterproductive bi-product of the legislation has been to hinder or at least to make very much more expensive the further accumulation of such information. The existing legislation, and administrative attitudes and practices, include procedures that require excessive, very specific and inflexible paper work and import requirements. They almost force one into employing commercial brokers and into buying specimens from dealers rather than importing a few individuals required for specific work directly from colleagues at foreign institutions. Not only does this increase the cost to the individual, and more often to the federal or state institution, museum, or university sponsoring the work, but it also increases transit time and with this, the chance of loss of precisely those animals which we are attempting to protect.

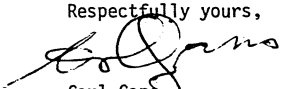
The issue has been of some small concern in my personal research. More important has been its implication for the investigations being carried out by many colleagues. These are often the colleagues who have done the field work documenting that many species were indeed endangered, and who have in some cases been able to propose control mechanisms that are meeting with some success. Much of their work has been supported by the Federal Government through diverse agencies such as the National Science Foundation. To the extent that such studies are now being hampered, the funds appropriated by the Congress and provided by the tax payers are being expended inefficiently. We feel that this enforcement pattern of the legislation induces an inflexible situation that precludes the timely responses demanded by the accelerating pace of environmental destruction. And, we should constantly remain aware that in most cases it is habitat destruction or alteration that pushes species to and over the brink of extinction.

The tenure of legislation and enforcement has been to impose the risk of personal liability for precisely those people traditionally most concerned with protection. It now has the additional effect that some colleagues are becoming fearful about any work being carried out on wild animals. Responsible officials of regulatory agencies refuse to indicate whether a particular action makes an investigator liable for prosecution.

Let me conclude by expressing the opinion that we as yet understand only a very small portion of the problems we face. Many of the organisms with which we share this globe are hardly as spectacular as a tiger or a panda, yet they may be even more significant in terms of their biological roles in the stability of ecosystems, as "barometers" of dangerous pollution, or in terms of eventual contributions to man's knowledge. Unless it remains possible to study such creatures without increased financial, and indeed psychological cost, many of them will become extinct before we can know more than that they once existed. We will certainly lack the information on which successful protection schemes may be based and by which they may be evaluated.

I hope that the government will work closely with the scientific community and its societies towards a satisfactory solution to this problem. I remain at your disposal and thanking you for your attention I am,

Respectfully yours,



Carl Gans
Professor of Zoology

P.S. I appologize for writing a letter rather than applying to testify in person. However, I will be out of the country on the times of your hearing. I shall appreciate your having your staff call me if I can be of any assistance upon my return.

STATEMENT OF THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION ON THE ENDANGERED SPECIES ACT OF 1973, BEFORE THE RESOURCE PROTECTION SUBCOMMITTEE OF THE UNITED STATES SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS.
AUGUST 12, 1977

Gentlemen, my name is Joseph S. Ives. I am the Environmental Counsel for the National Rural Electric Cooperative Association (NRECA). NRECA is the national organization which represents nearly 1000 REA financed, non-profit cooperative electric systems which deliver power to approximately 25 million people in 2600 out of 3100 counties in the United States. These consumer-owned electric systems serve nearly 75 percent of the total area of the United States which, for the most part, is sparsely populated, containing only about 10 percent of the total population. I appreciate the opportunity to express the views of NRECA.

The National Rural Electric Cooperative Association is so deeply concerned about the enforcement of the Endangered Species Act of 1973 that the membership during their 1977 Annual Meeting in Atlanta, Georgia adopted the following resolution.

TVA TELLICO DAM

> Under recent ruling of the courts, the TVA Tellico Dam project in Tennessee has been halted due to the discovery of a small fish known as the snail darter, when then was placed on the endangered species list. The Tellico Dam Project has been completed; however, much needed hydro-power generating capacity has been denied the people in the region due to the ruling of the courts relating to this discovery.
>
> We urge that the Congress pass legislation to exempt the snail darter fish from impeding the filling of the Tellico Dam Reservoir for much needed hydroelectric power generation and other benefits for the people in the region.

> We further urge that the Congress amend the Endangered Species Act to exempt species or sub-species whose preservation provides little or no benefits but will prevent the vital storage of water, hydroelectric development and power plant construction.

Although this resolution specifically mentioned the halting of a major hydro project which is directly beneficial to all residents of the TVA service area and indirectly beneficial to all citizens of the United States, the membership expressed in this resolution their broad based fears that the act as written could be used by many anti-growth and anti-development advocates to seriously damage the nation's energy and water supplies.

The cooperatively owned generating and transmission systems, who are members of NRECA, are also concerned that the implementation of the Act will impede or prevent the construction of vitally needed generating stations or add substantially to their cost. At the recent spring meeting of the Generation and Transmission (G&T) Managers Association on April 24 - 26, 1977, the G&T Managers recommended that the NRECA Board of Directors work with other impacted industries to amend the Endangered Species Act of 1973 so that it will be applied in a reasonable manner with some consideration to the cost of protecting a specie and the benefits of preserving the specie. They also recommended that the protection of the act be limited to those species which are economically, aesthetically or ecologically useful or important.

The fear of harassment by no-growth advocates has been reinforced by the tremendous number of petitions to list plants and animals as endangered

or threatened species since the Act was passed. In 1973, only 109 American species were listed as threatened or endangered, but by 1976 over 24,000 plants and animals were suggested for listing in the endangered or threatened categories. Although many of these species have no proven economic, aesthetic, or ecological importance, the fact that a species of this type has been listed or suggested for listing may delay or halt projects which are beneficial to the nation in general or large groups of citizens in particular. In the case of power plant and dam construction, these delays can and do impose a substantial economic loss directly on consumers and indirectly on the nation.

Of particular concern is the rapidity with which additional species have been added to these lists, the criteria used to classify specimens as distinct species, and the relative unproven importance of many species. Recently, over 50 additions have been made to the list and these additions include plants, butterflies, crustaceans, and snails. In the southeastern United States, a large number of river snails have been identified as endangered or threatened species. By classifying species such as these on the basis of insignificant variations, it would probably be possible to find a "rare species" in almost any river or tract of land in the United States. Using these "rare species" and the inflexible requirements of the Endangered Species Act, a single disgruntled person can delay projects which are necessary in the public interest and, as in the case of the TVA Tellico Dam, there is no mechanism within the law to resolve this conflict. In our opinion, the fact that a dispute of this type requires an Act of Congress to resolve indicates that the legislation is deficient and requires amendment.

Many have suggested that the Act does not require amendment as administrative procedures can be used to resolve most conflicts. This may be the case

if there is more than one habitat for a species, but there are many insignificant sub-species which have adapted to a specific river or area such that their habitat becomes unique. In this case, only an act of Congress can resolve this conflict as the law as now on the books allows no exception where a project, no matter how important to many people, jeopardizes the existence of that species. While this may not be much of a burden now as there are only a few species listed, there are now over 24,000 proposed for listing of which 2,000 are currently being considered. If conflicts develop in proportion to the number of species listed, an already overburdened Congress will be called on more and more often to legislate on conflicts which could be settled at the administrative level.

NRECA does not recommend that broad exemptions be granted in any amendment to any major category of species or to any specific categories of construction projects. However, we do recommend that the Act be amended in such a fashion that listings under the Act are restricted to species which are ecologically, economically, and aesthetically useful or important. We also recommend that Congress establish criteria or procedures in the amendment for classifying species on the basis of significant variations and characteristics so that insignificant varieties of fish, such as the snail darter, will not have the same degree of protection as the American bald eagle. We further recommend that the Congress establish some mechanism for balancing the marginal costs and the marginal benefits of preserving a specie in the event that a conflict arises between the use of a critical habitat by an endangered species and the need for modifying the habitat by constuction projects which are in the public interest.

In conclusion, NRECA respectfully suggests that the Endangered Species Act of 1973, be amended as soon as possible so that some flexibility is incorporated into the Act and a mechanism is provided so that an administrative

decision, rather than an act of Congress, can resolve conflicts which may develop.

We thank you very much for permitting us to express our opinion on this important act.

Testimony of Wayne C. Cobb, Assistant Director of the Natural Resources Council of Maine to the Resource/Conservation Subcommittee of the Senate Committee on Public Works, submitted August 4, 1977

Subject: The Endangered Species Act and the Furbish lousewort

The Natural Resources Council of Maine is a statewide, non-profit citizen's environmental organization of over 2,800 members and about 100 affiliate groups. Since 1959, the NRC has stood opposed to the Dickey-Lincoln hydroelectric project on the St. John River in northern Maine. We believe that the losses of productive timberland, abundant fish and wildlife resources, and wilderness values that would result from the construction of Dickey-Lincoln far outweigh the benefits of the project as estimated by the U. S. Army Corps of Engineers.

In the summer of 1976, the Corps of Engineers announced the rediscovery of the Furbish lousewort, *Pedicularis furbishiae,* near the site of the proposed Dickey dam. The last recorded sighting of the plant, a member of the snapdragon family, had been in 1946. Since that time it had been believed extinct. With the lousewort's rediscovery in 1976, the Office of Endangered Species, Department of the Interior, listed the plant among the first group of plants nominated for "endangered" status.

Section 7 of the Endangered Species Act directs that no federal activity shall jeopardize the continued existence of endangered or threatened species, or result in the destruction or modification of a species' critical habitat. Studies now underway by the Corps of Engineers will determine whether the lousewort's habitat is totally within the Dickey impoundment area, and whether transplanting to a "safe" area is feasible. These studies may indicate that, in fact, no "conflict" between the lousewort and Dickey-Lincoln exists.

The position of the Natural Resources Council of Maine is that, despite our strong and long-held opposition to Dickey-Lincoln, we do not see the existence of the lousewort in the project area as an immediate threat to Dickey-Lincoln, nor do we ourselves wish to make the lousewort an issue at this time.

A draft environmental impact statement is due to be released by the Corps of Engineers later this month, to be followed by public hearings. The Natural Resources Council will review carefully the impact statement, and prepare and submit testimony at the proper time. We anticipate that our testimony in opposition to Dickey-Lincoln will be vigorous and will include the following points:

- The St. John River, which is characterized by extremely low flow-rates in Summer and Fall, is not well suited to hydroelectric development. Power would be generated two or three hours per day.

- The upper St. John River basin is a unique wild region, whose natural beauty and abundant wildlife are regional and national assets.

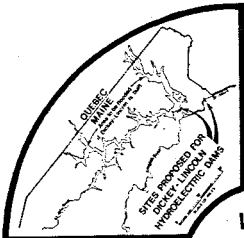
- The river is gaining popularity as a recreational resource for the Northeast, thereby generating revenue for the State of Maine.

- The Dickey-Lincoln project has questionable economic benefits for Maine. When the loss of productive timberland is considered, the project is seen as a net loss for the State.

We believe that the Endangered Species Act may be sufficiently flexible to allow both the lousewort and the Dickey-Lincoln dams to exist. Furthermore, we recognize the authority of Congress to exempt any federal project from the Act, should such an exemption be deemed in the public interest.

The "conflict" between the Furbish lousewort and Dickey-Lincoln is not a consequential public issue in Maine at this time. The decision to build or not to build the Dickey-Lincoln project will undoubtedly be based on considerations more important in the public eye than the lousewort. Therefore, we urge that any such presumed conflict <u>not</u> be the basis for efforts to weaken the Endangered Species Act.

Attachment: NRC Bulletin - "Furbish lousewort: A Threat to Dickey?"



A MAINE PERSPECTIVE
A Special Bulletin of the
Natural Resources Council of Maine

Wayne Cobb, Editor No. 3 May, 1977

DICKEY-LINCOLN:

Furbish Lousewort: A Threat to Dickey?

Opposition to the Dickey-Lincoln project has been a constant issue for the Natural Resources Council since the organization's inception in 1959. For many years it has been clear that the loss of timber resources, valued at more than $8 million annually to the State of Maine, as compared to the proposed benefits of the project, strongly suggests that the St. John River Valley be preserved in its natural state. This, combined with the ecological and recreational losses of the area due to flooding, as well as the existence of reasonable alternatives to Dickey-Lincoln, has convinced the NRC that construction of the dams would be a grave and irreversible mistake. Discovery of numerous rare and unique plants in the St. John Valley has simply strengthened the sentiment that Dickey-Lincoln be stopped.

Kate Furbish, Maine Botanist (1834-1931)

Lousewort Rediscovered

In the summer of 1976, while conducting an environmental impact study of the St. John River Valley under contract with the Army Corps of Engineers, Dr. Charles Richards, Professor of Botany at the University of Maine at Orono, rediscovered the Furbish lousewort. The last recorded sighting of this plant had been in 1946 at Fort Kent, Maine. Since that time it had been believed extinct. A member of the snapdragon family, the plant stands two to three feet tall, with deeply cut, fernlike leaves and elongated clusters of yellow flowers.

The plant was originally discovered nearly one hundred years ago by Kate Furbish, an avid Maine botanist who searched woods, rivers, valleys, mountain tops, and roadsides for more than 70 years, collecting specimens and making intricate watercolors of plants. Travelling through Aroostook County, she came upon the unfamiliar plant in Van Buren on the banks of the St. John River. She recognized it as being of the genus commonly called lousewort, part of the snapdragon family. Furbish recorded the plant as growing "three feet high on the bank of the river where the

water trickled down its sides." Soon botanists concluded that this species grew nowhere else in the world beyond this stretch of the St. John River Valley, and in 1882 Sereno Watson, a Harvard botanist, named the plant for Kate Furbish--Pedicularis furbishiae, or Furbish lousewort.

With its rediscovery in 1976, the Office of Endangered Species in Washington listed the Furbish lousewort among the first group of plants nominated for "endangered" status.

The Endangered Species Act

Originally passed in 1966 and revised in 1973, the Endangered Species Act provides protection for species in "immediate danger" of extinction ("endangered species"), as well as for those "likely to become extinct" ("threatened species"). The Act gives recognition to the biological significance of the growing number of species that, unfortunately, are becoming rare, endangered, or threatened, and provides a means of protecting them so they may continue and evolve as nature intended.

The Endangered Species List presently includes almost 200 animal species. The proposed inclusion of plants on the list marks an important milepost in the preservation of genetic diversity. Plants, many of them seemingly useless, are part of the biological diversity that maintains healthy ecological conditions for all earthly life. As stated in the Report on Endagered and Threatened Plant Species of the United States to the Congress of the United States of America by the Secretary, Smithsonian Institution, 94th Congress, 1st Session, House Document No. 94-51 (1975),

> "Many species of rare, endangered, and threatened plants grow in severe or unusual habitats and often possess unique qualities that make them particularly valuable to man: they help provide diversity and greater ecological stability, they stock unstable and unusual habitats, they are sources of medicines and chemicals, they are bio-indicators of minerals and metal ores, they possess potential value for food crops and horticultural use, and they provide man with sources of aesthetic value. Loss of any species of plant represents an irretrievable loss of unique genetic material or germ plasm that cannot be duplicated and narrows man's future options for his own use of the environment."

The Act authorizes the Secretaries of the Interior and Commerce to acquire land and water rights to preserve and propagate endangered species, and sets fines of up to $10,000 for taking or dealing in endangered species or products made from them. Most importantly, Section 7 of the Act directs that no federal activity shall jeopardize the continued existence of endangered or threatened species, or result in the destruction or modification of a species' "critical habitat"--the area essential to the survival of any endangered species. It is this section of the Act that has created such a hullabaloo over the Furbish lousewort.

Will the Lousewort Hold Up Dickey-Lincoln?

Dr. Richards rediscovered the lousewort in the township of Allagash, directly upstream from the site of, and within the area to be flooded by, the Dickey dam. In his survey he sighted approximately 40 of the plants. It is believed that many other specimens of the plant in this river valley have been eradicated by land levelling and the dumping of waste into the river.

While the lousewort was initially scheduled for classification as an endangered species in December, 1976, its acceptance, like that of the other plants on the list, is not yet final. According to John Spinks, Chief of the Office of Endangered Species in Washington, the delay is attributable to the need to create a set of regulations and policies concerning endangered plants.

When the presently proposed list of endangered species of plants becomes final, which should occur within the next few months, the lousewort, because of its precarious location upstream from the dam site, will be protected by Section 7 of the Endangered Species Act. Section 7 required the U. S. Army Corps of Engineers, the federal agency responsible for the Dickey-Lincoln project, to notify the U. S. Fish and Wildlife Service of the threatened plant's existence. After that notification, the plant was proposed for the Endangered Species List.

Paul Nickerson of the Northeast Region, U. S. Fish and Wildlife Service does not feel, however, that the Furbish lousewort will necessarily prevent construction of the Dickey-Lincoln dams. Nickerson, at the February meeting of Governor Longley's Dickey-Lincoln Review Committee, noted that although the Fish and Wildlife Service has the power to place the lousewort on the endangered list, the ultimate decision on whether the Endangered Species Act will hold up construction of Dickey-Lincoln lies with the U. S. Congress. "They passed the law and they may make exceptions to it if they wish."

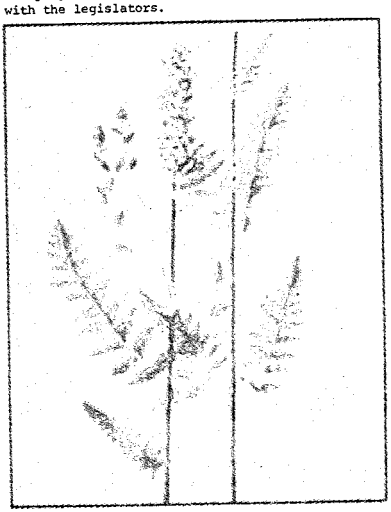
Amendments May Weaken Act

Attesting to the validity of this observation is the submission since January, 1977 of numerous bills in Congress to amend the Endangered Species Act, because of endangered plants or animals jeopardizing specific water resources projects. What is at stake is a threat to one of the sacred cows of Congress--public works--and lawmakers now find themselves in the uncomfortable position of having supported both habitat preservation and public works, two popular and sometimes contradictory federal programs.

Since the Act's inception many public works projects have been delayed or modified to avoid wiping out endangered species. But the first real conflict came in January of this year, when the U. S. Sixth District Court of Appeals halted work on the $116 million Tellico Dam project on the Little Tennessee River, after $100 million had already been spent. The project was halted in order to protect the critical habitat of the snail-

darter, a three-inch minnow. Several amendments to the Act have since been proposed. One seeks to exempt from the Act any public works project already under construction. Another looks to simply exempt the Tellico Dam from the Act, while a third requires assessments of economic consequences before an area is declared a critical habitat. Congressional oversight hearings on the entire Act are expected to take place early this summer.

The implications of these amendments and the upcoming hearings are considerable. Legislators are trying to open up the Act to allow more leeway for public works projects to go through without having to meet the endangered species regulations. Behind the legislators are the agencies defending the projects--agencies that have tremendous pull with the legislators.



The Furbish lousewort-- Photograph of the original watercolor by Kate Furbish, c. 1880

One of the major objections to the Act is that it is inflexible, and does not allow for any compromise or balance. Commenting on the flexibility of the Endangered Species Act, Zygmunt Plater of the Wayne State University Law School, a leading supporter of endangered species Conservation, noted that if ever amendments to the Act are to be considered, "it should be on future evidence of statutory intractability, that does not presently appear to exist." He stated that at present the court system is the only governmental arena which does not have discretionary flexibility under the Act, and that the responsibility of balancing all the complexities of biological science and Congressional policy does properly exist in the agencies which implement the Congressional mandate and, as a last resort, in Congress.

Plater continued to note that the past four years have seen more than 4,500 agency consultations with the Fish and Wildlife Service concerning potential project conflicts with the Act, and that of those only three have gone into the courts. Addressing the question of the timing of Congressional action, Plater stated, "there appears to be no need to rush into amendments to the Act until such time as it proves to produce unreasonable effects. On the record to date the Act appears to be workable as well as useful. Its practicality will be furthered by formal regulations now being issued." In the light of the 4,500 Fish and Wildlife consultations to date, he commented that the Tellico case indicates that inflexibility results "from agency reluctance to comply with protection procedures for natural populations. Even so, in that protracted case it appears that the Act does not require a choice of drastic extremes, but instead presents reasonable and beneficial options for design modifications which maximize economic and public values as well as protecting species and habitat. That is a desirable precedent to establish for the Act."

Meanwhile, Back with the Corps...

In its Environmental Impact Statement, the Corps must be cognizant of rare species. Accordingly, last summer Dr. Richards spent one month in the St. John River Valley searching for numerous rare species believed to exist there. Most of his work was done with a helicopter, landing at intermittent spots along the river banks. It was during that month that the lousewort was found. Since that time the Corps has been in constant contact with the Fish and Wildlife Service to determine how they should proceed this summer.

With the rediscovery of the lousewort, the Corps of Engineers has several responsibilities it must meet. Richard Dyer, the system project manager for Dickey-Lincoln, says the Corps will focus its energy in two areas. First, it intends to do extensive survey work looking for louseworts along the St. John and other rivers. Dyer expects the Corps to survey over 150 miles of the riverbanks over a span of two months. Included within this 150 miles are portions of Aroostook, Fish and Allagash Rivers, as well as several rivers in New Brunswick.

Why is the Corps spending time looking for the lousewort in New Brunswick? John Spinks of the OES postulates that the Corps is seeking to discover numerous louseworts north of the St. John and thus establish the lousewort as a circumpolar plant. Should the plant be found in quantity, then its habitat would be considered to be fairly secure and its classification as endangered in the United States would be removed. For although the Endangered Species Act applies only to the territorial United States, when a plant occurring rarely in the U. S. is found in abundance in a foreign country, it is generally accepted that the plant is not threatened with extinction and that its occurrence in the U. S. is merely indicative of an extreme of the plant's range.

Field surveys for other possibly endangered

species, including the Josselyn sedge, which is believed to be endemic to the impoundment area, are secondary to the Corps' examination of the lousewort, and according to Richard Dyer, will be done only "when the opportunity arises."

Dr. A. E. Brower, a retired biologist for the State of Maine who has done extensive field work in the St. John Valley area, is not pleased about the Corps' summer plans. He feels that the Corps has not spent adequate time in the area searching for plants. "Two weeks to look at 135,000 acres is simply not enough," said Brower. In addition, he noted that the field work last summer did not begin until early July, when the blossoms of many early spring flowers had already disappeared. Commenting on the reservoir area as a whole, Brower called it "a unique, outstanding ecological area, unequaled elsewhere in new England for its concentration of desirable and rare plants. Many of these do not occur or are rare elsewhere in the United States, " Brower stated. "To destroy such an area would be a botanical catastrophe for which this generation would never be forgiven."

Nickerson, however, feels differently, and says "it is not urgent to look for other species; we have the lousewort." He feels that classification of one plant cn the Endangered Species List is adequate to halt the project, and that to look for other species in this area at this time should not be a priority.

The second aspect of the Corps' summer work will be a physiological study of the lousewort itself. The Corps will examine its seeding, flowering and pollination mechanisms, its growth and its life cycle requirements to determine whether the plant can be successfully transplanted.

It is questionable, however, whether transplanting the flower would satisfy the Act. As stated in the Smithsonian Institution Report, "Cultivation or artificial propagation, even in the best botanical gardens, is not an acceptable alternative to *In situ* perpetuation of species. Preservation of a species' future cannot be assured in this way. Artificial propagation is a last resort and is done always with the ultimate objective of reestablishing the species in its natural habitat."

Dr. Brower too doubts that the lousewort can be successfully transplanted. "We do not even know if the lousewort is a parasite or engaged in a symbiotic relationship with another plant, and we could not even begin to measure the success of a transplant for at least ten years." What are the risks to the few remaining plants should should half, or even a few of them be transplanted? Dyer is not too concerned with this and says he hopes to be able to transplant louseworts and thus secure their existence, regardless of whether Dickey-Lincoln is built.

With the Furbish lousewort's classification as endangered expected within the next few months, Dyer hopes the Corps' work this summer will lead to an adequate determination of the plant's critical habitat and possibly expedite the transplanting process. Whether or not the plant can actually be transplanted must be determined by the Secretary of the Interior, however, and experience with species transplants in the past has been limited. It has often been the case that conflict situations have been solved through arbitration, such as in South Carolina, where plans for forest clearcutting were altered to protect a rare swamp bird. With the Dickey-Lincoln project, however, there is little room for negotiation and compromise.

Reasons are Many for Opposing Dickey-Lincoln

In the case of Dickey-Lincoln there are many reasons other than the lousewort why the dams should not be built.

The St. John River Valley is considered to be a unique wild region, complete with some of the best whitewater canoeing in the northeastern United States, far surpassing the Allagash Waterway for its magnificent rapids. The water that would back up to fill the two lakes at Dickey-Lincoln would destroy at least 86,000 acres of this irreplaceable resource. Fishermen would lose one of the most outstanding brook trout fisheries of the country and gain far less in return, while hunters would lose to the reservoir 17,600 acres of deer yard supporting 2,200 white-tailed deer.

As for jobs created by the project, most would be short term, lasting only through the construction period. Most importantly, there are other reasonable alternatives to Dickey-Lincoln that will meet its objectives and provide substantially more employment than would "boom and bust" Dickey-Lincoln. One that has been suggested is spending the money needed to build Dickey-Lincoln on an insulation program for buildings in New England. The energy saved through such a program would be more than twice that which the dams could produce. Also, the growing trend toward energy conservation, the use of solar, wind, and other alternatives, as well as "peak-load pricing", may make Dickey-Lincoln unnecessary.

Indeed, the NRC's original opposition to Dickey-Lincoln began long before the Furbish lousewort was discovered, because of these and other objectionable aspects of the project. That opposition will persist regardless of the fate of the flower that Kate Furbish discovered and which events have made famous. Nevertheless, the NRC has petitioned the Department of the Interior to place both the Furbish lousewort and the Josselyn sedge on the Endangered Species List, and to investigate the status of eighteen other species located in the area.

by Barbara Milus

NRC (Printed on 100% recycled paper)

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NATURAL RESOURCES COUNCIL
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ALTERNATIVES TO COMPLETION OF THE TELLICO DAM

TESTIMONY OF WILLIAM L. RUSSELL

FOR THE LITTLE TENNESSEE RIVER ALLIANCE, 130 TABOR ROAD, OAK RIDGE, TENNESSEE 37830

BEFORE THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

July 21, 1977

Mr. Chairman and distinguished members of this Committee, my name is William L. Russell, and I sincerely appreciate this opportunity to present my views on the Endangered Species Act and the Tennessee Valley Authority's enjoined Tellico Project on the Little Tennessee River.

I am a geneticist by profession and a conservationist by avocation. In both capacities I applaud the Endangered Species Act. The profound importance of this legislation was emphasized in a quotation printed in the June 24, 1977 issue of "Science," the publication of the American Association for the Advancement of Science. If the whole history of the planet Earth is represented by a time span of one year, then conditions suitable for life have existed for approximately the latter half of that year. Mammals appeared in large numbers shortly before Christmas, and man emerged at 5 minutes before midnight on New Year's Eve. The period since 1600 A.D., when man caused the extinction of the Dodo, amounts to three seconds on our time scale, and the last quarter of a century, when the disappearance of species really began to escalate, represents only one sixth of a second — a twinkling of an eye in evolutionary time. In this context the Endangered Species Act is indeed timely and important.

Since I happened to be in Washington this week, serving on another committee, I was asked to speak to you today on behalf of the Little Tennessee

River Alliance. I am a member of the Board of Directors of one of the organizations belonging to this Alliance. The Alliance is a coalition of many organizations. It includes the Tennessee Conservation League (which is the oldest large conservation organization in Tennessee, and the one officially affiliated with the National Wildlife Federation). Other members of the Alliance are the Tennessee Endangered Species Committee, the Sierra Club, the Eastern Band of the Cherokee Nation, Smoky Mountain Hiking Club, Tennessee Aububon Council, Trout Unlimited, Tennessee Citizens for Wilderness Planning, Tennessee Environmental Council and the Tennessee Outdoor Writers' Association.

The Alliance was formed this year after the 6th Circuit Court of Appeals ruled that TVA must halt all work on its Tellico Project, because it would violate the Endangered Species Act. The purpose of the Alliance was to try to find a positive, constructive solution to this conflict between TVA and the law. For years many of the conservation organizations had felt that the Tellico Dam was not justified economically or environmentally. Bringing the views of the various groups together, the Alliance concluded that many of the benefits of the Tellico Project, plus additional ones, could be achieved without the dam and reservoir. A preliminary investigation by the Alliance indicated that it was highly likely that, even at this late date, a modification of the project that would avoid closing the dam might not be an economic loss.

I regret very much that I have not been able to attend the hearings earlier than a few minutes ago, but I presume the Committee has already heard adequate testimony on the many very real benefits that would be lost if the dam is closed: the loss of prime agricultural land, historical and

archeological sites, the loss of a valuable recreational resource, the loss, along with the snail darter, of one of the Southeast's last big river environments, and so forth. Because of these, the Alliance felt that a well-planned agricultural, tourist and industrial development, without the dam, might prove more economically sound, as well as far less environmentally destructive, than the reservoir project. Accordingly, the Alliance recommended that Congress approve a study of such alternatives. I believe the first suggestion was that the study be conducted by the Departments of Interior and Agriculture and by TVA. As you know, the General Accounting Office subsequently started a study which will provide useful information along these lines. It is gratifying that some of the conclusions already reported seem to be indicating that the Alliance's constructive suggestions may really be viable alternatives.

The Alliance felt that if the alternatives were viable, TVA would have a golden opportunity, having already acquired the land, to fulfill its mission for the welfare of the people by showing what it could do with an imaginative multipurpose development associated with a river instead of a reservoir.

We hope that TVA will still see it this way, that it will take this bold shift in direction that will, at the same time, resolve the conflict with the Endangered Species Act.

There is a widespread feeling, shared, as you know, by some Members of Congress, that although TVA is still to be congratulated on many of the things it is doing today, its attachment to dam building has gotten out of hand. Unless there is a change in TVA's attitude, the Little Tennessee River

Alliance respectfully submits for your consideration the view that the problem the Committee is facing today is not a problem with the Endangered Species Act, but a problem with TVA. We sincerely hope TVA will responsively and responsibly help you to solve it with no harm to the Endangered Species Act and no harm to the endangered species.

STATEMENT BY THE SOUTHERN FOREST PRODUCTS ASSOCIATION
BEFORE THE RESOURCE PROTECTION SUBCOMMITTEE
COMMITTEE ON THE ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

July 19, 1977

The Southern Forest Products Association is an organization of forest products manufacturers with operations in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North and South Carolina, Oklahoma, Tennessee, Texas and Virginia. SFPA member mills account for almost half the total Southern Pine lumber output and also produce substantial quantities of plywood and pulpwood.

During the last 15 years, forest products manufacture has increased dramatically in the South. Southern Pine lumber output rose by 50 percent during that period from one-fifth to one-third of U. S. domestic softwood lumber production. Southern Pine plywood production, which began in 1963, has soared to the extent that it now represents 40 percent of the nation's total softwood plywood output. The South also accounts for two-thirds of the nation's total pulpwood output. Pulpwood production in the region has quadrupled since World War II.

These trends are expected to continue. The Forest Service of the U. S. Department of Agriculture predicts that, by the year 2000, the South will become the main source of wood products for the nation as a whole and will have to double current output to meet anticipated year 2000 demand.

This necessitates corresponding increases in timber growth, primarily on the small nonindustrial forestland ownerships which embrace 73 percent of the region's 192 million acres of commercial forestland.

Timber growth on this enormous aggregate of small woodlots is currently less than half of potential, largely because the owners cannot afford the costs and risks of long term forestry investments. In an effort to correct the situation, a growing national effort is underway to strengthen the forestry incentives of the small landowners.

Participants in this undertaking involve a broad array of public and private interests, including the forest products industry. Forest products companies are greatly accelerating their programs of landowner assistance and strongly supported passage of a law in 1973, which created the Federal Forestry Incentives Program. This law authorizes the investment of $25 million in Federal funds annually for cost sharing to help small landowners begin tree planting and timber stand improvement practices.

The overall objective of these and other related programs is to double timber growth on the small nonindustrial private ownerships, which nationwide embrace 300 million of 500 million acres of commercial forestland, by the year 2000. Success in the endeavor will assure adequate supplies of timber to meet anticipated future population needs, and will also bring substantial environmental benefits, including improved wildlife habitat, soil and water protection.

To achieve those goals, further strengthening of the forestry incentives of small landowners is essential in areas such as taxation and financial assistance. It is equally important to eliminate present and potential disincentives in Federal and state laws and regulatory policies.

Such is the basis for this Association's concern with the Endangered Species Act of 1973 and its implementation. While the objectives of this law are commendable, it imposes no contraints on unreasonable or irresponsible implementation that could deny private landowners the opportunity to practice forestry.

A main thrust of the law is to prohibit or restrict Federally funded activities on private lands designated by the U.S. Fish and Wildlife Service as habitats of animal and plant species classified by the Service as endangered or threatened. Such restrictions obviously could apply to forest management practices by small landowners partially funded by FIP or other Federal private forestry programs, including those relating to forest fire control.

The quantity and variety of species to be classified as endangered and threatened, the extent of habitat and the nature of restrictions are yet to be determined. But already there is disturbing evidence of the adverse potentials arising from the lack of legal constraints on overzealous implementation not in the public interest. For example, the June 1976 proposal by the Fish and Wildlife Service that 1776 plant species be classified as endangered. Many of these plants are located in the South and their designated habitat could conceivably cover

substantial acreage of commercial forestland. Questions were raised as to the methods of selection and on whether the species were, in fact, endangered or just rare. While only a handful of these plant species have thus far been classified as endangered, the size of the proposed list and the extent of geographic coverage indicate the potential danger to the timber supply base.

There are other disturbing signs. In Tennessee, for example, an endangered species of fish--the snail darter--has halted a multi-million dollar completed dam project on the Little Tennessee River. A large dredging project on the Minnesota River was temporarily halted due to the possibility that an endangered species of clam might be affected. In Maine, an endangered snap dragon--the furbish lousewort--threatens to halt the $600 million Dickey-Lincoln hydropower project on the St. John River.

The real and implied threats to energy sources, the timber supply base and other areas vital to the public interest, clearly indicate that the Endangered Species Act should be amended to preclude the danger of economic hardship or chaos from overzealous implementation.

The Association offers the following suggestions on amendments:

1) While it is obviously desirable to protect and perpetuate endangered species of animals and plants, this should be done in a way that will not present an overriding, unacceptable hardship to Man. Language should be added to the Act to that affect.

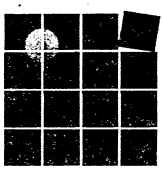
2) Another amendment should specify that the threat of extinction--not rarity -- be the basis for proposed inclusions in the endangered and threatened lists. Also, supporting data for such proposals should be made available to the public along with precise information on the geographical location of critical habitat. Sufficient time should be allowed for comments on proposals by interested parties and public hearings should be held for each proposed listing in each locality and state where the critical habitat of the proposed species has been identified to exist.

3) The law should be amended to require that proposals protecting alleged endangered species be accompanied by Environmental Impact Statements as called for by the National Environmental Policy Act. Inflation impact statements should also be required to determine the full economic impact of actions to preserve species from extinction. There should also be a cost-benefit analysis to determine all economic, social and institutional factors involved in the listing and in any actions recommended to preserve the species.

4) Private landowners should not be required to abide by provisions of the law unless they wish to do so. If they choose to manage land to protect endangered species provision should be made for reimbursement for economic losses that may be incurred. There also should be provision for land exchange in cases where economic usage of private land is denied.

5) Another amendment should clarify the intent of that section of the Act which prevents "taking" of listed animal species on all ownerships.

This makes it illegal to "harass" listed animal species on both public and private lands. It is possible that "take" could be construed to prevent normal land management activities on private lands, if it could be shown that those activities might disturb individuals of a listed species. This section should be amended to preclude constraint of legitimate economic activities which have little or no effect on the welfare of the species.



Graduate Program in Ecology
COLLEGE OF LIBERAL ARTS

The University of Tennessee
Knoxville 37916

(615) 974-3065

July 14, 1977

The Association of Southeastern Biologists is a professional organization of career biologists engaged in academic and applied practice in the field of biology and related areas. It currently comprises approximately 1500 members in the states of Maryland, Virginia, West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi and Louisiana.

The Association is professionally concerned with the accurate accummulation, analysis and dissemination of the factual products of scientific research; with the application of scientific knowledge to the practical and legal needs of our government system; and with the maintenance of natural ecosystems which serve the needs of natural scientists and the public at large.

It is the intent of the Endangered Species Act of 1973 to protect natural habitats identified as unique by the presence of endangered species.

The Association affirms the scientific and public importance of preserving endangered species and protecting habitats critical to their survival. The snail darter, Percina (Imostoma) sp, and its habitat qualify for protection under the Endangered Species Act of 1973.

The Association believes that the Tennessee Valley Authority, as well as private citizens should be required to comply with the law.

Sincerely,

J. Frank McCormick
Director
Graduate Program in Ecology

JFM/tt

THE UNIVERSITY OF TENNESSEE
DEPARTMENT OF ANTHROPOLOGY
South Stadium Hall
Knoxville, Tennessee 37916

Telephone
615 974-4408

July 19, 1977

The Honorable John C. Culver
Chairman, Subcommittee on
Resource Protection
The United States Senate
Washington, DC 20510

Dear Senator Culver:

As Head of the Department of Anthropology at the University of Tennessee, I should like you and the members of the Subcommittee to know that the appearance of Dr. Jeff Chapman, Research Assistant Professor in the department which I head, does not have the sanction of the University of Tennessee or this department. He appears before you purely in an individual capacity, and his views are not the views of the department or the University of Tennessee.

I would also like to state that the ten-year archaeological research program in the Tellico Project area has been notably successful and has been adequately funded by TVA and the National Park Service. TVA has cooperated fully in other significant ways, and the extensive excavations which have been conducted have produced a great deal of valuable information and material which would not otherwise have been possible.

Sincerely yours,

William M. Bass

William M. Bass, Head
Department of Anthropology
The University of Tennessee
Knoxville

WMB:ab

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THE FRANK H. McCLUNG MUSEUM
THE UNIVERSITY OF TENNESSEE, KNOXVILLE 37916

July 20, 1977

The Honorable John C. Culver
Chairman, Subcommittee on
Resource Protection
The United States Senate
Washington, D.C. 20510

Dear Senator Culver:

It has come to my attention that Dr. Jefferson Chapman, a Research Assistant Professor in the Department of Anthropology of The University of Tennessee, Knoxville, intends to appear before your Subcommittee in opposition to completion of TVA's Tellico Dam and Reservoir Project, which has been substantially completed on the lower 33 miles of the Little Tennessee River. Since the inception of the project in 1967, I have served as Principal Investigator of a very extensive archaeological survey and research program which has been carried on in the project area, and Dr. Chapman has participated in some phases of the program along with a number of other archaeologists working under my direction. I am Director of the McClung Museum at the University and am a Professor of Anthropology in that department which I formerly headed. The appearance of Dr. Chapman is not sanctioned by the McClung Museum or by me as Principal Investigator of the Tellico Archaeological Project. He is appearing simply as a concerned citizen, and the views he expresses may not coincide with my own.

Because of the Tellico project, TVA has provided the University with research funds in the approximate amount of $960,000, and the National Park Service has added an additional $497,000. This has made it possible to plan and carry out an orderly and very extensive program of archaeological survey and investigation of the signigicant resources in the project area. As a result, a great volume of archaeological and historical information as well as artifactual material has been recovered and new insight has been gained into the prehistoric and historic Indian occupation of the area. This has been particularly true regarding the history of the Overhill Cherokees, a number of whose towns were once located in this section of the Little Tennessee River Valley, although other Overhill Cherokee towns existed beyond the limits of the project area, and some of these sites remain for future investigation.

Of principal significance in evaluating the results of this program is the fact that much of the information and material which has been recovered was unavailable when the land was in private ownership. It was being lost and destroyed by erosion, cultivation, theft, natural deterioration, and improper handling by unscientifically trained persons. If the project

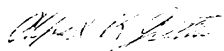
should not be completed and the land should be returned to private ownership, it is believed that this process of loss and destruction would be resumed, doubtless on an accelerated basis since our work has pinpointed the location of sites which formerly were known only in a general way. Indeed, "pot hunters" and looters have been a problem during the actual conduct of our work. The Citico site is a case in point, and I mention it since it alone among the principal sites might be adversely affected by reservoir fluctuation if impoundment occurs. Following the completion of our work performed during the years of 1967 and 1968 and before possession of the property was obtained by TVA, the site was extensively looted by amateur relic hunters. This has continued to some degree after TVA obtained possession of the property despite efforts of its public safety officers to drive the looters from the site. This extensive damage to the site, when coupled with the fact that we have obtained an adequate sampling of the material and information which it contained, greatly lessens the concern which I might otherwise have over the possible effects of the proposed reservoir.

There are a significant number of people in the field of archaeology who regard inundation by a reservoir as preferable to continued destruction of sites by looting and natural forces. Although the effects of inundation are not fully known and an area has been provided to test these effects in the Tellico project, it is well established that certain materials essential to archaeological research such as carbonized matter, stone, flint, and soil stains survive after thousands of years following inundation by water. The Early Archaic and Early Woodland sites investigated by Dr. Chapman are examples. There such materials were discovered under 10 to 15 feet of alluvial deposit, laid down by repeated flooding over a time span of 9,500 years. In short, inundation is not inevitably destruction, and may be considered preferable to the damage and destruction of sites which occurs from looting, cultivation, and erosion. This is particularly true of the later cultural occupations such as the Dallas phase of the Mississippian period and the still later occupation by the Cherokees. These occupations are not deeply buried and are evident on the surface.

It is generally accepted that the recovery of a 10 percent sampling of material from a given site is sufficient for a scientific interpretation of the occupation or occupations which once existed there. Fully adequate samples of 10 percent or more have been recovered from such major sites as Citico, Chota, Toqua, Tomotley, etc. One hundred percent site excavation is unnecessary from a scientific viewpoint, and cannot be justified from the standpoint of policy where public funds are being expended.

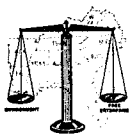
The archaeological research program in Tellico has been adequately funded. Indeed, the guidelines contained in the Moss-Bennett Bill have been substantially exceeded, and I know of no other river basin project in the United States which has received so extensive--or expensive--an investigation. Funding provided because of the project has enabled us to make significant discoveries and the recovery of information and artifacts has provided us with an adequate insight into the aboriginal occupation of the project area. Although additional research could be performed, the completion of the project and the filling of the reservoir would not deprive the scientific community or the public in general of the opportunity of gaining an adequate understanding of that occupation. The means for that understanding have already been achieved.

Sincerely,



Dr. A. K. Guthe
Principal Investigator
Tellico Archaeological Project

Director, McClung Museum
and Professor of Anthropology
The University of Tennessee
Knoxville, Tennessee



TENNESSEE RIVER VALLEY ASSOCIATION

City Hall Tower • P. O. Box 1248 • Decatur, Alabama 35602
Area Code 205/355-4660

July 18, 1977

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The Honorable John C. Culver
United States Senate
Chairman, Subcommittee on Resource Protection
Senate Committee on Environment and Public Works
Washington, D.C. 20510

Dear Sir:

On behalf of the officers, directors and membership of this association, it will be greatly appreciated if you will include the following comments in your hearing record covering consideration of the Endangered Species Act of 1973.

We urge that changes be written into this Act that will revise the Act so that it will be more flexible in order to achieve a balanced development of economic growth as well as environmental protection. The welfare of all of our citizens must be considered within the framework of this Act so that sustained economic growth can be realized. The Act currently frustrates these goals and allows extremism for environmental concerns to hamper, delay and create confusion with worthwhile and needed projects.

Your cooperation in including this request in the record of the hearing will be greatly appreciated.

Very truly yours,

J. Frank Keown

J. Frank Keown
Executive Vice President

JFK:jc

CC: Board of Directors
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TENNESSEE-TOMBIGBEE Waterway Development Authority

GLOVER WILKINS, Administrator

POST OFFICE DRAWER 671 • TELEPHONE 601/328-3286
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July 22, 1977

Honorable John Culver
Chairman, Subcommittee on Resource Protection
Senate Committee on Environment and Public Works
United States Senate
Washington, D. C. 20510

Dear Senator Culver:

I would appreciate very much having the enclosed statement submitted for the record with regard to your hearings on the Endangered Species Act.

Your cooperation in this regard is appreciated.

With best regards and good wishes, I am

Sincerely,

Glover Wilkins

GLOVER WILKINS
Administrator

GW/jw

Enclosure

STATEMENT BY
GLOVER WILKINS, ADMINISTRATOR
TENNESSEE-TOMBIGBEE WATERWAY DEVELOPMENT AUTHORITY
BEFORE THE SENATE SUBCOMMITTEE ON RESOURCE PROTECTION
WASHINGTON, D. C.
JULY 22, 1977

Mr. Chairman, Honorable Members of the Subcommittee, my name is Glover Wilkins, Administrator of the Tennessee-Tombigbee Waterway Development Authority, a five-state compact composed of the States of Alabama, Mississippi, Florida, Kentucky and Tennessee. It is my great pleasure to submit a statement for the record in the interest of the Tennessee-Tombigbee Waterway Authority.

The Tennessee-Tombigbee Waterway is the first waterway developed under the National Environmental Policy Act (NEPA). Its initial funding came almost simultaneously with the Nation's increasing environmental awareness and recognition of the importance of preserving our resources.

Developers of the Tennessee-Tombigbee Waterway are closely attuned to concern for environmental quality. Examples of this concern we have shown is in the more than five major structural changes in the originally designed waterway such as placing the lock and dam above Plymouth Bluff and lowering the crest of the lock and dam at Gainesville, Alabama as well as changing the canal concept to a chain of lakes. As a result, the Waterway will offer many environmental advantages.

Although several years away from completion, this Waterway is already serving as an economic stimulus for a previously severely economic depressed region of the United States -- giving this area of the South economic confidence where, previously, little existed.

This era of increasing economic stability would be severely weakened by any major setbacks in water resource development.

The Endangered Species Act, when carried beyond its original intent, could bring water resources development to a halt. Too strigent environmental regulations, in addition to erecting new legal, political and public opinion obstacles, also drive up the costs of developing and maintaining a strong natural waterway system.

Development of waterway projects contribute immensely to the future welfare of citizens in this nation by providing much needed jobs, electric energy, water supply, flood protection and recreation. Such projects also stimulate commerce, creating new employment opportunities.

In matters relating to economic growth balanced against environmental needs, emphasis should be focused on real environmental issues and alternatives with all citizens having a voice.

The Tennessee-Tombigbee Waterway Development Authority represents a broad spectrum of citizens from a five-state area who are vitally concerned and whose very livelihoods are closely linked to continued water resource development.

At the same time, our citizens believe environmental quality and sustained growth can be simultaneously attained with wise, careful and thoughtful planning. Legislation must allow for responsible balancing of all factors relevant to man's environment including his economic and social needs, as well as important ecological concerns.

We urge that the Endangered Species Act of 1973 be amended to provide for balancing conservation interests with the social and economic needs of the people and to allow for completion and use of projects that are already under construction.

MacFARLAND, COLLEY, BLANK and JACK
ATTORNEYS-AT-LAW
MIDDLE TENNESSEE BANK BUILDING
COLUMBIA, TENNESSEE 38401

LON P. MacFARLAND
JERRY C. COLLEY
EDWARD C. BLANK II
BILLY C. JACK

TELEPHONE 388-3215

July 19, 1977

Senator John C. Culver
2327 Dirksen Building
Washington, D. C.

Senator Malcolm Wallop
344 Russell Building
Washington, D. C.

Dear Senator Culver and
Senator Wallop:

We understand that your Committee is holding hearings on the Endangered Species Act. I am Attorney for Upper Duck River Development Association, Upper Duck River Agency and Upper Duck River Planning Commission and on behalf of them I desire to submit the attached statement which I would appreciate the Committee considering.

Very truly yours,

Lon P. MacFarland

LPM:ds

cc: Senator Howard Baker Attn: Mr. Jim Range
Senator James Sasser
Hon. Robin L. Beard
Hon. Albert Gore
Executive Director of Senate Committee on Environment and Public Works (Subcommittee on Resource Protection)

HONORABLE MEMBERS OF SENATE COMMITTEE ON ENVIRONMENT
AND PUBLIC WORKS
(SUBCOMMITTEE ON RESOURCE PROTECTION)

STATEMENT IN REGARD TO PROPOSED REVISIONS OF THE ENDANGERED SPECIES ACT AND EXEMPTION FROM THE ACT OF ONGOING PROJECTS

BY LON P. MCAFARLAND

FOR

UPPER DUCK RIVER DEVELOPMENT ASSOCIATION

UPPER DUCK RIVER AGENCY

UPPER DUCK RIVER PLANNING COMMISSION

July 19, 1977

STATEMENT OF LON P. MACFARLAND ON BEHALF OF THE UPPER DUCK RIVER DEVELOPMENT ASSOCIATION, THE UPPER DUCK RIVER AGENCY AND THE UPPER DUCK RIVER PLANNING COMMISSION

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

My name is Lon P. MacFarland. I am attorney for the Upper Duck River Development Agency. I have served in this capacity without fee for many years. I speak also for the agency Upper Duck River Development Association and its planning commission. The agency and the commission are official state agencies created to further this project. The association is a voluntary association representing many of the 130,000 citizens of Bedford County, Coffee County, Marshall County and Maury County, Tennessee, through which counties the Duck River flows on its way to the Tennessee River.

At various times I have testified before the Senate Public Works Subcommittee on Appropriations and the House Public Works Subcommittee on Appropriations in support of this project. We are advised of the hearings now being conducted on the subject of the Endangered Species Act, USC Title 16, Section 1531 et seq. This Act was passed in 1973, long after the project started, and it allows the Secretary of Interior, after consulting with affected States, interested parties and organizations, to determine endangered species, threatened species and declare critical habitat. I respectfully suggest that Congress when it passed the Act did not realize its potential scope or breadth. I do not believe that Congress intended in protecting endangered species to go as far as the Act has been interpreted by the Courts to go. The act defines "species" as including subspecies, lesser taxa, and unique endemic populations, and any organism for which it is possible to gather meaningful data, with minor exceptions, qualify for protection. To some there is no place to draw the line on what merits protection. The Endangered Species Act has not been coordinated with the National Environmental Policy Act. For instance, in the case of the Duck River project in the litigation under NEPA, consideration was given as to endangered species but notwithstanding this a hurried listing of endangered species has been made without adequate consideration as to whether or not the species listed are of any consequence. There is confusion as to whether or not before the listing of a species is made an Environmental Impact Statement is required. It seems logical that since an EIS was required before a project could be started, an EIS should be required before an endangered species is listed and a critical habitat declared since the effect of such an action would unquestionably be a "substantial federal action" affecting the human environment and may well require the stopping of the project.

We do not oppose the idea of protecting endangered species. We submit, however, that the Act is completely inflexible and should be amended to give the decision makers more discretion to weigh the benefits of the project against the alleged benefits of declaring a species endangered or threatened. The Endangered Species Act has farseeing ecogolical goals but vague outlines as to how these goals should be measured as against other vital goals such as flood control, recreation, water supply and the improvement of water quality.

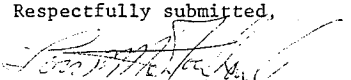
I submit that the Endangered Species Act as it presently exists and has been interpreted by the Court, does not provide for any

reasonable weighing or balancing of other needs which the Congress rightfully considers in making appropriations. The Act as it now exists can be and is being used to stop worthwhile, ongoing projects, the goals of which projects have been found by Congress to have great benefit. No matter how useful a project, in the present situation, the Endangered Species Act is being and can be used to stop worthwhile projects, the completion of which would be very beneficial to the public. On almost any project, Tellico, the Duck River, the Dirksen Office Building, necessary hydro and nuclear plants, some diligent scientist could find some subspecies or lesser taxa of no significant usefulness and obtain the listing of this subspecies or lesser taxa on the endangered or threatened species list and obtain a declaration of a critical habitat, thereby putting the project, no matter how worthwhile, at the complete mercy of someone bent on either protecting the insignificant species or taxa, or someone, for other reasons who is opposed to the project.

The Act must be given some balance and there must be some mechanism for weighing the benefits of protecting the species against other benefits of the project. This is not now provided for. The stopping of important projects because of the listing of an insignificant species is unduly expensive and costly in both money and delay.

We respectfully suggest (1) that projects started before enactment of the Endangered Species Act should be exempt from the Act and (2) that there should be significant revisions of the Act to provide for balance in weighing benefits of the project against any disbenefits the project might have in endangering or threatening species. In this connection we submit that at present quick judgments based on insignificant data are being made in the listing of threatened or endangered species. The Act should be amended to provide a more detailed and comprehensive examination as to whether or not the species exist elsewhere and is in fact endangered or not.

Respectfully submitted,



July 19, 1977

Lon P. MacFarland

THE WILDLIFE SOCIETY

7101 WISCONSIN AVENUE, N.W. SUITE 611
WASHINGTON, D. C. 20014

FRED G. EVENDEN
Executive Director
MICHAEL D. ZAGATA
Field Director
PHONE: (301) 986-8700

July 27, 1977

The Honorable John C. Culver
Chairman
Subcommittee on Resource Protection
U.S. Senate Committee on Environment & Public Works
Washington, DC 20510

Dear Senator Culver:

Your Subcommittee's current consideration of the Endangered Species Act (PL 93-205) is an important one to those of us serving in the wildlife profession.

The Wildlife Society has established a formal position with respect to Endangered Species which I am pleased to enclose for your information.

In addition, we believe the Act has sound objectives which should be retained as enacted, including Section 7. The secret to the Act's success rests in a beneficial level of reasonable moderation in its application. Although there have been a few experiences where the Act may have seemed counterproductive, it does serve its purposes. Information available at this time indicates that the vast majority of conflicts arising from the Endangered Species Act have been resolved through reasonable deliberation. Social and economic factors must be considered in the decision making process of carrying out the Act. Each case must be determined separately on its own set of conditions.

The Wildlife Society will be pleased to assist you and your Committee in continuing to support the basic tenets of the Endangered Species Act.

Respectfully yours,

Fred G. Evenden
Executive Director

FGE/lam
cc: H. Glascock
J. Gottschalk
T. Kimball
D. Poole
W. Towell
M. Zagata
Council, TWS
Section and Chapters, TWS

Enclosure

Route 1
Augusta, Wisconsin 54722
July 19, 1977

Senator John Culver
Room 4204
Dirksen Senate Office Building
Washington, D. C. 20510

Attention: Ms. Kathy Korpon

Dear Ms. Korpon:

I fully support the concept of constructive conservation of endangered species, and am actively contributing to this conservation effort through my own captive propagation programs.

The current licensing and permit requirements (including the CSSP program) for interstate sale and shipment of healthy non-native species are totally counter-productive in terms of preserving and propagating rare and endangered species of birds and animals.

My views for the Senate Environment and Public Works Committee hearings on the Endangered Species Act would be to respectfully request that all licensing and permit requirements for interstate sale be suspended until some more enlightened enforcement policies can be developed.

Sincerely,

Leland R. Wolfgang
Marsh Winds Game Farm

NATIONAL
ASSOCIATION OF STATE FORESTERS

H. GENE HERTEL, President
Des Moines, Iowa

WALLACE F. CUSTARD, Vice President
Charlottesville, Virginia

JAMES D. VERVILLE, Sec'y.-Treas.
Pierre, South Dakota

C. W. MOODY, Immediate Past-Pres.
Montgomery, Alabama

MAX J. YOUNG, Member at Large
Nashville, Tennessee

1977 Executive Committee

July 28,1977
6768 Baron Road
Mc Lean, Va.

Senator John C. Culver
1327 Dirksen Senate Building
Washington, D. C. 20510

Dear Senator Culver:

This refers to Oregon State Forester Schroeder"s letter dated June 18,1977 relating to the July 19-22 oversight hearings on the Endangered Species Act.

While Mr. Schroeder did not specify that his letter was for the record, it was intended that it be included in the record of the hearings. We hope that it can be included. A copy is enclosed.

Sincerely,

Boyd L. Rasmussen
National Association of State Foresters

ROBERT W. STRAUB
GOVERNOR

Forestry Department
OFFICE OF STATE FORESTER
2600 STATE STREET, SALEM, OREGON 97310 PHONE 378-2560

June 28, 1977

The Honorable John C. Culver
United States Senator
1327 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Culver:

It is our understanding that oversight hearings on the Endangered Species Act are scheduled for July 19 through 21 by the Resource Protection Subcommittee of the Senate Environmental and Public Works Committee. The concerns recently focused on the Endangered Species Act by the events of the Tellico Dam project are of great interest to this department for administrative and technical reasons. We would like to take this opportunity to express our views on the subject as a public agency vitally concerned with the management of natural resources, specifically forest lands in the State of Oregon.

In our opinion, there can be no serious doubt that the Endangered Species Act is very essential legislation and we have consistently supported efforts to preserve endangered species and their habitat through administration of the Oregon Forest Practices Act and through management on state-owned forest lands in Oregon. However, we do have concerns regarding the procedures involved in the administration of the Act and our access as a state agency to the decision making process. These concerns are:

1. Designation of critical habitat sometimes appears to be excessive and somewhat capricious.

2. The accumulative socio-economic impact of prohibiting essential human activities in areas of critical habitat for the large number of currently proposed species is staggering to the mind. At this time, we see no provisions for balancing social and economic costs with the proposed social and economic benefits of preservation, and

3. We have great difficulty in keeping abreast of the species being proposed for the "threatened or endangered" list.

96-141 O - 78 - 55

In the process of the oversight hearings, we urge the Resource Protection Subcommittee to consider the following recommendations:

1. More specifically define the criteria for key concepts such as critical habitat, threatened and endangered;

2. Recognize the need for consistent and dependable interpretation of the Act and subordinate regulations which directly influence State activities related to threatened or endangered species;

3. Require clear demonstration of endangerment and the need for protection before species are listed;

4. Recognize the need to balance the socio-economic benefits and the socio-economic costs in applying protective regulation to critical habitat;

5. Provide for educational programs on currently listed species and their habitat to be made available to appropriate segments of the public.

We assure you that the forestry community in Oregon has an inherent interest in the management of endangered species and their habitat and the Oregon State Forestry Department will assist in any meaningful way to help achieve the goals of the Endangered Species Act.

Sincerely,

J. E. SCHROEDER,
State Forester

JES:NS:afc

cc: State Department of Fish and Wildlife
Office of the Governor
U.S. Forest Service, Region 6
Bureau of Land Management, Portland Office
Oregon Congressional Delegation

Endangered Plants

FORESTRY DEPARTMENT

OFFICE OF STATE FORESTER

2600 STATE STREET • SALEM, OREGON • 97310 • Phone 378-2560

August 17, 1976

Mr. Lynn A. Greenwalt, Director
U. S. Fish & Wildlife Service
P. O. Box 19183
Washington, D. C. 20036

Dear Mr. Greenwalt:

I would like to express my concern regarding the 1700 species recently proposed for endangered or threatened status.

The Oregon State Forestry Department is responsible for administration of the Oregon Forest Practices Act which speaks directly to preservation of such listed species that may be adversely affected by forest operations. As a public agency involved in forest resource management and protective law enforcement activities, we fully support the objectives of the Endangered Species Act of 1973, but we feel that any added listing and its impact on existing activities, needs to be discussed openly and understood clearly before final acceptance.

The review process associated with the recently proposed listing has not provided adequate time to evaluate whether the species are truly endangered, nor has it provided adequate time to assess the impact the addition of 1700 species might have on forestry in Oregon.

I would therefore like to suggest:

1) That a six month period be established for public comment, and

2) That a series of hearings be held across the nation providing an opportunity for affected persons to hear, discuss, and understand the issues.

We realize that the expense in holding such meetings would be substantial in terms of time and effort, but surely the issues involved are worthy of discussion by all of the affected citizens.

Thank you for your consideration in this matter.

Very truly yours,

J. E. Schroeder,
State Forester

JES:NTS:lh

WAYNE STATE UNIVERSITY
LAW SCHOOL
DETROIT, MICHIGAN 48202

December 15, 1977

Hon. John Culver, Chairman
Subcommittee on Resource Protection
344 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Culver:

On behalf of citizen groups supporting the Endangered Species Act in general, and the specific case of the snail darter in the Little Tennessee River, I am pleased to respond to the questions you presented.

The enclosed materials cover the issues raised. It has been our experience in this controversy that the Authority, for its part, consistently utilizes highly selective phrasings of its facts, in order to support its arguments for completion of this last impoundment. If and when such issues arise we would be pleased to provide further analysis and data, for there literally is no TVA argument to which there is not a full and factual rebuttal. This last such river valley is quite simply more valuable for its present assets than for impoundment.

While our responses here are primarily concerned with the Tellico case study, we have also enclosed comments on the Endangered Species Act oversight review in general.

Many thanks for your past and future efforts in reviewing these important national conservation issues.

Yours sincerely,

Zygmunt J.B. Plater

for The Little Tennessee River Alliance
Tennessee Endangered Species Committee
Environmental Policy Center
Friends of the Earth, Inc.
American Rivers Conservation Council
Trout Unlimited, Inc.

ZBP:bak

Enclosures

PUBLIC INTEREST GROUPS' RESPONSES TO SENATE SUBCOMMITTEE QUESTIONS

1. During your appearance before the Subcommittee, you stated that impoundment of the Little Tennessee River is not necessary for the industrial and economic development of the Valley. What leads you to this conclusion? Please document your statement.

There is a basic distinction between a river-based economic development program for the Valley and the original impoundment development plan.

As a river-based economic development program, the Valley today possesses physical assets that directly indicate more profitable and beneficial uses for the project if the dam is not closed than if the Valley is flooded out. The profitability of alternative economic development, of course, is not the reason for having and complying with the Endangered Species Act. Congress's policy of preventing as far as possible the knowing extinction of any endangered species, is itself important and may sometimes lead to economic tradeoffs. In Tellico, the economic values of protecting the species and its Valley habitat are a pleasant coincidence. They make this important national case study an opportunity for sound conservation, and for rational improvement of the original marginal economic development plan noted below.

The original impoundment benefit projection, as detailed below, is as marginal on its original terms as the dam is small in proportion to total project assets.

Feasibility and profitability of river-based economic development

Tennessee's two major industries are agriculture and tourism. It is these two industries which present the strongest economic potential for the Valley if the Tellico project is used to develop them instead of flooding them out. The project now owns 38,000 acres including:

--25,500 agricultural acres of the highest classes of prime farmland (TVA's EIS at I-1-31; GAO Report, 26-27)
--16 major historical sites with major tourist potential all but two to be wholly or partially destroyed (GAO Report, 22-24)
--the major access route between the western entrance of the Smoky Mountain National Park (9,000,000 visitors each year) and the North-South connector, Interstate 75. (See Dept. of Interior and GAO comments, GAO Report 51-52, 21-22)

Quite simply, TVA has never considered development of these assets, perhaps because they render the dam irrelevant. The agency considered only dam alternatives, no action, and scenic management for the river (EIS, I-1-46). As GAO found, TVA's review "did not include other benefits which might also be derived from a developed river valley such as agriculture, historical, cultural and industrial development, fish and wildlife, shoreline development and redevelopment benefits" (Report at 17).

Interestingly, TVA admitted to the GAO that the agricultural lands alone could produce revenues up to $6.4 million per year, (other experts said three times that much) while their own impoundment was claimed to produce only $3.7 million! (TVA, quoted in GAO Report at 26, 28; EIS I-1-49).

At this stage of the project, with the dam portion practically complete, the valley's agricultural and tourist resources are basic to the profitable development of the river. The Hanson Report will undoubtedly develop the proposals more specifically, but briefly they will probably include two aspects:

Agriculture

The prime lands in the Valley should be developed for agriculture that will return maximum revenues to the local economies of Blount and Monroe Counties. This means diversified holdings, via longterm leasebacks or otherwise, by small farm operations from the local area. This form of management is permitted under the TVA Act and can draw upon financial grants-in-aid from the Carter Administration's program for support to small farmers.

Tourism

Tourist development should be planned in conjunction with the 9,000,000 annual visitorship of the adjacent Smoky Mountain National Park. If the Cherokee and pre-historic sites along the river are developed, instead of destroyed, they create a major tourist route from Interstate 75 (3 miles west of Tellico and from the Tellico Parkway,) along the river to the western entrance to the Park and its circle-the-Smokies highway. The sites include Fort Loudon (French and Indian War), Tuskegee (birthplace of Sequoyah), Tennassee (the village which named the state), Chota (the Cherokee Jerusalem), Citico, Tommotley, and three prehistoric sites with the oldest record of continuous human settlement in America. Cherokee history is already a major part of the Park's tourist attraction. Its development as a Cherokee Trail on this prime access route could carry literally hundreds of thousands of tourists through the Blount and Monroe County areas on their way to and from the Park. The special virtue of this economic potential is that it is a bird in the hand: the tourists are already there, the route and the sites are already there but would be lost under the mudflats and water of an impoundment.

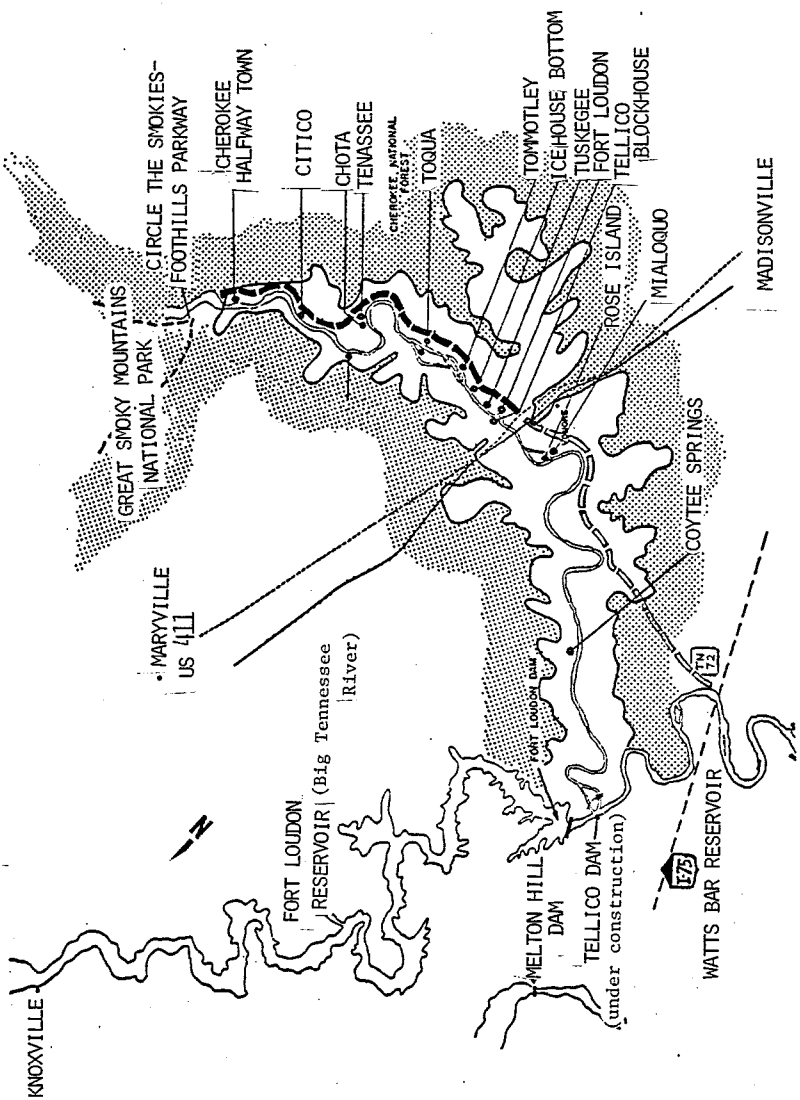


FIGURE ONE
Tellico Project Area on the Little Tenneessee River
Showing major Cherokee historic sites and a
Cherokee trail tourist route ▬▬▬
existing route 72 ▭▭▭

Other development

The failure to consider alternate river-based economic development programs is continued in the case of industrial development and recreational development.

The primary claimed project benefits are industrial development and recreation.

Industrial development does not appear to require a lake. The now defunct Timberlake New Town industrial community which was the basis of industrial projections was patterned after the Minnesota Experimental City project which had no such reservoir. The river valley now has an ample water supply for future industrial needs, and is well served by major railroad and highway transport systems.

Thousands of acres of industrial sites already exist along the other 67 lakes in the Tennessee Valley area, including more than 1100 acres which have lain undeveloped for close to 15 years on Melton Hill reservoir, less than 6 miles from Tellico. This indicates (1) that the mere presence of a reservoir does not draw industry, and (2) since many industries have located in Tennessee in recent years without reservoir access, that barge transport is not a requirement for development.

The collapse of the Timberlake development indicates that industrial growth in the Tellico Project is a conjectural matter. If industrial development will come, however, the House subcommittee's requested alternatives study shows that more sites with industrial potential will exist without the impoundment than with it. See Hanson Report.

TVA's industrial projections appear to be far less likely than the agricultural and tourist development they would eliminate. The construction of Timberlake New-Town was to be subsidized by Congress under the "infrastructure grant" program, and to be built by the Boeing Corporation (See TVA Timberlake EIS). Timberlake collapsed in 1974-75 when Congress withdrew the subsidy program and Boeing withdrew saying the industrial development project was economically infeasible.

Experience indicates that river industrial sites possess all the industrial features available from a lake except barge transport, and in the light of the region's excellent railroad, highway and water availability, barge transport appears irrelevant. Note the experience of Melton Hill barge usage:

(see Figure II, next page)

FIGURE II

TRAFFIC THROUGH TENNESSEE RIVER LOCKS
(IN 1000 TONS)

YEAR	KENTUCKY	PICKWICK	WILSON	WHEELER	GUNTERSVILLE	NICKAJACK*	CHICKAMAUGA	WATTS BAR	MELTON HILL**	FT LOUDOUN	YEAR
1944	366	233	226	460	643	67	30	30		66	1944
1945	515	480	452	641	849	347	251	10		8	1945
1946	452	403	423	335	471	451	71	19		15	1946
1947	745	704	721	624	752	655	300	170		170	1947
1948	858	830	843	809	901	864	473	467		287	1948
1949	1,053	1,084	1,006	814	909	755	476	373		365	1949
1950	1,198	1,163	1,093	1,011	890	748	373	478		473	1950
1951	1,242	1,108	952	1,053	984	738	549	412		721	1951
1952	2,305	1,369	1,129	1,084	840	823	498	491		835	1952
1953	2,644	1,910	1,580	1,533	1,283	1,048	725	643		693	1953
1954	2,887	2,359	2,145	2,029	1,792	1,400	692	775		745	1954
1955	3,600	3,845	2,370	2,265	1,963	1,670	712	615		630	1955
1956	3,784	3,210	2,479	2,357	2,084	1,913	1,064	972		873	1956
1957	4,895	5,657	2,715	2,335	2,150	1,823	527	504		396	1957
1958	4,820	5,108	3,244	3,029	2,759	1,901	1,100	824		441	1958
1959	5,140	5,214	3,260	3,090	2,873	2,105	1,040	923		493	1959
1960	5,712	5,630	3,874	3,353	3,191	2,351	668	531		440	1960
1961	4,681	4,850	2,846	2,589	2,445	1,576	726	357		301	1961
1962	5,559	5,549	4,117	3,821	3,463	2,175	641	460		417	1962
1963	5,328	5,414	3,819	3,623	2,934	1,889	692	488	2	453	1963
1964	6,663	5,199	3,502	3,097	2,419	1,724	462	267	5	191	1964
1965	9,468	5,515	3,790	3,388	2,475	1,439	585	310	5	423	1965
1966	10,958	8,554	5,542	3,896	2,776	1,567	565	323	1	242	1966
1967	12,580	8,250	4,312	3,909	2,674	1,817	694	283	1	174	1967
1968	13,388	6,357	4,705	4,379	2,741	1,887	1,238	301	2	178	1968
1969	14,951	8,048	5,801	5,427	3,480	2,239	1,338	373	1	262	1969
1970	15,939	9,029	6,602	6,307	4,427	2,526	1,248	368	4	195	1970
1971	17,830	9,643	7,219	6,923	4,956	2,809	1,086	531	10	387	1971
1972	17,971	9,230	6,498	6,205	4,234	3,106	1,106	460	4	353	1972
1973	19,512	9,788	6,793	6,561	4,200	3,462	1,296	340	1	214	1973
1974	18,951	8,116	6,712	6,465	4,413	3,572	947	375	6	255	1974
1975	21,821	8,759	6,903	6,656	4,198	3,648	1,115	375	3	239	1975

* IN 1965 NICKAJACK LOCK REPLACED HALES BAR LOCK
** ON ELKMON RIVER
SOURCE: DATA FROM CORPS OF ENGINEERS, DEPARTMENT OF THE ARMY

TENNESSEE VALLEY AUTHORITY
DIVISION OF NAVIGATION DEVELOPMENT
APRIL 1976

U.S. Army Corps of Engineers, 1975.

[Total 1975 traffic through TVA locks was 28,316,539 tons. Note also that barge traffic has been declining in the eastern Tennessee (right-hand) impoundments since the 1950's.] Barge traffic does not seem to be a major industrial advantage.

Recreational management does not require a lake, and indeed would be more attractive without: the river is now a prime and unique flowing water recreation resource, as has been noted. The current heavy use for canoeing, trout-fishing, family float trips, etc., however, has taken place in the absence of any developed recreational management. The addition of launching facilities, float trip franchises, supply shops, hiking and horseback trails, camping areas, etc. would substantially increase recreational usage. And this is the last such river in the state.

Existing lakes already provide more flat-water impoundment per capita for Tennessee than any other place on earth. The flowing water of the Little Tennessee Valley has become unique.

The National Park Service has supported the advantages of developing the river Valley with a recreational component. (GAO Report at 51)

Sum

The Valley today has extremely valuable assets, that would be destroyed by an impoundment plan that doesn't.

The consideration of an alternate river-based economic development program is the bottom line for a rational public decision on the survival of the darter and its Valley habitat. With such a comparison, as GAO said, "Congress would have before it, for the first time, a current detailed projection...for...the proposed reservoir project and a comprehensive river-based regional development project...." (Report at 40).

2. You testified that the Tennessee Valley Authority (TVA) overrated the energy, industrial, recreational, and other potential benefits of the Tellico Dam project. How do your estimates of the Dam's costs and benefits differ from those developed by TVA?

Benefits: Much of our response to this question has already been covered by the GAO Report's conclusions which severely criticized TVA's claimed benefits as unreliable. Nor is anyone, including us and TVA, presently capable of giving Congress a statistically accurate benefit-cost comparison of the original Tellico project and the river-based economic development program, for the simple reason that the river development option has never been prepared. That developed comparison is the job of agencies that seek to convince Congress of the need to render a species extinct.

FIGURE III

Benefits Claimed for the Tellico Project with Impoundments

Recreation	$1,440,000
Shoreline Industrial Development	710,000
Flood Control	505,000
Navigation	400,000
Power	400,000
Fish and Wildlife	220,000
Water Supply	70,000
Redevelopment	15,000
	$3,760,000 per year

(TVA EIS, I-1-49)

Compare the benefits claimed for the project as an impoundment with the following real-life facts:

Recreation - There are already 22 major impoundments within 60 miles of Tellico. To treat elimination of the best trout river (so says the Tenn. Wildlife Resources Agency) and clean flowing family float river in Tennessee as a plus is not reasonable. (See Dept. of Interior statements, EIS at I-3-28 to 31; Governor Dunn's request to halt impoundment, EIS at I-3-42-43.) (GAO report at 28, 29, 21, 22.) See Figure IV below.

Shoreline Industrial Development - Timberlake is defunct. The projections are unreliable. (See GAO Report at 30, 90-91)

Flood Control - No one alleges that there is any threat of flooding in the Little Tennessee Valley. The entire Tennessee River system is a computer-controlled system with more than 60 dams, 8 dams upstream of Tellico on the Little Tennessee and 30 dams upstream of Chatanooga, the only relevant flood-protection target. GAO criticized TVA's claimed benefits. (Report at 31, 91-92)

Navigation - See (1) above. Barge use is declining in East Tennessee. Figures are unreliable. (GAO Report at 32, 92-93)

Power - No generators. TVA says water through the canal could produce only 22 Megawatts (200 million KW hours spread over a year). TVA today has a 28,223 MW total, and will have on line by 1985 47,798 MW, including a surplus of over 5000 MW to sell outside the system (using official TVA figures).

Fish and Wildlife - What TVA counts as benefits, the Department of Interior says will be a loss of an "irreplaceable" river, special trout fishery, and wildlife habitats, in exchange for "mediocre, poor quality" fishing and hunting resources. EIS at I-3-28, 29. Outside observers agree. (See GAO Report at 34, 95.)

Water Supply - Benefit available with or without impoundment.

TVA appears to concede most of this analysis, since they now speak in terms of "remaining costs and benefits," while still of course declining to develop a comparative river-based economic development program for the project.

Costs

In (1) above we note some of the losses (costs) to economic development that the impoundment would cause, that were not at all considered by the agency.

Beyond losses in agriculture, tourist resources, recreation, fish and wildlife, etc. is the history: the very serious loss of the last remaining sites of the old Eastern Cherokee tribe, and the 10,000 year old prehistoric sites just recently discovered. The Valley's sites and relics show that it has always been extraordinary -- a fertile, beautiful and useful place for human settlement as long as humans have been in this part of the nation. Chief Sequoyah's birthplace, the old Cherokee nation, etc. cannot be given a monetary cost. Their loss would be incalculable, as well as economically wasteful and unnecessary.

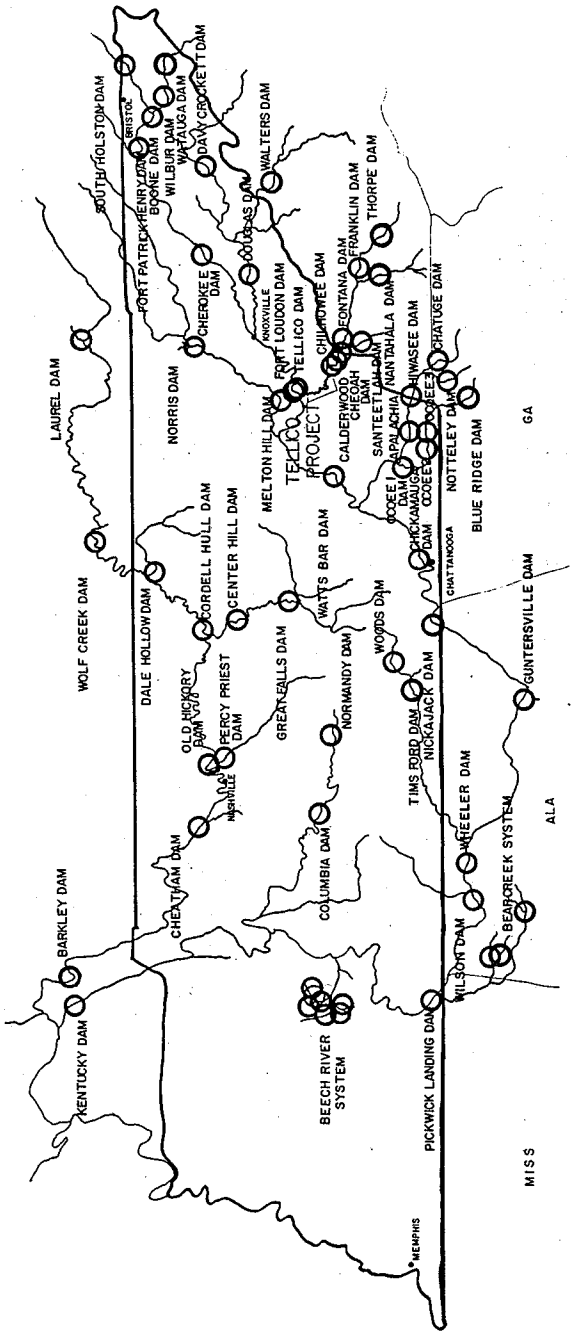


FIGURE IV

Tennessee River System, Showing More than 60 Major Impoundments Already In Existence from Headwaters (Right) to the Mississippi (Left)

3. In July you indicated that there is "no rush" to complete the project. Do you have any information concerning financial losses which are being incurred as a result of the injunction by the Sixth Circuit Court prohibiting closure of the Tellico Dam?

"No Rush"

We noted that there is "no rush" because none of the project's claimed benefits is necessary for the indefinite future:

Recreation - (The major claimed benefit). As noted in (2) there are already 22 impoundments within 60 miles of Tellico.

Shoreline Industrial Development - (The second major claimed benefit). As noted in (2) above, there are already thousands of acres of industrial sites lying empty along existing impoundments.

Flood control - (less than 14% of claimed project benefits). As noted in the GAO Report and (2) above, the river is already controlled by 68 dams, 30 of which lie north of Chattanooga. One small dam is insignificant; TVA's own research indicates that floodplain management is the effective way to reduce flood losses.

Navigation - (less than 11% of claimed benefits). Barge use and the value of navigation is declining in East Tennessee as noted in the chart in (1) above, Figure II.

Power - (less than 11% of claimed benefits). This benefit has been emphasized by TVA as a loss from delay. By their own figures noted in (2) above, however, TVA already is building a huge surplus; Tellico's canal water could add only 0.0008 to TVA's present power, and less than five ten-thousandths to the installed 1985 capacity (0.00046).

Fish and Wildlife - (6% of claimed benefits). In light of the views of the federal and state wildlife agencies, noted in (2) above, fish and wildlife obviously benefit from a delay of the impoundment, rather than lose.

There is, moreover, "no rush" to make the Congressional decision in ecological terms, because the endangered snail darter population is in a holding position in its natural habitat, surviving while awaiting Congress's review of comparative options for the river.

The GAO Report emphasized that in these circumstances the time constraints are not pressing, so that Congress could and should prohibit further action on the project until the comparative options and cost figures are developed for decision. (Report at 38-39).

Claimed Losses

In all likelihood TVA will claim huge dollar losses attributable to its forced compliance with the law, both in costs incurred and benefits foregone.

As to costs incurred by the delay, the agency in the past has not used real dollars for such figures.

Their loss claims in the present delay should be carefully scrutinized. On the original figures, Tellico is a marginal project with marginal benefits. Such purported losses must be considered in the light of the potential longterm value of the Valley. These claims often can be reduced to mere bookkeeping arguments. In 1972-73 TVA was enjoined for failure to file an impact statement, and claimed that $15 million loss resulted. Upon review virtually the entire loss turned out to be based on the changing value of the dollar, ignoring the fact that TVA pays such costs in similarly inflated federal dollars, and that the value of the Valley assets, e.g. land, would similarly increase during a delay. See Deposition of TVA Manager of Engineering, Design & Construction, March 31, 1976,33-47.

As to benefits lost, the agency's figures can be deflated by facts and common sense. Most fundamentally, the agency's claimed losses are gross figures, not net; they take no consideration of the amount of costs absorbed to produce the figure, nor of the value of resources and alternatives eliminated.

Take the example of electrical power that might be derived from water flow through a Tellico canal (TVA has argued that this flow could produce yearly revenues of $3 million dollars of "free" energy):

--The "$3 million power benefit" would occur through the loss of more than $6 million in annual agricultural revenue potential, not to mention tourist, historical, and industrial resources.

As noted in (1) above, TVA admitted to GAO that up to $6.4 million could be made yearly in agricultural revenues from an unflooded Valley; more objective observers in local banking have put the figure closer to $15 million. Other values eliminated are likewise noted in (1).

=

--The "$3 million power benefit" would represent energy fifteen times more expensive than average hydro energy in the TVA system.

According to TVA's own reports, the average "actual cost per kilowatt [capacity] for plants in service" is $174 for hydro plants and $135 for coalfired plants (dividing project cost by KW capacity; TVA Power Statistics, March 1977). By comparison Tellico's small flowage through the canal would represent a cost of more than $3000 per kilowatt capacity! This is 300% more expensive than the existing system's highest per - KW cost hydro unit.

=

--Electrical power has real value only where it is needed power, but TVA already has millions of kilowatts of excess capacity.

TVA's peak load comes in winter. In a recent survey of power statistics, TVA had a 34% excess over peak demand for the peak winter month; in the summer months it was 65% over peak demand (based on officially reported TVA figures). And the rate of growth of regional demand is declining markedly, not rising. Tellico water flows would be as unnecessary for energy production as they are expensive.

=

--The "$3 million dollar benefit," though a great deal of money in layman's terms, is minuscule in TVA's.

At an equivalent price TVA's system produced $1,862,500,000.00 dollars worth of power in 1976. Tellico would add less than 0.0005 to TVA capacity currently in existence or under construction; if the revenue or the 22 MW attributable to Tellico were ever needed it could be supplied out of the excess capacity of the other dams, coal-fired and nuclear plants.

In short, to avoid the numbers game, one must look at potential benefits and losses in a real economic context. This is a marginal project and the benefits

foregone through statutory compliance are therefore marginal. The assets, benefits, and potential revenues preserved, however, appear to be particularly valuable. If a wrecking crew proposed to tear down Chairman Wagner's house for firewood and parking, they could undoubtedly demonstrate that revenues would thereby be generated, but he would probably argue for a delay or halt to the project, correctly, since the benefits and returns from his undestroyed home may outweigh the proposed revenues. It's the same with valleys.

4. During your testimony, you claimed that, in regard to the Tellico project, TVA has been inflexible in its implementation of the Endangered Species Act. Would you please document specific instances which illustrate this alleged inflexibility?

Without entering into commentaries upon the personalities involved in TVA's leadership, it can be said that TVA has consistently and completely refused to consider any legal compliance or course of conduct which might forestall completion of their dam. In our survey of Department of Interior files on Endangered Species Act compliance, TVA's conduct in this regard is more pronounced than that of any other federal agency.

[For brief background, the history of the agency's inflexibility on Tellico predates the Endangered Species Act. After beginning the dam against the protests of local citizens, TVA in 1970 did not comply with the National Environmental Policy Act, and it took the citizens a year of active litigation in 1971 to obtain a court order requiring compliance. Although other federal construction agencies honor state governors' requests, when Governor Winfield Dunn of Tennessee officially requested that TVA halt its impoundment plans in favor of river-based development, TVA informed Governor Dunn it did not agree with him and proceeded with the dam (see EIS 1-3-42 ff). And when Congress withdrew funding from the Timberlake New Town, and Boeing Corp. backed out saying that the project was economically infeasible, the agency nevertheless insisted on pushing on with the dam despite the elimination of one of the two primary project benefit claims, industrial development.]

The endangered snail darter was discovered by Dr. David Etnier, a nationally respected ichthyologist, on a large shoal near Coytee Springs, on or about August 9, 1973, and shortly thereafter was collected by TVA fisheries biologists. All scientists were in agreement from the first that the fish had never before been known, and that its known population was localized in the clean, shallow flowing big river habitat of the Little Tennessee River. The Endangered Species Act became effective in December, 1973.

TVA's response to the statute and the snail darter can be grouped in a variety of categories, all reinforcing the conclusion that the agency never considered complying with the law in good faith:

Project expenditures and construction

The following chart indicates the timing and amount of agency expenditures on the project and the dam:

(Figure V)

FIGURE V

	Year	Funds Expended, in Thousands	Cummulative Running Total	
	1967	$ 4,821	—	
	1968	6,794	(11,615)	
	1969	5,767	(17,382)	
	1970	5,176	(22,558)	
	1971	4,816	(27,374)	
	1972	5,374	(32,748)	
	1973	2,857	(35,605)	[Discovery of the endangered species; End. Spec. Act]
	1974	7,687	(43,292)	
	1975	17,127	(60,419)	
to June	1976	24,928	(85,347)	
to Feb.	1977	15,651	(100,998)	
Feb.	1977	(ca 2,200)	(103,198)	
		$103,198,000	TOTAL TO FEB. 28, 1977	

(TVA Public Information Office, Feb. 7, 1977; GAO Report, 10.)

Figure Five shows clearly that the agency did not decrease its project efforts when it discovered the endangered species; rather it dramatically increased the pace of expenditures.

In the seven years before the endangered species was discovered, only about $35 million had been spent, primarily on purchase of the Valley lands and the construction of the concrete dam (which also indicates the small proportion of project funds comprised in the dam itself). In the four years after discovery of the darter, TVA spent $67,593,000, for excavation, tree clearing, building dikes, roads and bridges, etc.

Specific construction efforts reinforce this picture. The tree-cutting and land scalping was commenced early one morning at Coytee Springs, a historical landmark surrounded by a glade of giant sycamore trees where, according to some historians, the Cherokees and the English settlers made their first treaty west of the Appalachians. The spring also marks the river location which is the darter's prime spawning habitat. By noon all the trees had been dropped, and bulldozers were driving back and forth through the spring, sending a torrent of silt out over the river shoals. When the site had been scalped, the crews left the area and began a more gradual clearing process farther up the river.

Elsewhere on the river, when the 6th Circuit's decision to hear the Tellico case was announced, TVA crews moved to an overtime 6-day a week schedule, working under portable floodlights through the night for several months to cut and scrape the impoundment area. According to an insider's report of a high level agency meeting it was announced that by the time the citizens appeared in the 6th Circuit, there would be no more trees standing in the impoundment area. (In actual fact, 2000 acres remained uncut, while the cutover portions are rapidly regenerating.) TVA's official position, presented in a July preliminary hearing, was that since only the eventual closure of the dam threatened the species, all other project activities short of closure could continue unabated. The injunction was not issued until February 1977.

Legal Posture

From the beginning of the Endangered Species Act controversy in 1974 when citizens requested the agency to comply with Act, Chairman Wagner and General Manager Lynn Seeber took the position, as with NEPA before, that the Act did not apply to the Tellico Project.

TVA's position, starting in 1974 in response to citizen requests, is exemplified in General Manager Seeber's assertion that:

> "The Tellico Project has been lawfully authorized by Congress and is being carried out in accordance with all applicable federal, state and local environmental requirements..." Letter from General Manager Seeber to Hill, Plater and Cohen, October 28, 1975.

When questioned in TVA's monthly public board meeting about how continued project construction complied with the law, Chairman Wagner replied that TVA would comply with court orders, and no court had ordered the agency to halt construction. This clearly implied that the agency would not voluntarily comply with the Act until such time as someone took it to court and won an injunction.

The agency took the further position that the Act did not apply to Tellico because the project was important and the species was not, that the Act should be read with a grandfather clause though none was present in the statute, or that continued appropriations informally repealed laws that stood in the way of the project.

As noted below, the agency also took the position that compliance was not required until the endangered species was given its Latin name.

TVA Cooperation with the Department of Interior

The official FWS files on the Tellico case are voluminous, but reflect a consistent pattern. TVA's communications with Interior show prolonged refusals to alter construction activities until the court so ordered; prolonged efforts to prevent or delay the listing of the species; refusals to consider compliance until the fish was officially described in a scientific publication, named in Latin, and listed; refusals to consult with Interior on any course of action except completion of the dam and transplantation; and refusal to take any measures for conservation of the species in its river habitat.

Continuation of work

The Department of Interior's first major communications with TVA occurred in Fall 1974, at which time the Office of Endangered Species (OES) told TVA officials that the dam and construction work on the impoundment appeared to threaten the species based on best available knowledge. Interior requested TVA to review the project and its effects on the species and to take steps to conserve its population. The project would destroy the eco-system and the "established natural population of this species, a result obviously contrary to the policies of the Act." Letter of March 7, 1975.

TVA responded that only the ultimate closure of the dam threatened the survival of the species, and insisted on continued construction: "there will be ample opportunity to obtain the views of the scientific community...as well as to examine further the possibilities of transplantation and the present existence of the darter at other locations." They disagreed that actions taken to complete the project would be prohibited by the Act if such actions jeopardized the species. Tree cutting and bulldozing, TVA said, "presents no threat to the darter or its habitat," although silt was at that time pouring off the banks into the river. Letter of March 12, 1975.

The basic position of the Authority, often repeated, was that if anything the Act only meant that the dam itself could not be closed, so no compliance would take place until then, and even then a court injunction would be required. This may have been an attempt to spend so much money and construction effort that later the courts and Congress would be persuaded not to consider alternatives.

Delay of Procedures

TVA filed extensive materials on the "so-called snail darter". They argued that it was not endangered, in documents by their paid consultant Dr. Raney and others asserting that the fish undoubtedly lived elsewhere, would not be harmed by flooding its spawning habitat, and wasn't properly named. Each allegation was subsequently found empty by the court.

The effect of TVA's voluminous submissions, complaints, and objections, often filed at the end of the official comment periods, however, was to prolong the administrative process until November 1975 for the species listing and the habitat listing until April 1976. Even then the agency argued that the Interior actions were not effective until 30 days after publication.

Interior responded that formalities should not be prerequisites to good faith agency compliance, in light of the policy of Congress that "all Federal agencies shall seek to conserve endangered species...." Cf. Letters of Dec. 12, 1974; March 7, 1975.

"Consultation"

The Act requires good faith consultation when an endangered species conflict arises.

In late October 1975, more than two years after the darter was discovered by TVA, Director Greenwalt of the Fish and Wildlife Service was still asking TVA to begin agency consultation on the issue. Actual consultation did not begin until early the next year, 30 months after the conflict was discovered. Even then, in February and March 1976, FWS noted that "discussions have been limited to the snail darter transplant program and have not dealt with the problems posed for the snail darter by the Tellico Dam itself"; "Consultation as envisioned in the guidelines...has not taken place". Letters of Oct. 19,1975; Feb. and March 1976.

In the meantime, TVA had been informing FWS about its transplant program to move the fish anywhere else but behind the dam. (This transplantation was commenced hastily, without either the required federal or state permits, and actual field data to date indicates that the transplant is not a success.) Interior stated that transplantation was not compliance with the Act since it takes 5 to 15 years to know the probability of establishing new populations.) TVA asserted that its inter-agency actions were ratified as valid consultation by the Knoxville court. (In actuality the court had said that "TVA has communicated frequently with the Fish and Wildlife Service....")

Interior continually urged that the purpose of consultation is to explore "all possible options to prevent extinction". When TVA argued that no modifications were available except complete abandonment of the project, Interior noted the variety of possible alternatives that still exist today, including "utilization of the land investment for other purposes such as recreation, scenic, etc." "We are of the opinion that the legislation is crystal clear and that a formal consultation is required in this instance." Letters of October 29, 1975; May 13, 1976; May 27, 1976.

TVA's perennial response was that "although we feel we have fully and exhaustively consulted(sic) with FWS with regard to all options available to complete the project and save the snail darter, we shall be happy to consult further if you have additional suggestions or plans which will allow completion of the project...." Letter of May 14, 1976.

In this entire chronology, the only consultation or compliance actions that the agency entertained were incidental and ineffective attempts to mitigate the certain damages that the impoundment would cause. To this day no division of the agency has been permitted to prepare the comprehensive river-based economic program options that would develope the project area's resources and preserve the endangered species and its Valley habitat.

5. You stated that there is significant opposition to the construction of the Tellico Dam and Reservoir among local citizens. However, during the Subcommittee's hearings several members of the U.S. House of Representatives from Tennessee and other witnesses testified that many people in the Valley favor the project. Have you any indications to the contrary?

Opposition to the Tellico dam began 15 years ago with a small group of sportsmen and local citizens, including many of the several hundred families whose land was condemned. The opposition has grown and broadened over the years, however, as criticism of TVA became more possible in East Tennessee.

Today the active groups involved in the Little Tennessee River Alliance include the following organizations, many of which did not even exist in Tennessee 15 years ago, with a combined membership of over 25,000 citizens:

Tennessee Conservation League (NWF affiliate)
Sierra Club Tennessee Chapter
The Eastern Tribe of Cherokee Indians
Tennessee Citizens for Wilderness Planning
Tennessee Endangered Species Committee
Smoky Mountains Hiking Club
Tennessee Audubon Council
Trout Unlimited, Great Smoky Mountains Chapter
Tennessee Outdoor Writers Association
Tennessee Environmental Council

These groups, and literally hundreds of private citizens who have contributed to the support of the enforcement action, seek the adoption of a constructive river-based development option for the Valley.

In all honesty, it is clear that the majority of East Tennessee citizens polled today would support TVA's dam. Rep. John Duncan's newsletter poll showed more than 80% in favor of the project. The flaw in these figures, however, lies in the vagueness with which the question is generally understood. Like the Duncan poll, most people have never heard about the alternative economic development options for the river. TVA has said that with the impoundment will come jobs, industries, and local revenue; without the impoundment will come economic disaster.

TVA has done so much good for the Valley, and has so much power in the Valley, that it is difficult for citizens to make or hear informed public criticism of the agency's position. A number of local citizens in the vicinity of the dam were recently astonished when they heard that there was a possibility for agricultural and tourist development along the river. They had been told that the anti-dam endangered species lawsuit was seeking to turn the Valley into a park, with no developed uses or revenues.

In these circumstances, when Rep. Duncan asks citizens whether they support the objectives of the Tellico project, nearly all do. (Ironically, most of TVA's citizen critics also support the project objectives of jobs, revenues, and economic development, merely rejecting the impoundment feature and adding further river-based resources.) On November 28 we aked Rep. Duncan to poll his constituents with a more accurate questionnaire which informed them of the river-based development options now being debated. The suggested question:

> "Several modified development programs are being considered for the Tellico Project. If the Little Tennessee Valley could now be developed for agriculture, industrial sites and jobs, fishing, recreation and tourism without flooding the Valley would you support it _____? or oppose it _____?"

Rep. Duncan has not yet undertaken a new poll. Until the existence of options is publicly known and reacted to, the local public's ultimate feelings on the proper choices for the Valley will remain conjectural.

(On the plus side, however, it appears that pro Valley - anti dam citizens are far more actively concerned about the issue than the citizens who support TVA's position. In the months since the filing of the Tellico lawsuit, nearly twice as many letters to the editor in local papers favored non-dam options. The count to mid-July was 90 against the dam, 49 for it.)

Finally, it should be remembered that Congress has a national public on the Tellico issue. The Great Smoky Mountains National Park leads the nation in national visitation; it and the Little Tennessee Valley is within a 1 1/2 day's drive of 40% of the U.S. population. What is done with the Valley will have longterm importance to past and future Americans. The Valley's Cherokee history is a major part of our national heritage, as the birthplace of the Cherokee nation and Chief Sequoyah, as are the prehistoric sites of America's oldest continued human settlements. And as to the Endangered Species Act which itself is at issue in these deliberations, there never yet has been a conscious human extermination of a living species from the face of the earth. The Tellico project, which can preserve the species and its Valley habitat with extremely valuable river-based development options, is no place to start such a sad precedent.

Further issues: Conservationists would suggest several specific actions for this subcommittee with regard to the Tellico reservoir - snail darter case

The citizens supporting the protection of the snail darter and river-based development of the Tellico Project would of course prefer that the committee, on the basis of the record, require TVA to proceed to modify the Project for river-based development at the present time.

Since this issue is clearly a controversial one, however, Congressional consideration may well extend for some time before decisions are made. In this event it seems logical and necessary that the committee do the following:

1. Continue through the current information-gathering to assess the degree of TVA's good faith implementation of the Act.

2. Review information on all the options available to Congress, including the comprehensive river-based economic development program, as advised by the GAO study team. GAO advised that you request TVA, in operation with other agencies to develop alternative proposals for development of the Project which would protect the natural population of snail darters in the Little Tennessee River; this should include development of the initial proposals prepared for the House Subcommittee on Fisheries and Wildlife by the University of Tennessee School of Architecture in the Hanson Report.

3. As advised by the GAO study team, request TVA to do modern benefit-cost studies for the alternative development proposals and for the reservoir project as planned.

Finally, in the existing circumstances recognized in the GAO recommendation, TVA should be required to develop requested project plans and cost estimates in conjunction with other agencies that do not share TVA's past commitment to finishing this last reservoir at any cost or consequence. Participation should include the National Park Service, Fish and Wildlife Service, Department of Agriculture, CEQ and OMB. These agencies appear willing to participate in any such effort requested by the committee.

The Endangered Species Act Oversight Review

As important as the Tellico case study is in showing the benefits of statutory compliance, it is only part of the larger question of support for the Endangered Species Act itself.

The national conservation groups, which have worked extremely hard to develop data and supportive analysis on this important Act's implementation, were pleased with the thorough and perceptive Senate hearings in July. The Culver committee compiled a hearing record displaying breadth and depth of coverage. From those hearings it was clear on the facts that the Act has been working as it was supposed to, with active interagency efforts to discover and resolve the project conflicts that lead to extinction of fish and wildlife species.

In the hearings the federal agencies, except TVA and its witnesses, continually affirmed the good faith workability of the act. 4500 potential conflicts and hundreds of actual conflicts between endangered species and projects have occurred over the first four years of the Act. All but three were reconciled without going to court and only one of those has come to Congress -- Tellico.

To listen to the foes of the Act as it approaches reauthorization, however, one would think the hearings had never been held. Current pressures against the Act are based on arguments that were roundly deflated by the facts at the hearings. They include, for example, the arguments that the Act:

--"would stop progress in America," despite the fact that this has not occurred in the hundreds of cases arising to date, and that problems in interagency consultation continually become less so as agencies understand the issues, regulations and procedures.

--"protects frivolous species," despite the evidence that even small, undramatic endangered species act as barometers of human and ecological concerns far beyond their own discrete importance. As the President has noted, "Our fish, wildlife and plant resources act as an indicator of the health of our environment...., when they have trouble surviving, we should seriously examine the quality of our environment."

--"is inflexible," despite the administrative record of conflict resolution over the years. Interagency consultation has embodied flexibility for resolving competing interests in the overwhelming majority of cases and the courts have extensive powers to determine whether conflicts exist.
In actual fact there has been only one extraordinary case where a consultation has failed and the decision brought to Congress: Tellico, as the committee has noted, is the product of prolonged refusals by the agency to consult on project options complying with the law. That demonstrates bureaucratic inflexibility, rather than statutory inflexibility.

--"will bring an avalanche of cases to Congress," despite the fact that only one of the hundreds of cases to date has come to Congress. As a matter of proper procedure, Congress should decline to review cases that have not first gone through the administrative and judicial processes. If Congress acts carefully now, scrutinizing the facts and agency behavior in the Tellico case closely, it will dissuade other agencies from rushing to Congress

for exemptions instead of resolving conflicts through consultation. Ultimately there may be a case where Congress will decide that an irreconcilable project is more important than the survival of a species, but the record shows that no such cases have ever arisen under the Act, and they would be most extraordinary.

In sum, the innuendoes against the Act might be described as narrow attempts to eliminate an effective law before its public learns the facts. Proposed amendments would eliminate its workability, so that the survival of species would depend upon bureaucratic decisions. In the rare case where a choice between a species' survival and a public project cannot be avoided through good faith agency actions, that unprecedented decision should be made by the representatives of the people, in Congress.

The most impressive fact revealed by the hearings, undercutting each of the rhetorical attacks on the Act, is that in four years' experience under this major wildlife law, a good faith project-species conflict that could not be resolved in the public interest has never occurred.

TENNESSEE VALLEY AUTHORITY
KNOXVILLE, TENNESSEE

OFFICE OF THE BOARD OF DIRECTORS

January 4, 1978

The Honorable John C. Culver, Chairman
Subcommittee on Resource Protection
Senate Environment and Public Works Committee
Washington, D.C. 20510

Dear Senator Culver:

As you requested in your letter of November 30, 1977, which we received on December 13, 1977, we are pleased to enclose, in duplicate, TVA's responses to the additional questions about Tellico which were unresolved during your Subcommittee's July oversight hearings on the Endangered Species Act of 1973.

Director Freeman was not a member of the TVA Board at the time of your hearings in July and has not yet formed an opinion on the questions you raise. He therefore does not join in the enclosed responses.

If we can be of further assistance, please let us know.

Sincerely,

Aubrey J. Wagner
Chairman

Enclosure

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Question 1(a). Has TVA developed or recently reviewed non-reservoir alternatives for the Tellico project? If so, please describe the nature of these alternatives, when they were reviewed, and why they were rejected by your agency.

Yes. Since the Tellico project had been planned in the early 1940's as an extension of the Fort Loudoun project and as a part of the overall plan for the Unified Development of the Tennessee River System which was submitted by TVA to Congress in March 1936 pursuant to section 4(j) of the TVA Act and since historically a principal design feature of Tellico was to provide a navigable canal between the existing Fort Loudoun Reservoir and the new reservoir which would provide additional navigational and hydroelectric power benefits without the costs of building a lock or adding generating facilities, the discussion of physical alternatives was initially limited to dam design and site alternatives when the Tellico project planning report was developed by TVA in 1963. In 1965 and 1966, before the project was authorized by TVA or funded by Congress, the issue of reservoir versus nonreservoir alternatives was examined and debated in Congress during hearings before the Senate and House Appropriations Subcommittees. (Hearings Before a Subcomm. of the House Comm. on Appropriations, 89th Cong., 1st Sess., pt. 3, at 14-36, and pt. 4, at 747-84, 1002-76 (1965); Hearings Before a Subcomm. of the Senate Comm. on Appropriations, 89th Cong. 1st Sess., pt. 4, at 43, 86-156, 202-46 (1965); Hearings Before a Subcomm. of the House Comm. on Appropriations, 89th Cong., 2d Sess., pt. 2, at 697-701, 753-78, and pt. 3, at 731-71 (1966); Hearings Before a Subcomm. of the Senate Comm. on Appropriations, 89th Cong., 2d Sess., pt. 4, at 40-80 (1966)). The issue was further considered by TVA in 1971 and 1972 as a part of TVA's environmental review of Tellico embodied in the three-volume Environmental Impact Statement (EIS) for Tellico, which was provided to Congress and approved by the courts. The table attached hereto

as Exhibit 1 lists the alternatives considered by TVA during the environmental review, including a scenic river alternative (the principal nonreservoir alternative which has been suggested by project opponents). Each of the alternatives has a level of economic benefits significantly lower than the benefits from Tellico and was rejected.

Specifically, the costs and benefits of the scenic river alternative for the Little Tennessee River were examined based on the level of development comparable to that proposed for the Buffalo Scenic Riverway, a plan sponsored by TVA in cooperation with the Department of Conservation and the Bureau of Outdoor Recreation. The plan, which included a buffer zone along the river banks, public access areas, and camping, hiking, canoeing, picnicking and sanitary facilities, was found to provide a level of net economic benefits, of about 2 percent of the Tellico net benefits, and was rejected.

Thereafter, during appropriations hearings each year, TVA has fully reported to Congress on the progress of the Tellico project and the snail darter situation, and TVA has been directed by Congress to complete the project as promptly as possible in the public interest (H.R. Rep. No. 94-319, 94th Cong., 1st Sess. 76 (1975); S. Rep. No. 94-960, 94th Cong., 2d Sess. 96 (1976); H.R. Rep. No. 95-379, 95th Cong., 1st Sess. 104 (1977); S. Rep. No. 95-301, 95th Cong., 1st Sess. 99 (1977)). In light of this, it is our belief that further review by TVA of nonreservoir alternatives is both unnecessary and inappropriate. The project has now been built; the gates of the dam are ready to be closed; and the public benefits ready to be realized. We believe the time for discussion of nonreservoir alternatives has passed. We note that even in situations where Congress has not specifically directed the completion of a project, as it has done in the case of

Tellico, the current Principles and Standards for Planning Water and Related Land Resources, developed by the Water Resources Council in September 1973, make clear that a plan need not be reviewed unless it is not implemented within 10 years after completion of the project plan.

Question 1(b). With energy production as one of the stated objectives of the project, has TVA considered using agricultural lands within the project area for research on the production of energy from biomass?

No. Independent of the Tellico project, TVA is conducting several experimental projects on the production and use of energy from biomass. It is TVA's view, however, that even if Congress elected to scrap the Tellico project at this point, using the land within the project area for research on the production of energy from biomass is not its highest and best use. For example, farming the agricultural land in the project area for food and fiber production would be a substantially higher and better use of this land than use for biomass conversion.

Question 2. Several witnesses who appeared at the hearing testified that TVA, in constructing the Tellico Dam, did not comply fully with requirements of the Endangered Species Act. For instance, it was alleged that when the snail darter was officially listed as endangered in November 1975, TVA began a 24-hour-a-day construction schedule, initiating bulldozing and clear-cutting activities at Coytee Springs, the major spawning habitat for the snail darter. Similarly, witnesses from the Department of the Interior stated that TVA allegedly refused to consider non-reservoir alternatives during consultations with the Fish and Wildlife Service regarding Tellico. Please comment on these statements, providing documentation of your comments. In addition, please provide the Subcommittee with a summary of the overall development of the Tellico project, including expenditure of funds, from 1967 to the present.

While the legal question of TVA's ability to complete the Tellico project in light of the Endangered Species Act is still before the courts, it has been and remains TVA's position that the Endangered Species Act was not intended to be applied retroactively to halt a congressionally authorized project which was substantially complete when the Act was passed and the

affected species listed as endangered. It is our position that we have fully complied with the Endangered Species Act by doing everything possible to save the snail darter while completing the project as directed by Congress.

a. Construction and Clearing - Work activities for the completion of the Tellico project were scheduled and performed in accordance with a project engineering construction schedule (revised in 1973 before the Endangered Species Act was enacted) which called for closure of the dam in January 1977. A copy of the construction schedule, as revised in 1973, is attached as Exhibit 2. The allegation that TVA launched 24-hour-a-day work schedules to harm the snail darter is simply untrue. TVA began some construction on a three-shift basis in mid-June 1974 with foundation grouting for the earthfill portion of the dam being the primary work on the third shift. The third shift was expanded in July 1975 to include the placing of earthfill at the dam site. In 1975 and 1976, the third shift was required to reach a stage of construction at the end of each earthmoving (i.e., dry weather) season so the dam would be in a safe condition to protect against the possibility of major flooding during the winter and spring seasons. The construction schedule was unrelated to the snail darter but was dictated by the January 1977 closure date. Copies of Tellico project "Construction Force Reports," attached hereto as collective Exhibit 3, show that the total number of workers on the third shift rose to 38 in July 1975, peaked at 53 in September 1975, and by mid-October 1975 declined to the low 40's. Since the snail darter issue surfaced, all construction work has been performed so as to minimize its effect on the river and the designated critical habitat of the snail darter.

Reservoir clearing operations were similarly dictated by the January 1977 closure date. They were commenced on January 13, 1975, with

the execution of the first contract for the sale and removal of merchantable timber. The contract, which was awarded by competitive bidding, had a specified completion date of June 1, 1975, and was part of TVA's efforts to allow the recovery and utilization of the timber resources prior to total clearing of the reservoir. The particular contract (TV-1098.677), attached hereto as Exhibit 4, covered a nine-mile segment along the right bank of the river, including the Coytee Springs site. This nine-mile segment was the first area available (i.e., where merchantable timber had been removed) in September 1975, when TVA began clearing the remainder of the reservoir basin and so clearing began there. An excerpt from the October 1975 Construction Progress report is attached hereto as Exhibit 5. Clearing was performed on a single shift basis. The reservoir clearing work was carefully coordinated with TVA foresters, fisheries biologists, and sedimentation experts to assure that the snail darter would not be adversely affected; and special precautions beyond those already contained in TVA's clearing specifications were instituted at substantial costs. These precautions included special clearing methods on steep slopes, reseeding of critical areas where the soil had been disturbed and supervision of clearing work by a qualified forester. See the following documents: Tellico Reservoir construction specification No. TC-858; a letter to James D. Williams of the U.S. Fish and Wildlife Service dated December 1, 1975 from Dr. Ripley of TVA; and a memorandum dated December 15, 1975, to G. H. Kimmons from Dr. Ripley, attached as collective Exhibit 6. These efforts were a part of TVA's overall program to preserve the snail darter, which began before the commencement of clearing or the listing of the snail darter, and which included, among other things, funding a study of the life history of the snail darter by biologists at The University of Tennessee beginning in

September 1974 and TVA's own comprehensive biological program to save the snail darter. The fact is that plaintiff's own biologists agreed during the snail darter trial that TVA was doing everything humanly possible to save the snail darter short of scrapping the project.

b. TVA's Refusal To Consider Nonreservoir Alternatives - This issue has been addressed in part in response to question No. 1(a) above, and TVA's correspondence with the Fish and Wildlife Service (FWS) on this issue is attached hereto as collective Exhibit 7. The question of TVA's consideration of nonreservoir alternatives must be viewed in light of the fact that the project was substantially complete when the snail darter was listed as endangered. TVA's position on this question was stated in TVA's May 13, 1976, letter to Phillip S. Morgan, Acting Regional Director of the FWS (attached):

> We feel that in completing the project TVA has explored all possible options to prevent extinction of the snail darter and are confident that our efforts will be successful. Given the situation that exists with respect to this project, which is 80 percent complete and which involves a public investment of $80 million, there seems to us to be no other realistic and feasible option than to complete the project as scheduled, and we have so informed Congress and OMB. This project is not one which allows for alteration in detail or design which could prevent alteration or modification of the presently listed critical habitat of the snail darter, which was discovered after the project was over 50 percent complete and listed as endangered after the project was 75 percent complete. Unlike a highway or other flexible project, the dam cannot be moved; nor can the reservoir level be altered. The basic design of the project is to make Tellico Reservoir an integral part of Fort Loudoun Reservoir and it must necessarily have the same water level. The only real choices available are to complete or abandon the project, and Congress, with all the relevant invormation before it, has directed TVA to complete the project. We know of no valid reason to alter that view, and we certainly do not construe the Endangered Species Act to require the outright abandonment of a project in such an advanced stage of completion.

The district court found TVA's course of action reasonable and in accordance with the law:

> Completion of the dam and impoundment of the river are integral parts of a project begun almost a decade ago. TVA has been moving toward this goal since ground was first broken. When the snail darter was listed on the endangered species list in November 1975, TVA was fairly close to completion of the project which has been consistently funded by Congress since 1966.
>
> The nature of the project is such that there are no alternatives to impoundment of the reservoir, short of scrapping the entire project. Modifications or alterations to the project cannot be made at this time which will insure compliance with the Endangered Species Act. Requiring TVA to consult with other agencies about alternatives not reasonably available to it would be to require TVA to perform a useless gesture [Hill v. Tennessee Valley Authority, 419 F. Supp. 753, 758 (E.D. Tenn. 1976)].

c. Summary of Development of the Project - A summary of the appropriations and expenditures for the various work activities at the Tellico project (from 1967 to the present) is attached hereto as Exhibit 8.

The project planning report for Tellico was prepared by TVA in 1963 with initial funding of the project being provided in October 1966 (Pub. L. No. 89-689, 80 Stat. 1014) after extensive hearings before the House and Senate Appropriations Committees in 1965 and 1966. Construction began in March 1967; the concrete portion of the project was completed in March 1969; and the reservoir portion of the project was essentially completed with the dam ready for closure in January 1977. Remaining work includes completion of several road projects, recreation facilities, and archaeological and historical reconstructions. Major construction was halted for 21 months from January 1972 to November 1973 by injunction in litigation over the need for the adequacy of an environmental impact statement (EIS) for Tellico. The environmental impact statement was ultimately approved by the courts as adequate under the National Environmental Policy Act (Environmental Defense Fund v. Tennessee Valley Authority, 371 F. Supp. 1004 (E.D. Tenn. 1973), aff'd, 492 F.2d 466 (6th Cir. 1974)). The dam has been ready for closure since January 4, 1977, but litigation over the snail darter issue has resulted in an injunction preventing closure of the dam and

certain other activities. The Sixth Circuit's January 31, 1977, decision is now pending before the Supreme Court of the United States which, on November 14, 1977, agreed to review the decision of the court of appeals.

Question 3. Executive Order 11593 requires federal agencies to take necessary steps to protect areas which are contained on the National Register of Historic Sites or which may be nominated for inclusion on the Register. Witnesses at the hearings identified some 200 sites of archaeological and historical significance that would be affected adversely by closure of the dam. What action has TVA taken, or what action will it take, to comply with the Executive Order and to protect these sites if the Tellico project is completed?

TVA believes that it has fully complied with the requirements of Executive Order 11593, the National Historic Preservation Act of 1966, the Historic Sites Act of 1935, and the Antiquities Act of 1906 in carrying out the Tellico project. Every major site has been investigated, several have been placed on the Register, and other nominations are in process.

The 10-year program of archaeological surveys, investigations, and recovery at Tellico is believed to be the largest recovery effort made on a reservoir project anywhere in the United States. The program was jointly funded by TVA and the National Park Service at a cost of over $1.5 million, and was carried out with The University of Tennessee and others. The Office of History and Archaeology, National Park Service, has been kept fully informed before work began and as it progressed. The Advisory Council on Historic Preservation has been consulted and has approved preservation and mitigation plans for major sites. Moreover, the entire archaeological program has been reviewed and approved at regular intervals by TVA's Board of Archaeological Consultants, made up of nationally renowned archaeologists.

As stated in the July 20, 1977, letter of Dr. A. K. Guthe, Principal Investigator of the Tellico Archaeological Program, attached as Exhibit 9, the Tellico project

> . . . has made it possible to plan and carry out an orderly and very extensive program of archaeological survey and investigation of the significant resources in the project area. As a result, a great volume of archaeological and historical information as well as artifactual material has been recovered and new insight has been gained into the prehistoric and historic Indian occupation of the area. . . .
>
> Of principal significance in evaluating the results of this program is the fact that much of the information and material which has been recovered was unavailable when the land was in private ownership. It was being lost and destroyed by erosion, cultivation, theft, natural deterioration, and improper handling by unscientifically trained persons. If the project should not be completed and the land should be returned to private ownership, it is believed that this process of loss and destruction would be resumed, doubtless on an accelerated basis since our work has pinpointed the location of sites which formerly were known only in a general way.

The claim that "some 200 sites of archaeological and historical significance" would be adversely affected is inaccurate. While the Tellico archaeological surveys did locate and document the existence of over 200 loci or sites, many of these are not considered important or significant by the archaeological community, and perhaps are best described as minor Indian camps and hunting sites which are similar to thousands of such sites throughout the Tennessee Valley. The more important sites have all been adequately investigated, providing substantial information to document and preserve the prehistoric and historic Indian occupations of the area. Moreover, as Dr. Guthe's letter points out, inundation does not mean the complete loss of this cumulative information:

> There are a significant number of people in the field of archaeology who regard inundation by a reservoir as preferable to continued destruction of sites by looting and natural forces. Although the effects of inundation are not fully known and an area has been provided to test these effects in the Tellico project, it is well established that certain materials essential to archaeological research such as carbonized matter, stone, flint, and soil stains survive after thousands of years following inundation by water. The Early Archaic and Early Woodland sites investigated by Dr. Chapman are examples. There such materials were discovered under 10 to 15 feet of alluvial deposit, laid

down by repeated flooding over a time span of 9,500 years. In short, inundation is not inevitably destruction, and may be considered preferable to the damage and destruction of sites which occurs from looting, cultivation, and erosion.

The 18 archaeological sites found to be significant have received extensive testing with ample excavation to provide a full scientific interpretation of the sites. Six historical and archaeological sites are now on the Register and others are currently being processed. Full or partial reconstruction of three major historic and archaeological sites, namely, Fort Loudoun, the Tellico Blockhouse, and Chota, are being completed and will be preserved as a part of the Tellico project. Two National Register houses, the Bowman House and the McGhee Mansion, have been acquired by TVA and are being maintained for development by responsible organizations or public agencies. In summary, it is TVA's belief that the Tellico project has contributed substantially to providing an understanding of and preserving the archaeological and historical values of the Little Tennessee River Valley.

Question 4. During the hearing several landowners from the Little Tennessee River Valley criticized TVA's land acquisition policy for Tellico, specifically that the Tennessee Valley Authority acquired more land than was necessary for the impoundment. Mr. Lynn Seeber, in explaining the rationale for this, noted that "(I)f you...build an instant reservoir and leave the land in private ownership...industrial sites get used up immediately because there is immediate demand for home sites and cabin developments."

TVA's land acquisition policies and procedures, particularly with regard to Tellico, are explained in a letter of November 14, 1977, to The Honorable Malcolm Wallop, a copy of which is attached as Exhibit 10.

Question 4(a). How much land has TVA acquired for the total Tellico project? How many acres will be used for the reservoir impoundment and how many acres for industrial or other purposes?

TVA has acquired about 38,000 acres of land for the Tellico project, plus some 2,000 acres of riverbed. Approximately 16,500 acres will be inundated by Tellico reservoir at normal pool with an additional 2,900 acres

periodically inundated during flood control operations. The remaining 20,600 acres of shoreland will be managed to create a planned environment stressing the careful blending of the area's natural, cultural, and locational attributes into an optimum resource development plan of high quality known as Timberlake. The exact acreage ultimately devoted to each purpose will depend on many factors, such as the economy, governmental actions, housing trends, lifestyles, and technology; however, as presently planned, land use would be associated with the following general categories:

Category	Acres
Primary housing	3,700
Recreation	7,200
Industrial	5,000
Wildlife Management, Open Space, and Dam Reservation	4,100
Other	600
TOTAL	20,600

Question 4(b). Which companies or industries have entered into an agreement with TVA for the use of industrial sites to be developed in conjunction with the Tellico project? Will TVA sell, lease or rent these sites?

As of this date, no formal agreements have been executed. Full industrial development is projected over a 25-year period after creation of the reservoir. Several companies have expressed interest in acquiring the land and have made onsite inspections. Some early interests have not survived the delays in the completion of the project. The site is considered attractive to industry because it contains large acreage of relatively level land in unified public ownership, with intermodal transportaiton (water, rail, and highway), a dependable water supply, and industrial zoning provided by the project and continued planning efforts by TVA in cooperation with the state and local governments and other federal agencies. All of the various types of land rights that can be conveyed under the TVA Act will be considered

in making these sites available; the type of conveyance actually used will in large part depend upon the industry's needs and the compatibility with long range developmental objectives of the project. The most typical types of land transfer are expected to be conveyance of fee interests and industrial easements.

Question 4(c). Why is the existence of a reservoir essential to industrial development in the Little Tennessee River Valley?

TVA has found during the 44 years of industrial development work in the Tennessee Valley that there are a few unique locations which are unusually favorable for the location economics of certain types of industry. These locations are areas where commercial barge transportation, rail service, highway connections, and large acreages of relatively flat land all come together at the same place. The Tellico project near Vonore now has all these advantages but a navigable waterway, and closing the Tellico Dam will provide the missing link. TVA's job estimate for Tellico is based on what has already happened whenever these unique locations have occurred in the Tennessee Valley. For example, the following waterfront industrial employment has already occurred at the following locations:

Place	No. of Plants	No. of Jobs
Paducah	12	900
Calvert City	8	2,800
New Johnsonville	8	2,600
Counce	3	500
Muscle Shoals	10	7,400
Decatur	22	7,300
Guntersville	16	1,500
Scottsboro-Stevenson	5	1,800
Chattanooga	27	13,500
Charleston-Calhoun	4	1,700
Clinton	5	1,000

Aside from the 5,000 acres being made available by Tellico, there are only about 1,400 acres of controlled navigable waterfront land available in east Tennessee above Chattanooga. In a letter dated March 16, 1977, to Tennessee

State Representative William C. Watson, a copy of which is attached as Exhibit 11, the Tennessee Department of Economic and Community Development stated: "As the industrial and economic development agency of Tennessee State Government, we consider this proposed [Tellico industrial] park and port facility to have one of the highest potentials in the state in terms of future industrial development."

This is not to say that the barge transportation link will be necessary for every industry that will locate in the Tellico area. The presence of industries using the water-transportation system will improve the location economics for plants that do not need that option but benefit due to the construction of new public services, the opportunity to take advantage of interindustrial processes and products, and reduced transportation costs because of competitive rates. By making water transportation available, along with the other locational advantages noted in the answer to 4(b) above, Tellico will provide the needed impetus for economic growth in the area. Even in the absence of barge transportation to the proposed Tellico industrial site, however, we would hope that the advantages already developed as a part of the Tellico project would attract to the area some needed industry, not requiring barge traffic.

Question 4(d). How do projections of revenues from renting, leasing or selling of these newly-acquired lands affect the cost-benefit analyses of the Tellico project? Please indicate specific dollar amounts used in your original and subsequent calculations.

Projected Average Annual Revenues of $455,000 from renting, leasing, or selling of newly acquired lands are included on the benefit side of the benefit-cost analysis under shoreline development. The purchase price of the land, as well as the cost of acquiring and managing it, are included in the cost side of the benefit-cost analysis.

Question 5. Please summarize the energy, job, flood control and other benefits TVA has attributed to the Tellico Reservoir and Dam and provide a brief justification of these estimates.

The project benefits and how they were estimated is summarized as follows:

Energy. Tellico Dam and Reservoir will provide clean, renewable hydroelectric energy by diverting water from Tellico through the existing Fort Loudoun turbines, which were designed and constructed in the 1940's to handle the additional flow from the Little Tennessee River. This extra water will enable Fort Loundoun to generate an additional 200 million kilowatthours in an average year, enough energy to heat approximately 20,000 Tennessee Valley homes. This power benefit had an annual value of about $400,000 in 1968 price levels, measured in terms of savings in TVA power system production expense that would have to be incurred if this energy were supplied from existing and future TVA power production facilities. The value of power is directly related to the savings in TVA's power system production expenses which have risen dramatically in the last 10 years, especially since the oil embargo. Recent estimates of the value of the power have reflected this rise and recognized a continuing increase in the cost of the Nation's energy resources. The expected annual value of the energy from Tellico over its life is now estimated at about $3.5 million. Moreover, by using the renewable resource of falling water the project contributes to the conservation of scarcer fossil fuels. Specifically, to produce this much electricity using coal, oil, or gas, it would require the burning of 90,000 tons of coal, 15 million gallons of oil, or 1.8 billion cubic feet of natural gas every year.

Flood Control. Tellico reservoir will help control floods on the Tennessee River by providing an additional 126,000 acre-feet of flood storage

space. This will be the most flexible storage on the TVA system because the interconnecting canal between Fort Loudoun and Tellico will allow the interchange of storage capacity to help control uneven distribution of storm runoff. It is strategically located to provide storage on the main Tennessee River, where protection is vitally needed for the city of Chattanooga, the most vulnerable locality in the Tennessee Valley. The project will also aid in reducing flood damages to smaller communities and agricultural lands along the Tennessee River. Most of the flood control benefits will be downstream at Chattanooga, where the flood crest in a March 1973 flood could have been further reduced by at least two feet and about $15 million in damages would have been averted if this additional storage had been available.

The flood control value was estimated based on the then-existing TVA system flood reduction value of $4.02 per acre-foot of storage capacity, yielding an annual value of $505,000 in 1968 price levels for the 126,000 acre-feet of storage at Tellico.

Navigation/Industrial Development/Jobs. One of the primary purposes of the project is to create long-term social and economic opportunities for an area in east Tennessee characterized by low incomes and the outmigration of young people. A navigation canal will join Tellico Reservoir with Fort Loudoun and extend commercial navigation approximately 30 miles up the Little Tennessee River to what will become one of the best industrial sites in east Tennessee, with 5,000 acres of developable land. The navigation benefit, estimated at $400,000 per year in 1968 price levels, is based on savings derived from shipping various commodities by water as compared with the least expensive alternative method of transportation and will be achieved without the need to construct a lock, as the interreservoir

canal will allow the use of the existing Fort Loudoun lockage system. By providing these sites with access to river transportation as well as improved rail and highway access, TVA estimates 4,000 basic industrial jobs and 2,600 trades and services jobs will be created along the reservoir over a 25-year development period. By comparison, less than 200 families farmed portions of the 38,000 acres before the land was acquired for the project.

The new industries would have an annual payroll approaching $27 million and the related trades and services jobs would have an annual payroll of about $16 million. An enhanced employment benefit would be created from more productive use of the subemployed in these new jobs. Although not included in the benefit-cost study as a primary benefit, the equivalent annual value of enhanced employment would be about $3,650,000 in 1968 price levels and has been included in the economic analysis as a secondary benefit. These job opportunities are the heart of the project. The three-county project area has a rural agrarian and extractive industry economy, typical of much of Appalachia. Low incomes and lack of economic opportunities has led to the outmigration of the area's youth, with some 20,000 persons leaving the three-county area between 1950 and 1970. Monroe County, in which about half of the project is located, currently has a per capita income of only 57 percent of the national figure. More than 26 percent of its families have income below the poverty level, and its current unemployment rate is about 12 percent. The three-county area affected by the project had more than 3,300 people on the unemployment rolls in 1976.

Recreation. The project will create an excellent recreation lake, 16,500 acres in size, nestled in a scenic setting between the Great Smokey Mountains National Park and the Cherokee National Forest. Because

of a small seasonal drawdown, Tellico Lake will be available for full public use the year round. Some 7,000 acres of shoreline and adjacent areas are set aside for public and private recreation development, and an additional 4,000 acres will be in open space for such uses as wildlife management, walkways and "green areas," or will be set aside for community open space type recreation activity. Major historical sites are being reconstructed or restored by TVA and will be features of parks or public recreation developments within the project area.

The primary recreation area at Tellico is in the upper reaches of the reservoir and will adjoin the Great Smoky Mountains National Park and the Cherokee National Forest, both heavily used for recreational purposes. The development of the recreational potential of the project area could relieve pressure on the park and forest facilities.

The recreation benefit was derived by applying Senate Document 97 values for various recreation uses to the number of recreation visits projected over the life of the project and discounted to obtain the annual equivalent benefit of $1,440,000 in 1968 price levels.

Shoreline Development. In purchasing land for the Tellico project, as in other reservoirs, TVA has acquired land adjacent to the future reservoir in order to assure that its development and use is consistent with project purposes and provides benefits to the public, as well as to avoid unreasonable severage damages in some cases or undue expense in providing access to isolated tracks. The shoreline development benefit accounts for anticipated increases in market value as a result of enhanced land use potential created by the project. Enhancement was claimed only for those lands which do not have to be in restrictive use to achieve other project benefits and was estimated to be $710,000 annually in 1968 price levels.

Fish and Wildlife. The net annual fish and wildlife benefit estimated for Tellico was valued at $220,000 in 1968 price levels. It represents the difference between the value of fishing and hunting visits with the Tellico project and the value of those activities without the reservoir, using values ascribed to the various activities by Senate Document 97.

Water Supply. An annual water supply benefit of $70,000 in 1968 price levels was calculated based on savings in the power requirement for pumping municipal and industrial water supplies from the elevated water level resulting from the creation of the reservoir.

Redevelopment. The redevelopment benefit with an equivalent annual value of $15,000 in 1968 price levels has already been substantially realized. It represents the incremental value of fuller employment provided to the subemployed labor of the area during project construction and operation.

Note. For background, we are attaching as Exhibit 12 the Tellico Project Economic Analysis, as revised in 1971. If these benefit values were updated using the Consumer Price Index, their current annual value would be about $13 million, with about $7 million of this representing primary benefits.

TVA's environmental impact statement for Tellico contains a summary of these benefits (vol. I) as well as a critical analysis of TVA's estimates performed by a group at The University of Tennessee and TVA's rebuttal of the principal points raised (vol. III). In approving TVA's EIS, the district court complimented TVA's economic analysis, saying: "We can scarcely imagine a more satisfactory disclosure than that contained in [the] final statement."

Question 6. Please provide the Subcommittee with any information TVA has developed concerning (a) an updated benefit/cost analysis for Tellico and (b) benefit/cost information for alternative use proposals for the Little Tennessee River Valley.

The benefits were originally estimated as a part of the 1963 Tellico project planning report. The formal economic (benefit-cost) analysis for the Tellico project was performed in 1968 and reexamined in 1971-72 as a part of TVA's environmental impact statement review under the National Environmental Policy Act. Early in 1977 the benefit-cost analysis was again reexamined by a team from OMB, CEQ, DOI, the Corps, and TVA, as a part of President Carter's review of all water resource development projects. The benefit-cost ratio for remaining primary benefits and costs was found to be 7:1, using the same discount rate of 6-3/8 percent that the Water Resource Council guidelines specified for new projects, and not taking credit for the substantial secondary, enhanced employment benefits from Tellico. Attached is a summary sheet for Tellico which capsulizes data submitted for the President's review (Exhibit 13). In brief the analysis used a remaining cost to complete the project of $11,500,000, which was converted to 1968 price levels for comparison with remaining benefits. Remaining annual costs were estimated at $518,000 and remaining primary annual benefits at $3,760,000, for a benefit-cost ratio of 7:1. Net remaining economic benefits were $3,232,000. As a result of this review, the President approved the project for continued funding.

As this Subcommittee is aware, the GAO has recommended that TVA perform an updated remaining cost and remaining benefit analysis for Tellico and its alternatives. TVA has declined to follow this recommendation for the reasons stated in the letter dated December 13, 1977, from Aubrey J. Wagner to the Senate Committee on Governmental Affairs, attached as Exhibit 14.

Question 7. What additional costs are being incurred monthly as a result of the injunction by the Sixth Circuit Court prohibiting closure of the Tellico Dam?

Because the Tellico project was virtually completed, with the dam ready for closure at the time of the court's injunction, the primary loss is not escalating construction costs but is the nonrealization of project benefits for which over $107 million in public funds has been invested. As stated in response to question 5, the current value of the primary benefits is about $7 million annually in 1977 dollars. This does not include the secondary benefits such as jobs.

We have estimated the total construction escalation costs of a one-year injunction to be approximately $400,000. With the advanced stage of completion, most of these costs will not be incurred on a monthly basis but will be one-time additional costs, such as the cost to reassemble construction crews to resume clearing operations and the return of earthmoving equipment to complete the canal excavation. Some costs will increase the longer the delay. For example, additional clearing would be necessary for vegetative growth that develops with each growing season.

Question 8. The most recent TVA estimates of snail darter populations in the Hiwassee River range from 1400-1800 fish. Are these figures based strictly on the standard transect counts used in fisheries studies? If not, on what are they based, and why does the method of estimation differ from that used in the Little Tennessee River?

The Hiwassee River estimates were projected from a known, initial population rather than from transect counts. (It should be noted, however, that transect counts are not standard in estimating fish populations.) Our fisheries biologists selected this method because they felt it offered more opportunity for a realistic estimate given the additional data we have for the Hiwassee. The method follows accepted practice and represents the

state of the art, given the restrictions imposed by the Endangered Species Act and the FWS. Using the transect method, divers count the number of fish seen in a measured area, but there is no way to evaluate their efficiency in making these observations. In other words, it is not known what proportion of the actual number are seen.

In making the population projection for the Hiwassee, our biologists used a number of facts concerning the sex ratio, age composition, number of eggs per female, and known, initial population size. In addition, we made conservative assumptions about the number of females who spawn and survival rates for each age group. From this information we were able to project the number of fish produced each year as well as the number dying each year. These projections, while not statistically testable (nor is data from the transect method), are, in the opinion of our biologists, as sound as the state of the art permits under the restrictions noted above.

The method used by TVA for the Hiwassee, like the transect method, is not standard for estimating fish populations. Typically, a mark and recapture method is used, but in this case FWS felt the method had destructive potential and denied TVA's request to conduct such a study. A permit was issued to mark 200 individuals but this proved to be an insufficient number to assess the total population in the Little Tennessee River.

Question 9. How much habitat suitable for the snail darter is present in the Hiwassee River compared with what remains in the Little Tennessee River?

As a result of TVA's biological investigations conducted as a part of TVA's snail darter conservation program, suitable habitat for the adult snail darter can be defined generally as an area of clean sand-gravel substrate with an abundance of certain perferred snail species and other invertebrate organisms in a relatively large river. Using these criteria, suitable habitat in the Hiwassee River amounts to approximately 33 percent of

the original habitat that was available in the Little Tennessee River. As detailed in the attached TVA biological report, "Population Age Structure and Distribution - Little Tennessee and Hiwassee Rivers" (Exhibit 15), recent biological evidence shows that the snail darter cannot maintain a viable, reproducing population in the Little Tennessee River with the dam structures in place, as its larvae drift downstream into Watts Bar Reservoir and cannot return upstream. The population in the Little T is being maintained by restocking efforts undertaken jointly by TVA and the FWS.

Question 10. Upon listing of the snail darter as endangered in November, 1975, were project modifications available which would have allowed completion of the project and preservation of the snail darter in its Little Tennessee river habitat?

No. Because of the design of the project and its advanced stage of completion, the only alternatives available at the time the darter was listed in November 1975 (the project was then over 75 percent complete) were to complete the project or to scrap it. See also answer 2b above. When TVA presented the question to Congress, through its Appropriations Committees, it was directed to complete the project as promptly as possible in the public interest.

LIST OF EXHIBITS

Exhibit 1 -	Tellico project, alternatives evaluated by TVA during environmental review
Exhibit 2 -	Tellico Dam and Reservoir, Construction Schedule as revised in October 1973
Collective Exhibit 3 -	Weekly Construction Force Reports (June 21, 1974; July 5, 1975 to January 3, 1976)
Exhibit 4 -	Timber Sale Contract No. TV-1098.677 (January 13, 1975)
Exhibit 5 -	Excerpt from Construction Progress Report (October 1975)
Collective Exhibit 6 -	Construction Specification No. TC-858 for Reservoir Clearing and drainage
	Letter of December 1, 1975, to Dr. James D. Williams from Thomas H. Ripley
	Memo of December 15, 1975, from Thomas H. Ripley to G. H. Kimmons regarding the Tellico project--Coordination of Reservoir Clearing Activities
Collective Exhibit 7 -	Letter of May 13, 1976, to Phillip S. Morgan from Lynn Seeber
	Letter of July 15, 1976, to Kenneth E. Black from Lynn Seeber
Exhibit 8 -	Table - Tellico Dam and Reservoir Cumulative Construction Costs by Years in Thousands of Dollars (With Appropriations)
Exhibit 9 -	Letter of July 20, 1977, to Senator John C. Culver from Dr. A. K. Guthe, Director of the McClung Museum and Professor of Anthropology, University of Tennessee
Exhibit 10 -	Letter of November 14, 1977, to Senator Malcolm Wallop from Aubrey J. Wagner
Exhibit 11 -	Letter of March 16, 1977, to William C. Watson from Thomas D. Benson, Commissioner of the Tennessee Department of Economic Community Development
Exhibit 12 -	Tellico Project Economic Analysis (with description)
Exhibit 13 -	Tellico project, data summary sheet submitted as a part of President Carter's review of Water Resource Development Projects (Spring 1977)
Exhibit 14 -	Letter of December 13, 1977, to Senator Abraham A. Ribicoff from Aubrey J. Wagner (with attachments)
Exhibit 15 -	TVA Snail Darter Conservation Program - Situation Assessment: "Population Age Structure and Distribution--Little Tennessee and Hiwasee Rivers" - (February 1977)

ALTERNATIVES EVALUATED BY TVA
DURING ENVIRONMENTAL REVIEW

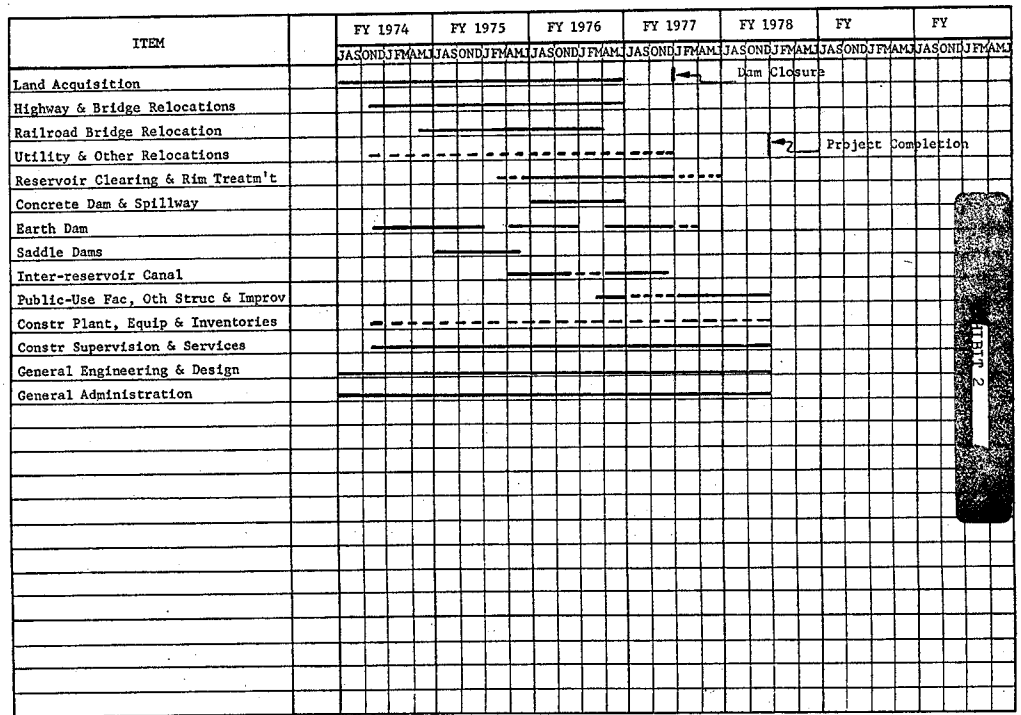
Project Design	Characteristics	Estimated Annual Costs	Estimated Annual Benefits	Estimated Net Annual Benefits	% Net Benefit to Tellico
Lower dam	3200 acre pool extending 25 miles	$1,426,000	$4,986,000	$3,560,000	60
Lower dam and scenic stream	3200 acre pool; 8 mile scenic stream	1,444,000	5,046,000	3,602,000	61
Intermediate dam	8000 acre pool extending 29 miles	1,745,000	5,245,000	3,500,000	59
Intermediate dam and scenic stream	8000 acre pool; 4 mile scenic stream	1,761,000	5,270,000	3,509,000	59
Scenic stream [1/]	33 mile scenic river corridor	82,000	211,000	129,000	2
No further action [1/]	Project abandonment	-0-	101,000	101,000	1.7
Tellico Project	Full pool level with Ft. Loudoun reservoir	1,507,000	7,410,000	5,903,000	100

1. Excludes cost of removing Tellico Dam and restoring area.

EXHIBIT 1

TELLICO DAM & RESERVOIR

Construction Schedule



OEDC--10/11/73

CONSTRUCTION FORCE REPORT

PROJECT Tellico PAYROLL 440418

FOR WEEK ENDING June 21, 1974

Classification	Journeymen & Apprentices (excluding Minority) Shift 1		Shift 2		Minority Shift 1		Shift 2		Foremen Shift 1		Shift 2		Total	Number Terminated	Number Hired
	1	2	3		1	2	3		1	2	3				
Boilermakers															
Carpenters	2												2		
Millwrights															
Electricians															
Iron Workers	1								1				2		
Steamfitters	5	3							1				9		
Teamsters	7	2							1				10		
Laborers	39	17	10		5	2	1		2	2			78		18
Operating Engineers	42	13	2						3	1			60		3
Painters															
Sheet Metal Workers															
Gas & Diesel Mechanics															
Cement Masons															
Machinist	1												1		
Totals	97	35	12		5	2	1		8	2			116		13

EXHIBIT 3

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING July 05, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	9									9		
Millwrights												
Electricians	1	1								2		
Iron Workers	5						1			6		
Steamfitters	7	1	1				1			10		
Teamsters	~~9~~	2	1				1			~~13~~		
Laborers	50	18	14	~~10~~			4	2	1	~~99~~		~~12~~
Operating Engineers	~~50~~	20	~~3~~	1			~~5~~	1	1	~~81~~		~~4~~
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	~~132~~	42	~~19~~	~~11~~		~~5~~	12	3	2	~~221~~		~~16~~

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING July 12, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	79						1			98	2	1
Millwrights												
Electricians	1	1								2		
Iron Workers	53						1			64	2	
Steamfitters	16	1	1				1			10	1	
Teamsters	11	2	1				1			15 14	1	1
Laborers	43 52	18	21 14	11			4	2	2 1	101 102	12	4
Operating Engineers	44 42	20	11	1			5	1	12	84 81	1	13
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	127	42	27	12			12	3	2	225	2	5
	116	34					13	4		224	8	5

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING July 19, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	1 ~~7~~						1			2 ~~8~~	6 ~~2~~	~~1~~
Millwrights												
Electricians	1	1								2		
Iron Workers	3						1			4	~~2~~	
Steamfitters	6	1	1				1			9	~~1~~	
Teamsters	12 ~~11~~	2	1				1			16 ~~15~~	~~1~~	1
Laborers	43	18	21	11			4	2	1	101	~~2~~	
Operating Engineers	115 ~~44~~	20	11	1			5	1	2	85 84		~~1~~ 1
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	~~116~~ 112	42	34	12			13	3	4	~~225~~ 220	~~8~~ 6	~~5~~ 2

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING July 26, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	1						1			2	6	
Millwrights												
Electricians	1	1								2		
Iron Workers	3						1			4		
Steamfitters	6	1	1				1			9		
Teamsters	12	2	1				1			16		1
Laborers	43	18	21	11			4	2	1	101		
Operating Engineers	45	20	11	1			5	1	2	85		1
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
	1									1		
TOTALS	112	42	34	12			13	3	4	220	6	2

CONSTRUCTION FORCE REPORT

PROJECT ~~CSB, Tellico Dam~~ PAYROLL ~~44044B~~

FOR WEEK ENDING August 04, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	1						1			2		
Millwrights												
Electricians	1	1								2		
Iron Workers	3						1			4		
Steamfitters	6	1	1				1			9		
Teamsters	11	2	1				1			15	1	
Laborers	43	19	21	17			4	2	1	101		1
Operating Engineers	45	21	16	1			5	1	1	91		6
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	111	44	39	12			13	3	3	235	1	7

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING August 08, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	1						1			2		
Millwrights												
Electricians	1	1								2		
Iron Workers	3						1			4		
Steamfitters	6	2	1				1			10		1
Teamsters	12	3	2				1			18		3
Laborers	43	19	19	10		1	4	2	1	99	2	
Operating Engineers	45	24	20	1			5	1	1	97		67
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	112	49	42	11		1	13	3	2	233	2	71

CONSTRUCTION FORCE REPORT

PROJECT CSE, Tellico Dam PAYROLL 440418

FOR WEEK ENDING August 15, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
rpenters	2						1			3		1
Millwrights												
Electricians	1	1					1			2		
Iron Workers	3						1			4		
Steamfitters	6	2	1				1			10		
Teamsters	12	4	2				1			19		1
Laborers	42	19	13	10		1	4	2	1	98	1	
Operating Engineers	46	24	21	1			5	1	1	99		2
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	113	50	43	11		1	13	3	2	236	1	4

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING August 22, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	2						1			3		
Millwrights												
Electricians	1	1								2		
Iron Workers	3						1			4		
Steamfitters	7	2	1				1			11		1
Teamsters	12	4	2				1			19	1	1
Laborers	43	20	19	10		1	4	2	1	100		2
Operating Engineers	46	24	23	1			5	1	1	101		3
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	115	51	45	11		1	13	3	2	241	1	7

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING August 29, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	2						1			3		
Millwrights												
Electricians	1	1								2		
Iron Workers	3						1			4		
Steamfitters	7	2	1				1			11		
Teamsters	13	4	2				1			20		1
Laborers	43	21	10	9		1	4	2	1	100	1	1
Operating Engineers	46	23	22	1			5	1	1	99	2	
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair											1	
TOTALS	114	52	44	10		1	13	3	2	239	4	2

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 440418

FOR WEEK ENDING September 05, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	2						1			3		
Millwrights												
Electricians	1	1								2		4
Iron Workers	3						1			4		
Steamfitters	9	2	1				1			13		1
Teamsters	12	3	2				1			18		
Laborers	38	20	20	9		1	4	2	2	96	1	1
Operating Engineers	54	24	24	1			5	1	1	110		
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	119	50	49	10		1	13	3	3	246	1	2

CONSTRUCTION FORCE REPORT

PROJECT CSR, Tellico Dam PAYROLL 44048

FOR WEEK ENDING September 12, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	2						1			3		
Millwrights												
Electricians	2	1								3		1
Iron Workers	3						1			4		
Steamfitters	9	2	1				1			13		
Teamsters	14	4	3				1			22		4
Laborers	37	20	20	8			4	2	2	93	3	
Operating Engineers	55	26	25	1	1		5	1	1	115		5
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	122	53	49	9	1		13	3	3	253	3	10

CONSTRUCTION FORCE REPORT

PROJECT ~~CSB, Tellico Dam~~ PAYROLL ~~44418~~

FOR WEEK ENDING ~~September 20, 1975~~

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	2						1			3		
Millwrights												
Electricians	2	1								3		
Iron Workers	3						1			4		
Steamfitters	9	2	1				1			13		
Teamsters	14	4	3				1			22		
Laborers	36	20	20	7			4	2	2	91	2	
Operating Engineers	55	29	25	1	1		5	1	1	118		3
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	121	56	49	8	1		13	3	3	254	2	3

CONSTRUCTION FORCE REPORT

PROJECT CSB Tellico Dam PAYROLL 440418

FOR WEEK ENDING September 26, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	2						1			3		
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		1
Steamfitters	7	2	1				1			11	2	
Teamsters	14	4	3				1			22		
Laborers	37	20	20	7			4	2	2	92		1
Operating Engineers	56	29	25	1	1		5	1	1	119		1
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	122	56	49	8	1		13	3	3	255	2	3

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CONSTRUCTION FORCE REPORT

PROJECT ~~CSB, Tellico Dam~~ PAYROLL 440418

FOR WEEK ENDING October 3, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	4						1			5		2
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		
Steamfitters	7	2	1				1			11		
Teamsters	14	4	3				1			22		
Laborers	37	20	20	8	1		4	2	1	93	1	2
Operating Engineers	56	29	25	1	1		5	1	1	119		
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	124	56	49	9	2		13	3	2	258	1	4

CONSTRUCTION FORCE REPORT

PROJECT CSB, Tellico Dam PAYROLL 40418

FOR WEEK ENDING October 10, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	6						1			7		2
Millwrights												
Electricians	2	1								3		
Iron Workers	5						1			6		1
Steamfitters	7	2	1				1			11		
Teamsters	14	4	3				1			22		
Laborers	38	20	20	8	1		4	2	2	95	1	3
Operating Engineers	57	29	25	1			5	1	1	119		
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	129	56	49	9	1		13	3	3	263	1	6

CONSTRUCTION FORCE REPORT

PROJECT CSB - Tellico Dam PAYROLL 440418

FOR WEEK ENDING ~~October 18, 1975~~

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	6						1			7		
Millwrights												
Electricians	2	1								3		
Iron Workers	5						1			6		
Steamfitters	7	2	1				1			11		
Teamsters	14	4	3				1			22		
Laborers	38	21	20	8	1		4	2	2	96		1
Operating Engineers	60	27	17	2			5	1	1	113	6	
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	132	55	41	10	1		13	3	3	258	6	1

CONSTRUCTION FORCE REPORT

PROJECT CSB-Tellico Dam PAYROLL 40418

FOR WEEK ENDING October 25, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	6						1			7		
Millwrights												
Electricians	2	1								3		
Iron Workers	5						1			6		
Steamfitters	7	2	1				1			11		
Teamsters	14	4	3				1			22		
Laborers	± 38	21	20	8	1		4	2	2	96		
Operating Engineers	61	28	17	2			5	1	1	115		2
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	133	56	41	10	1		13	3	3	260		2

CONSTRUCTION FORCE REPORT

PROJECT ~~CSB, Tellico Dam~~ PAYROLL ~~44048~~

FOR WEEK ENDING October 31, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	6						1			7		
Millwrights												
Electricians	2	1								3		
Iron Workers	5						1			6		
Steamfitters	7	2	1				1			11		
Teamsters	14	4	3				1			22		
Laborers	38	22	20	8	1		4	2	2	97		1
Operating Engineers	61	28	17	2			5	1	1	115		
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	133	57	41	10	1		13	3	3	261		1

CONSTRUCTION FORCE REPORT

PROJECT ~~CSB-Tellico Dam~~ PAYROLL ~~440418~~

FOR WEEK ENDING ~~November 07, 1975~~

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		4
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5	1	
Steamfitters	7	2	1				1			11		
Teamsters	14	4	3				1			22		
Laborers	39	24	19	8	1		4	2	2	99	1	3
Operating Engineers	61	28	17	2			5	1	1	115		
Painters												
Sheet Metal Workers												
Cas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair												
TOTALS	137	59	40	10	1		13	3	3	266	2	7

CONSTRUCTION FORCE REPORT

PROJECT CSR-Tellico Dam PAYROLL 440418

FOR WEEK ENDING November 14, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		
Millwrights												
Electricians	2	1								3		
Iron Workers	3						1			4	1	
Steamfitters	8	2	1				1			12		1
Teamsters	13	4	3	2			1			23	1	2
Laborers	36	24	18	8	1		4	1	2	94	6	1
Operating Engineers	53	27	15	2			4	1	1	103	12	
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		1
TOTALS	126	58	37	12	1		12	2	3	251	20	5

CONSTRUCTION FORCE REPORT

PROJECT CSB-Tellico Dam PAYROLL 44018

FOR WEEK ENDING ~~November 21, 1975~~

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		1
Steamfitters	9	2	1				1			13		1
Teamsters	13	4	3	2			1			23		
Laborers	42	29	19	8	1		4	1	2	106		1 2
Operating Engineers	52	27	17	2			4	1	1	104	4	5
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	133	63	40	12 1			12	2	3	266	4	19

CONSTRUCTION FORCE REPORT

PROJECT CSB-Tellico Dam PAYROLL 44018

FOR WEEK ENDING November 29, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		
Millwrights												
Electricians	2	1								3		
Iron Workers	3						1			4	1	
Steamfitters	9	2	1				1			13		
Teamsters	13	4	3	2	2		1			23		
Laborers	42	31	19	8	1		4	1	2	108		2
Operating Engineers	52	27	17	2			4	1	1	104		
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	132	65	40	10	3		12	2	3	267	1	2

CONSTRUCTION FORCE REPORT

PROJECT CSB-Tellico Dam PAYROLL 440418

FOR WEEK ENDING December 05, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		1
Steamfitters	7	2	2				1			12		
Teamsters	14	4	3		2		1			24		1
Laborers	43	30	19	8	1		4	2	1	108	2	2
Operating Engineers	48 49	24	17	2			4	1	1	97 93	18	#11
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	129 285	61	41	10	3		12	3	2	261 257	20	15 #11

CONSTRUCTION FORCE REPORT

PROJECT CSB Tellico Dam PAYROLL 440418

FOR WEEK ENDING Dec 13-75

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		
Steamfitters	5	3	3				1			12	2	2
Teamsters	11	4	3		2		1			21	3	
Laborers	44	26	20	8	1		4	2	1	106		2
Operating Engineers	46	23	16	2			5	1	1	94	4	1
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	123	59	42	10	3		13	3	2	253	9	5

CONSTRUCTION FORCE REPORT

PROJECT CSR-Tellico Dam PAYROLL 440418

FOR WEEK ENDING December 20, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		
Steamfitters	5	3	3				1			12		
Teamsters	11	4	3		2		1			21		
Laborers	44	26	20	8	1		4	2	1	106		
Operating Engineers	47	22	16	2			5	1	1	94	5	5
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	124	56	42	10	3		13	3	2	253	5	5

CONSTRUCTION FORCE REPORT

PROJECT CSB-Tellico Dam PAYROLL 440418

FOR WEEK ENDING December 27, 1975

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	10						1			11		
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		
Steamfitters	5	3	3				1			12		
Teamsters	11	4	3		2		1			21		
Laborers	44	26	20	8	1		4	2	1	106		
Operating Engineers	47	22	16	2			5	1	1	94		
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	124	56	42	10	3		13	3	2	253		

CONSTRUCTION FORCE REPORT

PROJECT CSB-Tellico Dam PAYROLL 440418

FOR WEEK ENDING January 03, 1976

Classification	Journeymen & Apprentices (excluding Minority)			Minority			Foremen				No. Term.	No. Hired
	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Shift 1	Shift 2	Shift 3	Total		
Boilermakers												
Carpenters	9						1			10	1	
Millwrights												
Electricians	2	1								3		
Iron Workers	4						1			5		
Steamfitters	6	3	3				1			13		1
Teamsters	11	4	3		1		1			20	1	
Laborers	44	25	20	8	1		4	2	1	105	1	
Operating Engineers	45	22	16	2			5	1	1	92	2	
Painters												
Sheet Metal Workers												
Gas & Diesel Mechanics												
Cement Masons												
Machinist-Air Tool Repair	1									1		
TOTALS	122	55	42	10	2		13	3	2	249	5	1

TENNESSEE VALLEY AUTHORITY
TIMBER SALE CONTRACT

Contract No. TV-1098.677
Reservoir Tellico
Issued January 13, 1975
Expires June 1, 1975

Ken Wilson
Contractor

6827 Dorchester Drive
Address

Knoxville, Tennessee 37919

Is hereby authorized to cut and remove designated timber from tracts shown on the attached map subject to the conditions set forth below and attached hereto during the period January 13, 1975 to June 1, 1975.

A. Discription of timber, estimated quantity, and unit price:

Item No.	Description	Estimated Quantity*	Unit	Unit Price
1.	Shortleaf and Virginia Pine	37,737	MBF	
2.	Red and Black Oak	68,067	MBF	
3.	White Oak	79,038	MBF	
4.	Yellow Poplar	65,448	MBF	
5.	Sweet Gum	4,608	MBF	
6.	Walnut	17,685	MBF	
7.	Cherry	7,668	MBF	
8.	Miscellaneous	144,243	MBF	
	Total	424,494	MBF	xxxxxxx
9.	Hardwood Pulpwood	330	Sta. Cds.	
10.	Pine Pulpwood	140	Sta. Cds.	
	Total	470	Sta. Cds.	xxxxxxx

Total contract price - all items $ 8500.50

USTVA

B. Conditions

*The bidder is advised to satisfy himself as to the accuracy of said estimate before entering his bid. No adjustment will be made for variation between the estimate here given and the volume cut and removed.

C. Acceptance

Accepted 1-13-75, 1975 Executed Jan 13, 1975

Kenneth Wilson
Contractor

[redacted]

9. ADDITIONAL CONDITIONS

1. ACCEPTANCE OF BID - TVA reserves the right to reject any and all bids and to waive any informality in bids.
2. PERFORMANCE DEPOSIT - Contractor shall within ten (10) days of date of award of this contract deposit with TVA an acceptable performance bond or money order or cashier's check made payable to Tennessee Valley Authority in the amount of 30 percent of the contract price which shall be held by TVA as a guarantee of performance. Said deposit will be returned to Contractor after completion of this contract in a manner satisfactory to TVA. The deposit and all payments on this contract shall be delivered or mailed to Tennessee Valley Authority, Box 606, 1101 Congress Parkway, Athens, TN 37303.
3. STUMP HEIGHTS - Stumps of all trees cut between the 792-foot contour elevation and the 815-foot contour elevation shall be cut flush with the ground if possible and in no case shall the stump extend more than 4 inches above ground level, except as approved by TVA. Trees cut below the 792-foot contour shall be cut no higher than 12 inches above ground level. The 792-foot contour will be estimated in the field jointly by the Contractor and TVA.
4. ORDER OF LOGGING - The various units of the sale area shall be logged in the following order: Begin on north end of sale area and proceed in an orderly manner to the south end of the sale area. All phases of the logging operation shall keep pace with another and each unit shall be satisfactorily completed before operations are started on a new unit.
5. CUTTING SHALL BEGIN - Within 20 days after the contract has been awarded.
6. NO WARRANTY - All timber offered in this proposal is offered "where is and as is" without recourse. No representation, warranty, or guaranty is made by the TVA as to the quantity, quality, condition, size, or description, other than the estimate of quantity as shown in this proposal, which is given only for the general guidance of bidders, and any discrepancy between estimated and actual volume will not affect the validity of the sale or be considered the basis of a claim. No representative of TVA is authorized to make any statement or representation as to the quantity, character, condition, size, or kind of any timber offered for sale, and any such statement will not be binding on the TVA. No claim for rescission, allowance, or otherwise upon any of the grounds aforesaid will be considered.
7. PAYMENT - Within 10 days after notification of award of the contract, the Contractor shall pay TVA 33-1/3 percent of the total contract price. Additional payments of 33-1/3 percent of the total contract price shall be made by the Contractor upon completion of 33-1/3 and 66-2/3 percent, respectively, of the cutting operations by volume or dollar value as determined by TVA. The final payment shall be made, by the Contractor, before May 1, 1975, regardless of the cutting progress. Such payments shall be made within one week of the date of the invoice.
8. CUTTING LIMITATIONS - Only trees within the sale area shall be felled. Unmarked or undesignated trees which are cut, or unauthorized removal of logs or other material shall be paid for at twice the current market value of logs delivered to the sawmill. Merchantable material needed for the construction of logging improvements shall be designated by the TVA and paid for at prices bid or comparable thereto.
9. MISCELLANEOUS FOREST PRODUCTS - Throughout the term of this contract the Contractor may use the following material resulting from the felling of trees designated for cutting: cull material, tops, and bark.
10. SUBLETTING OF CONTRACT - This contract is not assignable, and shall not be sublet in whole or in part except with written approval of TVA.
11. SUSPENSION OF CONTRACT - All operations covered by this contract may be suspended and/or terminated by written notice from TVA, without liability, if Contractor fails, in the judgment of TVA, to comply with any or all conditions of this contract.
12. IMPROVEMENTS - Any and all improvements including those to the nature and location of roads, concentration yards, and loading sites to be made by Contractor in performing this contract require advance approval by TVA. All structural improvements are to be removed on or before the date of completion of this contract, unless otherwise agreed upon. No sawmill sites will be permitted on TVA land.

ADDITIONAL CONDITIONS (continued)

13. CROSSING PRIVATE PROPERTY - Contractor shall be responsible for securing permission to cross private property, as may be convenient or necessary, in the performance of this contract.
14. PROTECTION - Contractor and his employees shall do all in their power, both independently and upon request of TVA, to prevent and suppress forest fires.
15. SPECIAL REGULATIONS - All operations performed under this contract shall conform to such rules and regulations as TVA may prescribe.
16. SANITATION - When occupying or using TVA owned or controlled lands in performing this contract, Contractor, his agents, subcontractors, and employees shall conform to all applicable laws, rules, and regulations relating to health and sanitation, particularly those rules and regulations requiring provisions of safe drinking water and sanitary disposal of waste, garbage, and excreta.
17. LIABILITY FOR DAMAGE TO TVA PROPERTY - All timber, standing or down, which is damaged through any cause attributable to Contractor, or damaged or killed by fires which Contractor or his employees cause, or the origin or spread of which they could reasonably have prevented, shall be evaluated by TVA and paid for by Contractor. All improvements on TVA's property shall be protected as far as possible in logging operations and, if damaged, shall be repaired immediately by Contractor; upon failure of Contractor to comply, repairs may be made by TVA at Contractor's expense.
18. LIABILITY - TVA makes no warranties or representations concerning the premises covered by this contract or any means of ingress thereto or egress therefrom. Contractor assumes all risk of and shall save TVA harmless from all liability for any personal injury, loss of life, or property damage resulting from or in any way connected with his operations hereunder; with the condition or use of the premises; or any means of ingress thereto or egress therefrom, suffered or sustained by Contractor, members of his family or his agents, employees, and invitees.
19. RESERVOIR FLUCTUATION - TVA assumes no liability for damage or loss caused by fluctuation of reservoir levels.
20. ELIGIBILITY - No member of or delegate to Congress or resident Commissioner shall be admitted to any share or part of this contract or to any benefit to arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.
21. SLASH DISPOSAL - Slash and other debris shall not be left in creeks, streams, or drainage ditches.
22. DISPUTES - Except as otherwise specifically provided in this contract, all disputes concerning questions of fact arising under this contract shall be decided by the Director of Division of Reservoir Properties, whose decision shall be final and conclusive upon the parties hereto as to such questions of fact. If it becomes necessary to scale timber in order to determine compliance with contract provisions, the International Log Rule 1/4" Kerf shall be used.
23. All logging roads, skid trails, concentration yards, and loading sites on project lands above elevation 815 will be restored, graded, and seeded by Contractor to prevent erosion
24. AREAS EXCLUDED FROM SALE - Timber is not to be cut or removed from areas shown shaded in blue on attached map. Trees in these areas are marked with blue paint. Timber is not to be cut or removed from the areas shown shaded in green on the attached map. These areas are not in TVA possession and their boundary line trees have been marked with green paint.
25. Much of the land in the sale area is under license to third parties for agricultural purposes. The timber operator shall exercise caution to hold the damage of crops and fences to a minimum.

TELLICO TIMBER SALE

LEGEND

Sale Boundary

Areas Excluded From Sale

1 Inch = 1 Mile

TENNESSEE VALLEY AUTHORITY

CONSTRUCTION SERVICES BRANCH

CONSTRUCTION PROGRESS

DURING THE MONTH OF

October 1975

(EXCERPT)

Gene Tanner

CHIEF, CONSTRUCTION SERVICES BRANCH

EXHIBIT 5

CONSTRUCTION SERVICES BRANCH

ACTIVITIES REPORT

October 1975

SELECTED ITEMS

Clearing for the Tellico Reservoir began on September 29.

The 1000-foot-high chimney shell for Widows Creek units 1-6 was "topped out" October 4.

Construction of the new ash pond at Allen Steam Plant commenced on October 6.

Grading for the Cordova substation was completed October 7.

Rentenbach Engineering Company, contractor for the new Bull Run precipitator, reported to the site October 13.

Placement of earthfill for the main dam at Little Bear Creek was completed October 23.

CONSTRUCTION GROUP ACTIVITIES

Fort Patrick Henry Dam

Concrete repairs to the spillway were begun on October 6. The access road was completed, and the splashboards were set in preparation for dewatering of the spillway apron. Dewatering was completed, and concrete was placed for a new baffle. Removal of the old baffle and cleaning spillway drains were continued.

Gallatin Steam Plant

The control and communication cables for the gas turbine remote control job were tested. Finish grading work in the switchyard area was started. Conduit and cable were run from the powerhouse to the main gate for the new electrically operated gate.

Painting continued for fuel tank No. 2, and sandblasting began for tank No. 1.

Alabama Roofing and Sheetmetal Company reported to the project on Wednesday, October 8, and began roof installation for the limestone handling facilities.

Global Lagging returned to the job on Monday, October 20, and began placing insulation on the fan housing and outlet gas ducts.

Units 1-6 Precipitators--Custodis Construction Company completed concrete for the new chimney Saturday, October 4, and began dismantling equipment and erecting the balconies and rest platforms.

Great Falls Reservoir

Bridge Builders, a subcontractor, placed concrete for the final lift of the north abutment early in the month and began placing decking on the bridge steel.

Bull Run Steam Plant

Precipitator Turnkey--Rentenbach Engineering Company, contractor for the turnkey electrostatic precipitator addition, moved on site on October 13. Its work to date consists of setting up office facilities and beginning exploratory drilling operations for precipitator foundations.

Ash Pond--To date, nearly 205,000 cubic yards of earth has been placed to raise the ash pond dikes. Ash removal has exceeded 66,000 cubic yards. In addition to earthwork, the placement of crushed stone and riprap was continued and advanced to 95 percent complete. Seeding and mulching were begun and continued throughout the period.

U S T V A

Tellico Project

Tellico Dam--Earthfill placement continued in the east channel below the upstream cofferdam with 35,500 cubic yards being placed. Fill activity also included the placement of 1,260 cubic yards on the main embankment, 685 cubic yards on the right abutment, and 2,700 cubic yards on saddle dam No. 1. Excavation of the cutoff trench across the east channel continued. The sump was installed at station 20+50±, and 1,390 cubic yards of fill concrete was placed in this area. Excavation and cleaning of rock were completed for the cutoff trench between stations 28+00 and 30+00, and 146 cubic yards of fill concrete was placed. The mixing plant was erected and placed in operation on October 20 and supplied 29 percent of the concrete used during the month. Riprap placement was continued on saddle dam No. 1 and nears completion.

Tellico Reservoir Clearing--Clearing in the Tellico Reservoir was begun on September 29. Approximately 50 acres has been cleared, and seeding and mulching were begun.

Tellico Reservoir--On Highway 72, project 2120, placement of fill continued near the L&N overpass and was begun near the triple box culvert at station 229+55. Formwork for the bottom slab of the triple box culvert was begun while clearing operations continued between Bat Creek and Fork Creek. The placing of earthfill and crushed stone surfacing was completed, and placing of riprap began on project 7055, Notchy Creek Road. Placing of fill was continued on project 7055, Citico-Chilhowee Dam Road, and 7034, West Fork Hicks Creek Road. On project 3221, River Road, placing of earthfill and installation of drainage structures were continued. Placing of stabilized base began on projects 3221, River Road, and 3222, Gap Road. At Baker Creek, the precast concrete beams were set, and formwork was begun for the abutment and pier diaphragms. Driving of piling at Sinking Creek Bridge abutment No. 2 was started. Setting of timber guardposts was completed on projects 7014, East Notchy Knobs Road, and 7033, Notchy Knobs Road.

A. J. Metler, subcontractor on project 381, L&N Railroad Bridge superstructure, completed tightening bolts and removed the falsework from beneath the main truss span. Painting of the superstructure was completed, and Associated Electrical Contractors began installation of electrical conduit for the pier lighting. Oman Construction Company, contractor on project 301, L&N Railroad relocation, completed placing stabilized base along with seeding and mulching slopes. McDowell-Purcell, contractor on project 7044, Citico Road, completed setting timber guardposts, concrete right-of-way markers, and seeding and mulching slopes, along with placing double bituminous surface treatment on projects 7044 and 7028, Four Mile Creek Road.

Fontana Dam

Calyx drilling of the 36-inch-diameter hole for the secondary seal was completed on October 22. Excavation of rock and earthfill downstream of the slot and preparation of the upstream face of the dam for installation of the seal began and continued throughout the month. Installation of the strain meters in the gallery at elevation 1630 was completed.

Drilling and Soil Sampling

Core drilling at Sequoyah Nuclear Plant for the east steam valve rooms and the Johnson Bend seismic correlation drilling at Kingston Steam Plant were continued. Mobilization was completed, and core drilling began on October 1 at the Town Creek site and continued throughout the month. The two pneumatic drills were moved to Cedar Creek Dam site, and percussion drilling began on October 22 for the north sluiceway alternate location.

Soil sampling for the barge-rail transfer station at Gallatin Steam Plant was completed October 3. Soil sampling began for Columbia Reservoir road projects on October 7 and was completed October 23. Soil sampling at the Yellow Creek site began on October 7 and is still in progress.

EMPLOYMENT DISTRIBUTION

October 25, 1975

	Constr. Annual	Engg.&Insp. Services Annual	Hourly
Knoxville			
Branch administration		6	
Construction	11		
Engineering		20	
Equipment Management		23	
Singleton operations	3		20
Materials Engg. Laboratory		36	1
Upper Bear Creek Dam	2	1	44
Tellico	10	22	288
Tellico Reservoir	5		215
Tellico Clearing	2		44
Little Bear Creek	5	6	170
Drilling and soil sampling			27
Fort Patrick Henry			7
Marine & Constr. Equipment Section	4		44
Widows Creek scrubber	11	5	172
Kingston	2	2	44
Ocoee 1 strengthening dam	1	1	48
Gallatin			10
Paradise	2		57
Cumberland	18	3	140
Johnsonville	6	2	225
Colbert	7	1	118
Shawnee		1	6
Bull Run ash pond	1		23
Paving	1		10
Fontana Dam repairs	1		15
Chickamauga mooring cells	1		11
Allen ash pond	1		9
Total	94	129	1,748

Month	Number of Employees	Payroll
May	1,946	$2,351,969
June	1,935	2,956,004
July	1,993	2,122,628
August	2,001	2,254,970
September	1,937	2,648,437
October	1,971	2,118,818

U S T V A

TENNESSEE VALLEY AUTHORITY

DIVISION OF ENGINEERING DESIGN

TELLICO RESERVOIR

CONSTRUCTION SPECIFICATION

NO. TC-858

FOR RESERVOIR CLEARING AND DRAINAGE

	REVISION	R1	R2	R3	R4	R5
Date	July 17, 1974	1/21/76				
SPONSORED	*J. R. Fox	JRF				
SUBMITTED	*F. D. Stansberry	FDS				
CONCURRED						
RECOMMENDED (Sponsor Branch Chief)	*W. W. Engle	WWE				
SPEC. CONTROL	*P. L. Duncan	PLD				
APPROVED (Dir. of Construction)	*H. H. Mull	HHM				
APPROVED (Dir. of Eng. Dsgn.)	*Roy H. Dunham	RHD				

*original signed by

[redacted]

TVA 10574A (DED-2-75)

TVA

Title: CONSTRUCTION SPECIFICATION FOR RESERVOIR CLEARING AND DRAINAGE - TELLICO RESERVOIR

REVISION LOG

TC-858

Revision No.	DESCRIPTION OF REVISION	Date Approved
1	The Construction Specification was revised as follows: a. Section B.1.a.(1) - The upper limit of zone 1 was changed from 792 contour to 794 contour. b. Section B.1.a.(2) - The lower limit of zone 2 was changed from 792 contour to 794 contour. c. Within the text where elevation 797 appeared, it has been changed to elevation 794. d. Section D. Special Instructions and Exceptions to Clearing 1. Revised D.1. elevation 808 to read elevation 801. 2. Added D.5. relating to skidding of logs and coordination of clearing work. 3. Updated titles of TVA divisions.	1/21/76

TVA 10534 (DED-9-73)

TVA

CONSTRUCTION SPECIFICATION FOR RESERVOIR CLEARING AND DRAINAGE - TELLICO RESERVOIR | TC-858

This specification has been coordinated with the Divisions of Environmental Planning; Water Management; Forestry, Fisheries, and Wildlife Development; Property and Services; and Navigation Development and Regional Studies. R1

A. Clearing

1. Clearing shall consist of the removal of and disposal of trees, brush, bushes, heavy weed growth, or similar material, and the removal of wooden structures, foundations, chimneys, silos, fences, mill and recreational dams, abandoned bridge piers, and other obstructions to commercial navigation and recreational navigation.

2. Clearing shall be accomplished in the areas and in the manner prescribed in this specification.

B. Areas to be Cleared

1. The total area to be cleared includes that portion of Tellico Reservoir, its branches, bights, and indentations, and the tributary streams which shall be divided into the following areas and zones:

   a. Area 1--That portion of the reservoir which lies on the Little Tennessee River and that portion of the reservoir which lies between the mouth and mile 5 of the Tellico River, including Notchy Creek upstream to the old Steed Bridge site. Area 1 shall be divided into the following zones:

      (1) Zone 1--That area of the reservoir which lies below the 794 contour (11 feet below minimum headwater). R1

      (2) Zone 2--That area of the reservoir and the tributary streams which lies between the 794 contour and the normal maximum headwater, elevation 813, plus that area which extends from the 813 contour for a landward distance of 15 feet, measured along the slope of the ground, or to the 815 contour whichever is reached first. R1

   b. Area 2--That portion of the reservoir which lies above mile five of the Tellico River and above the old Steed Bridge site on Notchy Creek. Area 2 shall be divided into the following zones:

      (1) Zone 1--That area of the reservoir which lies below the 800 contour (5 feet below minimum headwater).

      (2) Zone 2--That area of the reservoir and the tributary streams which lies between the 800 contour and the normal maximum headwater, elevation 813, plus that area which extends from the 813 contour for a landward distance of 15 feet, measured along the slope of the ground, or to the 815 contour whichever is reached first.

The intent of this specification is to clear area 1 for commercial navigation and area 2 for recreational boating.

A summary of various water elevations is given below:

Tellico Reservoir

Minimum headwater elevation	- 805
Normal maximum headwater elevation	- 813
Approximate 10-year flood elevation	- 814.8±
Maximum probable headwater elevation	- 817.5±

C. Clearing Instructions

1. All trees, brush, heavy weed growth, or similar material and wooden structures, foundations, chimneys, silos, fences, mill and recreational dams, abandoned bridge piers, and other obstructions are to be removed in the following manner except as modified by D.

   a. Trees--In zone 1, those trees whose tops extend above elevation 794 in area 1 and elevation 800 in area 2 shall be removed. Such trees shall be cleared in the most efficient manner, except that no stump shall extend above elevation 794 in area 1 and elevation 800 in area 2. In addition, all trees which are dead, unsound, or which are for any other reason likely to float up at a later date shall be removed. All other trees in zone 1 may remain in place. In zone 2, all trees shall be cut flush with the ground, if possible, and in no case shall the stump extend more than 4 inches above ground level. The intent of this specification is to clear zone 2 in a manner which will remove hazards to recreation and permit future mowing with a machine. R1 R1

   b. Brush, Bushes, Heavy Weed Growth, and Briars--In zone 1, only those stands of brush, bushes, heavy weed growth, and briars whose tops extend above elevation 794 in area 1 and elevation 800 in area 2 shall be removed. In addition, all similar growth in zone 1 which is dead, loose, or otherwise likely to float up at a later date shall be removed. All other brush, bushes, heavy weed growth, and briars in zone 1 may remain in place. In zone 2, all brush, bushes, heavy weed growth, and briars shall be machine cut. In areas where machine cutting is impracticable, cutting shall be flush with the ground (as close as possible) by hand. R1

   c. Wooden Structures--All wooden structures in zones 1 and 2 shall be completely removed to ground level.

   d. Foundations--Foundations in zone 1 having top elevations of 794 or less in area 1 or 800 or less in area 2 may be left in place. Those foundations whose top elevations exceed 794 in area 1 or 800 in area 2 shall be reduced to those elevations or to the elevation of surrounding ground, whichever is higher. In zone 2, all foundations shall be removed flush with the surrounding ground (as low as possible). R1 R1

e. Chimneys and Fences--In zone 1 all fences shall be removed and all chimneys shall be felled. Debris from felled chimneys may be left in place if it does not extend above elevation 794. All fences in zone 1 shall be removed as close to ground level as practicable, consistent with efficient operations. In zone 2, all chimneys and fences shall be removed flush with the surrounding ground (as low as possible). R1

f. Mill and Recreational Dams, Silos, and Bridge Piers--All mill and recreational dams, silos, and bridge piers whose top elevations are below 794 in area 1 or 800 in area 2 may remain in place. R1
Mill and recreational dams, silos, and bridge piers whose top elevations extend above elevation 794 in area 1 or elevation 800 in area 2 shall be reduced to those elevations or to the elevation of the surrounding ground whichever is higher. Bridge piers shall be removed if so specified on bridge plans. R1

g. Nonsalvable Material--All nonsalvable timber, logs, brush, tops, and other material which might float or collect floatage following impoundment in both zones 1 and 2 shall be piled and burned or otherwise disposed of in a satisfactory manner. Piling and burning operations shall be performed below elevation 813 and at such a time as to prevent damage to standing timber adjacent to the reservoir basin, and in accordance with applicable local regulations. Any exception to burning below elevation 813 must have prior approval of DED.

h. Wells and Cisterns--All wells and cisterns in zones 1 and 2 with tops above elevation 799 and all wells and cisterns on lands acquired above zone 2 shall be reduced to the elevation of the surrounding ground and filled to eliminate hazards to the public. A representative of Mapping Services Branch shall identify the wells and cisterns above elevation 813 on lands acquired.

D. Special Instructions and Exceptions to Clearing

1. In the interest of providing optimum sport fishing conditions, selected areas of growth and stumpage may be left in place. Such areas shall be coordinated with interested divisions and specifically identified by a representative of the Fisheries and Waterfowl Resources Branch. In no case shall the tops of growth and stumpage be higher than elevation 801. R1

2. In areas designated for shoreline improvement by deepening and filling, trees and stumps should be removed together, or stumps should be left high enough to permit most economical removal by bulldozer.

3. Reasonable care shall be taken to minimize construction operations above elevation 813. Insofar as practicable, scarring of riverbanks shall be eliminated, reducing the possibility of siltations.

4. Four safety landings requiring special treatment have been identified by the Division of Navigation Development and Regional Studies and are located on the attached map. Clearing of these areas will be inspected by a representative of the Division of Navigation Development and Regional Studies.

5. Logs shall be skidded in such a manner that will minimize siltation and turbidity. (TVA's snail darter conservation effort requires that siltation and turbidity be held to a minimum.) The clearing supervisor shall work closely with FFWD in order that logs and brush may be used by FFWD crews to construct fish attractors. R1

E. Marginal Drainage

1. All marshy areas and all depressions lying between the approximate 10-year flood elevation and elevation 810, which would be filled at the approximate 10-year flood and hold water forming isolated pools when the lake is lowered, shall be inspected by the Division of Environmental Planning to determine whether or not the area is to be connected with the main body of the reservoir by construction of suitable drainage ditches. If the location and size of the drainage ditches involve significant cost or construction difficulties, the Division of Environmental Planning and the Office of Engineering Design and Construction shall jointly determine the feasibility of draining these areas.

F. Interim Inspection

1. An interim inspection will be made during the course of clearing operations. OEDC will request the Divisions of Environmental Planning; Navigation Development and Regional Studies; Property and Services; Water Management; and Forestry, Fisheries, and Wildlife Development to participate in the inspection to determine the effectiveness of clearing operations underway and to recommend corrective measures, if necessary. R1

G. Final Reconditioning

1. The need for reconditioning the cleared areas prior to impoundment will depend upon regrowth of woody plants during the time lapse between initial clearing and filling of the reservoir and shall be determined by field inspection. The specific areas, if any, requiring rebrushing operations shall be defined by the engineering representative of the Division of Environmental Planning. Areas so defined shall be cleared as set forth in C of this specification.

2. Upon completion of clearing, corrective measures, where necessary, such as construction of check dams, terraces, grassing, and diversion ditches, shall be taken to prevent erosion at clearing roads and skid trails above zone 2.

3. After completion of construction there shall be a joint inspection by the Divisions of Construction; Engineering Design; Environmental Planning; Navigation Development and Regional Studies; Water Management; Property and Services; and Forestry, Fisheries, and Wildlife Development for approval of work. R1

December 1, 1975

Dr. James D. Williams
U.S. Department of the Interior
Fish and Wildlife Service
Office of Endangered Species
Washington, D.C. 20240

Dear Jim:

This is in response to our telephone conversation of November 24, 1975, regarding the Tellico Basin clearing.

As you may recall, there will be approximately 2,000 acres cleared by the time we have completed the operation. This amounts to 0.5 percent of the total 406,400-acre watershed below Chilhowee Dam to Little Tennessee River Mile 5, much of which, as you observed from the helicopter during your March 24, 1975, visit is agricultural land. This land has been subjected to extensive clearing, plowing, and cultivating for many years and has produced a correspondingly heavy silt load in the watercourses.

Sedimentation experts with the Tennessee Valley Authority's Division of Water Management have examined past records of sediment transported by the Little Tennessee River and have estimated the soil loss which could be produced by reservoir clearing. Prior to construction of any dams on the Little Tennessee River, average sediment loads were probably around 800,000 tons per year. Early Tennessee Valley Authority sediment measurements show that average annual sediment loads in the late 1930's averaged around 340,000 tons. Since the Fontana and Chilhowee impoundments, the average load declined to approximately 254,000 tons per year. Sediment production which could be attributable to the Tellico Reservoir clearing is estimated to be less than 1 percent of the sediment load.

We have also studied the clearing operations for possible effect on the darter and have concluded that there will be no significant impact on the darters or their normal life history functions resulting from the basin clearing. We have reviewed the basin clearing specifications by foresters and feel they are environmentally sound. Out of an abundance of caution,

two changes in the clearing plans have been made to even further reduce any potential soil loss. One was with respect to additional precautions regarding log skidding, and the other change was to lower the clearing elevation by two feet.

The cleared area adjacent to Coytee Spring has been fertilized and planted with grasses and is now covered with a healthy growth. As I mentioned in our phone conversation, I have assigned a staff forester, having a watershed management background, to work with the clearing supervisors making onsite inspections and suggesting modifications in procedure when necessary.

Sincerely,

Thomas H. Ripley, Director
Division of Forestry, Fisheries,
and Wildlife Development

CC: Mr. Kenneth Black
Regional Director
Bureau of Sport Fisheries and Wildlife
U.S. Fish and Wildlife Service
17 Executive Park Drive, NE.
Atlanta, Georgia 30329

96-141 O - 78 - 61

DECEMBER 17 1975

TVA 64 (05-9-65)

UNITED STATES GOVERNMENT

Memorandum TENNESSEE VALLEY AUTHORITY

TO : G. H. Kimmons, Manager of Engineering Design and Construction, 607 UB, Knoxville

FROM : Thomas H. Ripley, Director of Forestry, Fisheries, and Wildlife Development, Norris

DATE : December 15, 1975

SUBJECT: TELLICO PROJECT - COORDINATION OF RESERVOIR CLEARING ACTIVITIES

This confirms our discussions and understanding concerning the coordination of Tellico project construction activities and the snail darter conservation program.

We agree that TVA's clearing specifications for the Tellico project, Construction Specification No. TC-858, as strengthened by the October 1, 1975, additions to item D, Special Instructions and Exceptions to Clearing, are fully adequate to control the siltation potential from clearing and to prevent any detrimental effect to the snail darter. Out of an abundance of caution, however, we had suggested certain additional measures which could perhaps be taken to further assure that our conservation objectives will be attained. As we have since discussed, it is unfortunate that my roughly drafted guides or criteria were assumed to be recommendations for an across-the-board technical amendment of the construction specifications. They were intended only as a rough sketch of our thoughts and as a basis for discussion, and not as final or definitive criteria for the overall clearing operation. The agreed upon revised procedures now make this clear. A representative of this Division is in the field working with your people in the implementation of these additional precautions.

U S T V A

The following supplemental precautions will be observed in clearing designated sensitive areas:

1. Living vegetation will not be cut unless leaving it will produce a problem when the reservoir is filled.

2. Stumps will not be grubbed and/or land cleared to mineral soil except when necessary for access or some other specific purpose.

3. Sites disturbed to mineral soil will be fertilized and seeded as quickly as possible. Fertilizers and mixtures of grasses and other materials will conform to season and site needs.

4. To the extent feasible, heavy equipment will be kept out of streambeds, and off hillsides and riverbanks.

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

2

G. H. Kimmons
December 15, 1975

TELLICO PROJECT - COORDINATION OF RESERVOIR CLEARING ACTIVITIES

5. Where removal is needed, streamside and steep hillside vegetation (timber) will be skidded by cable or removed by other appropriate method.

THR:JSB
CC: M. I. Foster, 511 AB-K
J. P. Taylor, 109 WCB-K

12-17-75--cb
CC: R. H. Dunham, 505 UB
H. H. Mull, 707 UB

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May 13, 1976

Mr. Phillip S. Morgan
Acting Regional Director
Fish and Wildlife Service
United States Department of the Interior
17 Executive Park Drive, N.E.
Atlanta, Georgia 30329

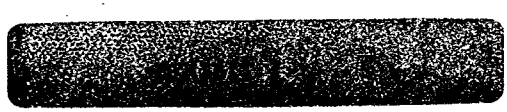
Dear Mr. Morgan:

This is in reply to your letter of April 27, 1976, concerning consultation between TVA and the Department of the Interior under the Endangered Species Act, as it pertains to the Tellico Dam project and its potential effects on the snail darter.

As you no doubt are aware, TVA in carrying out the project has done everything humanly possible to conserve the snail darter. These conservation efforts began shortly after the discovery of the snail darter and well over a year before its listing as endangered. Consultation with the Department of the Interior began in late 1974. On occasions too numerous to catalog in a letter, we have forwarded to various offices of the Fish and Wildlife Service involved materials and information about our snail darter conservation program, and sought their comments and assistance. This includes our letters of August 15 and 20, 1975, forwarding complete details of our conservation program, and our letter of January 22, 1976, responding in full to Mr. Greenwalt's October 29, 1975, letter in which he listed the information needed by the Service for its consultation under section 7. TVA's reply to that request contained several hundred pages of data.

In light of all this, we believe the purposes of the interagency consultation stated in the new guidelines are being fulfilled. As stated on page 2 of the guidelines:

> The consultation and assistance process proposed here is viewed as a means of providing responsible Federal agencies with the benefit of information, biological opinions, and expertise available in the FWS and the NMFS on the effects of actions upon listed species and their habitats.



We feel that in completing the project TVA has explored all possible options to prevent extinction of the snail darter and are confident that our efforts will be successful. Given the situation that exists with respect to this project, which is 80 percent complete and which involves a public investment of $80 million, there seems to us to be no other realistic and feasible option than to complete the project as scheduled, and we have so informed Congress and OMB. This project is not one which allows for alteration in detail or design which could prevent alteration or modification of the presently listed critical habitat of the snail darter, which was discovered after the project was over 50 percent complete and listed as endangered after the project was 75 percent complete. Unlike a highway or other flexible project, the dam cannot be moved; nor can the reservoir level be altered. The basic design of the project is to make Tellico Reservoir an integral part of Fort Loudoun Reservoir and it must necessarily have the same water level. The only real choices available are to complete or abandon the project, and Congress, with all the relevant information before it, has directed TVA to complete the project. We know of no valid reason to alter that view, and we certainly do not construe the Endangered Species Act to require the outright abandonment of a project in such an advanced stage of completion.

Although we feel that we have fully and exhaustively explored and consulted with the Department of the Interior with regard to all options available to complete the project and save the darter, we shall be happy to consult further if you have any additional suggestions or plans which will allow completion of the project in accordance with our congressional mandate and conserve the snail darter.

Sincerely yours,

Lynn Seeber
General Manager

CC: Mr. Nathaniel P. Reed
Assistant Secretary
Fish and Wildlife and Parks
United States Department of the Interior
Washington, D.C. 20240

Mr. Keith Schreiner
Associate Director, Federal Assistance
Fish and Wildlife Service
United States Department of the Interior
Washington, D.C. 20240

July 15, 1976

Mr. Kenneth E. Black
Regional Director
Fish and Wildlife Service
17 Executive Park Drive, N.E.
Atlanta, Georgia 30329

Dear Mr. Black:

This is in reply to your letter of May 27, 1976, regarding the Tellico project.

As we stated in our May 13 letter to Phillip S. Morgan of your office, although we feel that TVA has fully and exhaustively explored and consulted with the Department of the Interior on all options available to complete the project and conserve the snail darter, we shall be glad to consult further if you have any additional suggestions or plans to conserve the darter which will also allow completion of the project in accordance with our congressional mandate. The alternatives which you suggested in your letter of May 27 do not allow completion of the project.

We believe that our position is fully consistent with the requirements of the Endangered Species Act. As you know, the United States District Court for the Eastern District of Tennessee, Northern Division, in the case of Hill v. Tennessee Valley Authority, Civil No. 3-76-48 (filed Feb. 18, 1976), held that the Endangered Species Act did not prevent completion of the Tellico project. In so doing, the court found that TVA had fulfilled the consultation requirements under the act and had made a good-faith effort to conserve the snail darter. Additionally, the court said:

> Completion of the dam and impoundment of the river are integral parts of a project begun almost a decade ago. TVA has been moving toward this goal since ground was first broken. When the snail darter was listed on the endangered species list in November 1975, TVA was fairly close to completion of the project which has been consistently funded by Congress since 1966.

> The nature of the project is such that there are no alternatives to impoundment of the reservoir, short of scrapping the entire project. Modifications or alterations to the project cannot be made at this time which will insure compliance with the Endangered Species Act. Requiring TVA to consult with other agencies about alternatives not reasonably available to it would be to require TVA to perform a useless gesture [Memorandum Decision at 11].

We are enclosing a copy of the court's opinion for your information.

If you feel that additional matters about the completion of the project and the conservation of the snail darter need to be discussed between TVA and the Fish and Wildlife Service, we shall be happy to consult on those matters at a mutually convenient time. Dr. Thomas H. Ripley, Director of TVA's Division of Forestry, Fisheries, and Wildlife Development, and TVA's liaison officer for endangered species matters, FTS telephone number 852-3333, will be glad to discuss with you arrangements to do so.

Sinceraly yours,

Lynn Seeber
General Manager

TELLICO DAM AND RESERVOIR CUMULATIVE CONSTRUCTION COSTS
BY YEARS IN THOUSANDS OF DOLLARS
(WITH APPROPRIATIONS)

	ACTUAL										ESTIMATED		
CUMULATIVE TO:	6/30 1967	6/30 1968	6/30 1969	6/30 1970	6/30 1971	6/30 1972	6/30 1973	6/30 1974	6/30 1975	9/30 1976	9/30 1977	9/30 1978	9/30 1979	TOTAL COST
Land Acquisition	707	4,809	6,643	10,066	12,450	15,423	16,931	19,109	21,910	25,262	25,623	25,700	25,700	25,700
Reservoir Adjustments, Clearing and Rim Treatment	178	-	571	2,423	5,241	7,823	8,572	10,094	17,209	30,681	38,304	42,404	42,500	42,500
Main Dam, Spillway, and Auxiliary Dams	228	2,753	3,947	3,983	3,984	4,032	4,030	5,630	9,851	21,302	22,699	23,300	23,300	23,300
Interreservoir Canal, Channel Improvements, Public-Use Facilities, and Other Structures	109	109	109	109	109	109	109	128	300	2,533	5,008	10,708	12,100	12,100
Construction Plant, Equipment and Inventories	576	1,588	1,449	1,736	1,463	637	809	265	191	99	302	-	-	-
Construction Supervision, General Engineering, and Administration	982	2,221	2,870	3,362	3,814	4,481	4,957	5,830	7,680	11,859	13,710	15,042	15,400	15,400
TOTAL EXPENDITURES	2,780	11,480	15,589	21,679	27,061	32,505	35,408*	41,056	57,141	91,736	105,646	117,154	119,000	119,000
TOTAL APPROPRIATIONS	4,093	10,340	17,978	22,400	27,297	35,297	46,547	46,547	63,447	92,589	102,289	113,789	115,635**	

* Major construction was halted by a 21-month injunction, extending from January 1972 to November 1973, during the litigation challenging the need for and adequacy of TVA's environmental impact statement, which was ultimately resolved in TVA's favor by the courts.

** The difference in total appropriations ($115,635,000) and the total project cost ($119,000,000) is $3,365,000. This difference has been funded from unobligated balances, efficiencies, and slippages in financing other TVA programs during the construction of the Tellico project.

EXHIBIT 8

THE FRANK H. McCLUNG MUSEUM
THE UNIVERSITY OF TENNESSEE, KNOXVILLE 37916

July 20, 1977

The Honorable John C. Culver
Chairman, Subcommittee on
Resource Protection
The United States Senate
Washington, D.C. 20510

Dear Senator Culver:

It has come to my attention that Dr. Jefferson Chapman, a Research Assistant Professor in the Department of Anthropology of The University of Tennessee, Knoxville, intends to appear before your Subcommittee in opposition to completion of TVA's Tellico Dam and Reservoir Project, which has been substantially completed on the lower 33 miles of the Little Tennessee River. Since the inception of the project in 1967, I have served as Principal Investigator of a very extensive archaeological survey and research program which has been carried on in the project area, and Dr. Chapman has participated in some phases of the program along with a number of other archaeologists working under my direction. I am Director of the McClung Museum at the University and am a Professor of Anthropology in that department which I formerly headed. The appearance of Dr. Chapman is not sanctioned by the McClung Museum or by me as Principal Investigator of the Tellico Archaeological Project. He is appearing simply as a concerned citizen, and the views he expresses may not coincide with my own.

Because of the Tellico project, TVA has provided the University with research funds in the approximate amount of $960,000, and the National Park Service has added an additional $497,000. This has made it possible to plan and carry out an orderly and very extensive program of archaeological survey and investigation of the signigicant resources in the project area. As a result, a great volume of archaeological and historical information as well as artifactual material has been recovered and new insight has been gained into the prehistoric and historic Indian occupation of the area. This has been particularly true regarding the history of the Overhill Cherokees, a number of whose towns were once located in this section of the Little Tennessee River Valley, although other Overhill Cherokee towns existed beyond the limits of the project area, and some of these sites remain for future investigation.

Of principal significance in evaluating the results of this program is the fact that much of the information and material which has been recovered was unavailable when the land was in private ownership. It was being lost and destroyed by erosion, cultivation, theft, natural deterioration, and improper handling by unscientifically trained persons. If the project

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should not be completed and the land should be returned to private ownership, it is believed that this process of loss and destruction would be resumed, doubtless on an accelerated basis since our work has pinpointed the location of sites which formerly were known only in a general way./ Indeed, "pot hunters" and looters have been a problem during the actual conduct of our work. The Citico site is a case in point, and I mention it since it alone among the principal sites might be adversely affected by reservoir fluctuation if impoundment occurs. Following the completion of our work performed during the years of 1967 and 1968 and before possession of the property was obtained by TVA, the site was extensively looted by amateur relic hunters. This has continued to some degree after TVA obtained possession of the property despite efforts of its public safety officers to drive the looters from the site. This extensive damage to the site, when coupled with the fact that we have obtained an adequate sampling of the material and information which it contained, greatly lessens the concern which I might otherwise have over the possible effects of the proposed reservoir.

There are a significant number of people in the field of archaeology who regard inundation by a reservoir as preferable to continued destruction of sites by looting and natural forces. Although the effects of inundation are not fully known and an area has been provided to test these effects in the Tellico project, it is well established that certain materials essential to archaeological research such as carbonized matter, stone, flint, and soil stains survive after thousands of years following inundation by water. The Early Archaic and Early Woodland sites investigated by Dr. Chapman are examples. There such materials were discovered under 10 to 15 feet of alluvial deposit, laid down by repeated flooding over a time span of 9,500 years. In short, inundation is not inevitably destruction, and may be considered preferable to the damage and destruction of sites which occurs from looting, cultivation, and erosion./ This is particularly true of the later cultural occupations such as the Dallas phase of the Mississippian period and the still later occupation by the Cherokees. These occupations are not deeply buried and are evident on the surface.

It is generally accepted that the recovery of a 10 percent sampling of material from a given site is sufficient for a scientific interpretation of the occupation or occupations which once existed there. Fully adequate samples of 10 percent or more have been recovered from such major sites as Citico, Chota, Toqua, Tomotley, etc. One hundred percent site excavation is unnecessary from a scientific viewpoint, and cannot be justified from the standpoint of policy where public funds are being expended./

The archaeological research program in Tellico has been adequately funded. Indeed, the guidelines contained in the Moss-Bennett Bill have been substantially exceeded, and I know of no other river basin project in the United States which has received so extensive--or expensive--an investigation. Funding provided because of the project has enabled us to make significant discoveries and the recovery of information and artifacts has provided us with an adequate insight into the aboriginal occupation of the project area. Although additional research could be performed, the completion of the project and the filling of the reservoir would not deprive the scientific community or the public in general of the opportunity of gaining an adequate understanding of that occupation. The means for that understanding have already been achieved.

Sincerely,

Dr. A. K. Guthe
Principal Investigator
Tellico Archaeological Project

Director, McClung Museum
and Professor of Anthropology
The University of Tennessee
Knoxville, Tennessee

November 14, 1977

The Honorable Malcolm Wallop
The United States Senate
Washington, D.C. 20510

Dear Senator Wallop:

This is in response to your October 13 and October 22 letters in which you requested a summary of TVA's land acquisition policies and procedures, and particularly those used in the Tellico Dam and Reservoir acquisitions. You enclosed a copy of a letter with attachments from Thomas Moser and asked for specific information on the condemnation of his property.

We appreciate this opportunity to explain our land acquisition practices in general, and to point out the reasons why lands were acquired for the Tellico project which will not actually be inundated by the waters of the reservoir.

In creating the Tennessee Valley Authority in 1933, Congress granted TVA's Board of Directors the power to acquire in the name of the United States all property which the Board deemed necessary to carry out the purposes of the Act. The broad purposes of the TVA Act, as they related to land acquisition, were well summarized by the Supreme Court in a case which arose as a result of TVA's acquisition of some 44,000 acres of land located between our Fontana Dam project and the Great Smoky Mountains National Park. Of course, any project of necessity involves acquiring more land than that devoted to the principal project purpose and the 44,000 acres, like some of that acquired for the Tellico project, was not to be flooded by the reservoir, but was to be used for other purposes consistent with TVA's statutory responsibilities. In so considering the acquisition, the Supreme Court said:

> [The TVA] Act does far more than authorize the T.V.A. to build isolated dams. The broad responsibilities placed on the Authority relate to navigability, flood control, reforestation, marginal lands, and agricultural and industrial development

EXHIBIT 10

> of the whole Tennessee Valley. . . . All of the Authority's actions in these respects were to be directed towards "development of the natural resources of the Tennessee River drainage basin and of such adjoining territory as may be related to or materially affected by the development consequent to this Act . . . all for the general purpose of fostering an orderly and proper physical, economic and social development of said areas." To discharge its responsibilities the T.V.A. was granted "such powers as may be necessary or appropriate" for their exercise. . . . Section 4(i) of the Act empowers the Authority to condemn specified types of property and concludes by referring to "all property that it [the Authority] deems necessary for carrying out the purposes of this Act." To make clear beyond any doubt the T.V.A.'s broad power, Congress in § 25 . . . authorized the Authority to file proceedings, such as the ones before us, "for the acquisition by condemnation of any lands, easements, or rights of way which in the opinion of the corporation are necessary to carry out the provisions of this Act" [United States ex rel. TVA v. Welch, 327 U.S. 546, 553-54 (1946)].

It is this charter which guides our decisions concerning the land needed to maximize the public benefits from a TVA project. Thus, in connection with multipurpose water resource projects like Tellico, which are designed to foster the physical, economic, and social development of the areas affected, TVA acquires more land than will be inundated, but only that land necessary to accomplish the overall goals of the project.

The acquisition of lands in addition to those to be inundated in order that project objectives might be realized received an early review by the Congress through a Joint Committee which conducted an extensive investigation of TVA in 1939. In reviewing TVA's first two reservoir projects, Norris and Wheeler, in which the amount of land acquired was approximately double the acreage to be flooded, the Committee recognized the beneficial use of some of the lands acquired for the construction of parks, noting that

recreation in the Valley was an important potential source of health and income. Big Ridge Park on Norris Lake was described as providing "a 45-acre lake, with 4,500 acres of game refuge, and swimming and boating facilities" (Report of the Joint Comm. Investigating the Tennessee Valley Authority, S. Doc. No. 56, 75th Cong., 1st Sess., pt. 1, at 253 (1939)).

The Tellico project, in addition to providing flood control and electric power benefits, will create a 9-foot-deep navigation channel providing opportunities for commercial and industrial development in an area now characterized by low incomes and the outmigration of young people. Based upon development in other TVA reservoirs, we estimate that 4,000 basic industrial jobs and 2,600 trades and service jobs will be created over a 25-year development period. Other benefits will accrue from water supply availability, fish and wildlife development, and shoreline and recreation development. Accordingly, when the Tellico project was planned, our Board decided that approximately 33,000 acres should be acquired, about half of which would be inundated by the reservoir at full pool, with the balance to be used for shoreline protection, recreation development, and industrial and residential use. The acquisition of this land was necessary to achieve maximum public benefit from the project.

The scope and purposes of the Tellico project, as well as the land acquisition policies employed, have been discussed at length in Congress. During the 1966 hearings before the House Appropriations Committee, TVA furnished a detailed statement setting forth all relevant facts, including plans for resale and development of portions of land to be acquired as a means of realizing the full benefits afforded by the project. The statement contained the following summary with regard to land acquisition resale and development:

SHORELINE LANDS

> TVA believes the Tellico project will contribute greatly to the industrial development of the area and proposes to follow a land acquisition pattern which will assure that sites needed for industry are reserved for that purpose. The amount of land acquired by TVA for the project is expected to be about twice the area inundated, as has been the case in most other reservoirs. However,

> advance planning will assure a more effective use of the shoreline lands than in the past. Plans for the use of these lands will be developed in full cooperation with State and local officials to insure that sites best suited for industry are not dissipated for less vital purposes and that there are adequate provisions for public and private recreation, homesites, and other purposes.
>
> The plan to acquire key lands for industrial and recreation development and resell them as demand for such property increases reflects the public purpose of the project in meeting the serious need for measures to speed growth in employment and general economic development in this part of eastern Tennessee.
>
> Proceeds from the sale of lakeshore lands, presently estimated at $10,900,000, would be returned to the U.S. Treasury as an offset against the cost of the project [Hearings on Pub. Works Appropriations for 1967 Before a Subcomm. of the House Comm. on Appropriations, 89th Cong., 2d Sess., pt. 2, 761-66 at 765 (1966)].

Acquisition of land for Tellico began in 1967 and was completed in 1976. Procedures in acquiring land were governed by a policy statement set by our Board, a copy of which is enclosed. The basic policies which we have followed were developed initially in the 1930's and were last revised in 1971 to reflect conformity with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Under our policy, TVA land appraisers are instructed to appraise land and land rights in such a way as to encourage voluntary conveyances. We believe that we have had an outstandingly successful record in property acquisition, and the Tellico project is no exception. All or part of 750 tracts in the Tellico project were acquired from landowners in fee simple. Of these, 692, or 92 percent, were acquired by negotiation and voluntary conveyance. It was necessary to condemn only 58 tracts, or 8 percent. Of those, 26 were necessary only because of the condition of title and not because of a dispute

as to price. Only 32, or about 4 percent of all tracts, were condemned because of a disagreement as to the value of the property. In the trial of those 32 cases, the court awarded less than TVA had offered in 6 cases and more in 26 cases. However, the average increase in the latter group of cases was only 7 percent. We believe that the high percentage of voluntary conveyances and the trial results clearly demonstrate that TVA dealt fairly with the landowners affected by this project.

As to the property acquired from Mr. Moser, which was mentioned in your letter and enclosures, the facts are as follows: the Moser tract contained a dwelling house located on 4.7 acres of land at the north edge of the village of Vonore in Monroe County. Upon impoundment of the lake, the front portion of the house will be inundated, as will the public road which serves it. Utility service lines will also be inundated. There will be no road access to the small remainder of the tract which will become a part of the shoreline of the lake.

TVA first sought to purchase the Moser property in 1969, and after negotiations extending over a period of two years proved unsuccessful, condemnation proceedings were instituted in Federal court in Knoxville in 1971. Under applicable law, title to the property passed to the United States at that time, but since immediate possession was not needed, Mr. Moser was permitted to continue in occupancy.

A TVA appraiser had placed a value of $12,550 on the property, and that amount was deposited with the court as our estimate of just compensation. Mr. Moser was the sole landowner plaintiff in a suit brought by the Environmental Defense Fund and others in an attempt to halt the project. At the request of Mr. Moser and his attorney, trial of the condemnation case was deferred pending the outcome of the environmental litigation. After the environmental case was decided in TVA's favor in 1973, the condemnation case was tried before a commission appointed by the court. The realtor who appeared as a witness on Mr. Moser's behalf testified to a value of $16,500. After hearing the testimony offered by both parties and after personally inspecting the property, the commission awarded $14,500, and Mr. Moser filed no appeal to the award. With interest on the difference between the award and the amount deposited, the sum of $14,718.08 was sent to Mr. Moser by the clerk of the court in June 1973. Mr. Moser did not see fit to use this money to purchase replacement property, but instead returned it to the court where it still remains. Of course, it is subject to withdrawal by Mr. Moser at any time.

After the full amount due Mr. Moser had been determined by the court, TVA's relocation assistance people got in touch with him in July 1973 to offer our aid in finding replacement property and to explain the relocation assistance to which he was entitled. He was informed in writing that TVA would pay up to $2,000 in addition to the court judgment if he spent that much to purchase existing housing comparable in age, size, etc., to his former home. He was further informed that if comparable housing could not be located, TVA would pay up to $7,000 above the amount of the judgment which could be applied to the purchase of a new dwelling costing up to $21,500. He was also given the option of purchasing for a small sum the salvage rights to the dwelling house which we had condemned and which could be moved to another site. Our relocation people found a site in the immediate neighborhood which could have been purchased and to which the house could have been moved. However, Mr. Moser resisted all efforts to relocate and still occupies the house and property which have been owned by the United States since 1971. We remain ready, of course, to assist Mr. Moser in finding other replacement property. Three hundred thirty-eight families have moved from the project area. Only Mr. Moser and two others, one of whom appeared before the Senate Subcommittee on Resource Protection in opposition to Tellico, have refused to vacate the properties which they formerly owned.

One final point concerning the material Mr. Moser sent to you should be mentioned. The Tellico Dam is not built on an earthquake fault. While it is true that a fault does exist within a mile of the site where Tellico Dam has been completed, it does not pose a hazard to the project. As shown by the enclosed excerpts from the environmental impact statement, historically neither this fault nor any other fault in the Tennessee Valley has been active. The accepted methods for making such determinations show that the last movement of the fault was at least 280-290 million years ago.

We appreciate your giving us an opportunity to explain these aspects of the Tellico project, and if there is any other material or information which would be helpful to you, please let us know.

Sincerely yours,

Aubrey J. Wagner
Chairman

Enclosures

DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT
ANDREW JACKSON STATE OFFICE BUILDING · NASHVILLE, TENNESSEE 37219

March 16, 1977

The Honorable William C. Watson
Legislative Plaza
Suite 22
Nashville, TN 37219

Dear Representative Watson:

This is in response to your recent query regarding the proposed industrial park and port facility on the Little Tennessee River in Monroe County Tennessee.

As the industrial and economic development agency of Tennessee State Government, we consider this proposed park and port facility to have one of the highest potentials in the state in terms of future industrial development. The present proposal is for a site of 300 acres and eventually public port facilities. However, TVA owns approximately 5,000 acres of choice industrial land in this area and most of this is available when needed for industrial purposes. This means that when we have major industrial projects requiring substantial acreages of land, we can offer them up to 5,000 acres of land with excellent water, highway and rail facilities.

The Monroe County Quarterly Court has made a commitment to acquire the first 300 acres from TVA and has applied to us for ARC funds for development purposes. Governor Blanton has approved an initial grant for $500,000 and has recommended it to ARC for approval. Preliminary approval is expected by ARC on March 21, 1977.*

Obviously, we and the Monroe County Quarterly Court are concerned about the uncertainty which the stoppage of the Tellico Dam construction creates for this high priority industrial site development project and hope that the decision on the completion of the dam can be made with minimum delay.

Sincerely,

Thomas D. Benson

Thomas D. Benson, Commissioner
Department of Economic and
Community Development

TDB/ls *These funds were approved on Monday, March 21, 1977

[redacted]

TELLICO PROJECT

ECONOMIC ANALYSIS[1]

Annual Costs	
Interest and amortization	$2,045,000
Operation and maintenance, including replacements	205,000
Total Annual Costs	$2,250,000
Direct Annual Benefits	
Flood control	$ 505,000
Navigation	400,000
Power	400,000
Recreation	1,440,000
Fish and wildlife	220,000
Water supply	70,000
Shoreline development	710,000
Redevelopment	15,000
Total Direct Annual Benefits	$3,760,000
Benefit-Cost Ratio for Direct Benefits	1.7:1
Secondary Annual Benefits	
Enhanced employment	$3,650,000
Total Annual Benefits	$7,410,000
Benefit-Cost Ratio, Including Secondary Benefits	3:1

1. Based upon a service life of 100 years, discount rates of 4 percent for power and 3-1/4 percent for other purposes per requirements of Water Resources Council standard 704.39(d), and 1968 price levels for both benefits and costs (capital amount $54,000,000).

PPBr
9/22/71

EXHIBIT 12

FLOOD CONTROL

The greatest actual and potential urban damage from floods in the Tennessee Valley has been in Chattanooga. Major tributary reservoirs control 63 percent of the drainage area above Chattanooga, providing flood storage on January 1 equivalent to 8.4 inches over their watersheds. The remaining 37 percent of the drainage above Chattanooga has relatively little control by three main river reservoirs, which provide flood storage equivalent to an average of only 1.9 inches. Thus, a great storm concentrated below the main tributary reservoirs would provide a grave threat to Chattanooga.

Addition of flood storage anywhere in the system adds flexibility to overall operation capability. The addition of Tellico would be particularly advantageous because it would be located in the area of least present control.

The Fort Loudoun project is one of the main river dams upstream from Chattanooga. Because of the interconnecting canal between the Fort Loudoun and Tellico Reservoirs, storage capacity could be interchanged to help compensate for nonuniform distributions of storm runoff. For concentrated floods falling in either drainage area, the interconnecting canal allows an operation providing control similar to what would be realized from adding an additional reservoir to the main stem and two reservoirs to the Little Tennessee River.

Tellico Reservoir alone would add more flood storage reservation to the system than what is presently provided by the Fort Loudoun Reservoir, amounting to 126,000 acre-feet (elevations 807-815) during the winter flood season. It would also aid in reducing flood damages to smaller communities and to agricultural lands along the Tennessee River.

The value of the flood detention capacity which would be provided by the Tellico project is estimated to be $4.02 per acre-foot, which gives an equivalent annual value of approximately $505,000 for the 126,000 acre-feet. This value is based upon an analysis of the effectiveness of the project, as a part of the system, in the reduction of flood damages.

NAVIGATION

The navigation benefit attributable to a navigation project is based on the savings which would be derived from moving various commodities over a route involving barges as compared with the least expensive alternative route. Generally, the next cheapest alternative is via all-rail, although a truck or combination alternative sometimes exists. Total costs to the shipper (1) for the barge route are made up of the barge rate plus rates for any necessary ancillary rail, truck, or transfer service and (2) for the alternative route are

the rail (or truck) rate plus any switching or service charges. The transportation saving is the difference by which the first is lower than the second cost. Published rates are used when applicable; estimated rates are used otherwise.

The navigation benefits for the Tellico project are based on a careful analysis of traffic and shipper savings elsewhere on the navigable Tennessee waterway and on estimates of the traffic potential of the industrial sites developed by the Tellico project. These sites, totaling some 5,000 acres, would generate an annual equivalent benefit of $400,000.

POWER

The power benefits from the Tellico project would be the additional energy which could be generated at the Fort Loudoun powerhouse due to the diversion of the Little Tennessee River flows, through the canal, to the Fort Loudoun Reservoir. By this means about 85 percent of the potential energy production at the Tellico site can be gained without installing generating units at the Tellico project.

Hydro power benefits usually are measured by the cost of adding an equivalent amount of generating capacity and energy by the best alternative available. In this case, since no capacity would be added to the system, the value of the additional hydro energy has been measured in terms of the savings in system production expense brought about by the reduction in kilowatt-hours which otherwise would have to be produced by existing and future system steam plants. On this basis, the additional 200,000,000 kilowatt-hours of power which would be generated yearly at the Fort Loudoun Dam as a result of the Tellico project would have an annual value of approximately $400,000. Since this figure represents only the recent cost of the best alternative means of producing this energy, it is a minimal estimate of benefit. The value of the power produced would be greater; and because the costs of alternative sources of power continue to increase substantially, the alternative cost used here as the power benefit is most likely understated for future years.

RECREATION

General recreation benefits for the project are exclusive of fishing and hunting gains and losses which are considered separately elsewhere in the evaluation. Recreation specialists estimated the usage which could be expected for the remaining types of water-based recreation. Use of access areas and other public recreation facilities has been evaluated and values ranging from 50 cents to $1.50 have been placed on visitation estimates depending upon the type of use and facilities involved. These values when applied to the estimated annual use, which would eventually reach some 1.5 million visits, result in an annual equivalent benefit of $1,440,000.

The following classes of land within the Tellico purchase boundary will be related to recreation.

Recreational Area	Approximate Acreage
TVA access	700
General recreation -	
Scenic protection areas	11,500
State park	1,000
County park	200
Commercial recreation	1,000
	14,400

The ten TVA access areas will be developed recreation sites. Following is an estimate of facilities which will be provided at these sites.

Camping - Sites	600
- Bathhouses	18
Picnic tables	215
Launching ramps - 20 Foot	6
- 30 Foot	11
Landing piers	14
Miles of walkway	10

FISH AND WILDLIFE

There are three categories within the fish and wildlife benefit: (1) sport fishing, (2) commercial fishing, and (3) waterfowl hunting. The initial annual value of sport fishing would be $175,000, consisting of $165,000 warmwater fishing and $10,000 coldwater fishing. These values are based on the Inter-Agency schedule of $1 per trip for warmwater fishing and $2 per trip for trout. On the same basis, the present river fishery is worth $53,350.

Fisherman use of both the river and the lake could be expected to increase in the coming years. TVA experience indicates a reasonable rate of increased use is 3 percent a year for 10 years, 1.5 percent for the next 15, and a leveling off thereafter. For the Tellico project, average annual value over the life of the project would amount to $250,000 and for the present river fishery, $85,600. Subtracting the two leaves an annual net sport fishery benefit of $194,400.

Presently, there is virtually no commercial fishing on the Little Tennessee River but fisheries specialists estimate that some $28,000 worth of commercial fish would be available annually from the reservoir.

Most of the area to be impounded is now agricultural lands suitable for rabbit, dove, and quail hunting. After deducing present river area, estimated hunting losses approximate 2,586 hunter-days valued at $1.50 each for a total present value of $3,880. Unless the state develops small dove-shooting areas, the only postimpoundment wildlife value will be a few hundred waterfowl hunting trips worth about $1,200.

The net annual fish and wildlife benefit estimate for the Tellico project is $220,000.

WATER SUPPLY

The minimum flow of the Little Tennessee River in the reach to be impounded by Tellico Dam is considerably greater than expected future water supply requirements for the area. Therefore, there is no benefit claimed for additional water made available by the reservoir. The elevation of water in the reservoir as compared with the stream channel, however, would result in savings derived from reductions in power requirements for pumping of municipal and industrial water. The average reduction in pumping head would be 30 feet or more. In addition, the heights of intakes could be reduced from about 40 to 15 feet which would allow for savings in intake concrete, screens, pump columns, etc. The equivalent annual value of these benefits is approximately $70,000.

SHORELINE DEVELOPMENT BENEFITS

Shoreline development, also called shoreline land value enhancement, is an evaluation made in terms of anticipated increases in market value as a result of enhanced use potential created by the project. The existence of this enhancement is amply documented by experience with the present TVA reservoir system. The enhancement is claimed as a project benefit only for those lands which do not have to be in a restrictive use to achieve other project benefits.

In purchasing land for a reservoir project, such as Tellico, TVA acquires land adjacent to the reservoir to (1) assure maximum development and use of the reservoir for purposes of public benefit, (2) prevent unreasonable severance damages, and (3) avoid undue expense in providing access to isolated tracts.

Land value enhancement is estimated by experienced land appraisers based upon careful examination of the lands involved. Drawing on knowledge gained by past experience, all lands are considered from standpoints of desirability and probable sequence of development, delineating lakeshore zones into development tracts. This development plan is based upon an overall land use allocation made by the various planning and program organizations involved, including other federal, state, and local agencies.

Through comparisons with real estate markets in similar existing reservoirs, adjustments are made for population, access, and other variable factors to determine potential land values. Using existing reservoirs as guides, estimates are then made of the time required to reach the highest and best use values. The total potential land

value must be adjusted for the expense of sales, closing costs, and access roads. In TVA's experience, these costs average 10 to 15 percent of the gross potential. This adjusted potential land value is discounted to its present worth through the standard use of compound interest and annuity tables. The resulting value is the shoreline development benefit attributable to the project. The value of the purchased land in its present state is included as a part of the project cost.

Some lands outside the project purchase boundary would also be enhanced in value as a result of the project. The increase in value accruing to these adjoining lands is treated as a benefit attributable to the project. These two types of shoreline development combine to produce an equivalent annual benefit of approximately $710,000.

REDEVELOPMENT BENEFITS

The construction, operation, and maintenance of the Tellico project will provide employment to some of the otherwise subemployed labor in the area. Based on an analysis of employment applications and other data from the area as compared with prospective employment required for the project, it was estimated that $500,000 of project wages would represent fuller employment of the otherwise subemployed. The $15,000 redevelopment benefit quoted in the Tellico draft environmental statement represents the annual equivalent of this value.

ENHANCED EMPLOYMENT

In a subregion that is experiencing net out-migration of workers but yet has unemployment and underemployment there exists immobilized and underutilized national and regional human resources. If these resources are to be fully and efficiently utilized, it must take place in the subregion. The Tellico project will add to the opportunities for doing this. It will provide a navigable waterway to a potential industrial area about 20 miles from the main river, providing assured water levels and creating sites along the shorelines ideal for industrial development.

The enhanced employment benefit from more productive use of the subemployed in project-induced new jobs is estimated by (1) eliminating from the benefit computations those categories of jobs which have skill requirements that would keep them from being filled from the subemployed labor force and (2) crediting for the remaining jobs the difference between wages to be paid and an average alternative subemployment wage of $3,300 per year. In the case of the Tellico project, the time period used for estimating the benefit was conservatively limited to 25 years rather than the full life of the project. These enhanced employment benefits are discounted for the buildup period and credited to the project only in proportion to the project's share of the public investments considered necessary to accommodate the new jobs.

It is necessary therefore to forecast the types of industry that would find locational advantages in the combination to be created by the project. The most important characteristic of this combination of factors is that the location is the closest possible to eastern markets but still on the inland waterway system where TVA power is available. Ten types of manufacturing industries were identified which would find advantages in the conditions created by the Tellico project. The identified industries were characterized by manufacturing operations which (1) have inputs of raw materials that are bargeable, (2) require cold, industrially pure water in abundant supply, (3) have sufficient need for low-cost power to make it a location factor, (4) have annual wages per employee above the average for Tennessee, (5) have shown rapid growth in the past few years, and (6) have strong markets easily reachable by land in the Southwest. The number of employees for an average-size plant in these industries and their typical customer and supplying satellites aggregated approximately 10,000. While this estimate was used for planning purposes, a more conservative minimum level of 40 percent of the estimated potential was used for benefit computation. The minimum 4,000 industrial jobs at 1966 pay levels would produce an annual payroll of about $27,000,000. Typical regional relationships between incremental growth in industrial jobs and incremental growth in trade and service jobs indicate an additional 2,600 nonmanufacturing, nonfarm jobs with an annual payroll of $16,000,000 would be induced. Assuming a growth curve similar to that of the private industrial investment on the Tennessee River waterway for a 25-year period, the above procedure and employment estimates produced an enhanced employment benefit with an annual equivalent of $3,650,000.

96-141 O - 78 - 63

Tennessee Valley Authority

Tellico Project

Project Authorization and Planning Documentation:

Public law and date: Tennessee Valley Authority Act of 1933 - May 18, 1933
Environmental Impact Statement and date: Final Environmental Impact Statement filed with CEQ on February 10, 1972
Phase I Design Memorandum/Definite Plan Report and date: N/A

Location: The Tellico Dam site is in Loudon County, Tennessee, near Lenoir City at mile 0.3 on the Little Tennessee River.

Project Description and Purpose: The Tellico Dam will create a reservoir extending upstream approximately 33 miles and connecting with the Fort Loudoun Reservoir by a short canal. The canal enables the navigation and power features of the project to be attained without construction of a navigation lock or powerhouse and valuable flexibility is achieved in TVA flood control operations. The project will add 126,000 acre-feet of flood storage to the TVA system and will extend navigation to an important rail and highway crossing of the Little Tennessee River. It will add an average of about 200,000,000 kWh annually to the Fort Loudoun power generation. The project will stimulate the economy of the area characterized by outmigration and under employment by providing major industrial sites with access to river transportation and by providing a water and shoreline resource with great potential for community development and recreational opportunities. The project will also provide fish and wildlife, water supply, and redevelopment benefits.

A. Economic Data

1. Federal and Non-Federal Financing:

First Costs	Construction	Lands and Relocations	Total
Federal			
Sunk Through FY 1977	$77,819,000	$26,681,000	$104,500,000
Cost to Complete	11,369,000	131,000	11,500,000
Total	$89,188,000	$26,812,000	$116,000,000
Non-Federal			
Sunk Through FY 1977	-	-	-
Cost to Complete	-	-	-
Total			-
Total: Federal & Non-Federal	$89,188,000	$26,812,000	$116,000,000
Annual Operation and Maintenance			
Federal	-	-	$205,000 1/
Non-Federal	-	-	
Total	-	-	$205,000 1/

1/ Per FEIS

2. Repayment of Federal Financial Costs:

	Paid or to be Paid as Costs are Incurred	Deferred	Terms of Repayment
First Costs	-	$225,000	Power revenues
Operation and maintenance	$3,000	-	Power revenues

3. Effective Composite Project Cost Sharing by Purpose if Available from Section 8G (1974 Dollars).

Purpose	Appropriated Funds	Non-Appropriated Funds 1/	Total
Hydropower	0	$319,000	$319,000
Other	$2,831,000	0	$2,831,000
Total	$2,831,000	$319,000	$3,150,000

4. Benefit-Cost Ratios and Net Economic Benefits

Current Discount Rate (6-3/8%): 2/

Benefit-cost ratio based upon remaining primary benefits and costs:	7:1
Net remaining economic benefits (average annual):	$3,232,000
Authorized Rate, if Applicable; Specify Rate:	N/A
Benefit-cost ratio based upon total primary benefits and costs:	N/A
Net economic benefits (average annual):	N/A
Discount Rate Applicable for Appropriations for Initial Construction Funding, if Applicable; Specify Rate:	3-1/4%
Benefit-cost ratio based upon total primary benefits and costs:	1.7:1
Net economic benefits (average annual):	$1,510,000

1/ Revenues derived from TVA power operations
2/ 1968 Price levels

EXHIBIT 13

5. Benefits and Allocated Costs:

	Average Annual Benefits[1] ($ in Ks)	%	Average Annual Allocated Costs[2]	Number of Beneficiaries
Flood Control	$505	7	$179	[3]
Navigation	400	5	114	[4]
Power	400	5	115	TVA power system[5]
Recreation	1440	19	505	1,750,000 annual visits
Fish and Wildlife	220	3	77	140,000 annual trips
Water Supply	70	1	20	20,000 people
Shoreline Development	710	10	202	300 tracts
Redevelopment	15	-	-	100 people
Enhanced Employment	3650	49	1038	5700 people
TOTAL	$7410	100	$2250	

6. Local Cooperation Requirements

Local sponsor name: None

7. Net Employment Impact:

	NUMBER INDIVIDUALS At Construction Peak	Date	Current	Date
Onsite	300	March 77	300	March 77
Offsite	35	March 77	35	March 77
Total	335		335	

8. Have opportunity costs of foregone recreation benefits and hydrogeneration been incorporated in the most current B/c ratio calculation? If No, estimate the dollar value of foregoing benefits, using market values as a basis for calculation. Yes.

9. Are project costs within the current project authorization ceiling? N/A

10. Water use as proposed by project (irrigation: Volume of water diverted vs. volume of water consumed; municipal and industrial: average daily per capita water use). Municipal - 160 gal/per capita/per day
Industry - 10,000 gal/per capita/per day

1/ Taken from FEIS
2/ TVA preliminary allocation studies
3/ 23,000 structures in Chattanooga and additional flood relief along the Tennessee River, lower Ohio and Mississippi Rivers.
4/ Consumers of water borne products
5/ TVA serves 2,251,413 residential and 270,532 commercial and industrial and 11 Federal customers.

B. Environmental

1. Extent of significant impacts:

a. Agricultural and forest land eliminated from production or potential production: 1/

(1) Crop land type I-IV, number of acres 33,000, SCS Class I or II 17,000
(2) Range of grazing land type VI, number of acres 2600
(3) Forest type oak-hickory, number of acres 1600, productivity 85-120 cu ft/ac/yr
(4) Unique crop land type -, number of acres none.

b. Upland wildlife habitat eliminated or substantially modified: 1/

(1) Acres 15,000, habitat type forest & open land, wildlife type white-tailed deer, dove, quail, rabbit, gray squirrel, and others.
(2) Local and regional importance of habitat minor.

c. Wetland eliminated or substantially modified:

(1) Acres minor, type Type 1 (Circular 39)
(2) Primary plant species oaks, sycamore, willow, maple, ash, elm
Species of fish and wildlife affected wood duck, mallard, black duck, raccoon, mink, muskrat, sauger, crappie, trout (stocked), white bass, various sunfish, buffalo, carp, redhorse sucker, and miscellaneous darters and minnows.

d. Fisheries resources, area and type:

(1) Commercial type -, area affected None
(2) Sports type 86% cold water, 14% warm water, miles of stream affected 33.
(3) Local and national significance significant locally, minor nationally

e. Water quality: (specify, without mitigation, if any)

(1) Eutrophication in impoundments: No
(2) Reduced downstream flow: No
(3) Salinity increases: No
(4) Pollutant type and amount: None
(5) Other: None
(6) Compliance with state standards: Yes

f. Inducement for flood plain development:

(1) urban: Acres -, type N/A
(2) agricultural: Acres 0, type N/A

1/ The same land may be shown in more than one category (including wetlands habitat, if any).

g. Existing and potential recreational uses: (type, magnitude)

(1) type canoeing-rafting - 1,500 trips/yr; small game hunting - 9660 trips/yr; coldwater fishing - 31,000 trips/yr; warm water fishing - 5000 trips/yr
(2) projected needs specific surveys for project area not available

h. Endangered or threatened species: (specify)

(1) Federal list Snail Darter Percina tanasi (E)
(2) Proposed Federal Anthony's river snail Athearnia anthonyi (T)
(3) State list Blue sucker Cycleptus elongatus (T)
(4) Proposed state 0

i. Potential induced downstream flooding: (magnitude, frequency, flooded area)

(1) Flood magnitude None
(2) Flood frequency -
(3) Flooded acres -

j. Cultural, historic and archaeologic resources: (type, extent)

(1) Type historic, prehistoric, and historic archaeological
(2) Extent 1750 period English fortification (Fort Loudoun), 1790 period U. S. garrisoned fortification (Tellico Blockhouse), 155 archaeological sites, two houses, school, cemeteries, campground.
(3) On Federal Register Two houses, two forts, two historic Cherokee Indian villages, and church campground
(4) Proposed for Fed Register One farm-outbuilding complex
(5) State Register None

k. Parks, wilderness areas, wild and/or scenic rivers: (specify)

(1) Name None
(2) Legally designated -
(3) Proposed for designation -
(4) Other areas having outstanding wilderness or scenic characteristics
-

2. Nature and extent of enhancement, mitigation of, or compensation for any impacts stated in #1 above.

The snail darter which was listed as endangered on November 10, 1975, by the Department of the Interior, is still under study and review by TVA. A delisting request has been filed with the Department of the Interior (February 1977) and is under consideration by the Department. Seven hundred and ten darters were transplanted to the Hiwassee River in 1975. The transplant was successful so far as judged by survival, maturity, reproduction, and the transplanted fish continue to be closely observed. TVA has filed a permit request for transplanting additional snail darters to other locations (Holston River) with the Department of the Interior (February 25, 1977).

Also in the Little Tennessee River, Anthony's river snail is proposed for threatened listing (42 Fed. Reg. 2507(1977)). TVA has the listing of this species under review and consideration and expects to respond to the proposed listing by the April 12, 1977, deadline.

The archaeological significance of Old Fort Loudoun has been fully investigated in cooperation with the Tennessee Department of Conservation. TVA, the Department, and the Fort Loudoun Association have agreed to the preservation of the historic significance of the site by reconstruction of the fort on a raised landfill. Development plans include new access roads and an interpretive visitors center and museum.

The Tellico Blockhouse has been the subject of extensive archival research and archaeological investigations. Interpretive outline type restoration is presently underway. The archaeological investigations were also conducted in cooperation with the University of Tennessee.

Extensive archaeological investigations of other sites within the reservoir area have been conducted since 1967. These investigations were done in cooperation with the National Park Service and the University of Tennessee. TVA has agreed with the representatives of the Cherokee Nation for development of selected sites.

Two houses, school, slave graveyard, and an elm tree are being held for later use as elements of a regional park, recreation and historic interpretive plans which will be developed in cooperation with state agencies.

Fishing on the reservoir is expected to be over five times the present use of the stream. Access for boat fishermen and others will be improved. Wading and shorebirds should increase although overall use by migratory waterfowl may decrease. The change in ownership of shore lands from private to Federal will enhance wildlife development by providing stable and protected habitat.

C. Safety: No safety problems

D. Institutional

1. Identification of beneficiaries, including for direct beneficiaries estimated number of individuals, farms where available, and identification of all beneficiaries receiving over 5% of primary project benefits. None

2. Any involvement with international obligations. No

3. Extent of displacement of area residents. All relocations have been accomplished.

4. Status of local assurances and contractual commitments of non-Federal interests. None

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5. Extent to which project beneficiaries have made investments whose return is contingent upon completion of the Federal project. N/A

6. Effect on Indians (Federal trust responsibilities, etc.) None

7. Litigation. The appropriations for the Tellico project, a Federal multi-purpose dam and reservoir project, were first made by Congress in October 1966 and construction began in March 1967. In 1973, when the project was 50 percent complete, a small 3-inch fish, later to be named the snail darter, was found in the area of the river to be impounded. When the Endangered Species Act of 1973 was enacted in December 1973 the project was over 50 percent complete and two years later, on November 10, 1976, at which time the project was about 75 percent complete, the fish was placed on the endangered species list. A suit was filed in February 1976 to halt the project based on the claim that completion of the project would jeopardize the snail darter's continued survival. Congress had appropriated funds for the Tellico project each year since 1966. The Congressional House and Senate Appropriations Committee, being fully informed of the snail darter situation and of the pending suit, included in their reports recommending appropriations specific directions that the project be completed as quickly as possible in the public interest. Consistent with this congressional action, the district court, after a full trial, concluded that it was not the intent of Congress that the project be halted in its advanced state of completion and denied an injunction. On January 31, 1977, the Court of Appeals for the Sixth Circuit reversed the district court decision and enjoined closure of the dam and completion of a canal which connects the Tellico project to TVA's Fort Loudoun Dam. Under this injunction other work incidental to completion of the project, such as road building and seeding, may be continued. Continued industrial development activities are also permitted under the injunction. The Sixth Circuit directed that the "injunction shall remain in effect until Congress, by appropriate legislation, exempts Tellico from compliance with the Act, or the snail darter has been deleted from the list of endangered species or its critical habitat materially redefined." TVA will petition the Supreme Court of the United States to review the Sixth Circuit decision. TVA has petitioned the Department of the Interior (February 1977) to delist the Little Tennessee River as critical habitat for the snail darter since experts now agree that the Little Tennessee River, with the dam structures in place, cannot sustain a viable, natural population of snail darters.

E. Alternatives

1. Reasonable alternatives where available. None

2. What use of project can be made in present scale or what changes are necessary to make it useful short of completion? The dam is ready for closure.

December 13, 1977

The Honorable Abraham A. Ribicoff, Chairman
Committee on Governmental Affairs
The United States Senate
Washington, D.C. 20510

Dear Senator Ribicoff:

In accordance with section 236 of the Legislative Reorganization Act of 1970 (31 U.S.C. § 1176 (1970)), we are reporting the actions taken by TVA with regard to the recommendations to TVA contained in the General Accounting Office's (GAO) report issued on October 14, 1977, entitled The Tennessee Valley Authority's Tellico Dam Project--Costs, Alternatives, and Benefits.

We believe it is significant that the GAO report does not take a position for or against Tellico. Rather, after some seven months of study, the GAO concluded that the nearly completed Tellico project should be restudied by TVA to determine whether it should be used or scrapped in favor of an alternative use of the Little Tennessee River Valley. The final report is essentially the same as GAO's draft report mailed to TVA for comment in early August 1977. We submitted to GAO at that time our detailed chapter-by-chapter comments reflecting TVA's views on the report. Those comments, which are included as an Appendix to the GAO report (pp. 53-78), are still germane, and copies are enclosed for your convenience.

While we disagree with many of the "facts" appearing in the GAO report (see enclosed comments), the principal point is that the factual material reported by GAO does not support its conclusion that the project should be reevaluated from a benefit-cost standpoint. GAO recognizes that

--the project is virtually completed and has been ready for closure since January 1977;

--$103 million (now $107 million) of the project's estimated cost of $116 million has been invested to achieve the public benefits from Tellico;

--$47 million of the $103 million expended as of February 1977 would be lost (from a public benefit standpoint) if the project is not completed; while some public benefit would be recovered from the remaining $56 million, the benefit probably would not be proportionate with the expenditures;

--in light of the snail darter, the only viable alternative to the Tellico project is the so-called scenic river alternative, which Congress has considered and rejected, first in 1966 before any money was invested in Tellico, and each year thereafter in appropriating a total of $116 million for the project; and

--it would cost up to $16 million to remove the dam structures to accommodate the snail darter and restore the area to the state it was in at the time Congress decided that the project should be begun. Of course, it would be many years before the replanted trees and vegetation approach the former state of the area. In addition, if the scenic river alternative is to benefit more than just a few individuals, substantial additional expenditures would be required to develop public use areas and attractions, access roads, and other facilities.

With these facts, it seems incongruous that GAO concluded that TVA should conduct a remaining benefit and remaining cost analysis of the Tellico project and the scenic river alternative. To support this conclusion, GAO says that the last benefit-cost study (showing an overall benefit-cost ratio of 3:1) was conducted by TVA in 1968 and is therefore too old; that there were faults in some of the methodology used by TVA to estimate project benefits; and that certain aspects of the scenic river alternative, primarily the existence of the snail darter in the Little Tennessee River, have not been previously considered. We simply do not think GAO's conclusion makes good sense.

The Tellico project has been under the continuous scrutiny of Congress since 1965. The environmental and economic pros and cons of the project were vigorously argued before Congress in 1965 and 1966 before the funds for starting the project were appropriated. The same arguments which are currently being urged against the Tellico project were fully considered by Congress in 1965 and 1966 and rejected. These arguments have been made each year thereafter during appropriations hearings. Scrutiny of the Tellico project has not been limited

to Congress. In 1971, the environmental aspects of the project were challenged in the courts under the National Environmental Policy Act, and, after full trial on the merits, the courts held that TVA's final Environmental Impact Statement was fully adequate and in compliance with NEPA.

The fact is that the project has been studied and restudied, argued and reargued, and the project has been built and its benefits are now ready to be enjoyed. Those benefits justify its completion now regardless of how they were evaluated in 1968 or whether improved benefit-cost methodology can refine the precision of their statement. For example, each year the project will generate some 200 million kilowatthours of electricity, presently valued at about $3.5 million. The value of this as well as the value of other benefits, such as flood control, the 6,600 new jobs that will be created in an area characterized by poverty and outmigration of young people, navigation, and recreation, have obviously changed somewhat over time. But it makes little sense to delay their realization simply to recount them. In light of GAO's suggestion that any new benefit-cost study should be based on the remaining cost to complete the project, and since any one of the project's major benefits would more than justify the relatively small costs to complete the project, we think that a new study would be a time consuming, expensive exercise to prove the obvious and would only further delay the public's enjoyment of Tellico's benefits. Moreover, the project was studied only a few months ago by a team from OMB, CEQ, and TVA as a part of President Carter's review of water projects and found to have a remaining cost-benefit ratio of 7:1.

Except for the discovery and listing of the snail darter as an endangered species, the underlying facts which support Tellico have not changed significantly since the studies were completed and the final Environmental Impact Statement was provided to Congress and approved by the courts. From our view we have done everything possible to keep Congress fully informed as to the snail darter issue and have actively pursued a conservation program to insure its survival through transplantation. We believe our program has been a success. Our biologists tell us that the 710 snail darters moved to the Hiwassee River have now reproduced for the second successive year and that as many as 2,000 now live in the Hiwassee. This is in sharp contrast to the Little Tennessee River, where biologists generally agree that the fish are dying out. To assume, as GAO apparently

does, that further congressional consideration of the snail darter question would be aided by an updated dollars-and-cents benefit-cost analysis seems wrong. The question is simply one of policy. Even the professor who discovered the fish has not claimed that the snail darter has any special value other than its existence as one of the more than 80 darters living in Tennessee.

For the past three years, TVA has reported to both the Senate and House, through the appropriations committees about the Tellico project and its effect on the snail darter. We have testified in detail about the status of the project, the status of the snail darter, our transplant efforts, the effect of the litigation and other matters bearing on this question, and have asked Congress for guidance as to how to proceed. Each year we have been directed to complete the project as promptly as possible in the public interest. H.R. Rep. No. 94-319, 94th Cong., 1st Sess. 76 (1975); S. Rep. No. 94-960, 94th Cong., 2d Sess. 96 (1976); H.R. Rep. No. 95-379, 95th Cong., 1st Sess. 104 (1977); S. Rep. No. 95-301, 95th Cong., 1st Sess. 99 (1977). Over $107 million has been invested in the project over the last decade, and, as already noted, the dam has been ready for closure since January 1977. Only this year, as recommended by the President in his budget, $11.5 million was appropriated for the completion of various project activities including remaining roads, recreation facilities, and archaeological and historical reconstruction work. If the project is allowed to be completed in fiscal 1979, less than $2 million in new appropriations will be needed. In contrast, an amount greater than that sum has already been lost in foregoing the power benefits alone during 1977. Moreover, as previously noted, it would cost over $16 million to return the area to the condition it was in at the time Congress decided to begin the project.

One final point deserves mention. As we informed GAO, we question from a national policy standpoint the desirability of requiring a restudy of a project over 90 percent complete. We believe this approach will create an unfortunate precedent which might keep every congressional project in a perpetual state of uncertainty. Moreover, the delays in the administrative and judicial process and the present recommendation for further indecisiveness which have characterized this project are the very faults which plague efforts in this country to overcome our social and economic problems, and we

believe are to a large extent the basis for the negative views for government held by so many.

In light of the above, we do not believe that GAO's recommendation to TVA to restudy the Tellico benefit-cost analysis should be followed. As we have previously informed GAO, however, if Congress wishes us to perform another benefit-cost analysis, we will gladly undertake it.

We appreciate the opportunity to provide you with this information.

Our new Board member, S. David Freeman, has not as yet formed an opinion on the Tellico project.

Sincerely yours,

Aubrey J. Wagner
Chairman

caw

NDV:CAW:HSS:JAR
Enclosures
cc: Mr. W. L. Jenkins, E12A11 C-K
Mr. S. David Freeman, E12A9 C-K
Mr. Lynn Seeber, E12B16 C-K
Mr. H. S. Sanger, Jr., E11B33 C-K
Mr. J. S. Barron, E12C29 C-K
Mr. H. P. Claussen, 139 EB-K
Mr. M. I. Foster, 200A LB-K
Mr. G. H. Kimmons, W12A9 C-K
Mr. E. H. Lesesne, 448 EB-K
Mr. T. H. Ripley, FOR B-N
Mr. John Van Mol, E12A4 C-K
Mr. L. L. Calvert, Washington

TENNESSEE VALLEY AUTHORITY
KNOXVILLE, TENNESSEE 37902

August 10, 1977

Mr. Monte Canfield, Jr., Director
Energy and Minerals Division
General Accounting Office
General Accounting Office Building
441 G Street
Washington, D.C. 20548

Dear Mr. Canfield:

Thank you for the opportunity to comment on the General Accounting Office's revised draft report on TVA's Tellico project. Our detailed chapter-by-chapter comments are enclosed.

We are disappointed that many of the comments we previously provided to GAO were not included in the revised draft report, and we again suggest that they be included in the final report in order to provide a more balanced presentation of the issues, as well as to correct a number of errors and mischaracterizations that remain. As you know, during the week of July 11 these comments were submitted to and discussed with GAO's Atlanta staff. It was our understanding that the substance of TVA's comments would be incorporated into the final report to balance the presentation of contrary views of the Tellico opponents, which had been presented in the earlier draft without critical analysis. Many of the corrections and changes agreed to as necessary for accuracy and balance have not been included in the revised draft.

Even without the incorporation of our comments, however, we believe that the material in the revised draft report does not support GAO's primary conclusion that the Tellico benefit-cost analysis should be updated to determine whether the virtually completed project should be used. The draft expresses concern over the age of the benefit-cost analysis, certain faults which GAO believes exist in the methodology used by TVA in 1968 to estimate some of the benefits, and ultimately concludes that GAO is unsure whether the Tellico benefits have been understated or overstated. If the present issue were whether or not to authorize a new project, those concerns would be relevant. The Tellico project, however, is over 90 percent complete and over $103 million of the estimated $116 million total cost has already been invested (as of February 1977) to achieve the project's benefits. And, although GAO questions certain methodology used by TVA in 1968 to value benefits, it is apparent that the current value of any one of the project's major benefits more than justifies the relatively small cost to complete it.

Mr. Monte Canfield, Jr., Director August 10, 1977

According to GAO's calculations, some $47 million of public funds would be completely wasted if the project is not completed. While some public benefit would be recovered from the remaining $56 million, GAO found that those benefits "probably will not be proportionate with project costs." In addition, before the "scenic river" developments which the report suggests be considered in the reanalysis could be undertaken, approximately $16 million of new money would have to be spent to remove the reservoir related structures and restore the project area. To obtain any benefit from the "scenic river" alternative for more than a few individuals, substantial additional expenditures would be required for public use areas and other facilities.

As the GAO draft report recognizes, the "scenic river" alternatives suggested by project opponents are not new. These are the same alternatives which have been considered and rejected time and again by Congress both before and after Tellico's initial funding. The "scenic river" alternatives were also fully examined as a part of the 1971 review performed by TVA pursuant to the National Environmental Policy Act and found to be 2 percent of the Tellico benefits. Neither passage of time nor technical inaccuracies in some of the benefit-cost methodology, even if true, would change the result of this analysis. We simply do not think it makes sense to lose the public benefits from Tellico, waste the nonrecoverable expenditures in the project, and spend an additional $16 million in an effort to return the land to the state it was in at the time Congress decided that the project should be begun.

We wish to make clear that TVA would hasten to prepare an updated benefit-cost analysis of the Tellico project and its alternatives if one were needed or appropriate under the circumstances. We do not think one is. Over the last decade, Congress has authorized the expenditure of over $100 million to make possible the public benefits Tellico will provide. The project has been studied and restudied, argued and reargued, and the project has now been built and its benefits ready to be enjoyed. Those benefits justify its completion now regardless of how they were evaluated in 1968 or whether improved benefit-cost methodology can refine the precision of their statement. For example, each year the project will generate some 200 million kilowatthours of electricity, presently valued at about $3.5 million. The value of this as well as the value of other benefits, such as flood control, the 6,600 new jobs that will be created in an area characterized by

APPENDIX VII

Mr. Monte Canfield, Jr., Director August 10, 1977

poverty and outmigration of young people, navigation, and recreation, have obviously changed somewhat over time; but it makes little sense to delay their realization simply to recount them.

In addition, from a national policy standpoint we question the desirability of this approach. We believe to require still another full-scale review at this time will create an unfortunate precedent which might keep every congressional project in a perpetual state of uncertainty. Nevertheless, if Congress wishes us to perform another benefit-cost analysis, we will gladly undertake it.

In the event our suggestions are not incorporated into the text of the final report, we ask that this letter and the enclosed chapter-by-chapter comments be included in your report to Congress.

Sincerely yours,

Lynn Seeber

Lynn Seeber
General Manager

Enclosure

COMMENTS ON REVISED GAO REPORT, TELLICO PROJECT

CHAPTER I

This chapter is mainly descriptive; nonetheless several errors and omissions should be mentioned.

1. Petition to delist--The report incorrectly refers in several places (pp. ii, 6(a)) to two TVA petitions to delist the Little Tennessee River as the critical habitat of the snail darter. As we pointed out to GAO on several occasions, only one petition has been filed. Because the Fish and Wildlife Service had not acted on TVA's February 28 petition, TVA sent a followup letter to the Service on June 30, 1977. The petition has still neither been acknowledged nor acted upon. The petition was filed because biologists now generally agree that the Little Tennessee River, with the dam structures in place, cannot support a natural viable population of snail darters. In contrast, the Hiwassee River, where 700 fish were transplanted, apparently will support a snail darter population, and the current snail darter population in the Hiwassee is several times as large as the one in the Little Tennessee River.

2. NEPA lawsuit--In the earlier Tellico litigation brought under the National Environmental Policy Act (NEPA) by environmentalists and one affected landowner (rather than "affected landowners" as indicated by GAO (p. 3)), the loss of

one or more rare or endangered species of fish and the development of a scenic river alternative to the Tellico project were expressly considered, and the adequacy of TVA's EIS was upheld by the courts.

3. What is TESC?--The Tennessee Endangered Species Committee (TESC) is referred to throughout the report without identifying the group. It is a Knoxville area organization of about 100 current members, mainly students or recent graduates of The University of Tennessee, who oppose the Tellico project. Moreover, it was three individuals (two law professors and a law student), and not "a group of scientists and environmentalists" (p. 4), who originally filed the snail darter suit.

CHAPTER II

Although we do not fully agree with GAO's conclusion in Chapter II, that chapter does contain an objective analysis and assessment of the nonrecoverable costs if the Tellico project is not completed and used. One significant error should be corrected, however.

Site restoration--With regard to site restoration if the Tellico project is scrapped, the report (p. 14) suggests that "a portion of the earthen dam" could be removed "without great expense" but fails to point out the dangers involved. As we informed the GAO investigating team, partial removal of the

earthen section of the dam would not only cause periodic flooding behind the dam but, upon such flooding, would also create the probability of the failure of the remainder of the earthen section of the dam, with the consequent downstream damage to life and property, as well as the heavy sedimentation of the Tennessee River. Safe engineering practices would not permit the suggested partial removal of the earthen dam.

CHAPTER III

The discussion of alternatives in Chapter III is perhaps the most unbalanced presentation in the report. GAO reports the Tellico opposition proposals without any scrutiny of or challenge to the unrealistic cost estimates or claims made to support them. The report, in many instances, either fails to incorporate or distorts TVA's views on a number of issues, including archaeology, recreation, and agriculture.

1. Early alternatives--The discussion (beginning on p. 21) of the early consideration of alternatives is incomplete. It fails to mention that the Tellico Dam, as an extension of the Fort Loudoun project, has been planned as a part of the overall Tennessee River control system since the early 1940's. Indeed, the Fort Loudoun turbines were sized and built to accommodate the diversion of the Little Tennessee River flow. Congress first funded the project in 1942, but due to war material priorities, work was halted. Since, historically, a