APPENDIX E

FISH AND WILDLIFE COORDINATION ACT REPORT

The following appendix provides a response by USACE, Tulsa District to the U.S. Fish and Wildlife Services report. USACE, Tulsa has evaluated the proposed mitigations that would address impacts occurring as a result of changes in the conservation pool level at Wister Lake. Part 2 of the appendix includes the U.S. Fish and Wildlife Services 2002 report.

APPENDIX E
PART I

TULSA DISTRICT ANALYSIS
U.S. FISH AND WILDLIFE SERVICE
FISH AND WILDLIFE COORDINATION ACT REPORT

Purpose. In accordance with the provisions of the Fish and Wildlife Coordination Act, the USACE funded the U.S. Fish and Wildlife Service (USFWS) to report on and address the impacts that have occurred as a result of the changes in the conservation pool level at Wister Lake. A final Coordination Act Report (CAR) dated April 12, 2002 was furnished and constitutes the report of the Secretary of the Interior on the project within the meaning of Section 2 (b) of the Act. A copy of the CAR is furnished in this appendix. A letter of concurrence from the Oklahoma Department of Wildlife Conservation (ODWC) dated March 11, 2002 is included in the CAR.

Background. Wister Lake is a multipurpose project authorized by the Flood Control Act of June 28, 1938, Public Law 761, 75th Congress, 3rd Session for flood control, water supply, water conservation, low flow augmentation, and sediment reduction. Construction was initiated on April 10, 1946, and the project was placed in full flood control operation in October 1949.

The conservation pool of Wister Lake as originally constructed was at elevation 471.6 feet National Geodetic Vertical Datum (NGVD). Congress subsequently authorized changes to the conservation pool on four occasions. In 1974, a seasonal operational plan was implemented to experimentally raise the conservation pool from elevation 471.6 to 478.0 feet NGVD between June and December. In 1976, the seasonal pool raise was made permanent. In 1983, Public Law 98-63 directed the Chief of Engineers to raise the permanent conservation pool level from 471.6 to 474.6 feet NGVD and continue to seasonally raise the conservation pool to 478.0 between June and December, resulting in a seasonal rise of about 3 feet. In 1994, the conservation pool was permanently raised to 475.5 feet NGVD and the seasonal pool raise to 478.0 feet NGVD was continued. The last change to the conservation pool occurred when the Water Resources Development Act (WRDA) of 1996 instructed the Corps of Engineers to permanently raise the conservation pool to 478.0 feet NGVD.

Summary. The USFWS reports that, "Overall, about 2,600 acres of terrestrial wildlife habitat have been lost since the first changes in the conservation pool in 1974. This figure takes into account losses incurred due to the experimental 6-foot rise that began in 1974, the 3-foot seasonal plus 3-foot permanent rises that began in 1983, and the permanent increases that occurred in 1994 and 1996. The various operational plans implemented at Wister Lake have resulted in the loss of aquatic and terrestrial habitat due to inundation during the growing season with the seasonal pool plans and permanent inundation of habitat with the increased conservation pool.

The Service's overall goal is to conserve important fish and wildlife resources. The Service's Mitigation Policy (Federal Register 46(15): 7644-7663) provides guidance for formulating measures to eliminate, reduce and offset environmental impacts. These guidelines follow the sequenced approach to mitigation presented in the Council on Environmental Quality's National Environmental Policy Act (NEPA) regulations (40CFR 15087.20). The mitigation definition found in the NEPA regulations consists of five sequential steps: 1) avoiding the impact altogether by not taking a certain action or parts of an action; 2) minimizing impacts by limiting the degree of magnitude of the action; 3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; 4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and 5) compensating for the unavoidable impacts by replacing or providing substitute resources or environments. The primary focus of the Service's Mitigation Policy is mitigation of losses of habitat value, with the degree of mitigation corresponding to the value and scarcity of habitat for selected evaluation species to be impacted by a proposed project (Service, 1981). "

Based on the Service's evaluation, most of the fish and wildlife resources being impacted are considered of medium to high value, but are relatively abundant on a national basis. Consequently, they are considered to be resource category 3, which can be mitigated out-of- kind providing there is no net loss of habitat value. Proposed mitigation for the project includes reimbursing the ODWC for the loss of about 288 acres of green tree reservoirs, providing ODWC funds for the construction of a new 200-300 acre green tree reservoir, marsh, and/or other waterfowl management unit, and reimbursement to ODWC for the loss of revenue that otherwise would have been generated by wildlife recreational activities had it not been for adverse impacts to wildlife habitat.

Recommendations and Comments:

Recommendation No. 1. Reimburse ODWC for loss of 288 acres of green tree reservoir/marsh at a cost of $87,000.

Comment: Concur. These waterfowl facilities were in existence and functional when the authorized pool rises was implemented. Mitigation for replacement of these facilities and associated losses as a result of inundation by the permanent pool raise is recommended.

Recommendation No. 2. Reimburse ODWC for construction of a new 200-300 acre green tree reservoir at a cost of $350,000 and provide $4,200 annual Operation and Maintenance costs.

Comment: Concur. Approximately 2,600 acres of terrestrial wildlife habitat were inundated and lost as a result of the authorized pool raise. Mitigation of these losses by construction of a 200-300 acre green tree waterfowl management unit at a cost of $350,000 is justified and recommended. Funding for the annual operation and maintenance of these facilities ($4,200) is also reasonable and is recommended.

Recommendation No. 3. Reimburse the ODWC for loss of revenue ($255,400) that would have been generated by wildlife recreational activities.

Comment: Do not concur. It is doubtful these losses occurred. Wildlife oriented recreation activities and hunting at Wister Lake are project-induced benefits. While lands are licensed to the ODWC for wildlife management, the ODWC does not charge a user fee for the public to participate in these activities at the lake. Consequently, there was no lost revenue to the Department, as claimed, due to the pool raise. Reimbursement to ODWC for loss of revenue is not recommended.

APPENDIX E
PART II

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
222 S. Houston, Suite A
Tulsa, Oklahoma 74127

April 12, 2002

U. S. Army Corps of Engineers
Attention: Planning, Environmental, and Regulatory
1645 South101st East Avenue
Tulsa, Oklahoma 74128-4609

Dear Sir:

Enclosed is the final supplemental Fish and Wildlife Coordination Act report of the U. S. Fish and Wildlife Service on the Wister Lake Water Reallocation Study being conducted by the U. S. Army Corps of Engineers, Tulsa District (Corps). This report fulfills the reporting requirements set forth in Section 2 (b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and is intended to accompany the Corps survey report for the study.

The Service appreciates the cooperation of your staff in development of this report. Comments on the draft report submitted in your letter of March 6, 2002, have been incorporated in the final report. If you have any questions, please contact Richard Stark of this office at 918-581-7458, extension 240.

Sincerely,

Jerry J. Brabander
Field Supervisor

Enclosure

cc: Director, Oklahoma Department of Wildlife Conservation, Oklahoma City, OK
(Attn: Ron Suttles, Natural Resources Division)
Regional Administrator, Environmental Protection Agency, 6WQ-EM, Dallas, TX
Natural Resources Library, U.S. Department of the Interior, Washington, DC w/o encl.
Regional Director, FWS, Albuquerque, New Mexico w/o encl.

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SUPPLEMENTAL FISH AND WILDLIFE COORDINATION ACT REPORT
on
Wister Lake Water Reallocation Study

Tulsa District
U.S. Army Corps of Engineers

Prepared by:
Richard Stark
Oklahoma Ecological Services Field Office
U.S. Fish and Wildlife Service
Tulsa, Oklahoma

April 2002

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INTRODUCTION

Wister Lake is a multipurpose project authorized by the Flood Control Act of June 28, 1938, (Public Law 761, 75th Congress, 3rd Session) for flood control, water supply, water conservation, low flow augmentation, and sediment reduction. Other uses of the reservoir and surrounding public lands include recreation and fish and wildlife management. Construction was initiated on April 10, 1946, and the project was placed in full flood control operation in October 1949.

The conservation pool of Wister Lake as originally constructed was at elevation 471.6 feet National Geodetic Vertical Datum (NGVD). Congress subsequently authorized changes to the conservation pool on four occasions. In 1974, a seasonal operational plan was implemented at Wister Lake to experimentally raise the conservation pool from elevation 471.6 to 478.0 feet NGVD between June and December. In 1976, the seasonal rise was made permanent. In 1983, Public Law 98-63 directed the Chief of Engineers to raise the permanent conservation pool level from 471.6 to 474.6 feet NGVD and continue to seasonally raise the conservation pool to 478.0 between June and December, resulting in a seasonal rise of about 3 feet. In 1994, the conservation pool was permanently raised to 475.5 feet NGVD (Supplement to the FES for Wister Lake, 2001); the seasonal raise to 478.0 feet NGVD was continued. The last change to the conservation pool occurred when the Water Resources Development Act (WRDA) of 1996 instructed the Corps to permanently raise the conservation pool to 478.0 feet NGVD.

The Service has previously evaluated alternatives studied by the Corps for development of water resources in the Poteau River Basin such as channelization of the lower Poteau River for navigation, construction of two additional reservoirs on Brazil and James Fork creeks, raising the existing Wister Lake conservation and flood pools, and adding hydropower to Wister Lake in planning aid reports dated November 20, 1980 (Service, 1980), and May 14, 1982 (Service , 1982). The 6-foot seasonal rise that began in 1974 was addressed in a draft Fish and Wildlife Coordination Act (FWCA) report of April 19, 1983 (Service, 1983a), and a revised draft FWCA report of November 10, 1983 (Service, 1983b). The permanent three-foot rise and the resulting three-foot seasonal rise that began in 1983 was evaluated in a FWCA report dated February 10, 1986 (Service, 1986). Mitigation for impacts associated with changes in the conservation pool has never occurred due to budgetary constraints.

The intent of this report is to supplement the FWCA report of February 10, 1986, by addressing the impacts that have occurred as a result of the changes in the conservation pool level at Wister Lake. We discuss changes since the FWCA report of 1986, present mitigation requirements and projected costs for the environmental impacts caused by the seasonal and permanent changes in the conservation pool elevation, and present the position of the Service.

This report has been prepared under the authority of and in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and fulfills the reporting requirement set forth in Section 2(b) of the Act. The Oklahoma Department of Wildlife Conservation (ODWC) reviewed and concurred with the report as indicated in their letter dated March 11, 2002 (Appendix A).

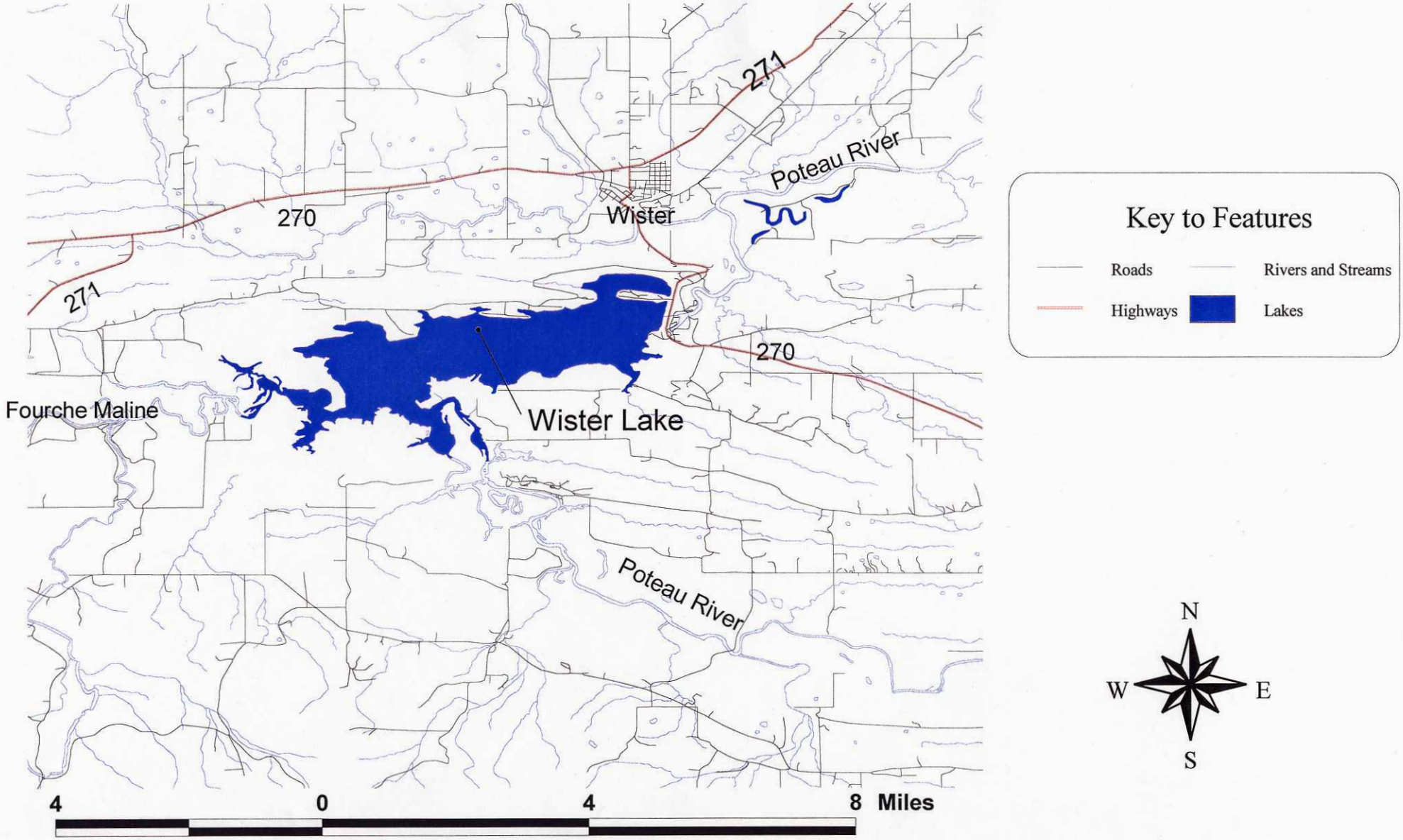

Figure 1. Location of Wister Lake

DESCRIPTION OF AREA

Wister Lake is located in the foothills of the Kiamichi Mountains just north of the Ouachita National Forest in Leflore and Latimer counties, Oklahoma. The dam site is on the Poteau River at river mile 61, approximately 2 miles south of the town of Wister, Oklahoma, seven miles northwest of Heavener, Oklahoma, and 47 miles southwest of Fort Smith, Arkansas (Figure 1). The Poteau River Basin is located in eastern Oklahoma and western Arkansas in the Ouachita Mountains and Arkansas Valley ecoregions (Omernik, 1987). The Poteau River heads in Scott County, Arkansas, and flows in a westerly direction to Wister Lake where it forms the eastern arm of the lake. The river then continues about 61 miles downstream, flowing from the lake in a northeasterly direction to its confluence with the Arkansas River near the border of Oklahoma and Arkansas. The western arm of Wister lake is formed by the Fourche Maline River that originates in the northwest part of Latimer County and flows easterly about 37 miles to the lake.

At the original normal pool elevation of 471.6 feet NGVD, Wister Lake had a median surface area of 4,148 acres and was 23,000 acres in size at the top of the flood control pool (502.5 NGVD), providing about 400,000 acre-feet of flood control storage to handle runoff from the 993 square mile drainage area above the dam. The 3-foot permanent plus 3-foot seasonal rise that began in 1983 created a median surface area of 6,755 acres. The permanent rise in conservation pool level to 478.0 feet NGVD in 1996 increased the median surface area to about 7,400 acres. The current shoreline length at 478.0 NGVD is about 115 miles.

Most of the project land above the conservation pool elevation is managed for fish and wildlife resources by the ODWC (35,550 acres). Lake Wister State Park is managed by the Oklahoma Department of Tourism and Recreation. The park occupies about 3,090 acres of project land and consists of 182 camp sites, 15 cabins, and a nature center. The Corps now manages only the land around the dam and project office.

The basic topography of the area is rough, varying from low rounded ridges on the north and northeast to high mountainous ridges in the south, southwest, and central portions of the watershed. The elevation varies from about 460 feet in the valley floor to about 2,300 feet on the highest ridges. Valley slopes are steep and rocky, and most of the upland areas are covered in oak-hickory and oak-pine.

The area undergoes seasonal variations in temperature and precipitation and typically experiences long, humid summers and short, mild winters. Mean annual precipitation is about 47 inches. Average annual temperature is about 60° Fahrenheit. The growing season averages 216 days (Omernick, 1987).

EVALUATION METHODOLOGY

The findings presented in this report are based on available data supplied by the Corps and ODWC, and on past reports of the Service regarding Wister Lake and the Poteau River Basin. The impacts of the changes in the conservation pool level on the fish and wildlife resources of the Wister Lake area were determined by comparing future habitat conditions without the project (condition that existed before the initial changes of 1974) to future habitat conditions with the project condition over the 100 years of project life. The permanent rise in the conservation pool as authorized by the WRDA of 1996 resulted in the continuous inundation of the largest area of all previous conservation pool management scenarios. Therefore, we believe that impacts of this pool raise potentially may have been greater than impacts associated with past changes in the conservation pool had the other changes in the conservation pool and their associated negative impacts not occurred (Service, 1983a, b, 1986; and see Fish and Wildlife Resources without the Project/Project Impacts below). However, because mitigation for impacts caused by previous permanent and seasonal raises in the conservation pool never occurred due to budgetary constraints, we believe compensatory mitigation for the losses due to the previous changes in the conservation pool as well as losses due to the 1996 permanent change in the conservation pool, as discussed in this report, are warranted. Furthermore, due to the lack of mitigation for past impacts, we consider the without project condition as the condition that existed before the initial changes of 1974, and the with project condition as the current condition that has resulted from the changes in the conservation pool since 1974.

The impact evaluation in this report is based largely on data collected for the previous reports on Wister Lake. Data for the without-project condition were taken from the Service's FWCA report on the Fish and Wildlife Resources of the Poteau River, Oklahoma and Arkansas (Wister Lake) dated February 10, 1986 (Service, 1986). Data for the with-project condition were obtained from the Service's planning aid report dated May 14, 1982 (Service, 1982) (and corrected pages for this report dated June 2, 1982), that evaluated various alternatives on Wister Lake including raising the conservation pool to 477.6 feet, aerial photographs of Wister Lake, and information provided by the ODWC.

The data were collected from field investigations and surveys conducted utilizing the 1976 version of the Service's Habitat Evaluation Procedures (HEP) (Service, 1976) by biologists from the ODWC, Corps, and the Service. These procedures are used to evaluate fish and wildlife resources and habitat primarily on a non-monetary basis, although monetary values can be

reflected as well. The HEP were used to quantify impacts in non-monetary terms, and provide a basis for determining the mitigation measures needed to compensate for these impacts and maintain the integrity of the ecosystem.

The non-monetary evaluation measures the quality of each cover type in the project area for the full range of fish and wildlife resources present on a scale of 0 to 1. The rating is based on the habitat's capability to support and sustain a given variety of animals as determined through established evaluation criteria and professional judgement of experienced biologists. Cover types with the highest habitat suitability index have the best capability to sustain associated fish and wildlife populations. Multiplying the habitat suitability index (quality) by the acres of each habitat type provides a measure of the combined quality and quantity of habitat, referred to as habitat units.

To compare future habitat conditions without the project (condition that existed before the initial changes of 1974) to future habitat conditions with the project over the 100 years of project life, the amount of habitat units expected to be lost or gained during this time period within each cover type was divided by 100 years. The result is the gross annualized loss or gain for the habitats without the project. The net loss or gain in annual habitat units with the project is determined by the difference between annualized loss or gain with and without project conditions.

FISH AND WILDLIFE RESOURCES WITHOUT THE PROJECT

The Wister Lake project area provides habitat for a diversity of fish and wildlife species. Fifty species of mammals, 293 species of birds, 55 species of reptiles, 22 species of amphibians, and 95 species of fish are known to occur in the area (Lindsay et al., 1974).

TERRESTRIAL RESOURCES

The Wister Lake project area is within the Arkansas Valley Ecoregion as defined by Omernick (1987), and is located between the Ozark highlands to the north and the Ouachita Mountains to the south. The Arkansas Valley is characterized by flat lowlands and isolated hills. The highest ridges in the area are the Sans Bois Mountains to the east with an elevation of 1,831 feet NGVD and Oklahoma High Top to the west with an elevation of 2,381 feet NGVD.

Eastern hardwood forests are prevalent in the hills but communities typical of the Central Oklahoma/Texas plains to the west, such as dry forests of post oak (Quercus stellata), blackjack oak (Quercus marilandica), and scattered hickories (Carya spp.), also occur in the area. Prairie communities are scattered between the dry upland forests and the bottomland hardwoods found along the streams and rivers. The prairie communities consist of bluestem (Andropogon gerardii), Indian grass (Sorghastrum nutans), and switchgrass (Panicum virgatum), as well as a variety of wildlflowers. Common plant species that occur in the bottomland forests along streams and rivers include elm (Ulmus spp.), oak (Quercus spp.), hackberry (Celtis spp.), grape (Vitis spp.), poison ivy (Toxicodendron radicans), and greenbriar (Smilax bona-nox). Ridge tops in the area consist of pine savannas and mixed pine-hardwood forests.

About 50 species of mammals occur in the project area. Common species include the white-tailed deer (Odocoileus virginianus), beaver (Castor canadensis), muskrat (Ondatra zibethicus), coyote (Canis latrans), striped skunk (Mephitis mephitis), fox squirrel (Sciurus niger), and raccoon (Procyon lotor).

There are 293 bird species that occur in the project area within a given year. Common species include the great blue heron (Ardea herodias), little blue heron (Egretta caerulea), and green heron (Butorides virescens). During winter, large numbers of snow geese (Anser caerulescens), gadwall (Anas strepera), mallard (Anas platyrhyncos), pintail (Anas acula), green-winged teal (Anas crecca), blue-winged teal (Anas dicors), and lesser scaup (Aythya affinis) occur in the

Wister Lake area. The federally-listed threatened bald eagle (Haliaeetus leucocephalus) also is known to winter in the area. Important game birds are the mourning dove (Zenaida macroura), bobwhite (Colinus virginianus), and eastern wild turkey (Meleagris gallopavo).

A diversity of reptiles occur in the Wister Lake area, including 13 species of turtles, 11 species of lizards, and 13 species of snakes. The most common reptiles are the ringneck snake (Diadophis punctatus), copperhead (Agkistrodon contortrix), water snakes (Nerodia spp.), garter snake (Thamnophis sirtalis), five-lined skink (Eumeces fasciatus), ground skink (Scincella lateralis), eastern box turtle (Terrapene carolina), and the red-eared slider (Trachemys scripta).

The Wister Lake area is occupied by 22 amphibian species including seven species of salamander and 15 frog and toad species. Salamanders of the area include the ringed salamander (Ambystoma annulatum), marbled salamander (Ambystoma opacum), smallmouth salamander (Ambystoma texanum), and slimy salamanders (Plethodon spp.). The most common frogs and toads are the cricket frog (Acris crepitans), spring peeper (Pseudacris crucifer), leopard frog (Rana utricularia), bullfrog (Rana catesbeiana), gray tree frog (Hyla versicolor/chrysoscelis), American toad (Bufo americanus), and Woodhouse's toad (Bufo woodhousii).

The principal terrestrial cover types that were evaluated for terrestrial species are forests, savannah, hydrophytes, rocked shoreline, and emergent willows (Table 1). The area, habitat suitability index, management potential, and habitat units of each of these cover types are presented in Table 2.

Forests

Bottomland and upland forests were evaluated for food and cover using the quality and quantity of overstory and ground cover. Interspersion of forests with croplands, pastures, and streams was considered for edge effect. Bottomland overstory consists of mature stands of American elm, hackberry, willow oak, pin oak, green ash, hickory, and black walnut. Secondary growths of black willow, elm, and ash in association with buttonbush, honey locust, and black gum comprise most of the understory vegetation. Typical bottomland cover includes thick growths of greenbriar, Virginia creeper, bangle grass, wildrye, and smartweed.

Forest is the dominant cover type around Wister Lake and along the Poteau River. On Wister Lake project land, forest has a habitat suitability index of 0.63.

Savannah

This cover type is abundant in the project lands and consists of a diversity of plant species. These areas vary in stage of succession from annual and perennial weeds to areas of woody vegetation. The dominant plants include yellow dock, ragweed, cocklebur, goldenrod, sunflower, persimmon, sumac, post oak, blackberry, and greenbriar. Savannah was given a habitat suitability index of 0.51.

Hydrophytes

This habitat consists of areas that are subject to frequent, short-term inundation and support plants such as smartweeds, nutgrass, poorjo. The areas provide food for waterfowl. The habitat suitability index is 0.43.

Table 1. Evaluation species used for Wister Lake terrestrial cover types.

Evaluation Species	Rocked shoreline	Emergent willow	Hydrophytes	Savannah/old field	Forest
White-tailed deer	X		X	X	X
Muskrat	X	X	X		
Coyote	X		X	X	X
Raccoon				X	X
Cottontail				X	X
Cotton rat	X				
Red-winged blackbird	X	X	X		
Bobwhite				X	X
Dove	X			X	
Shorebirds		X	X		
Woodpecker					X
Waterfowl		X	X		
Rattlesnake				X	X
Water snake		X	X		

Rocked shoreline

This cover type is confined to the Wister Lake area. Wave action has either exposed underlying parent material or side slopes are too steep for sod formation. Scattered vegetation in this area of sandstone and shale include black willow, buttonbush, smartweed, crabgrass, and nutgrass. The area has low habitat value and is therefore given a habitat suitability index of 0.31.

Emergent willows

This area occurs above the submerged willow habitat type as described in the aquatic resources section. The area provides habitat for various reptiles, amphibians, songbirds, and shorebirds. The habitat suitability index for this area is 0.26.

Table 2. Area, habitat suitability index, management potential, and habitat units of the terrestrial and aquatic habitats at Wister Lake without the project (Service, 1986).

Habitat	Acres	Habitat suitability index	Management potential	Habitat units
Terrestrial				
rocked shoreline	178	0.31	0.53	55
emergent willow	1,568	0.26	0.26	408
hydrophytes	603	0.43	0.43	259
savannah/oldfield	14,285	0.51	0.66	7,285
forest	19,718	0.63	0.80	12,422
Total terrestrial	36,352			20,429
Aquatic				
submerged willow	1,568	0.81	0.85	1,270
pond/wetland	96	0.72	0.80	69
reservoir	4,148	0.81	0.85	3,360
Total aquatic	5,812			4,699

AQUATIC RESOURCES

The aquatic resources in the project area consist of the mainstream of the Poteau River, tributaries of the river, ponds, wetlands, submerged willows, and the reservoir. The Poteau River Basin supports one of the most diverse icthyofaunas in Oklahoma. About 95 fish species have been collected from the drainage (Service, 1983a). Common game species found in the reservoir include channel catfish (Ictalurus punctatus), flathead catfish (Pylodictus olivaris), largemouth bass (Micropterus salmoides), white crappie (Pomoxis annularis), and bluegill (Lepomis macrochirus).

The principal aquatic cover types that were evaluated for aquatic species are the reservoir, wetlands/ponds, and submerged willows (Table 3). The area, habitat suitability index, management potential, and habitat units of each of these cover types are presented in Table 2.

Table 3. Evaluation species used for aquatic cover types at Wister Lake.

Evaluation species	Submerged willows	Pond/wetland	Reservoir
Gizzard shad	X	X	X
Flathead catfish	X		X
Channel catfish	X		X
Bullhead		X	
Carp	X	X	
Crappie	X	X	X
Sunfish	X	X	X
Largemouth bass	X		X

Reservoir

Wister lake is a moderately turbid, shallow, frequently fluctuating body of water. Dense stands of willow and buttonbush are found bordering the coves. Scattered islands of black willow occur in the upper end of the lake. The reservoir was given a fairly high habitat suitability index of 0.81 because of the presence of adjacent areas of submerged willows and other standing timber.

Wetlands/ponds

Most ponds or palustrine wetlands in the area (Cowardin et al., 1979) are shallow and turbid with surface areas of less than two acres. Many dry up during summer months when rainfall is low. Dominant vegetation around pond perimeters consists of cattails, sedges, and other emergents typical of successional stages. Warmwater fishes have been stocked in most ponds. Cover usually is lacking but fairly diverse habitats occur for amphibians, reptiles, and birds. Other palustrine type wetlands in the project area are dominated by forest and shrub habitat. The ponds and wetlands around Wister Lake are quality areas and their habitat suitability index is 0.72.

Submerged willow

The stands of black willow found scattered throughout the conservation pool provide excellent fish feeding and resting sites. These sites are important not only for the habitat they provide, but also for their role in lake dynamics. The habitat suitability index is 0.81.

WILDLIFE MANAGEMENT AREA (WMA)

About 35,550 acres of the project land above the conservation pool is managed for fish and wildlife resources by the ODWC. Habitat consists mainly of bottomland hardwoods, native grass glades, and oak/hickory-pine forest. Common wildlife are white-tailed deer, turkey, waterfowl, rabbit, squirrel, furbearers, and quail. About 1,500 acres of the area are annually planted to small grain crops, strip disced and/or controlled burned to improve habitat. A 1,000 acre waterfowl refuge was established to enhance the area for migratory birds. About 390 acres of prime waterfowl habitat has been enhanced with three miles of dike systems. The areas are annually flooded to attract and hold waterfowl. Public use of the WMA centers around hunting.

THREATENED AND ENDANGERED SPECIES

Three federally listed species have the potential to occur at Wister Lake: the endangered American burying beetle (Nicrophorus americanus) and Indiana bat (Myotis sodalis), and the threatened bald eagle (Haliaeetus leucocephalus).

The American burying beetle is a large beetle that is typically active only during the spring and summer once nighttime temperatures begin to exceed 60^{0}F. Current information suggests that this species is a habitat generalist that occurs in both grasslands and forests. The beetle feeds on carrion about the size of chipmunks, and carrion availability and the availability of enough humus and top soil for carrion burial may be the most important factor determining where it can survive (U. S. Department of the Interior, 1989).

The Indiana bat is a migratory species rarely found in Oklahoma. During the winter, Indiana bats hibernate in limestone caves. In the summer, female bats and their young roost in small colonies under tree bark. These colonies occur near streams with large, overhanging trees where the bats forage for insects. Eastern Oklahoma is considered the western limit of the bat's range.

The threatened bald eagle breeds and winters in Oklahoma where it is known to utilize large trees for perching and roosting. Wister Lake is known to support wintering bald eagles. Trees used for diurnal perches and feeding are typically different from those used for roosting at night. Trees used for diurnal perching are usually tall, with large diameters and stout branches. Trees used for communal night roosts are usually more secluded but are typically located near feeding areas. The eagles in the winter area probably feed mainly on fish, but also may eat waterfowl and carrion.

Section 7(a)(2) of the Endangered Species Act requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any federally listed threatened or endangered species or result in the destruction or adverse modification of designated critical habitat. In the event that a Federal agency determines that its action "may affect" a listed threatened or endangered species or designated critical habitat, the agency is required to consult with the Service regarding the degree of impact, and measures available to avoid or minimize the adverse effects. The Corps determined that the project would

not likely adversely affect any federally listed species. The Service concurred with this determination. Therefore, formal consultation under Section 7 of the Endangered Species Act was not required.

DESCRIPTION OF THE SELECTED PLAN

The selected plan is to operate the Wister Lake project at the conservation pool level of 478.0 feet NGVD year round. The selected plan is the same as the conditions at the lake since 1996 when the WRDA of 1996 instructed the Corps to permanently raise the conservation pool to 478.0 feet NGVD.

FISH AND WILDLIFE RESOURCES WITH THE PROJECT/PROJECT IMPACTS

TERRESTRIAL RESOURCES

Changes in the different cover types are due both to inundation and successional trends (Table 4). Impacts to terrestrial vegetation in the area around the lake, as a result of the permanent rise in the conservation pool to 478.0 feet NGVD, are minimal due to the lack of vegetation there. However, it must be kept in mind that the lack of vegetation is a direct result of the June through December seasonal pool rise first implemented in 1974. The higher water levels during much of the growing season adversely affected terrestrial vegetation by drowning newly established plants; the subsequent drawdowns would then expose aquatic vegetation. As a result, a considerable band of barren shoreline developed around the edge of the lake. Mitigation for these impacts has never been implemented.

Table 4. Expected area (acres) and annualized habitat units for the various cover types at Wister Lake after 100 years with and without the project (Service, 1982; 1986).

	Without project (471.6 feet)		With project (478.0 feet)		Change from without project	
	Acres	Habitat Units	Acres	Habitat Units	Acres	Habitat units
rocked shoreline	178	55	157	49	-21	-6
emergent willow	1,397	363	485	126	-912	- 237
hydrophytes	965	415	678	291	-287	- 124
savannah/oldfield	9,794	4,995	8,534	4,352	-1,260	- 643
forest	23,858	15,030	23,570	14,849	-288	-181
submerged willow	1,397	1,132	1,397	1,132	0	0
pond/wetlands	85	61	60	43	-25	-18
reservoir	4,148	3,360	7,386	5,983	+3,238	+ 2,623
terrestrial total	**36,192**	**20,858**	**33,581**	**19,667**	**-2,611**	**-1,191**
aquatic total	**5,630**	**4,553**	**8,843**	**7,158**	**+3,213**	**+2,605**

The permanent increase in Wister Lake's conservation pool elevation to 475.5 feet NGVD in 1994 and then to 478.0 feet NGVD in 1996 further decreased the amount of quality wildlife habitat in the area inundated. The "pin oak flats" (large areas of almost pure pin oak) in the Fourche Maline arm of the lake have been weakened as a result of the higher water levels in the growing season, and these trees are not expected to survive inundation (Al Stacey, ODWC Waterfowl Biologist, pers. comm.). Although pin oaks and other bottomland hardwood species are tolerant of flooding during the dormant season, intermittent inundation during the growing season may injure or kill trees (Black, 1980; Bell and Johnson, 1974; Hall and Smith, 1955). Upland areas also will be affected during flood events due to the higher level of the conservation pool. A change in ground water levels will eventually alter the species composition of terrestrial areas not directly inundated.

Maintaining the conservation pool level at 478.0 feet NGVD has, however, improved the areas previously negatively impacted by the seasonal raises. If the lake level stays relatively stable, new shoreline areas are likely to eventually revert to communities similar to those that existed before the initial experimental operational plan of 1974.

Many wildlife species, including big game, upland game, fur animals, nongame birds, mammals, reptiles, and amphibians have suffered a loss of terrestrial habitat as a result of the pool rise. The species that occurred in the area prior to inundation either suffered mortality or experienced increased stress due to the necessity of migrating to new suitable habitat, and from the increase in competition from other animals already occupying niches in the remaining habitat area.

Practically all of the area inundated around the lake by the 6-foot seasonal rise initiated in 1974 and the subsequent permanent rises in the conservation pool was within the 35,550 acre WMA managed by the ODWC. The rises also have adversely affected about 288 acres of green tree reservoirs and marsh constructed by the ODWC and used for waterfowl management.

AQUATIC RESOURCES

At the original normal pool elevation of 471.6 feet NGVD, Wister Lake had a median surface area of 4,148 acres. The 3-foot permanent plus 3-foot seasonal rise that began in 1983 created a median surface area of 6,755 acres, with no change in the size of the lake at the top of the flood control pool. The permanent raise in the conservation pool level to 478.0 feet NGVD in 1996 increased the median surface area to about 7,400 acres.

Most of the negative impacts to aquatic fish and wildlife habitat were due to the seasonal fluctuations in the conservation pool. Vegetation found around the shoreline could not become established due to the seasonal fluctuations. The rise in lake level in June inundated and killed terrestrial vegetation growing around the margins of the lake. Aquatic submergent and emergent vegetation was then exposed and not allowed to fully establish or develop as a result of the seasonal drawdowns in December. The fluctuations resulted in a band of barren shoreline and a loss of cover that would have been utilized by fish and wildlife such as foraging waterfowl during winter and spring spawning fish.

Permanently raising the conservation pool to 478.0 feet NGVD rather than continuing with the seasonal fluctuations has provided benefits to fish and wildlife species. By keeping the lake level relatively stable, new vegetated aquatic and shoreline areas were allowed to establish. Both waterfowl and fisheries benefit from established submergent and emergent vegetation because the areas provide sources of food and cover.

The increased water depth and more stable lake levels should result in an improvement in the water quality of the lake. Large areas that were once shallow mud flats due to water level fluctuations have experienced increased water depths and more stable water levels. They should therefore be less susceptible to wind action that results in increased suspended sediments and decreased water clarity.

PUBLIC USE

Fishing and hunting opportunities at Wister Lake have changed as a result of the alterations in the conservation pool. Overall, fishing opportunities have increased as a result of the increase in aquatic habitat, including more stable spawning and nursery areas around the lake. Hunting opportunities for terrestrial species, such as white-tailed deer and turkey, have initially decreased due to the loss of terrestrial habitat. The loss of revenue due to inundation of terrestrial wildlife habitat that would have otherwise been generated through wildlife recreational activities (hunting, birdwatching, etc.) equals about $10,169/year (U. S. Department of the Army, 1983).

DISCUSSION OF FISH AND WILDLIFE CONSERVATION MEASURES

Overall, about 2,600 acres of terrestrial wildlife habitat have been lost since the first changes in the conservation pool in 1974. This figure takes into account losses incurred due to the experimental 6-foot rise that began in 1974, the 3-foot seasonal plus 3-foot permanent rises that began in 1983, and the permanent increases that occurred in 1994 and 1996.

The Service's overall goal is to conserve important fish and wildlife resources. The Service's Mitigation Policy (Federal Register 46(15):7644-7663) provides guidance for formulating measures to eliminate, reduce and offset environmental impacts. These guidelines follow the sequenced approach to mitigation presented in the Council on Environmental Quality's National Environmental Policy Act (NEPA) regulations (40 CFR 1508.20). The mitigation definition found in the NEPA regulations consists of five sequential steps: 1) avoiding the impact altogether by not taking a certain action or parts of an action; 2) minimizing impacts by limiting the degree or magnitude of the action; 3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; 4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and 5) compensating for the unavoidable impacts by replacing or providing substitute resources or environments. The primary focus of the Service's Mitigation Policy is mitigation of losses of habitat value, with the degree of mitigation corresponding to the value and scarcity of habitat for selected evaluation species to be impacted by a proposed project (Service, 1981).

Based on our evaluation of the various cover types, most of the fish and wildlife resources being affected are considered of medium to high value, but are relatively abundant on a national basis. This would place them under resource category 3 of the Service's Mitigation Policy. The preferred mitigation goal for loss of category 3 habitat is in-kind, but the losses can be mitigated out-of-kind, with no net loss of habitat value (Service, 1981). For example, loss of upland forest habitat due to increased lake levels could be mitigated by improving habitat for other wildlife species through management. Due to the importance placed by the ODWC on waterfowl management at Wister Lake, emphasis was placed on habitats for these species in developing mitigation recommendations.

RECOMMENDATIONS

The Service has worked cooperatively with the ODWC to develop recommendations for losses to quality fish and wildlife habitat at Wister Lake that occurred as a result of the changes in the conservation pool from 1974 to 1996. The ODWC and a local chapter of Ducks Unlimited are currently discussing the possibility of constructing a new green tree reservoir at Wister Lake covering about 200 - 300 acres. Because out-of-kind mitigation is allowable for habitat losses at Wister Lake, credit can be given for development of these and other waterfowl resources as compensation for the loss of other cover types.

With this in mind, we believe mitigation could be achieved by: 1) reimbursement for the construction cost of the 288 acres of green tree reservoirs lost as a result of the changes in the conservation pool, 2) creation of green tree reservoirs, marshes, and/or other waterfowl habitats in cooperation with the OWDC and Ducks Unlimited; and 3) reimbursement to ODWC for the loss of revenue from hunting and other wildlife related recreational activities as a result of the loss of wildlife habitat. The costs of the mitigation plan are shown in Table 5. We recommend that a lump sum payment be made to the ODWC equal to the total cost for mitigation features as presented in Table 5 ($692,400) plus operation and maintenance costs ($4,200 annually) for the proposed green tree reservoirs to assure continued effectiveness of mitigation features.

SUMMARY AND SERVICE POSITION

In general, the seasonal fluctuations since 1974 and the permanent conservation pool rise that occurred in 1996 resulted in the loss of aquatic and terrestrial habitat because of: 1) increased median lake surface area; 2) the seasonal pool rise occurring during the growing season; and 3) the seasonal drawdown occurring when waterfowl and fish populations would benefit from the cover provided by submergent and emergent vegetation. The increase in the conservation pool to 478.0 feet NGVD, however, provides benefits to some fish and wildlife species through an increase in the aquatic habitat provided by the reservoir. Vegetated aquatic and shoreline areas that have established increase the foraging, spawning, and nursery areas available for fish and waterfowl. Negative impacts to terrestrial and wetland habitats, however, also have occurred (see Table 4).

Table 5. Mitigation features and associated costs.

Mitigation Features	Amount (acres)	Cost	Annual Operation & Maintenance
Reimbursement to ODWC for loss of green tree reservoirs/marshes	-288	$87,000*	—
Construction of new green tree reservoirs	288	$350,000	$4,200
Reimbursement to ODWC for loss of revenue that would have been generated by wildlife recreational activities	3,400	$255,400**	
Total		$692,400	$4,200

*Estimate based on an initial cost of about $30,000 plus yearly inflation of 3% from 1965.
**Estimate based on an average loss of about $10,169/year as reported in the Corp's report, "Proposed Mitigation of Wildlife Resources at Wister Lake, Oklahoma", plus yearly inflation of 3% from 1983.

The Service believes all wildlife related losses at Wister Lake resulting from the conservation pool level changes should be mitigated, and that the mitigation features presented here are reasonable and justifiable. Our evaluation of the various cover types shows that most of the fish and wildlife resources affected are considered of medium to high value, but are relatively abundant on a national basis, and are therefore resource category 3 habitats according to the Service's Mitigation Policy. The mitigation goal for loss of category 3 habitat is that preferably it is to be mitigated in-kind, but it can be mitigated out-of-kind with no net loss of habitat value (Service, 1981). Due to Wister Lake's importance for waterfowl, emphasis is being placed on the management of these species to mitigate losses.

Mitigation of habitat losses could be achieved by reimbursing the ODWC for the loss of about 288 acres of green tree reservoirs, providing ODWC funds for the construction of about 200-300 acres of new green tree reservoirs, marshes, and/or other waterfowl resources, and reimbursement to ODWC for the loss of revenue that otherwise would have been generated by wildlife recreational activities had it not been for adverse impacts to wildlife habitat. Both lump sum and annual costs are included.

Three federally-listed species have the potential to occur at Wister Lake: the endangered American burying beetle and Indiana bat, and the threatened bald eagle. The Corps determined that the project would not likely adversely affect any federally-listed species. The Service concurred with this determination. Therefore, formal consultation under Section 7 of the Endangered Species Act was not required.

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APPENDIX A

TO

APRIL 2002 USFWS

FINAL

Supplemental Coordination Act Report
on
Wister Lake:
Water Reallocation Study

Concurrence Letter

WILDLIFE CONSERVATION COMMISSION

land Stonecipher, CHAIRMAN
Vyrl Keeter, VICE CHAIRMAN
Ed Able, SECRETARY
hn D. Groendyke, MEMBER
John S. "Jack" Zink, MEMBER
Lewis Stiles, MEMBER
Mac Maguire, MEMBER
Douglas Schones, MEMBER

OKLAHOMA

FRANK KEATING, GOVERNOR
GREG D. DUFFY, DIRECTOR

DEPARTMENT OF WILDLIFE CONSERVATION

1801 N. Lincoln P.O. Box 53465 Oklahoma City, OK 73152 PH. 521-3851

11 March 2002

RECEIVED
MAR 13 2002
US FISH & WILDLIFE SERVICE
TULSA ES

Jerry Brabander
U.S. Fish and Wildlife Service
222 South Houston, Suite A
Tulsa, Oklahoma 74127

Subject: Draft Fish and Wildlife Coordination Act report on Wister Lake Water Reallocation Study

Dear Mr. Brabander,

The Oklahoma Department of Wildlife Conservation (ODWC) submits the following comments in regard to the draft Fish and Wildlife Coordination Act report on the Wister Lake Water Reallocation Study being conducted by the U.S. Army Corps of Engineers, Tulsa District (Corps). The draft report is being prepared under authority of and in accordance with the Fish and Wildlife Coordination Act in fulfillment of the reporting requirements set forth in Section 2(b) of the Act, and is intended to accompany the Corp's draft survey report for the study.

The U.S. Fish and Wildlife Service (Service) has coordinated with the ODWC in the preparation of this draft Fish and Wildlife Coordination Act report on the Wister Lake Water Reallocation Study. After reviewing this draft report, we found our comments and concerns are properly reflected in the report. As stated in the Service's report, mitigation could be achieved by the reimbursement of the construction cost of 288 acres of green tree reservoirs, creation of 288 acres of green tree reservoirs, marshes, and/or waterfowl resources, and the reimbursement to ODWC for the loss of revenue from lost hunting and other wildlife recreational opportunities. We believe this report properly addresses the concerns of this department regarding mitigation of lost fish and wildlife habitat. We concur with the statements provided by the Service in this report.

The ODWC appreciates the opportunity to review this report and submit comments. If I can be of further assistance, please contact me at (405) 521-4602.

Sincerely,

Ron Suttles
Natural Resources Administrator

cc: U.S. Fish and Wildlife Service, Tulsa OK (Attn: Mr. Richard Stark)

APPENDIX B

TO

APRIL 2002 USFWS

FINAL

Supplemental Coordination Act Report
on
Wister Lake:
Water Reallocation Study

Comment Letter on December 2001 Draft

DEPARTMENT OF THE ARMY
U.S. ARMY, CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101ST EAST AVENUE
TULSA, OKLAHOMA 74128-4609

March 6, 2002

Environmental Analysis and Compliance Branch
Planning Environmental and Regulatory Division

RECEIVED
MAR 15 2002
US FISH & WILDLIFE SERVICE
TULSA ES

Mr. Jerry J. Brabander, Field Supervisor
Fish and Wildlife Service
Ecological Services
222 S. Houston, Suite A
Tulsa, Oklahoma 74127

Dear Mr. Brabander:

We have reviewed the Draft Fish and Wildlife Coordination Act Report (CAR) for the Wister Lake Reallocation Study dated December 2001 and have the following minor comments:

Page 5, second paragraph, next to last sentence. The reference to median surface area should be 7,400 acres instead of 7,100 acres.

Page 13, last line. The figure 7,400 acres should be 7,400 acres.

Page 15, Tabular display, third column, row eight. The figure 7,080 should be 7,386.

Please make the noted corrections and finalize the report. We request these changes NLT 15 March 2002 so that the final CAR can be included in the environmental impact statement for this project and circulated for public review and comments.

If you have any questions please contact Jim Randolph at 918-669-4396. Your efforts on completing this report are appreciated.

Sincerely,

Larry D. Hogue
Chief, Planning, Environmental and
Regulatory Division