



**DEPARTMENT OF ARMY**  
CORPS OF ENGINEERS, TULSA DISTRICT  
1645 SOUTH 101<sup>ST</sup> EAST AVENUE  
TULSA, OKLAHOMA 74128-4609

April 29, 2015

Operations Division  
Natural Resource and Recreation Branch

TO INTERESTED PARTIES

The Tulsa District and the Regional Planning and Environmental Center (RPEC) have revised the 1978 Tenkiller Ferry Lake Master Plan and have assessed the environmental impacts of this Master Plan revision. The Master Plan is the strategic land use management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of the water resource project. The Master Plan guides the efficient and cost-effective comprehensive management and development of all project recreational, natural and cultural resources throughout the life of the Corps project.

This Master Plan revision and Environmental Assessment (EA) was prepared in accordance with U.S. Army Corps of Engineers Regulation 1130-2-550, Project Operations - Recreation Operations and Maintenance Policies and Part 230, Policy and Procedures for Implementing the National Environmental Policy Act. It has been determined from the referenced EA that adoption of the Master Plan revision will have no significant adverse impacts on the natural or human environment.

The Draft Master Plan revision and Draft Environmental Assessment are available on the Tulsa District web page for your review (<http://www.swt.usace.army.mil>). If you have comments they should be submitted within 30 days from the date of this letter to the U.S. Army Corps of Engineers, Tulsa District, ATTN: Natural Resource and Recreation Branch (Tenkiller Ferry Lake Master Plan Revision), 1645 South 101<sup>st</sup> East Avenue, Tulsa, Oklahoma 74128 or to Dr. Tony Clyde at [Tony.Clyde@usace.army.mil](mailto:Tony.Clyde@usace.army.mil).

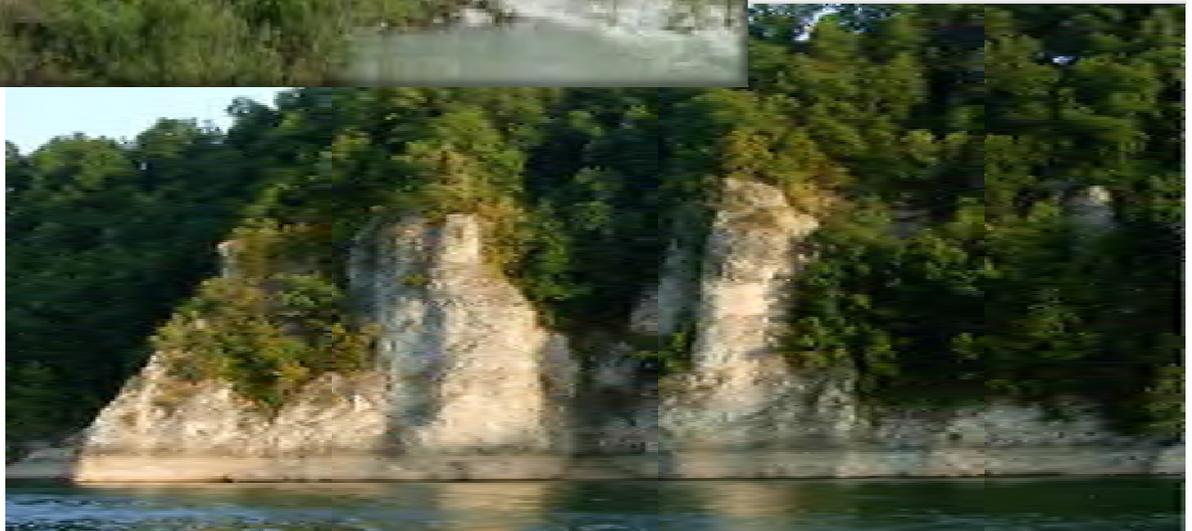
Sincerely,

A handwritten signature in black ink, appearing to read "S. Nolen", followed by a horizontal line extending to the right.

Stephen L. Nolen  
Chief, Natural Resources  
and Recreation Branch

# DRAFT MASTER PLAN

## Tenkiller Ferry Lake Illinois River, Oklahoma



**US Army Corps  
of Engineers®**  
Tulsa District

**March 2015**

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1 **CHAPTER 1 - INTRODUCTION**  
2

3 **1.1. PROJECT AUTHORIZATION**

4 Tenkiller Ferry Lake was authorized by the Flood Control Act approved June 28, 1938.  
5 Installation of power features were authorized by the River and Harbor Act approved July 24,  
6 1946; Project Document Committee No. 1, 75th Congress, 1st Session, HD 758, 79th  
7 Congress, 2d Session. The originally-authorized purposes of the lake included flood control  
8 and hydroelectric power generation.  
9

10 **1.2. PROJECT PURPOSE**

11 Tenkiller Ferry Lake is a feature of the project for comprehensive development of the  
12 Arkansas River and tributaries for flood risk management, hydroelectric power, water supply,  
13 natural resource management, and recreation. Additionally, hydroelectric generation provides  
14 regulated flows from Tenkiller Ferry Reservoir into the McClellan-Kerr Arkansas River  
15 Navigation System (MKARNS).  
16

17 **1.3. PURPOSE AND SCOPE OF MASTER PLAN**

18 This report proposes public use development and conservation necessary to develop  
19 and conserve existing project lands to realize the optimal potential of the project. This plan  
20 incorporates conservation, enhancement, development, operation, management, and public  
21 interest use of all project lands, waters, forests, and other resources throughout the life of the  
22 project, and includes plans showing the most desirable and feasible locations and types to  
23 meet these goals. Emphasis has been placed on a balanced approach to public access,  
24 camping, shoreline use, water based recreation, and conservation. Adequate facilities and  
25 land-based requirements are proposed to insure all desired recreational opportunities are  
26 achieved and assure compliance with applicable environmental regulations, laws and  
27 policies. This plan also proposes proper utilization of natural resources and recreational  
28 facilities in regards to available funding while at the same time preserving the biological,  
29 scenic, scientific and wildlife resources, plus protecting and enhancing the primary project  
30 purposes and benefits. The plan is presented with recreational enhancement funded by the  
31 Government limited to existing public use areas rather than acquisition and development of  
32 new ones.

33 **1.4. DESCRIPTION OF PROJECT AND WATERSHED**

34 Major construction of dam was started in June 1947. The spillway, outlet works, and  
35 tunnels were completed in 1951, and embankment closure occurred in May 1952.  
36 Impoundment of the power pool began in July 1952. The project was completed for full flood  
37 control operation in July 1953. Installation of the two hydropower units was completed in  
38 December 1953 and power generation was initiated. Work on the repair and extension of the  
39 spillway apron was initiated in July 1960 and completed in August 1961.  
40

41 In fiscal year 2003, Phase 1 of a dam safety project was begun at the lake. Phase 2  
42 began in fiscal year 2004 and was completed in fiscal year 2006. The dam safety project

1 consists of an auxiliary spillway with five 50-foot wide by 35-foot high tainter gates  
2 constructed near the right abutment of the embankment. The spillway structure is similar to  
3 the existing spillway. In addition, a new Highway 100 bridge was built to carry traffic across  
4 the upstream approach channel for the new spillway. On November 29, 2006, a ribbon  
5 cutting ceremony was held marking the completion of the spillway project.  
6

7 The dam structure is a rolled, impervious and semi-pervious earth-filled dam  
8 approximately 3,000 feet long with a maximum height of 197 feet above the streambed  
9 elevation 480.20 feet. Oklahoma State Highway 100 extends across the top of the dam. An  
10 earth-filled dike approximately 1,350 feet long is located between the right end of the dam  
11 and the spillway.  
12

13 The spillway and outlet works include a concrete-gravity spillway, located in a narrow ridge  
14 comprising the right abutment of the dam about 800 feet west of the axis of the dam, with a  
15 total width of 590 feet. Spillway capacity is 290,400 cubic feet per second (cfs) at maximum  
16 pool (elevation 672.2') with flow controlled by ten 50- by 25-foot tainter gates. A flood  
17 control outlet extending through the narrow ridge comprising the right abutment consists of a  
18 19-foot conduit. Capacity of the conduit is 23,300 cfs at the top of the flood control pool.  
19 Flow through the conduit is controlled by two 9- by 19-foot tractor-type service gates  
20 installed at the upstream end of the conduit and operated by individual electric hoists located  
21 on the operating floor of the gate tower structure. A 19-foot-diameter penstock is provided  
22 through the narrow ridge comprising the right abutment to the powerhouse.  
23

24 Tenkiller Ferry Lake straddles two ecoregions: the upper one-third portion of the  
25 lake is situated in the Dissected Springfield Plateau-Elk River Hills ecoregion of the Ozark  
26 Highlands in the Springfield Plateau physiographic region; the lower two-thirds portion of  
27 the lake is situated in the Lower Boston Mountains ecoregion of the Boston Mountains in the  
28 Ozark Mountains physiographic province.  
29

30 The Dissected Springfield Plateau-Elk River Hills ecoregion is characterized by  
31 moderately to highly dissected and hilly, with narrow ridgetops separated by steep V-shaped  
32 valleys. Karst features are common. Spring seeps are common along streams and contribute  
33 to stream flow during the normally dry periods of summer and fall. As such, most streams are  
34 perennial.  
35

36 The Lower Boston Mountains ecoregion is characterized by rounded high hills and  
37 benches. In drier summer months, streams typically contain little to no flow, however water  
38 still moves through the landscape in interstitial spaces between pools. Stream substrates are  
39 mostly rocky and consist of gravel, cobbles, and boulders. In larger water bodies, some  
40 organic material or mud substrates may occur.  
41

42 Natural vegetation in these areas generally consists of species in the oak-hickory  
43 forest association and includes species of blackjack oak, post oak, scarlet oak, and black  
44 hickory in the drier upland areas. Species that are generally found along stream banks and in  
45 floodplains typically consist of bottomland forests and include species of pecan, oak, maple,

1 birch, sycamore, cottonwood, elms, and willow. Common understory species include woody  
 2 species of sumac, hawthorn, wild plum, and rough leaved dogwood. Herbaceous species  
 3 include bluestems, sedges, panic grass, and broomsedge.

4 **1.5. PRIOR DESIGN MEMORANDA**

5 <u>Memo #</u>	6 <u>Title</u>	7 <u>Date Submitted</u>	8 <u>Date</u>
9 1B(C1)	10 Public Use and Access Facilities	11 Jun 1961	12 Sep 1961
	13 Master Plan for Tenkiller Ferry 14 Reservoir, Illinois River		15 Oct 1953
16 1C	17 Master Plan for Tenkiller Ferry 18 Dam and Reservoir (Update)	19 Oct 1962	20 Mar 1964
21 1C	22 Master Plan for Tenkiller Ferry 23 Dam and Reservoir (Update)		24 Aug 1978
25 2	26 Tenkiller Ferry Lake, Illinois River, 27 Oklahoma: Design Memoranda No. 2, auxiliary spillway and existing spillway modifications		2006

28 **1.6. PERTINENT PROJECT INFORMATION**

29 Table 1.1 provides pertinent information regarding existing reservoir storage  
 30 capacity.

31 Table 1.1. Tenkiller Ferry Lake and Dam pertinent data.

32 <b>Feature</b>	33 <b>Elevation (feet)</b>	34 <b>Area (acres)</b>	35 <b>Capacity (acre-feet)</b>	36 <b>Equivalent Runoff<sup>(1)</sup> (inches)</b>
37 Top of Dam	677.2	-	-	-
38 Top of Gates & Flood Control Pool	667.0	20,800	1,230,800	14.33
39 Flood Control Storage	632.0-667.0	-	576,700	6.72
40 Spillway Crest	642.0	14,700	791,900	9.22
41 Top of Conservation Pool	632.0	12,900	654,100 <sup>(2)</sup>	7.62
42 Conservation Storage	594.5-632.0	-	371,000	4.32
43 Top of Inactive Pool	594.5	-	283,100	3.30

(1) From a 1,610-square-mile drainage area above the dam.

(2) Includes 25,400 acre-feet for water supply, 345,600 acre-feet for power drawdown storage, and 283,100 acre-feet of dead storage.

28

1           **CHAPTER 2 - PROJECT SETTING AND FACTORS INFLUENCING**  
2                                   **MANAGEMENT AND DEVELOPMENT**

3  
4           **2.1. DESCRIPTION OF RESERVOIR**

5           Tenkiller Ferry Dam and Reservoir is a unit of a system of river improvement works  
6 in the Arkansas and Lower Mississippi River Basins. The project was initially authorized for  
7 Flood control by the Flood Control Act of 1938, and was later authorized for generation and  
8 hydroelectric power by the Harbor Act of 1946. Authorized Project Purposes include Flood  
9 Control and Hydroelectric Power.

10  
11           Construction was completed in 1953 at an approximate cost of \$23 million. The  
12 Tenkiller Ferry Lake powerhouse contains two 20,000-kilawatt hydroelectric generators, and  
13 produces commercial electric power which is valued at approximately 8 million dollars a  
14 year. Currently there are six Class A and two Class C campgrounds and several day use parks  
15 operated by USACE with numerous other facilities operated by State, private entities and  
16 local governments that have approximately 2.5 to 3 million visitors annually.

17  
18           Tenkiller Lake has 654,100 acre-feet of storage that is utilized for flood control, water  
19 supply, and generation of hydroelectric power. The conservation pool, with top at elevation  
20 632.00 feet above sea level, is fully allocated. Allocation of storage in Tenkiller Ferry Lake  
21 includes 25,400 acre-feet for water supply, 345,600 acre-feet for power drawdown storage,  
22 and 283,100 feet of dead storage. An acre-foot of water is equivalent to one foot of water  
23 spread over one acre of land. The conservation pool covers an area of 12,900 acres. The  
24 flood control pool, with top at elevation 667.00 feet, will have an additional capacity of  
25 576,700 acre-feet, making a total capacity of 1,230,800 acre-feet, and will cover a total area  
26 of 20,800 acres. This flood-control pool will be kept empty except during flood periods.  
27 Then the water in excess of channel capacity of Illinois River below the dam will be stored in  
28 the flood control pool until such time as it can be released without causing floods  
29 downstream from the project. The entire flood control storage of the lake can be expected to  
30 be utilized once every 10 years.

31  
32           **2.2. HYDROLOGY AND GROUNDWATER**

33           Tenkiller Ferry Dam is located on the Illinois River at river mile 12.8 and the  
34 watershed comprises 1,610 square-miles above the dam. The reservoir has the Illinois River,  
35 as its major tributary. Major tributaries include the Barren Fork. Minor tributaries include  
36 Caney Creek, Dry Creek, Elk Creek, Sixshooter Creek, Terrapin Branch, Chicken Creek,  
37 Snake Creek, Cato Creek, Pine Creek, Parkhill Creek, Pettit Creek, Sisemore Creek, Burnt  
38 Cabin Creek, Dogwood Creek, Salt Creek, and Lender Branch. Groundwater basins within  
39 the Tenkiller Ferry Lake regions include the Northeastern Oklahoma Minor Groundwater  
40 Basin (NOMGB) and the Boone Aquifer in all, or portions of, Adair, Cherokee, Craig,  
41 Delaware, Mayes, Ottawa, and Sequoyah Counties, Oklahoma.

42  
43           The NOMGB is comprised of Pennsylvanian and late Mississippian deposits that  
44 occur as shale, siltstone, coal, thin limestones, and widely separated sandstone units. Average

1 formation thickness is estimated to be 250 feet with an average saturated thickness of  
2 approximately 200 feet. The formations have very little primary porosity and their ability to  
3 store and transmit water is limited. Bedding plane openings are the principal avenues for  
4 water entry and movement and water also moves through fractures and joints. Recharge  
5 entering the basin is derived mainly from precipitation falling on the outcrop.  
6

7 The Boone aquifer is overlain by younger Mississippian and Pennsylvanian  
8 formations along the western and southern edges of the basin. The formation consists of  
9 alternating sequences of low-permeability shale and low-permeability to permeable  
10 limestone, sandstone, and coal. Formation thickness is ranges from zero to greater than 400  
11 feet. The average saturated thickness is approximately 200 feet. The formations have very  
12 little primary porosity and their ability to store and transmit water is limited. Recharge to the  
13 Boone aquifer is almost entirely from infiltration of precipitation in areas were the Boone  
14 Formation crops out. Bedding plane openings, fractures, and joints are the principal avenues  
15 for water recharge.

### 16 **2.3. SEDIMENTATION AND SHORELINE EROSION**

17 The lake inflow carries a minimal amount of sediment because of the stony soils  
18 upstream of the project. Sedimentation and shoreline erosion have not contributed  
19 substantially to volume losses in the reservoir and no measures of sediment have been made  
20 since impoundment.  
21

### 22 **2.4. WATER QUALITY**

23 In general, Tenkiller Ferry Lake is classified as eutrophic based on Trophic State  
24 Index (TSI) index values calculated by the Oklahoma Water Resources Board in 2012.  
25 Elevated nutrient (nitrogen and phosphorus) concentrations, elevated levels of chlorophyll a,  
26 and increasing incidence of nuisance algal blooms support this classification. The lake is  
27 listed in the State of Oklahoma Water Quality Standards (WQS) as a nutrient limited water  
28 (NLW) indicating the Aesthetics beneficial use is considered threatened by nutrients until  
29 additional studies can be conducted to confirm the non-support status of the reservoir. The  
30 2012 303(d) List of Impaired Waters reports Tenkiller Ferry Lake does not support  
31 designated beneficial uses in the following categories: 1) Fish and Wildlife Propagation  
32 owing to turbidity values exceeding the WQS numeric criteria; 2) Public and Private Water  
33 Supply owing to chlorophyll a values exceeding WQS numeric criteria; and, 3) Aesthetics  
34 owing to elevated nutrient concentrations resulting in the NLW classification in the WQS.  
35

36 Overall, water quality in Tenkiller Ferry Lake can be characterized as good. Recorded  
37 pH values range from 6.56 to 9.02 standard units (less than 1% of recorded values exceed  
38 WQS numeric criteria) and fluctuate seasonally with algal activity. Surface total nitrogen  
39 values range from 0.40 mg/l to 3.43 mg/l and surface total phosphorus values range from  
40 0.005 mg/l to 0.097 mg/l and the ratio of nitrogen to phosphorus in the reservoir indicates the  
41 nutrient most limited for biological growth and primary production is phosphorus. Specific  
42 conductance values range from 177  $\mu\text{S}/\text{cm}$  to 278  $\mu\text{S}/\text{cm}$  indicating low concentrations of  
43 ionized salts. Fecal coliform counts are generally below WQS, however occasional

1 exceedances have been reported historical resulting in the temporary closure of swimming  
2 beaches.

3  
4 The frequency and duration of harmful algae blooms (HABs) and nuisance algae  
5 blooms have increased in Tenkiller Ferry Lake since 2000. The majority of nuisance and  
6 harmful algae blooms have been cyanobacteria blooms, however occasional dinoflagellate  
7 blooms; are reported in isolated coves of the lake. Recorded cyanobacterial bloom cell  
8 densities frequently exceed established World Health Organization public health guidelines  
9 for primary body contact for low (> 20,000 cells/ml cyanobacteria) and moderate (> 100,000  
10 cells/ml cyanobacteria) risk of adverse health effects. Additionally, the hepatotoxin (liver  
11 toxin) microcystin has regularly been detected in Tenkiller Ferry Lake at concentrations  
12 ranging from non-detect to 5 ug/l to 0.252 ug/l, and below the WHO recreation guidelines of  
13 20 ug/l.

## 14 **2.5. TOPOGRAPHY, GEOLOGY, AND SOILS**

15 Tenkiller Ferry Lake straddles two ecoregions: the upper one-third portion of the  
16 lake is situated in the Dissected Springfield Plateau-Elk River Hills ecoregion of the Ozark  
17 Highlands in the Springfield Plateau physiographic region; the lower two-thirds portion of  
18 the lake is situated in the Lower Boston Mountains ecoregion of the Boston Mountains in the  
19 Ozark Mountains physiographic province.

20  
21 The Dissected Springfield Plateau-Elk River Hills ecoregion is characterized by moderately  
22 to highly dissected and hilly, with narrow ridgetops separated by steep V-shaped valleys.  
23 Karst features are common. Spring seeps are common along streams and contribute to stream  
24 flow during the normally dry periods of summer and fall. As such, most streams are  
25 perennial.

26  
27 The Lower Boston Mountains ecoregion is characterized by rounded high hills and benches.  
28 In drier summer months, streams typically little to no flow, but water still moves through the  
29 landscape in interstitial spaces between pools. Stream substrates are mostly rocky and consist  
30 of gravel, cobbles, and boulders. In larger water bodies, some organic material or mud  
31 substrates may occur.

32  
33 The terrain is rugged with elevations varying from about 2,500 to 1,250 feet, NGVD. The  
34 highest ridges and peaks are capped with sandstone and shales of Pennsylvanian age. The  
35 deeply eroded valleys are cut into the underlying Mississippian limestone and Ordovician  
36 dolomite. The soils of this region have a high infiltration rate. The soils of this area vary  
37 widely in fertility, structure, and use. The majority of the soils are stony in texture and well  
38 drained. To the north of the project, the Illinois River and its principal tributaries flow  
39 through heavily wooded deeply dissected hillsides surround by low and gently rolling fields.  
40 Natural cover consists of hardwood forests with grasses in the medium to open forest canopy  
41 areas. Pine tree forests can be found in the rolling hill areas.

42  
43 The average elevation of the tablelands is about 1,250 feet. The valley slopes are steep and  
44 rocky, and most of the area is covered with a light growth of timber and underbrush. The

1 average fall of the Illinois River is about 8 feet per mile, varying from approximately 20 feet  
2 per mile in the upper reaches to approximately 3 feet per mile in the lower reaches. The  
3 valley averages one-half mile in width, while the river channel varies in width from 200 to  
4 600 feet. The riverbanks average 10 feet in height. The principal tributaries are the Muddy  
5 Fork, Osage Creek, Flint Creek, Barren Fork, and Caney Creek. All of these tributaries enter  
6 the Illinois River above Tenkiller Ferry Dam, with the Barren Fork being the largest and  
7 most important.

8  
9 Soils within the valley are comprised mostly of alluvially deposited sandy and silty loams  
10 formed from the decomposition of local sandstones and shales. These soils generally consist  
11 of very deep, moderately drained, and rapidly permeable upland soils that formed in sandy  
12 Pleistocene sediments. The type and range sites of these soils are described in the following  
13 paragraphs.

- 14  
15 1. Claypan prairie is on areas of nearly level to moderately sloping soils on  
16 uplands and consists of Okemah silty clay loam, 1 to 3 percent slopes. Soils in  
17 the group are 2 percent Mayes and 2 percent Parsons.
- 18  
19 2. Heavy Bottomland is on areas that are often overflowed and consists of Osage  
20 clay, 0 to 1 percent slopes. The soils are deep clay and consist of 95 percent  
21 Osage soil.
- 22  
23 3. Loamy Bottomland is on bottomlands. The soils are deep and loamy and are  
24 comprised of Elsay very gravelly loam, 0 to 3 percent slopes, consisting of  
25 Healing and Razort soils; Osage clay, 0 to 1 percent slopes, consisting of  
26 Verdigris soil; Cleora fine sandy loam, 0 to 2 percent slopes, consisting of  
27 Cleora soil; and Mason silt loam, 0 to 1 percent slopes, consisting of 90  
28 percent Mason, 5 percent Speer, 3 percent Cleora, and 2 percent Cupco soils.
- 29  
30 4. Loamy Prairie is on uplands. The soils are nearly level to moderately steep  
31 and are on convex slopes of low ridges and on the side slopes of moderately  
32 steep ridges in broad valleys. The soils are comprised of Enders-Linker-  
33 Hector association, 5 to 30 percent slopes, consisting of Eram soil; Newtonia  
34 silt loam, 1 to 5 percent slopes, consisting of Newtonia, Dennis, Okemah, and  
35 Britwater soils; Okemah silty clay loam, 1 to 3 percent slopes, consisting of  
36 Okemah and Dennis soils; and Shidler stony silty clay loam, 10 to 25 percent  
37 slopes, consisting of Lula and Catoosa soils.
- 38  
39 5. Very shallow is in areas of nearly level to gently sloping, very shallow soils.  
40 The surface layer is 6 to 10 inches deep over limestone. The soils are  
41 comprised of the Shidler-Rock outcrop complex, 2 to 50 percent slopes, and  
42 Shidler stony silty clay loam, 10 to 25 percent slopes. Soils are primarily  
43 comprised of Shidler soils and are extremely rocky.
- 44

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41  
42  
43  
44  
45
6. Eroded Claypan Prairie is in areas where part or all of the A horizon has been removed by erosion and the soil integrity has been altered. The soils are comprised of Apperson silty clay loam, 3 to 5 percent slopes, consisting of 88 percent Apperson, 8 percent Okemah, 3 percent Dennis, 1 percent Shidler soils.
  7. Eroded Loamy Prairie is in areas where part or all of the A horizon has been removed by erosion and the soil integrity has been altered. The soils are comprised of Apperson silty clay loam, 3 to 5 percent slopes, consisting of Okemah and Dennis soils.
  8. Eroded Very Shallow is in areas where part or all of the A horizon has been removed by erosion and the soil integrity has been altered. The soils are comprised of Apperson silty clay loam, 3 to 5 percent slopes, consisting of thin Shidler soil.
  9. Smooth chert savannah is on cherty uplands on the more gently sloping ridges and footslopes in the Ozark Highlands. The soils are comprised of Clarksville very gravelly silt loam, 5 to 20 percent slopes, consisting of Britwater and Nixa soils; Clarksville very gravelly silt loam, 20 to 50 percent slopes, consisting of Britwater and Nixa soils; Tonti gravelly silt loam, 1 to 3 percent slopes, consisting of Captina and Britwater soils; Newtonia silt loam, 3 to 5 percent slopes, consisting of Britwater soil; Healing silt loam, 0 to 1 percent slopes, consisting of Britwater soil; Razort gravelly loam, 0 to 3 percent slopes, consisting of Britwater soil; Stigler silt loam, 0 to 1 percent slopes, consisting of Stigler and Captina soils; Sallisaw loam, 1 to 3 percent slopes, consisting of Sallisaw soil; and Sallisaw loam, 3 to 5 percent slopes, consisting of Sallisaw soil.
  10. Loamy Savannah is in areas of nearly level to gently sloping, rolling, deep soils on uplands. The soils are comprised of Shermore loam, 1 to 3 percent slopes, consisting of Stigler soil; Stigler-Wrightsville complex, 0 to 1 percent slopes, consisting of Stigler and Vian soils; and Linker-Hector complex, 3 to 5 percent slopes, comprised of Stigler soil.
  11. Sandy Savannah is in areas of nearly level to steep, sandy soils on uplands. The soils are comprised of Hector fine sandy loam, 3 to 5 percent slopes, consisting of Hector and Linker soils; Enders-Linker-Hector association, 5 to 30 percent slopes, consisting of Enders, Linker, and Eram soils; Rock outcrop-Hector complex, 40 to 100 percent slopes, consisting of Linker soil; and Shermore loam, 1 to 3 percent slopes, consisting of Shermore and Linker soils.
  12. Savannah breaks is in steep and very steep, rocky areas that have large sandstones on or near the surface. Large amounts of bare rock on the surface

1 restrict forage production. The soils are comprised of Rock outcrop-Hector  
2 complex, 40 to 100 percent slopes, consisting of Hector soil and Enders-  
3 Linker-Hector association, 5 to 30 percent slopes, consisting of Endsaw soil.  
4

- 5 13. Shallow savannah is in areas of rugged topography on low, mountainous  
6 ridges. The soil is comprised of Hector fine sandy loam, 3 to 5 percent slopes,  
7 consisting of Hector soil; Enders-Linker-Hector association, 5 to 30 percent  
8 slopes, consisting of Hector soil; and Linker fine sandy loam, 3 to 5 percent  
9 slopes, consisting of Hector soil.

## 10 **2.6. RESOURCE ANALYSIS**

### 11 12 **2.6.1. Fish and Wildlife Resources**

13 Tenkiller Ferry Lake provides habitat for an abundance of various wildlife and  
14 fisheries located both in the lake proper and in the tailwater area.  
15

16 The lake provides fishing opportunities for the boater and bank angler. Cooperative efforts  
17 between the USACE and the ODWC have improved fishing success rates with installation of  
18 fish habitat and maintenance of access areas throughout the project. Common sport fish  
19 species present in Tenkiller Ferry Lake include largemouth bass, spotted bass, smallmouth  
20 bass, white crappie, black crappie, white bass, and channel catfish. Other species include a  
21 variety of smaller sunfish, minnows, darters, and shad. Additional angler opportunities exist  
22 in the tail water trout fishery. This fishery is managed by the ODWC as a put-and-take  
23 fishery through active annual stocking of rainbow and brown trout. Other species present in  
24 the lake tailwaters include crappie, bass, sunfish, flathead catfish, and channel catfish.  
25

26 USACE licenses 2590.125 acres of land to the ODWC for the purposes of wildlife  
27 management. The majority of which comprises the Tenkiller Wildlife Management Area  
28 (WMA) in Cherokee and Sequoyah Counties. The Tenkiller WMA is a mixture of upland  
29 areas and riparian habitat associated with Tenkiller Lake and is managed for both game and  
30 non-game species. Game species of interest within the Tenkiller WMA include bear, white-  
31 tailed deer, turkey, quail, rabbit, squirrel, dove, coyote, bobcat, gray fox, raccoon, skunk,  
32 mink and opossum. Non-game species of interest within the Tenkiller WMA include bald  
33 eagles and other raptors, migratory shore birds, and various song birds. The ODWC submits  
34 a five year management plan to USACE for review and approval on an annual basis. In  
35 addition to the areas leased to the ODWC, several units managed by USACE also provide  
36 excellent game and non-game habitat. USACE managed units are approximately 5,165 acres.  
37 These areas are also popular with both hunters and individuals wishing to observe wildlife in  
38 their natural habitat. Species that are located in these areas includes: white-tailed deer,  
39 squirrel, cottontail rabbit, raccoon, turkey, quail (limited), dove, eagles, waterfowl, and  
40 various song birds.

### 41 **2.6.2. Vegetative Resources**

42 The vegetative resources of the Tenkiller Ferry Lake project were classified using  
43 information derived from the National Vegetation Classification System. Level 1

1 Environmental Inventory GIS data was used to download and analyze this data and the  
 2 results are displayed in Table 2.1.

3  
 4 **2.6.3. Threatened and Endangered Species**

5 Table 2.2 lists the federally listed threatened and endangered species thought to occur  
 6 on Tenkiller Ferry Lake fee lands.

7  
 8 **2.6.4. Invasive Species**

9 Table 2.3 lists the important invasive species that occur on Tenkiller Ferry Lake fee  
 10 lands. Data were retrieved from the FY2014 Project Site Invasive Species Records in  
 11 reported in OMBIL.

12 Table 2.1. Vegetative Resources of the Tenkiller Ferry Project.

13

<b>Division</b>	<b>Order</b>	<b>Class</b>	<b>Sub-Class</b>	<b>Acreage</b>
DEVELOPED/OTHER LANDCOVER*	Agricultural	Crop	Warm season	168
DEVELOPED/OTHER LANDCOVER*	Agricultural	Improved/introduced pasture	Warm season	1,317
DEVELOPED/OTHER LANDCOVER*	Urban	Residential/industrial	Non-Vegetated	616
DEVELOPED/OTHER LANDCOVER**	Water	Lake Reservoir	Non-Vegetated	12,900
DEVELOPED/OTHER LANDCOVER*	Water	Pond	Non-Vegetated	652
FOREST*	Mainly deciduous forest	Cold deciduous broad-leaved forest with evergreen needle-leaved trees	Oak-hickory and pine forest	294
FOREST*	Mainly deciduous forest	Cold deciduous broad-leaved forest with evergreen needle-leaved trees	Oak cedar forests	238
FOREST*	Mainly deciduous forest	Cold deciduous forest without evergreen needle-leaved treest	Eastern crosstimbers	843
FOREST*	Mainly deciduous forest	Cold deciduous forest without evergreen needle-leaved treest	White oak-hickory forest	10,683
FOREST*	Mainly deciduous forest	Cold-deciduous alluvial forest	East central bottomland forest	45

14 \* Based on the most recent GIS information.

15 \*\* Based on fee land allocation at top of conservation pool.

1 2.6.5. Ecological Setting

2 Tenkiller Ferry Lake lies within two ecoregions. The upper one-third portion of the  
 3 lake is situated in the Dissected Springfield Plateau-Elk River Hills ecoregion of the Ozark  
 4 Highlands in the Springfield Plateau physiographic region. The lower two-thirds portion of  
 5 the lake is situated in the Lower Boston Mountains ecoregion of the Boston Mountains in the  
 6 Ozark Mountains physiographic province.

7  
 8 The Dissected Springfield Plateau-Elk River Hills ecoregion is characterized by  
 9 moderately to highly dissected and hilly, with narrow ridgetops separated by steep V-shaped  
 10 valleys. Karst features are common. Spring seeps are common along streams and contribute  
 11 to stream flow during the normally dry periods of summer and fall. As such, most streams are  
 12 perennial.

13  
 14 Table 2.2. Federally listed threatened and endangered species of the Tenkiller Ferry Project.

<b>Species</b>	<b>FED/State List</b>	<b>Inventoried Occurrence</b>	<b>Biological Opinion Issued</b>	<b>Final Recovery Requirements</b>	<b>Recovery Actions Designated</b>
Beetle, American burying	FED	Rare	Y	N	N
Plover, piping	FED	Potential	N	N	N
Tern, least	FED	Rare	Y	N	N
Knot, Red	FED	Uncommon	N	N	N
Mucket, Neosho	FED		N	N	N
Rabbitsfoot	FED		N	N	N
Bat, Gray	FED		N	N	N
Bat, Indiana	FED		N	N	N
Bat, northern long-eared	FED (proposed)		N	N	N
Bat, Ozark Big-eared	FED		N	N	N

15  
 16 Table 2.3. Invasive species documented to be present on the Tenkiller Ferry Project.

<b>Species Common Name</b>	<b>Type of Occurrence</b>	<b>Acreage Impacted</b>
Grass carp	Minor	50
Eurasian collared dove	Significant Major	10,000
European starling	Minor	10,000
Autumn olive	Minor	1,000
Johnson grass	Minor	5,000
Purple star thistle	Minor	1,000
Eastern red cedar	Significant Major	10,000
Sericea lespedeza	Minor	100
Tall fescue	Minor	1,000

1 The Lower Boston Mountains ecoregion is characterized by rounded high hills and benches.  
 2 In drier summer months, streams typically little to no flow, but water still moves through the  
 3 landscape in interstitial spaces between pools. Stream substrates are mostly rocky and consist  
 4 of gravel, cobbles, and boulders. In larger water bodies, some organic material or mud  
 5 substrates may occur. Natural vegetation in these areas generally consists of species in the  
 6 oak–hickory forest association and includes species of blackjack oak, post oak, scarlet oak,  
 7 and black hickory in the drier upland areas. Species that are generally found along stream  
 8 banks and in floodplains typically consist of bottomland forests and include species of pecan,  
 9 oak, maple, birch, sycamore, cottonwood, elms, and willow. Common understory species  
 10 include woody species of sumac, hawthorn, wild plum, and rough leaved dogwood.  
 11 Herbaceous species include bluestems, sedges, panic grass, and broomsedge.

12

13 2.6.6. Wetlands

14 Table 2.4 lists the acreages of various types of wetlands present at Tenkiller Ferry  
 15 Lake. Wetland classifications presented are derived from the USFWS Trust Resource List  
 16 generated using the Information, Planning, and Conservation System decision support system  
 17 available at <http://ecos.fws.gov/ipac/>.

18

19 Table 2.4. Wetland resources present on the Tenkiller Ferry Project.

System	NWI Code	Sub-System	Class	Subclass	Water Regime	Class Acres
Palustrine	PEM1C	NO SUB-SYSTEM	Emergent	Persistent	Seasonally Flooded	20.1
Palustrine	PEM1A	NO SUB-SYSTEM	Emergent	Persistent	Temporary Flooded	22.4
Palustrine	PEM1/USCh	NO SUB-SYSTEM	Emergent/Unconsolidated Shore	Persistent	Seasonally Flooded	18.5
Palustrine	PEM1Ch	NO SUB-SYSTEM	Emergent	Persistent	Seasonally Flooded	6.0
Palustrine	PEM1Fh	NO SUB-SYSTEM	Emergent	Persistent	Semi-permanently Flooded	4.1
Palustrine	PFO1Ah	NO SUB-SYSTEM	Forested	Broad-Leaved Deciduous	Temporary Flooded	5.3
Palustrine	PSS1/EM1C	NO SUB-SYSTEM	Scrub-shrub/ Emergent	Broad-Leaved Deciduous/ Persistent	Seasonally Flooded	13.8
Palustrine	PSS1Ah	NO SUB-SYSTEM	Scrub-shrub	Broad-Leaved Deciduous	Temporary Flooded	2.6
Palustrine	PSS1/EM1A	NO SUB-SYSTEM	Scrub-shrub/ Emergent	Broad-Leaved Deciduous/ Persistent	Temporary Flooded	8.0

20

1 Table 2.4 continued. Wetland resources present on the Tenkiller Ferry Project.  
2

System	NWI Code	Sub-System	Class	Subclass	Water Regime	Class Acres
Palustrine	PFO1Ch	NO SUB-SYSTEM	Forested	Broad-Leaved Deciduous	Seasonally Flooded	8.9
Palustrine	PFO1/USCh	NO SUB-SYSTEM	Forested/Unconsolidated Shore	Broad-Leaved Deciduous	Seasonally Flooded	7.1
Palustrine	PFO5F	NO SUB-SYSTEM	Forested	Dead	Semi-permanently Flooded	8.4
Palustrine	PFO1/EM1A	NO SUB-SYSTEM	Forested/Emergent	Broad-Leaved Deciduous/Persistent	Temporary Flooded	63.2
Palustrine	PSS1A	NO SUB-SYSTEM	Scrub-shrub	Broad-Leaved Deciduous	Temporary Flooded	15.6
Palustrine	PFO1C	NO SUB-SYSTEM	Forested	Broad-Leaved Deciduous	Seasonally Flooded	103.2
Palustrine	PFO1A	NO SUB-SYSTEM	Forested	Broad-Leaved Deciduous	Temporary Flooded	807.5
Palustrine	PUBHx	NO SUB-SYSTEM	Unconsolidated Bottom	NO SUBCLASS	Permanently Flooded	32.4
Palustrine	PUBH	NO SUB-SYSTEM	Unconsolidated Bottom	NO SUBCLASS	Permanently Flooded	10.4
Palustrine	PUBHh	NO SUB-SYSTEM	Unconsolidated Bottom	NO SUBCLASS	Permanently Flooded	12.0
Lacustrine	L1UBHh	Limnetic	Unconsolidated Bottom	NO SUBCLASS	Permanently Flooded	11,765.3
Lacustrine	L2USCh	Littoral	Unconsolidated Bottom	NO SUBCLASS	Seasonally Flooded	787.6
Lacustrine	L2UBFh	Littoral	Unconsolidated Bottom	NO SUBCLASS	Semi-permanently Flooded	561.4
Riverine	R4SBC	Intermittent	Streambed	NO SUBCLASS	Seasonally Flooded	75.6
Riverine	R2UBH	Lower Perennial	Unconsolidated Bottom	NO SUBCLASS	Permanently Flooded	379.6
Riverine	R2USC	Lower Perennial	Unconsolidated Shore	NO SUBCLASS	Seasonally Flooded	35.1

3  
4  
5

1 **2.7. CULTURAL RESOURCES**

2 2.7.1. Historic and Archaeological Features

3 A. History

4 Tenkiller Ferry Lake is located in a region that once was the Cherokee Nation (one of  
5 the Five Civilized Tribes relocated to Indian Territory during the 1800s). Among the early  
6 settlers of the area were: John Ross, Principal Chief of the Cherokee Nation; George M.  
7 Murrell, who operated a steam mill on the east side of the Barren Fork near present-day  
8 Welling; Mark Bean and Reuben Sanders, who operated a salt works in the early 1800s; and  
9 Samuel Mackey, who started another salt works in 1828. Another early day settler was  
10 Samuel Newton, who with his wife Mary established a mission in 1830.

11  
12 Historical sites in the vicinity of the project are: the City of Tahlequah, which is the  
13 oldest incorporated town in Oklahoma; the Cherokee Agency, located three miles northwest  
14 of Tahlequah; Cherokee National Capitol, which was erected in 1867 by the Tribal Council  
15 and served as the Capitol Building until 1907 (now the Cherokee County Courthouse);  
16 Bacone College, established at Tahlequah in 1880 and moved to the City of Muskogee in  
17 1882 (originally known as Indian University, it is still active); Jane Ross Miegs house, a  
18 home built over a century ago for the daughter of John Ross; the Murrell Home, which is  
19 four miles south of Tahlequah on State Highway 82 and one mile east; Park Hill (District),  
20 center of cultural, political, and economic life of the Cherokee Nation from 1836 to 1900,  
21 now overshadowed by the City of Tahlequah; and Riley’s Chapel, a Methodist Mission  
22 established in 1844, located two miles southeast of Tahlequah.

23  
24 B. Archaeology

25 Archaeological sites representative of the Paleo-Indian, Archaic, Woodland,  
26 Caddoan/Mississippian, Protohistoric (Contact), and Historic Periods are known in the larger  
27 vicinity of Tenkiller Ferry Reservoir in northeastern Oklahoma. This culture-historical  
28 sequence falls generally within the overall sequence that has been established for eastern  
29 Oklahoma. Many archaeological sites in this area have undisturbed, deeply-buried deposits;  
30 many are comprised of multi-component prehistoric and/or historic occupations. Several  
31 cultural resources investigations, including archaeological survey and excavation, were  
32 conducted incident to and post-construction of Tenkiller Ferry Reservoir. In the larger  
33 regional area there are hundreds of archaeological sites and historic standing structures on  
34 record with the Oklahoma State Historic Preservation Office (SHPO) and Oklahoma  
35 Archeological Survey (OAS). Ultimately, as a major river flowing out of the western Ozarks,  
36 the entire Illinois River Valley can be classified as an area of high sensitivity for the location  
37 of cultural resources.

38  
39 2.7.2. Cultural History Sequence

40 The following regional chronology is adopted in this Master Plan.

41  
42 A. Paleo-Indian 12,000 to 8500 BP

- 1 B. Archaic 8500 to 2000 BP
- 2 C. Woodland 2000 to 1200 BP (AD 1 to 800)
- 3 D. Caddoan/Mississippian AD 800 to 1500
- 4 E. Protohistoric (Contact) AD 1500 to 1825
- 5 F. Historic AD 1825 to present

6  
7 To aid in comparing divergent cultures and sequences in eastern Oklahoma, the  
8 following general adaptation types are used to characterize prehistoric cultural traditions.

9  
10 A. Paleo-Indian

11 Specialized, large-game hunting by small bands of hunter-gatherers was the  
12 adaptation type associated with this period. Signature stone tools are unnotched projectile  
13 points of fluted or lanceolate type, often found in contexts where mammoth or bison remains  
14 also occur. Structural remains are poorly understood, the probable result of a mobile lifestyle  
15 and the use of perishable construction materials. Three main complexes identified within this  
16 period are Clovis, Folsom, and Late Paleo-Indian (e.g., Dalton). The extent of the Paleo-  
17 Indian period was approximately 12,000 BP to 8,500 BP.

18  
19 B. Archaic

20 Plant foraging was an important subsistence strategy of hunter gatherer groups in this  
21 period and was associated with increased seasonal variability of resources during the mid-  
22 Holocene Hypsithermal period. Repeated occupation of sites and features such as rock-lined  
23 hearths and roasting pits, and grinding tools reflect intensive plant processing and the cyclical  
24 exploitation of resources. Bison were hunted on a smaller scale than previously, with greater  
25 reliance on small mammals, mussels and fish. Stone tools were often thermally cured, and  
26 included distinctive stemmed and notched projectile points. The Archaic period is  
27 traditionally divided into Early, Middle, and Late periods, the overall extent of which was  
28 approximately 8,500 BP to 2,000 BP.

29  
30 C. Woodland

31 Archaeologists in Oklahoma associate the use of ceramics in describing Woodland  
32 cultural components. Incipient horticulture was the adaptation type associated with this  
33 period, marked by the introduction of cultigens in eastern Oklahoma. Evidence for semi-  
34 permanent villages, increased reliance on wild and domestic plants, widespread use of  
35 ceramics and elaborate burials reflect the more sedentary lifestyle of Woodland cultures.  
36 Small game remained essential in subsistence. Tool assemblages are distinguished by small,  
37 corner-notched projectile points, which suggest invention of the bow and arrow.

38  
39 D. Caddoan/Mississippian

40 Agriculture, supplemented by hunting and gathering, was the adaptation type  
41 associated with village societies. Agricultural tools were recognized in artifact assemblages,  
42 along with triangular arrowpoints for hunting and pottery types that in eastern Oklahoma  
43 serve to denote this period as the Caddoan/Mississippian. Village cultures are often identified  
44 in lowland terraces of waterways where agriculture was viable. Some archaeological sites

1 from this time period have mounds associated, suggesting that those sites have some larger  
2 ceremonial or social function. Some mounds contain primary or secondary burials, but a few  
3 represent mounds on which a structure was located. Mounds such as these likely had a very  
4 specific role in the ceremonial lives of the region’s inhabitants.

5  
6 E. Protohistoric (Contact)

7 This period was defined by transitory contacts of European explorers in the eastern  
8 woodlands and central plains, substantiated by little or no historical documentation. Lifeways  
9 were subsumed under the Plains Village adaptation type, which is the Plains adaptation  
10 largely contemporaneous with Caddoan/Mississippian villages. Protohistoric sites in  
11 Oklahoma appear to be directly related to an earlier manifestation of similar village sites  
12 located further north in Kansas, including the Great Bend aspect with sites in south-central  
13 Kansas. Great Bend manifestations likely represent the proto-Wichita villages encountered  
14 by Francisco Coronado in 1541. Slightly later Proto-Wichita sites from the early 1700’s have  
15 been identified in Kay County, north-central Oklahoma, and closer to the Tenkiller Ferry  
16 Reservoir area in Tulsa County, Oklahoma. These early 1700’s Proto-Wichita sites are  
17 evidence of French influence on the southern Plains, as artifact assemblages from these sites  
18 contain metal musket parts from French firearms, glass trade beads (French), and European  
19 gunflints.

20  
21 F. Historic

22 The Reservation Period (1825-1900) was marked by the displacement and resettling  
23 of Native American tribes throughout the greater Oklahoma region. The Cherokee Nation  
24 was created in northeastern Oklahoma in 1828, soon thereafter incorporating the Quapaw and  
25 Seneca tribes. After the Civil War, the area was further divided into reserves for the Peoria,  
26 Ottawa, Wyandotte and others. From 1838 to 1871 the Neosho Agency held jurisdiction over  
27 all tribes but the Cherokee. Between the 1830s and 1850s Anglo-Americans legally occupied  
28 tribal lands to operate mission schools, trading posts, ferries, mills and blacksmith shops. The  
29 period 1850-1900 was marked by increasing Anglo-American land speculation and enhanced  
30 military supply lines through the study region that connected Fort Gibson, Fort Scott and Fort  
31 Leavenworth during the Civil War. Pioneer settlement of homesteads and towns began in  
32 earnest in southeastern Kansas during the 1860s following the removal of Native American  
33 tribes to Oklahoma. This trend was somewhat delayed in northeastern Oklahoma where the  
34 Cherokee Nation maintained a loose hold on sovereignty. By the 1890s, however, towns such  
35 as Miami and Ottawa in northeastern Oklahoma were firmly rooted.

36 **2.8. DEMOGRAPHICS**

37 2.8.1. Population

38 The total population for the zone of interest is 223,109, as shown in Table 2.5. About 32% of  
39 the population is in Muskogee County, 22% in Cherokee County, 19% in Delaware County,  
40 18% in Sequoyia County and 9% in Adair County. The population in the zone of interest  
41 makes up approximately 6% of the total population of Oklahoma. From 2013 to 2065, the  
42 population in the zone of interest is expected to increase to 339,032, an annual growth rate of  
43 0.8% per year. By comparison, the population of Oklahoma is projected to increase at a rate

1 of 0.6% per year. The distribution of the population among gender is approximately 49%  
 2 male and 51% female in all geographical areas, as shown in Table 2.6.

3

4 Table 2.5. 2013 Population Estimates and 2065 Projections.

<b>Geographical Area</b>	<b>2013 Population Estimate</b>	<b>2065 Projection</b>
Oklahoma	3,850,568	5,280,026
Adair County	22,194	32,391
Cherokee County	48,017	79,204
Delaware County	41,377	74,060
Muskogee County	70,303	85,457
Sequoia County	41,218	67,920
<b>Zone of Interest Total</b>	<b>223,109</b>	<b>339,032</b>

Source: U.S. Bureau of the Census, American Fact Finder (2013 Estimate)  
 Oklahoma State Data Center (2065 Projections)

5

6 Table 2.6. 2013 Population Estimate by Gender.

<b>Geographical Area</b>	<b>Male</b>	<b>Female</b>
Oklahoma	49.5%	50.5%
Adair County	50.0	50.0
Cherokee County	49.3	50.7
Delaware County	49.3	50.7
Muskogee County	48.9	51.1
Sequoia County	49.3	50.7
<b>Zone of Interest Total</b>	<b>49.2</b>	<b>50.8</b>

Source: U.S. Bureau of the Census, American Fact Finder

7

8 Table 2.7 shows the population by age group. The distribution by age group is similar  
 9 among the counties, zone of interest and the state overall. The largest age group is the 45 to  
 10 54, with 14% of the total population for each geographic area. Approximately 36-38% of the  
 11 total population for each area is between 25 and 54 years of age.

12

13 Population by race and Hispanic Origin is displayed in Table 2.8. For the zone of  
 14 interest, 57% of the population is White, 20% American Indian or Native Alaskan, 13% two  
 15 or more races, 5% Hispanic, and 4% Black. The remainder of the races makes up less than  
 16 1% each. By comparison, for the state, 68% of the population is White, 9% Hispanic, 7%  
 17 each for Black, American Indian/Native Alaskan, and two or more races, 2% Asian, with the  
 18 remaining less than 1% each.

19 **2.8.2. Education and Employment**

20

21 In the zone of interest, for 36% of the population 25 years old and older the highest  
 22 level of education attained is a high school diploma or equivalent. Twenty-four percent have  
 23 some college, but no degree, 12% have a Bachelor's degree, 11% 9-12 years but with no  
 diploma, 7% have an Associate degree, 6% have a graduate or professional degree and 5%

1 have less than nine years of education. The distribution is very similar to the state overall.  
2 For Oklahoma, 32% has a high school diploma or equivalent, 24% has some college, but no  
3 degree, 16% has a Bachelor's degree, 9% 9-12 years of school but no diploma, 8% have a  
4 graduate or professional degree, 7% have an Associate degree, and 5% less than nine years  
5 of schooling. Table 2.9 shows the population over 25 years of age by highest level of  
6 educational attainment for each of the geographical areas.

7  
8 Employment by sector is presented in Table 2.10. In the zone of interest,  
9 approximately 19% of the workforce is employed in the Health Care and Social Assistance  
10 Sector, followed by 13% in Public Administration, 12% in Retail Trade, 11% in Educational  
11 Services, 10% in Manufacturing, and 8% in Accommodation and Food Services. Similarly,  
12 the largest employment sector in the state was also Health Care and Social Assistance, with  
13 14% of the total employment. The second largest employment sector in the state is Retail  
14 Trade with 11%, followed by Educational Services and Manufacturing and Accommodations  
15 & Food Services, each with 9%, Public Administration with 7%, and Administrative and  
16 Support with 6%. While manufacturing has importance in both the zone of interest and state,  
17 it is evident the economies are driven by service sector employment.

18  
19 As shown in Table 2.11, the unemployment rate is slightly higher in the zone of interest, at  
20 5.6%, than the state overall, with 4.4%. The difference is driven by a significantly higher  
21 unemployment rate in Sequoia County, at 7.2 % and a moderately higher rate in Adair and  
22 Muskogee Counties with just over 5%. Cherokee and Delaware Counties have  
23 unemployment rates closer to the state rate.

Table 2.7. 2013 Population Estimate by Age Group.

Area	Age Group												
	<5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 59	60 to 64	65 to 74	75 to 84	85 and over
Oklahoma	264,159	262,213	256,213	260,843	277,306	512,819	464,680	513,248	243,245	208,692	292,159	165,856	63,599
Adair County	1,540	1,701	1,840	1,690	1,314	2,700	2,874	3,090	1,392	1,283	1,805	957	241
Cherokee County	3,240	3,134	3,028	3,983	4,782	5,751	5,272	6,007	3,027	2,637	3,927	1,968	732
Delaware County	2,155	2,698	2,549	2,660	2,052	4,008	4,465	5,762	3,011	3,287	5,406	2,694	647
Muskogee County	4,985	4,573	5,039	4,716	4,699	8,938	8,563	9,687	4,406	4,494	5,797	3,389	1,371
Sequoia County	2,548	2,844	3,212	2,900	2,332	4,777	5,457	6,011	2,829	2,409	3,883	1,958	674
Zone of Interest	14,468	14,950	15,668	15,949	15,179	26,174	26,631	30,557	14,665	14,110	20,818	10,966	3,665

Source: U.S. Bureau of the Census, American Fact Finder

1 Table 2.8. 2013 Population Estimate by Race/Hispanic Origin.

Area	Race / Hispanic Origin							
	White	Black	American Indian or Native Alaskan	Asian	Native Hawaiian or Other Pacific Islander	Other Race	Two or more	Hispanic
Oklahoma	2,582,335	269,717	255,929	66,720	4,208	2,854	258,840	345,139
Adair County	9,453	80	8,102	144	3	13	3,383	1,249
Cherokee County	23,699	547	13,304	304	59	51	6,489	3,035
Delaware County	27,151	108	8,831	513	22	3	3,488	1,278
Muskogee County	40,984	7,766	9,610	411	11	23	8,050	3,802
Sequoya County	27,200	787	4,965	257	0	6	7,133	1,486
Zone of Interest	128,487	9,288	44,812	1,629	95	96	28,543	10,850

Source: U.S. Bureau of the Census, American Fact Finder

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3

4 Table 2.9. 2013 Population Estimate by Highest Level of Educational Attainment,  
5 Population 25 Years of Age and Older.

Area	Highest Educational Attainment							
	Population 25 Over	<9 Years	9 to 12 Years, No Diploma	High School	Some College No Degree	Associate Degree	Bachelor Degree	Graduate or Professional Degree
Oklahoma	2,464,298	113,560	221,671	782,753	595,862	171,995	387,885	190,572
Adair County	29,280	1,102	3,382	11,447	6,791	1,838	3,184	1,536
Cherokee County	29,321	1,437	2,931	8,607	7,529	1,633	4,405	2,779
Delaware County	29,280	1,102	3,382	11,447	6,791	1,838	3,184	1,536
Muskogee County	46,645	2,171	4,879	15,361	11,902	3,982	5,867	2,483
Sequoya County	27,998	1,652	3,579	11,385	5,702	1,949	2,561	1,170
Zone of Interest	162,524	7,464	18,153	58,247	38,715	11,240	19,201	9,504

Source: U.S. Bureau of the Census, American Fact Finder

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1 Table 2.10. 2013 Annual Average Employment by Sector.

Sector	Oklahoma	Adair County	Cherokee County	Delaware County	Muskogee County	Sequoyah County	Zone of Interest
Agriculture, Forestry, Fishing, and Hunting	10,284	99	641	42	94	71	947
Mining	59,551	ND	41	ND	65	77	183
Utilities	16,561	76	238	53	380	106	853
Construction	79,148	67	330	434	1,423	240	2,495
Manufacture	138,198	1,543	186	777	3,792	127	6,424
Wholesale Trade	62,171	68	ND	118	862	80	1,128
Retail Trade	177,903	500	1,659	1,268	3,154	1,336	7,918
Transportation and Warehousing	51,901	53	61	120	899	244	1,377
Information	23,704	23	72	64	339	73	569
Finance and Insurance	55,645	123	311	272	681	281	1,668
Real Estate and Rental and Leasing	22,890	13	203	58	386	42	702
Professional, Scientific and Technical Services	68,853	49	168	147	481	312	1,155
Management of Companies and Enterprises	16,590	ND	ND	ND	52	ND	52
Administrative and Support and Waste Management and Remediation Services	99,720	33	121	226	1,257	227	1,864
Educational Services	143,973	758	2,102	971	2,439	1,204	7,474
Health Care and Social Assistance	210,892	591	2,463	1,314	5,424	2,585	12,377
Arts, Entertainment and Recreation	34,998	ND	416	1,058	1,553	568	3,595
Accommodation and Food Services	139,481	285	1,186	880	2,372	820	5,544
Other Services (except Public Administration)	36,221	85	316	230	555	139	1,325
Public Administration	112,276	279	4,089	462	3,284	488	8,601
<b>TOTAL</b>	<b>1,560,960</b>	<b>4,647</b>	<b>15,206</b>	<b>8,510</b>	<b>29,491</b>	<b>9,062</b>	<b>66,916</b>

Source: Oklahoma Employment Security Commission, , citing Quarterly Census of Employment and Wages Program, Bureau of Labor Statistics

ND = Not disclosed for confidentiality purposes

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1 Table 2.11. Labor Force, Employment and Unemployment Rates, November 2014.

2

<b>Area</b>	<b>Civilian Labor Force</b>	<b>Number Employed</b>	<b>Number Unemployed</b>	<b>Unemployment Rate</b>
Oklahoma	1,796,308	1,717,345	78,963	4.4
Adair County	9,506	8,983	523	5.5
Cherokee County	22,841	21,865	976	4.3
Delaware County	18,759	17,862	897	4.8
Muskogee County	30,625	28,963	1,662	5.4
Sequoia County	16,242	15,078	1,164	7.2
Zone of Interest	97,973	92,751	5,222	5.6

Source: Oklahoma Employment Security Commission

3 2.8.3. Households and Income

4 There are approximately 84,000 households in the zone of interest with an average  
 5 household size of 2.61 persons. For the state, there are 1.4 million households, with an  
 6 average size of 2.55 persons per household, as shown in Table 2.12.

7

8 Table 2.12. 2013 Households and Household Size.

<b>Area</b>	<b>Number of Households</b>	<b>Average Household Size</b>
Oklahoma	1,444,081	2.55
Adair County	8,046	2.76
Cherokee County	16,875	2.68
Delaware County	16,589	2.47
Muskogee County	26,802	2.51
Sequoia County	15,624	2.65
Zone of Interest	83,936	2.61

Source: U.S. Bureau of the Census, American Fact Finder

9

10 As shown in Table 2.13, the zone of interest is slightly poorer than the state  
 11 overall. In the zone of interest, the median household income is almost \$36,000,  
 12 compared to the state median household income of \$45,000. Within the zone of interest,  
 13 the median household incomes are similar, with Muskogee County having the highest  
 14 (\$39,000) and Adair County the lowest (\$33,000). Similarly, the zone of interest has a  
 15 lower per capita income (\$19,000) compared to the state (\$24,000). Within the zone of  
 16 interest, Delaware County has the highest per capita income (\$21,000) and as with  
 17 median income, Adair has the lowest per capita income (\$15,000).

1 Table 2.13. Median and Per Capita Income, 2012.

Area	Median Household Income	Per Capita Income
Oklahoma	\$45,339	\$24,208
Adair County	32,556	15,116
Cherokee County	37,260	18,582
Delaware County	36,588	21,109
Muskogee County	38,502	19,868
Sequoia County	35,742	18,131
Zone of Interest	N/A	19,028

Source: U.S. Bureau of the Census, American Fact Finder

2

3 **2.9. RECREATION FACILITIES, ACTIVITIES, AND NEEDS**

4 2.9.1. Zones of Influence

5 The primary area of economic influence encompasses portions southeastern  
 6 Sequoyah, Muskogee, Cherokee, Wagoner, Mayes, Delaware, and Adair Counties with  
 7 additional economic influence from within a 100 mile radius of the lake. This seven-  
 8 county region has been utilized as the basis in summarizing the population characteristics  
 9 of Tenkiller Ferry Lake.

10

11 2.9.2. Visitation Profile

12 The majority of visitors to Tenkiller Ferry Lake come from within a 100 mile  
 13 radius of the lake area. Tenkiller Ferry Lake visitors are a diverse group ranging from  
 14 campers who utilize the campgrounds around the lake, full time and part time residents of  
 15 the private housing developments that border the lake, hunters who utilize the Wildlife  
 16 Management Areas around the lake, day users who picnic in the city, state and federally  
 17 operated parks, marina customers and many other user groups. The peak visitation  
 18 months on Tenkiller Ferry Lake are April through September when 82 percent of the  
 19 visits occur. July is the highest visitation month and accounts for 17 to 21 percent of the  
 20 annual total. Approximately 83 percent of visits to recreation areas occur in Corps  
 21 managed recreation areas. Dispersed recreation visits exceed those that occur in  
 22 recreation areas.

23

24 2.9.3. Recreation Analysis

25 Recreational use at Tenkiller Ferry Lake continues to evolve. While visitation in  
 26 recreational areas remains strong, facilities installed in outgranted areas indicate that  
 27 there is demand for recreational opportunities not offered in traditional Corps managed  
 28 parks. Annual visitation trends recorded the USACE Operation and Maintenance  
 29 Business Information Link (OMBIL) is presented in Table 2.14. The most recent  
 30 available data from OBMIL for monthly visitation is FY2012. In FY 2012, there were

1 3,829,616 visitations. In 2012, June was recorded to be the month of highest visitation  
 2 with 757,851 visitations. The majority of visitation occurs within the traditional  
 3 recreation season of April-September with 3,420,736 visitations reported, representing  
 4 89.32% of total visitation to Tenkiller Ferry Project in FY 2012. Monthly visitation in FY  
 5 2012 is presented in Table 2.15. There is not a great demand for private boat dock  
 6 permits and the maximum number of permits available for private docks has been issued.  
 7 Requests for vegetative modification permits are limited and little to no growth in permit  
 8 related workload is anticipated. Blue Green algae blooms, which have occurred lake wide  
 9 since 2011, are fueled by nutrient loading, adequate light availability, and hot dry  
 10 weather. Continued algal blooms have the potential to make some portions of Tenkiller  
 11 Ferry Lake undesirable for water related recreation.

12  
 13

Table 2.14. Annual attendance from FY 2003 through FY 2012.

<b>Year</b>	<b>Visitation</b>
2003	2,890,538
2004	3,668,258
2005	3,507,524
2006	3,612,692
2007	3,795,268
2008	3,849,234
2009	4,001,268
2010	4,084,731
2011	3,384,097
2012	3,829,616

14  
 15

**2.9.4. Recreation Carrying Capacity**

16 The recreation carrying capacity of a lake is the amount of development, use, and  
 17 activity any lake and associated recreational lands can sustain without being permanently  
 18 adversely impacted. No recreation carrying capacity studies have been conducted at  
 19 Tenkiller Ferry Project. Presently, lake staff manage recreation areas using historic  
 20 visitation data combined with best professional judgment to address recreation areas  
 21 considered to be overcrowded, overused, underused, or well balanced. Lake staff will  
 22 continue to identify possible causes and effects of overcrowding and overuse and apply  
 23 appropriate best management practices including: site management, regulating visitor  
 24 behavior, and modifying visitor behavior.

**2.9. REAL ESTATE**

26 The acquisition policy for purchasing lands for Tenkiller Ferry Lake were: (a) fee area  
 27 encompassing elevation 670.0 feet, NGVD, which is the flood control pool plus three feet  
 28 of freeboard and (b) the upper guide line for flowage easement encompasses the flood of  
 29 record, assumed to fall on a filled flood control pool (elevation 667.0 NGVD) with  
 30 freeboard of 3 feet added to the envelope curve in the flat pool (to elevation 670.0  
 31 NGVD) for possible operation for induced surcharge, accompanied by wave action and  
 32 shoreline erosion.

Table 2.15. Project site visits\*, by recreation area, for Tenkiller Ferry Project (FY 2012).

Project Site Area(USACE)	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012
ANG CLUB BOAT RAMP - 30138												
BARNACLE BILL'S - 110187	6535	3651	2539	2500	2488	2512	4191	11624	18406	18056	12964	12627
BLACKGUM LANDING - 203228	1220	253	136	129	139	255	1005	3276	4135	3687	2013	0
BURNT CABIN - 110189	5611	3241	1578	1466	1547	1712	3053	10345	15304	14924	8871	9461
BURNT CABIN BOAT RAMP - 30144												
CAMP FRED DARBY - 203912	0	0	0	0	0	0	0	0	0	0	0	0
CANEY RIDGE - 110190	4366	3056	2289	2264	2620	2969	5443	11528	16052	15358	7937	7722
CANEY RIDGE BOAT RAMP - 30143												
CARLISLE COVE - 2077251	5795	3681	1570	1504	1858	2251	4530	12692	20280	10187	6319	6520
CARTERS LANDING - 202678	3879	2062	1126	1031	1125	1573	3134	11911	17521	12827	5643	6779
CATO CREEK LANDING - 203431	5781	2935	1520	1361	1705	2321	3845	8992	12923	11558	9592	9731
CHEROKEE LANDING STATE PARK - 203409	4087	1878	1028	1381	1429	4936	3880	15974	18092	14706	8195	7599
CHICKEN CREEK - 518050013	13795	6540	5105	4958	4962	5224	8679	40215	54656	50096	29242	31566
CHICKEN CREEK SOUTH - 30142												
COOKSON BEND - 518050011	7093	3971	2848	2453	2486	2593	5140	22865	31830	31193	15031	15155
COOKSON BEND MARINA - 30141												
ELK CREEK LANDING - 518050009	6271	2604	1740	1599	1605	1859	4776	14777	22376	19914	10121	10390
ELK CREEK MARINA - 30140												
ETTA BEND BOAT RAMP - 30134												
HORESHOE BEND - 202698	1239	1069	196	192	332	934	2544	3873	4300	3964	1662	1797
METHODIST BOYS RANCH - 203609												

\* Sites without visitation data reported do have traffic/visitation counters.

Table 2.15 continued. Project site visits\*, by recreation area, for Tenkiller Ferry Project (FY 2012).

Project Site Area(USACE)	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012
MONGOLD'S BOAT RAMP - 30139												
OVERLOOK - 203400	8771	1665	1609	1599	2198	3329	5608	13686	13950	13190	6819	6673
PETTIT BAY - 518050005	7434	3990	3118	2520	2809	3891	7177	26623	33952	32808	18203	18944
PETTIT BAY MARINA - 30145												
PSA_TENKILLER FERRY LAKE - 018050	86620	43155	28998	26700	29009	36783	69978	226230	306232	273805	154474	492951
SIXSHOOTER - 110194	5355	2844	1328	923	1115	1190	2916	11179	15393	14540	6951	7895
SIZEMORE LANDING - 202354	4044	2544	1196	1108	1210	1356	3205	5605	10940	11241	6471	8827
SNAKE CREEK - 518050014	9500	4554	3636	3384	3491	4283	8054	32619	43811	38635	21156	22670
SNAKE CREEK MARINA - 30137												
STANDING ROCK - 202750	913	209	126	116	137	263	602	1977	3249	2477	1271	1563
STRAYHORN LANDING - 518050002	9221	4647	3520	3397	3407	3927	7462	21258	29775	30631	19461	20035
STRAYHORN LANDING MARINA - 30136												
S.W. OSU TENKELLER ADVENTURE PROGRAM - 203640	0	0	0	0	0	0	0	0	0	0	0	0
TENKILLER HARBOR BOAT RAMP - 30135												
TENKILLER STATE PARK - 203248	6497	4192	4980	3604	4865	6553	8419	28947	58005	24815	13904	15727
TROUT STREAM - 203943	2884	2684	1688	1478	1684	2979	5222	9137	6669	5084	3483	3667
<b>Sum:</b>	<b>206911</b>	<b>105425</b>	<b>71874</b>	<b>65667</b>	<b>72221</b>	<b>93693</b>	<b>168863</b>	<b>545333</b>	<b>757851</b>	<b>653696</b>	<b>369783</b>	<b>718299</b>

\* Sites without visitation data reported do have traffic/visitation counters.

1 **2.10. PERTINENT PUBLIC LAWS**

2 The following public laws are applicable to Tenkiller Ferry Lake.

- 3
- 4 a. Public Law 59-209, Antiquities Act of 1906. - The first Federal law established to  
5 protect what are now known as "cultural resources" on public lands. It provides a  
6 permit procedure for investigating "antiquities" and consists of two parts: An act for  
7 the Preservation of American Antiquities, and Uniform Rules and Regulations.  
8
- 9 b. Public Law 74-292, Historic Sites Act of 1935. – Declares it to be a national policy to  
10 preserve for (in contrast to protecting from) the public, historic (including prehistoric)  
11 sites, buildings, and objects of national significance. This act provides both  
12 authorization and a directive for the Secretary of the Interior, through the National  
13 Park Service, to assume a position of national leadership in the area of protecting,  
14 recovering, and interpreting national archeological historic resources. It also  
15 establishes an "Advisory Board on National Parks; Historic Sites, Buildings, and  
16 Monuments, a committee of eleven experts appointed by the Secretary to recommend  
17 policies to the Department of the Interior".  
18
- 19 c. Title 16 U.S. Code §§ 668-668a-d, 54 Stat. 250, Bald Eagle Protection Act of 1940,  
20 as amended. This Act prohibits anyone, without a permit issued by the Secretary of  
21 the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act  
22 provides criminal penalties for persons who take, possess, sell, purchase, barter, offer  
23 to sell, transport, export or import, at any time or any manner, any bald eagle .. [or  
24 any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines  
25 “take” as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or  
26 disturb.  
27
- 28 d. Public Law 75-761, Flood Control Act of 1938. – This act authorizes the  
29 construction, repair, and preservation of certain public works on rivers and harbors  
30 for navigation, flood control, and for other purposes.  
31
- 32 e. Public Law 78-534, Flood Control Act of 1944, as amended. – Section 4 of the act as  
33 last amended in 1962 by Section 207 of Public Law 87-874 authorizes the Corps to  
34 construct, maintain, and operate public parks and recreational facilities in reservoir  
35 areas and to grant leases and licenses for lands, including facilities, preferably to  
36 Federal, State or local governmental agencies.  
37
- 38 f. Public Law 79-525, River and Harbor Act of 1946. – This act authorizes the  
39 construction, repair, and preservation of certain public works on rivers and harbors  
40 for navigation, flood control, and for other purposes.  
41
- 42 g. Public Law 83-780, Flood Control Act of 1954. – This act authorizes the  
43 construction, maintenance, and operation of public park and recreational facilities in  
44 reservoir areas under the control of the Department of the Army and authorizes the  
45 Secretary of the Army to grant leases of lands in reservoir areas deemed to be in the  
46 public interest.

- 1
- 2 h. Public Law 85-624, Fish and Wildlife Coordination Act 1958. - This act as amended
- 3 in 1965 sets down the general policy that fish and wildlife conservation shall receive
- 4 equal consideration with other project purposes and be coordinated with other
- 5 features of water resource development programs. Opportunities for improving fish
- 6 and wildlife resources and adverse effects on these resources shall be examined along
- 7 with other purposes which might be served by water resources development.
- 8
- 9 i. Public Law 86-523, Reservoir Salvage Act of 1960, as amended. This Act provides
- 10 for (1) the preservation of historical and archeological data that might otherwise be
- 11 lost or destroyed as the result of flooding or any alteration of the terrain caused as a
- 12 result of any Federal reservoir construction projects; (2) coordination with the
- 13 Secretary of the Interior whenever activities may cause loss of scientific, prehistoric,
- 14 or archeological data; and (3) expenditure of funds for recovery, protection, and data
- 15 preservation. This Act was amended by Public Law 93-291.
- 16
- 17 j. Public Law 86-717, Forest Conservation. - This act provides for the protection of
- 18 forest cover for reservoir areas under this jurisdiction of the Secretary of the Army
- 19 and the Chief of Engineers.
- 20
- 21 k. Public Law 87-88, Federal Water Pollution Control Act Amendments of 1961, as
- 22 amended. Section 2(b)(1) of this Act gives USACE responsibility for water quality
- 23 management of USACE reservoirs. This law was amended by the Federal Water
- 24 Pollution Control Act Amendment of 1972, Public Law 92-500.
- 25
- 26 l. Public Law 87-874, Rivers and Harbors Act of 1962. – This act authorizes the
- 27 construction, repair, and preservation of certain public works on rivers and harbors
- 28 for navigation, flood control, and for other purposes.
- 29
- 30 m. Public Law 88-578, Land and Water Conservation Fund Act of 1965. - This act
- 31 established a fund from which Congress can make –appropriations for outdoor
- 32 recreation. Section 2(2) makes entrance and user fees at reservoirs possible by
- 33 deleting the words "without charge" from Section 4 of the 1944 Flood Control Act as
- 34 amended.
- 35
- 36 n. Public Law 89-72, Federal Water Project Recreation Act of 1965. - This act requires
- 37 that not less than one-half the separable costs of developing recreational facilities
- 38 and all operation and maintenance costs at Federal reservoir projects shall be borne
- 39 by a non-Federal public body. An OCE/OMB implementation policy made these
- 40 provisions applicable to projects completed prior to 1965.
- 41
- 42 o. Public Law 89-90, Water Resources Planning Act (1965). - This act established the
- 43 Water Resources Council and gives it the responsibility to encourage the
- 44 development, conservation, and use of the Nation's water and related land resources
- 45 on a coordinated and comprehensive basis.
- 46

- 1 p. Public Law 89-272, Solid Waste Disposal Act, as amended by PL 94-580, dated  
2 October 21, 1976. – This act authorized a research and development program with  
3 respect to solid-waste disposal. It proposes (1) to initiate and accelerate a national  
4 research and development program for new and improved methods of proper and  
5 economic solid-waste disposal, including studies directed toward the conservation of  
6 national resources by reducing the amount of waste and unsalvageable materials and  
7 by recovery and utilization of potential resources in solid waste; and (2) to provide  
8 technical and financial assistance to State and local governments and interstate  
9 agencies in the planning, development, and conduct of solid-waste disposal programs.  
10
- 11 q. Public Law 89-665, Historic Preservation Act of 1966. – This act provides for: (1) an  
12 expanded National Register of significant sites and objects; (2) matching grants to  
13 states undertaking historic and archeological resource inventories; and (3) a program  
14 of grants-in aid to the National Trust for Historic Preservation; and (4) the  
15 establishment of an Advisory Council on Historic Preservation. Section 106 requires  
16 that the President’s Advisory Council on Historic Preservation have an opportunity to  
17 comment on any undertaking which adversely affects properties listed, nominated, or  
18 considered important enough to be included on the National Register of Historic  
19 Places.  
20
- 21 r. Public Law 90-483, River and Harbor and Flood Control Act of 1968, Mitigation of  
22 Shore Damages. – Section 210 restricted collection of entrance fee at Corps lakes and  
23 reservoirs to users of highly developed facilities requiring continuous presence of  
24 personnel.  
25
- 26 s. Public Law 91-190, National Environmental Policy Act of 1969 (NEPA). – NEPA  
27 declared it a national policy to encourage productive and enjoyable harmony between  
28 man and his environment, and for other purposes. Specifically, it declared a  
29 “continuing policy of the Federal Government... to use all practicable means and  
30 measures...to foster and promote the general welfare, to create conditions under  
31 which man and nature can exist in productive harmony, and fulfill the social,  
32 economic, and other requirements of present and future generations of Americans.”  
33 Section 102 authorized and directed that, to the fullest extent possible, the policies,  
34 regulations and public law of the United States shall be interpreted and administered  
35 in accordance with the policies of the Act.  
36
- 37 t. Public Law 91-611, River and Harbor and Flood Control Act of 1970. – Section 234  
38 provides that persons designated by the Chief of Engineers shall have authority to  
39 issue a citation for violations of regulations and rules of the Secretary of the Army,  
40 published in the Code of Federal Regulations.  
41
- 42 u. Public Law 92-347, Golden Eagle Passbook and Special Recreation User Fees. – This  
43 act revises Public Law 88-578, the Public Land and Water Conservation Act of 1965,  
44 to require Federal agencies to collect special recreation user fees for the use of  
45 specialized sites developed at Federal expense and to prohibit the Corps of Engineers  
46 from collecting entrance fees to projects.  
47

- 1 v. Public Law 92-500, Federal Water Pollution Control Act Amendments of 1972. – The  
2 Federal Water Pollution Control Act of 1948 (PL 845, 80th Congress), as amended in  
3 1956, 1961, 1965 and 1970 (PL 91- 224), established the basic tenet of uniform State  
4 standards for water quality. Public Law 92-500 strongly affirms the Federal interest in  
5 this area. "The objective of this act is to restore and maintain the chemical, physical  
6 and biological integrity of the Nation's waters."  
7
- 8 w. Public Law 92-516, Federal Environmental Pesticide Control Act of 1972. - This act  
9 completely revises the Federal Insecticide, Fungicide and Rodenticide Act. It  
10 provides for complete regulation of pesticides to include regulation, restrictions on  
11 use, actions within a single State, and strengthened enforcement.  
12
- 13 x. Public Law 93-81, Collection of Fees for Use of Certain Outdoor Recreation  
14 Facilities. This act amends Section 4 of the Land and Water Conservation Act of  
15 1965, as amended to require each Federal agency to collect special recreation use fees  
16 for the use of sites, facilities, equipment, or services furnished at Federal expense.  
17
- 18 y. Public Law 93-205, Conservation, Protection, and Propagation of Endangered  
19 Species Act of 1973, as amended. This law repeals the Endangered Species  
20 Conservation Act of 1969. It also directs all Federal departments/agencies to carry out  
21 programs to conserve endangered and threatened species of fish, wildlife, and plants  
22 and to preserve the habitat of these species in consultation with the Secretary of the  
23 Interior. This Act establishes a procedure for coordination, assessment, and  
24 consultation. This Act was amended by Public Law 96-159.  
25
- 26 z. Public Law 93-251, Water Resources Development Act of 1974. - Section 107 of this  
27 law establishes a broad Federal policy which makes it possible to participate with  
28 local governmental entities in the costs of sewage treatment plan installations.  
29
- 30 aa. Public Law 93-291, Archeological Conservation Act of 1974.- The Secretary of the  
31 Interior shall coordinate all Federal survey and recovery activities authorized under  
32 this expansion of the 1960 act. The Federal Construction agency may transfer up to  
33 one percent of project funds to the Secretary with such transferred funds considered  
34 nonreimbursable project costs.  
35
- 36 bb. Public Law 93-303, Recreation Use Fees. - This act amends Section 4 of the Land  
37 and Water Conservation Act of 1965, as amended, to establish less restricted criteria  
38 under which Federal agencies may charge fees for the use of campgrounds developed  
39 and operated at Federal areas under their control.  
40
- 41 cc. Public Law 93-523, Safe Drinking Water Act. - The act assures that water supply  
42 systems serving the public meet minimum national standards for protection of public  
43 health. The act (1) authorizes the Environmental Protection Agency to establish  
44 Federal standards for protection from all harmful contaminants, which standards  
45 would be applicable to all public water systems, and (2) establishes a joint Federal-  
46 State system for assuring compliance with these standards and for protecting  
47 underground sources of drinking water.

- 1
- 2 dd. Public Law 94-422, Amendment of the Land and Water Conservation Fund Act of
- 3 1965. - Expands the role of the Advisory Council. Title 2 - Section 102a amends
- 4 Section 106 of the Historical Preservation Act of 1966 to say that the Council can
- 5 comment on activities which will have an adverse effect on sites either included in or
- 6 eligible for inclusion in the National Register of Historic Places.
- 7
- 8 ee. Public Law 95-217, Clean Water Act of 1977, as amended. This Act amends the
- 9 Federal Water Pollution Control Act of 1970 and extends the appropriations
- 10 authorization. The Clean Water Act is a comprehensive Federal water pollution
- 11 control program that has as its primary goal the reduction and control of the discharge
- 12 of pollutants into the nation's navigable waters. The Clean Water Act of 1977 has
- 13 been amended by the Water Quality Act of 1987, Public Law 100-4.
- 14
- 15 ff. Public Law 95-341, American Indian Religious Freedom Act of 1978. The Act
- 16 protects the rights of Native Americans to exercise their traditional religions by
- 17 ensuring access to sites, use and possession of sacred objections, and the freedom to
- 18 worship through ceremonials and traditional rites.
- 19
- 20 gg. Public Law 95-632, Endangered Species Act Amendments of 1978. This law amends
- 21 the Endangered Species Act Amendments of 1973. Section 7 directs agencies to
- 22 conduct a biological assessment to identify threatened or endangered species that may
- 23 be present in the area of any proposed project. This assessment is conducted as part of
- 24 a Federal agency's compliance with the requirements of Section 102 of NEPA.
- 25
- 26 hh. Public Law 96-95, Archeological Resources Protection Act of 1979. This Act protects
- 27 archeological resources and sites that are on public and tribal lands, and fosters
- 28 increased cooperation and exchange of information between governmental
- 29 authorities, the professional archeological community, and private individuals. It also
- 30 establishes requirements for issuance of permits by the Federal land managers to
- 31 excavate or remove any archeological resource located on public or Indian lands.
- 32
- 33 ii. Public Law 98-63, Supplemental Appropriations Act of 1983. This Act authorized the
- 34 Corps of Engineers Volunteer Program. The United States Army Chief of Engineers
- 35 may accept the services of volunteers and provide for their incidental expenses to
- 36 carry out any activity of the Army Corps of Engineers, except policymaking or law or
- 37 regulatory enforcement.
- 38
- 39 jj. Public Law 99-662, The Water resources Development Act 1986. - Provides for the
- 40 conservation and development of water and related resources and the improvement
- 41 and rehabilitation of the Nation's water resources infrastructure.
- 42
- 43 kk. Public Law 101-601, Native American Graves Protection and Repatriation Act. This
- 44 Act provides for the protection of Native American and Native Hawaiian cultural
- 45 items. It establishes a process for the authorized removal of human remains, funerary,
- 46 sacred, and other objects of cultural patrimony from sites located on land owned or
- 47 controlled by the Federal government. This Act requires Federal agencies and

1 Federally assisted museums to return specified Native American cultural items to the  
2 Federally recognized Indian tribes or Native Hawaiian groups with which they are  
3 associated. Notification of all inadvertent discoveries of such items covered by the  
4 Act is reported to the appropriate affiliated descendant or tribe in order of precedence  
5 as set by the Act.  
6

- 7 ll. Public Law 110-114, Water Resources Development Act of 2007, Section 3134. –  
8 This act requires lakes within the State of Oklahoma under Corps of Engineers  
9 jurisdiction research methods for demonstration projects to benefit and enhance  
10 recreation.  
11

## 12 **2.11. EXECUTIVE ORDERS AND CIRCULARS**

13 The following Executive Orders and Circulars are applicable to Tenkiller Ferry Lake.  
14

- 15 a. Executive Oder 11593, 13 May 1971, Protection and Enhancement of the Cultural  
16 Environment. This Presidential Order mandates that all Executive Branch agencies,  
17 bureaus, and offices: (1) compile an inventory of the cultural resources –  
18 archeological, architectural, and historical structures, sites, and districts – for which  
19 they are trustee; (2) nominate all eligible Government properties to the National  
20 Register of Historic Places; (3) preserve and protect their cultural resources; and (4)  
21 insure that agency activities contribute to the preservation and protection of non-  
22 federally owned cultural resources. The deadline for Federal agency compliance with  
23 Executive Order 11593 was 1 July 1973.  
24
- 25 b. Executive Order 11752, 17 December 1973, Prevention, Control, and Abatement of  
26 Environmental Pollution at Federal Facilities. The purpose of this order is to assure  
27 that the Federal Government, in the design, construction, management, operation, and  
28 maintenance of its facilities, shall provide leadership in the nationwide effort to  
29 protect and enhance the quality of air, water, and land resources through compliance  
30 with applicable standards for the prevention, control, and abatement of environmental  
31 pollution. Section 4 listed the requirements for federal facility design, construction,  
32 management, operation, and maintenance.  
33
- 34 c. Executive Order 11988, 24 May 1977, Floodplain Management. This order outlines  
35 the responsibilities of Federal agencies in the role of floodplain management. Each  
36 agency shall evaluate the potential effects of actions on floodplains and should not  
37 undertake actions that directly or indirectly induce growth in the floodplain, unless  
38 there is no practical alternative. Agency regulations and operating procedures for  
39 licenses and permits should include provisions for evaluation and consideration of  
40 flood hazards. Construction of structures and facilities on floodplains must  
41 incorporate flood proofing and other accepted flood protection measures. Agencies  
42 shall attach appropriate use restrictions to property proposed for lease, easement,  
43 right-of-way, or disposal to non-Federal public or private parties.  
44
- 45 d. Executive Order 11990, 24 May 1977, Protection of Wetlands. This order directs  
46 Federal agencies to provide leadership in minimizing the destruction, loss, or  
47 degradation of wetlands.

- 1  
2 e. Executive Order 12898, 11 February 1994, Federal Actions to Address  
3 Environmental Justice in Minority Populations and Low-Income Populations. Federal  
4 agencies shall make achieving environmental justice part of its mission by identifying  
5 and addressing, as appropriate, disproportionately high and adverse human health or  
6 environmental effects of its programs, policies, and activities on minority populations  
7 and low-income populations in the United States.  
8  
9 f. Executive Order 12962, 7 June 1995, Recreational Fisheries. This order mandates that  
10 Federal agencies, to the extent permitted by law and where practicable, improve the  
11 quality, function, and sustainable productivity and distribution of aquatic resources  
12 for increased recreational fishing opportunities.  
13  
14 g. Executive Order 13007, 24 May 1996, Indian Sacred Sites. This Executive Order  
15 requires that agencies avoid damage to Indian sacred sites on Federal land, and avoid  
16 blocking access to such sites for traditional religious practitioners.  
17  
18 h. Executive Order 13045, 21 April 1997, Protection of Children from Environmental  
19 Health Risks and Safety Risks. This order mandates that Federal agencies, to the  
20 extent permitted by law and appropriate and consistent with the agency’s mission,  
21 make it a priority to identify and assess environmental health risks and safety risks  
22 that may disproportionately affect children and ensure that its policies, programs,  
23 activities and standards address disproportionate risks to children that result from  
24 environmental health risks or safety risks.  
25  
26 i. Executive Order 13112, 3 February 1999, Invasive Species. The purpose of this order  
27 mandates that each Federal agency whose actions may affect the status of invasive  
28 species shall identify the actions, use relevant programs and authorities to prevent the  
29 introduction of invasive species, detect and respond rapidly to and control populations  
30 of such species, monitor invasive species populations, provide for restoration of  
31 native species and habitat conditions in ecosystems that have been invaded, conduct  
32 research on invasive species, and promote public education on invasive species.  
33 Federal agencies are further mandated not to authorize, fund, or carry out actions that  
34 it believes are likely to cause or promote the introduction or spread of invasive  
35 species. The order also establishes an Invasive Species Council and outlines the  
36 duties of the Council. USACE responded with a Policy Memorandum on 2 June  
37 2009, which implements USACE Invasive Species Policy. The policy memorandum  
38 establishes a consistent, nationwide policy that will be applied to all Civil Works  
39 projects and programs. Specifically for Operations, the memorandum states that  
40 “Operating projects will include strategies for invasive species management in their  
41 project Operations and Maintenance responsibilities.” The strategies are to be  
42 coordinated with other Federal, State, and local agencies. The National Invasive  
43 Species Management Plan, developed by the National Invasive Species Council,  
44 serves as a blueprint for USACE action on both aquatic and terrestrial invasive  
45 species.  
46  
47

- 1 j. Executive Order 13186, 10 January 2001, Protection of Migratory Birds. This order  
2 requires that each Federal agency taking actions that have, or are likely to have, a  
3 measureable negative effect on migratory bird populations develop and implement a  
4 Memorandum of Understanding with the Fish and Wildlife Service that shall promote  
5 the conservation of migratory bird populations.  
6
- 7 k. Executive Order 13474, 26 September 2008, Recreational Fisheries. This order  
8 amends Executive Order 12962.

## CHAPTER 3 - RESOURCE OBJECTIVES

### 3.1. RESOURCE OBJECTIVES

Resource considerations at Tenkiller Ferry Lake exist primarily due to user demands on the project. Multiple user types have interests in the project lands, recreation facilities, and waters, and such demands regularly create conflicts. USACE is also obligated to manage these resources for the overall interest of the public and not just for a select group of individuals. It is the responsibility of the project and the agency to attempt to provide an environmentally sound balance of these demands. Impacts on the environment will be assessed during the decision making process prior to any change to management plans or strategies. The following objectives are the priorities for consideration when determining management goals and development activities.

1. To increase the value of all project lands and waters for recreation, fisheries, and wildlife.
2. Manage the existing natural resources and recreation facilities in compliance with all pertinent laws, regulations and policies.
3. Develop and manage the area for maximum enjoyment of the recreating public.
4. Protect and preserve the existing native wildlife species and improve wildlife habitat for now and in the future.
5. Protect and preserve the existing shoreline from erosion and overuse through natural resource management and cooperation with adjacent landowners.
6. Inform the public, through programs and personal contacts, about the project and resource management purposes and objectives.
7. Integrate fish and wildlife management practices with other natural resource management practices while working closely with state and local natural resource agencies.
8. Identify safety hazards or unsafe conditions; correct infractions and implement safety standards in accordance with EM 385-1-1.
9. Avoid the appearance of private exclusive use in areas zoned for limited development in the Tenkiller Ferry Lake SMP.
10. Encourage non-consumptive use of project lands.

Implementation of these objectives is based upon time, manpower, and budget. The objectives provided in this chapter are established to provide high levels of stewardship to USACE managed lands and resources while still providing a high level of public service.

1 These objectives will be pursued through the use of a variety of mechanisms such as:  
2 Assistance from volunteer efforts, hired labor, contract labor, permit conditions, remediation,  
3 and special lease conditions. It is the intention of Tenkiller Ferry Project to provide a realistic  
4 approach to the management of all resources.

5  
6 The Natural resource elements within the identified objectives come in several  
7 different categories of work at Tenkiller Ferry Lake. They can be broken into fisheries, game,  
8 non-game, and shoreline use. Management objectives for these categories are dependent on  
9 the individual resource, location, and lead agency.

10  
11 A. Shoreline Management. The Tenkiller Ferry Lake shoreline management program  
12 is one of the primary work burdens for the staff. The objective for this program is to manage  
13 public lands in accordance with the Tenkiller Ferry Lake SMP. The purpose of this document  
14 is to manage activities considered as private use on public lands without allowing  
15 degradation to natural resources or creating the appearance of private exclusive use.  
16 Reference the Tenkiller Ferry Lake SMP for descriptions of authorized activities within this  
17 program.

18  
19 B. Wildlife and Fisheries Management. Wildlife and fisheries are managed  
20 cooperatively between the ODWC and USACE. USACE currently licenses 2,590 acres of  
21 land to ODWC. This area comprises the Tenkiller Wildlife Management Area. USACE also  
22 currently licenses 0.125 acres to ODWC for placement and operation of a Supersaturated  
23 Dissolved Oxygen System (SDOX) to support the ODWC management goals and objectives  
24 associated with the tailwater trout fishery. ODWC's primary objective in these areas is to  
25 manage game species with the understanding those actions benefit both game and non-game  
26 species. These areas will continue being managed by this agency under their license.

27  
28 ODWC is also the primary agency responsible for performing fisheries management.  
29 ODWC objectives for fisheries are to continue to monitor current populations, insure the  
30 populations are healthy and stable, and reduce the number of spotted bass in the reservoir.  
31 ODWC does annual sampling and data analysis to assure fisheries populations stay within an  
32 acceptable range. They also make adjustments in creel and size limits as necessary to keep  
33 existing populations healthy. ODWC can also supplement fish populations with their  
34 hatchery program.

35  
36 USACE is not directly involved with management within the ODWC areas of  
37 responsibility. However, USACE has determined that ODWC's objectives compliment our  
38 goals for fish and wildlife management and should remain as the primary objectives for these  
39 locations. Another USACE objective for ODWC areas of responsibility will be to continue  
40 providing support when resources are available. USACE often provides support with  
41 assistance in the placement of fish structures, archeological reviews for proposals involving  
42 soil disturbance, and assistance with GIS mapping.

43  
44 In addition to the ODWC licensed areas, USACE has several additional management  
45 units established for the purpose of wildlife management. The objectives for these lands are

1 to preserve the existing native wildlife species and improve their habitat. The management  
2 plans written within this objective will be centered on both game and non-game species and  
3 can be found in the OMP.  
4

5 C. Recreation. Recreation falls within two categories and can be identified as either  
6 land or water based recreation. Management objectives for each type vary depending on the  
7 location and the intensity of use. General objectives are provided in this master plan as to the  
8 work necessary to meet the public’s needs for land and/or water based recreation.  
9

10 Land-based recreation includes opportunities, activities, areas and facilities that  
11 typically occur on, or adjacent to, USACE land and water, such as camping, hiking, hunting,  
12 picnicking, wildlife/bird viewing, sightseeing, etc. Land-based recreation areas include  
13 campgrounds, day-use areas, overlooks, bathrooms, roads, boat ramps, courtesy docks, and  
14 wildlife management areas. Facility types typically found within these recreation areas  
15 include campsites, picnic sites, hunting areas, and trails. These recreation areas are managed  
16 by several entities: USACE, State of Oklahoma, county and city governments, and  
17 private/commercial concessionaires. Land-based recreation objective will be to continue  
18 providing service and rehabilitate existing parks to a “Justified Level of Service”.  
19

20 Water-based outdoor recreation includes opportunities, activities, areas and facilities  
21 that occur on water managed by USACE. These activities include; fishing, boating,  
22 swimming, scuba diving, operating seaplanes, kayaking, etc. Unlike land-based recreation  
23 the majority of water-based is managed by USACE with some assistance from the Oklahoma  
24 Highway Patrol, Marine Enforcement Division. The objective of this program is to insure  
25 public safety while providing recreational opportunities on the water. This program will  
26 involve looking at recreation carrying capacity vs. current use patterns, zoning requirements  
27 for no-wake or restricted areas, and areas to remain open for public recreation. USACE will  
28 keep in close coordination with the Oklahoma Lake Patrol in determining use patterns within  
29 the water portions of the project and promote water safety.  
30

31 D. Oklahoma State Comprehensive Recreation Plan. The 2012 Oklahoma State  
32 Comprehensive Recreation Plan (SCORP) includes 14 recommendations addressing outdoor  
33 recreation concerns and issues. The SCORP indicates 1) there is an increased awareness  
34 regarding water quality and water quantity issues throughout the state, 2) the public is  
35 primarily concerned with maintaining access to public lands while providing a wide variety  
36 of recreation opportunities, 3) Oklahomans under-value public recreation , and 4) Oklahoma  
37 lacks trails or a plan for trails to link communities or populations to outdoor recreation  
38 resources.  
39

40 One of the unique challenges identified in the SCORP is the change in demographics  
41 that all outdoor recreation providers will see an increase in resource user groups that have  
42 historically represented ethnic and racial minorities. These groups have differences in  
43 preferences for space, facilities, and amenities. This SCORP also demonstrated that low-  
44 income and rural constituents often face unique challenges in accessing outdoor recreation  
45 resources and that Oklahomans do not fully comprehend the costs associated with recreation

1 services and facilities provided by the public sector. Further depletion of the available  
2 outdoor recreation resource base would increase the negative impacts on these population  
3 groups. Maintaining what is currently held in the public sector and purposefully managing  
4 some of these spaces for undeveloped outdoor recreation use would address the needs of  
5 these minority user groups.

6  
7 E. Project-Wide Resource Objectives. The purpose of the USACE Master Plan is to  
8 establish the guidelines for sustainable stewardship of natural and recreational resources  
9 managed directly and indirectly on USACE fee lands. The project-wide resource  
10 management objectives involve the long-term development and management goals of project  
11 resources to guide proposed future actions for the public benefit, consistent with resource  
12 capabilities within the framework of the USACE Environmental Operation Principles.

13  
14 Resource objectives are attainable goals for development, conservation, and  
15 management of natural, cultural, and manmade resources at a project. They are guidelines for  
16 obtaining maximum public benefits while minimizing adverse impacts to the environment  
17 and are developed in accordance with: 1) authorized project purposes, 2) applicable laws and  
18 regulations, 3) resource capabilities and suitabilities, 4) regional needs, 5) other  
19 governmental plans and programs, and 6) expressed public desires.

20  
21 The project-wide resource objectives for Tenkiller Ferry Lake, not in priority order,  
22 are listed below:

- 23 1. To give priority to the preservation and improvement of wild land values in public  
24 use planning, design, development, and management activities.
- 25  
26 2. To preserve and protect important paleontological, archeological, ecological, and  
27 esthetic resources.
- 28  
29 3. To manage habitat for threatened and endangered species and to support a diversity of  
30 fish and wildlife, and recreation use.
- 31  
32 4. To prevent the introduction of invasive species and aquatic nuisance species (ANS),  
33 detect and respond rapidly to and control populations of such species in a cost-  
34 effective and environmentally sound manner, monitor invasive species and ANS  
35 populations accurately and reliably, and provide for restoration of native species and  
36 habitat conditions in ecosystems that have been invaded.
- 37  
38 5. To manage and develop project lands to accommodate periodic fluctuations in lake  
39 elevations with minimal impacts.
- 40  
41 6. To develop and manage project resources to support types and levels of recreation  
42 activities indicated by visitor demand and consistent with carrying capacities and  
43 aesthetic, cultural, and ecological values.
- 44  
45 7. To manage identified recreations lands in ways that enhance benefits to wildlife.

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- 8. To provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties.
- 9. To preserve and protect cultural resources sites in compliance with existing federal statutes and regulations.
- 10. To expand public outreach and education about the history of the area, project resources, and the USACE’s role in developing and managing these resources.
- 11. To foster stewardship by minimizing encroachments and other non-allowed uses.
- 12. To develop and manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.
- 13. To maintain and manage project lands and waters to support regional management programs.

Execution of resource objectives at a large multi-purpose project such as Tenkiller Ferry Lake is difficult. It is a delicate balance between items that often compete for funds, time, and other resources. Priority will be given to those items required by law with an attempt to provide continued public use of Government land. Public access will still be a priority to service all ethnic and economical groups. Access will be in the form of offering hunting, fishing, camping, bird watching, boating, and other various lake related recreational opportunity locations.

1                   **CHAPTER 4 - LAND ALLOCATION, LAND CLASSIFICATION,**  
2                   **WATER SURFACE, AND PROJECT EASEMENT LANDS**

3  
4                   **4.1. LAND ALLOCATION**

5                   Land allocation is identified as the congressionally authorized purpose for which the  
6 project lands were purchased. There are four categories of allocation identified as Operations,  
7 Recreation, Fish and Wildlife, and Mitigation. There was a total of 30,487 acres of land  
8 purchased for the creation of Tenkiller Ferry Lake.

9  
10                  4.1.1. Operations. These are lands acquired specifically to meet the requirements of the  
11 congressionally authorized purpose of constructing and operating the project (i.e., flood  
12 control, hydroelectric power generation). There were 30,493 acres purchased for this  
13 purpose which comprises 100 percent of the project.

14  
15                  4.1.2. Recreation. These would be lands that were purchases specifically for the purpose of  
16 development for recreation. There were no lands purchased specifically to meet this  
17 purpose and allow development for recreational facilities. Authorization allowing  
18 development of recreational facilities was included in subsequent legislation and is  
19 presented in Section 2.10.

20  
21                  4.1.3. Fish and Wildlife. These would be lands that were purchased specifically for the  
22 purpose of managing or protecting fish and wildlife. There were no lands  
23 congressionally authorized for the purpose of Fish and Wildlife.

24  
25                  4.1.4. Mitigation. These would be lands purchased for the specific intention of offsetting the  
26 losses associated with the creation of the project. There were no lands congressionally  
27 authorized for the purpose of Mitigation.

28  
29                  A map showing the Land Allocation for Tenkiller Ferry Lake is presented in the Index to  
30 Drawings Appendix A.

31                   **4.2. LAND CLASSIFICATION**

32                   Land Classification indicates the primary use for which project lands area managed.  
33 There are five categories of classification identified as: Project Operations, High Density  
34 Recreation, Mitigation, Environmentally Sensitive Areas, and Multiple Resource Managed  
35 Lands. Maps showing the various land classification can be found in Appendix A (Drawing  
36 TEN15MP-OC-01 through TEN15-OC-17). Table 4.1 lists the acreage associated with each  
37 category of land allocation at Tenkiller Ferry Lake.

38  
39                  4.2.1. Project Operations. This category includes the lands required for the dam, spillway,  
40 hydropower plant, project office, and maintenance yards. There are 335 acres  
41 specifically managed for these features.

42

1 4.2.2. High Density Recreation. These are lands developed for intensive recreational  
2 activities for the visiting public including day use areas, campgrounds, and concession  
3 areas. There are 3,462 acres of land classified for high density recreation.  
4

5 4.2.3. Mitigation. This classification is only used for the lands allocated for mitigation for  
6 the purpose of offsetting losses associated with the development of the project. There  
7 are no lands classified as mitigation since this land allocation was not congressionally  
8 authorized.  
9

10 4.2.4. Environmentally Sensitive Areas. These are areas where scientific, ecological,  
11 cultural, and aesthetic features have been identified. This designation limits and can  
12 prohibit any further development within the area. There are 789 acres classified for  
13 environmentally sensitive areas to manage and protect cultural resources identified as  
14 eligible for the National Register of Historic Places.  
15

16 4.2.5. Multiple Resource Managed Lands. This classification is for the predominate use of  
17 an area with the understanding that other compatible uses can occur within the area.  
18 This classification is divided into four subcategories identified as: Low Density  
19 Recreation, Wildlife Management, Vegetative Management, and Future/Inactive  
20 Recreation Areas. There are 12,826 acres of lands that are under this classification. The  
21 following identifies the amount contained in each subcategory of this classification.  
22

- 23 a. Low Density Recreation. These are lands with minimal development or infrastructure  
24 that support passive public use (e.g., fishing, hunting, wildlife viewing, shoreline use,  
25 hiking, etc...). They were lands purchased for project operations and classified for  
26 low density recreation. The intention of these classified lands is to assure available  
27 lands for low density recreation between areas classified as recreation intensive use  
28 and wildlife management. There are 4,913 acres under this classification at Tenkiller  
29 Ferry Lake.  
30
- 31 b. Wildlife Management. These lands designated for the management of Fish and  
32 Wildlife resources. They were lands purchased for project operations and classified  
33 for the purpose of wildlife management. There are 7,755 acres under this  
34 classification at Tenkiller Ferry Lake.  
35
- 36 c. Vegetative Management. These are lands designated for stewardship of forest, prairie,  
37 and other native vegetative cover. There is no acreage under this classification at  
38 Tenkiller Ferry Lake.  
39
- 40 d. Future or Inactive Recreation. These are lands with site characteristics compatible  
41 with potential future recreation development or recreation areas that are closed or  
42 open but no longer maintained. These areas will be managed as multiple resource  
43 land until an opportunity to develop or reopen these areas. There are 158 acres under  
44 this classification at Tenkiller Ferry Lake.  
45

- e. Water Surface. The project does have a surface water management program for 3 items. Item 1 includes the area around the dam which has been identified for no boat entry. There is an area below and above the dam that is buoyed off and in which no boat entry is allowed. This is for both project operations and public safety. Item 2 includes restrictions at Pine Cove at Crappie Point located within Tenkiller State Park and relates to restricting public access to cliffs and bluffs to deter cliff diving and promote public safety. Item 3 includes sea plane takeoff and landing restrictions within 2,000 feet of dam structure, bridges, and recreation areas.

Table 4.1. Land classifications at Tenkiller Ferry Lake.

CLASSIFICATION	ACRES
Project Operations	335
High Density Recreation	3,462
Environmental Sensitive Areas	789
Multiple Resource Managed Lands Low Density Recreation	4,913
Multiple Resource Managed Lands Wildlife Management	7,755
Multiple Resource Managed Lands Vegetative Management	0
Multiple Resource Managed Lands Future/Inactive Recreation Areas	158

The remainder of the lake is open to recreational use. There is no specific zoning for these areas, but there is a buoy system in place to help aid in public safety. These buoys mark hazards, no wake areas, and navigational direction. This buoy system is managed by USACE with close coordination with the Oklahoma Department of Public Safety.

### 4.3. PROJECT EASEMENT LANDS

These are lands on which easement interests are held but not fee title ownership. These are typically composed of three different classification indentified as Operations Easement, Flowage Easement, and Conservation Easement. There are 268 acres of easement lands at Tenkiller Ferry Lake.

4.3.1. Operations Easement. These would be easements the Corps of Engineers purchased for the purpose of project operations. There are 140 acres of operation easements at Tenkiller Ferry Lake.

4.3.2. Flowage Easement. These are easements purchased by the Corps of Engineers giving the right to temporarily flood private land during flood risk management operations. There are 129 acres of flowage easement lands located at Tenkiller Ferry Lake.

4.3.3. Conservation Easement. These are easements purchased by the Corps of Engineers for the purpose of protecting wildlife, fisheries, recreation, vegetation, archeological, threatened and endangered species, or other environmental benefits. There are no conservation easements at Tenkiller Ferry Lake.

1 **CHAPTER 5 - RESOURCE PLAN**

2  
3 **5.1. CLASSIFICATION AND JUSTIFICATION**

4 This chapter describes the management plans for each area of classification within the  
5 MP. The classifications which exist at Tenkiller Ferry Lake are; Project Operations, High  
6 Density Recreation, Low Density Recreation, Wildlife Management, and Environmentally  
7 Sensitive. The management plans identified are in broad terms of how these project lands  
8 will be managed. A more descriptive plan for managing these lands can be found in the  
9 Tenkiller Ferry Lake OMP.

10  
11 **A. Project Operations**

12 This land is classified for security reasons pertaining to project operations. This  
13 would be land associated with the dam and related facilities. There are 335 acres of lands  
14 under this classification which are managed by the USACE. The management plan for this  
15 area is to continue providing physical security necessary to insure continued operations of the  
16 dam, hydropower plant, and related facilities. This means that public access must be  
17 restricted in hazardous locations, near the dam and spillway, and within the hydropower  
18 plant. Authorization for the public to moor private floating facilities and/or the modification  
19 of land form and vegetation are not permitted within this area. The goal for these classified  
20 lands is to continue operating as done historically in order to insure project operations.

21  
22 **B. High Density Recreation**

23 There are numerous areas around Tenkiller Ferry Lake that are designated as High  
24 Density Recreation in previous master plans. Description of High Density recreation is  
25 provided in two separate areas. First are areas classified for high density recreation but leased  
26 to another agency/entity for management and operation. Second would be those high density  
27 areas which USACE still manages and operates.

28  
29 There are several areas currently classified as high density recreation which are leased  
30 to other organizations for operation and management. These areas include the lands and  
31 waters leased to two state parks and recreation facilities. USACE does not provide any  
32 maintenance within any of these locations but there are times when support is provided to the  
33 managing agency. USACE has to provide review of requests and make sure they are in  
34 accordance with applicable laws and regulations for the proposed activity within an area  
35 zoned high density recreation. The areas currently leased to other agencies and individuals  
36 can be found in Table 5.1. The goal for these areas is to work with USACE partners to assure  
37 recreation areas are being managed in accordance with resource objectives identified in  
38 Chapter 3.

1  
2  
3

Table 5.1. Recreation area managing agency.

<b>Park</b>	<b>Number of Acres</b>	<b>Land Allocated to Recreation</b>	<b>Managing Agency</b>
Barnacle Bills Marina	59	Yes	Barnacle Bills Marina
Burnt Cabin Marina	65	Yes	Burnt Cabin Marina
Caney Ridge Marina	40	Yes	Caney Ridge Marina
Cookson Bend Marina	32	Yes	Cookson Bend Marina
Cherokee Landing State Park	136	Yes	State of Oklahoma
Elk Creek Marina	28	Yes	Elk Creek Marina
Pettit Bay Marina	27	Yes	Pettit Bay Marina
N.S.U. Riverhawk Camp	261	Yes	Northeastern State University
Sixshooter Marina	29	Yes	Sixshooter Marina
Snake Creek Marina	32	Yes	Snake Creek Marina
Strayhorn Landing Marina	70	Yes	Strayhorn Landing Marina
Tenkiller State Park	565	Yes	State of Oklahoma

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13

USACE still operates and manages numerous areas designated as high density recreation. These areas vary from locations that were classified recreation areas that were developed but have since been turned into access points and locations where developed recreational areas are still managed and maintained for high density use. Table 5.2 shows the areas currently managed by USACE. Drawings showing existing parks and facilities managed by USACE are located in Appendix A (TEN15MP-OR-01 through TEN15MP-OR-13).

Table 5.2. Management goal for designated public use areas.

<b>Park</b>	<b>Number of Acres</b>	<b>Land Allocated to Recreation</b>	<b>Management Goal</b>
Blackgum Landing	22	Yes	Access Point
Carlisle Cove	107	Yes	Access Point
Carters Landing	22	Yes	Maintained Facility
Chicken Creek	81	Yes	Maintained Facility
Chicken Creek South	43	Yes	Maintained Facility
Cookson Bend	108	Yes	Maintained Facility
Elk Creek Landing	174	Yes	Maintained Facility
Etta Bend	19	Yes	Access Point
Horseshoe Bend	143	Yes	Access Point
Overlook	24	Yes	Access Point
Pettit Bay	94	Yes	Maintained Facility
Sizemore Landing	98	Yes	Maintained Facility
Snake Creek	206	Yes	Maintained Facility
Standing Rock	93	Yes	Maintained Facility
Strayhorn Landing	78	Yes	Maintained Facility
Trout Stream	63	Yes	Access Point

1  
2 The areas identified as Access Point under the management goal are locations that  
3 were constructed in the early years of the lake's development. These locations were projected  
4 to have need for recreational facilities based on projected use. Time revealed that recreational  
5 use did not develop for these locations and/or funding to provide services was insufficient.  
6 Therefore, over a several year period USACE opted to change some maintained facilities into  
7 Access Points. This allowed these areas to stay open for public use but services such as park  
8 cleaning, refuse collection, and mowing were no longer provided. Also, any maintenance  
9 needs such as improvements or betterments were ceased. The only maintenance performed is  
10 the minimal amount necessary to allow safe use of the facilities. Management goal for these  
11 areas is to keep them open for public use while meeting the resource objectives identified in  
12 Chapter 3.

13  
14 The areas shown as maintained facilities under the management goals are parks that  
15 were constructed and managed for high density use. These areas still provide services such as  
16 water, electric, mowing, refuse collection, cleaning, and maintenance/improvements. The  
17 plan is to provide a justified level of service by updating camp sites to accommodate larger  
18 camping units with 50-amp electrical service, restrooms to a sufficient standard to service the  
19 public, and water available for camper hook-up while at campsite. With minor exceptions, all  
20 operations and maintenance activities are performed by the USACE employees, contractors,  
21 volunteers, and other various methods. The ultimate goal of this program is to insure the  
22 safety of our visitors and to provide a wide range of opportunities for outdoor recreational  
23 enjoyment while concurrently meeting the resource objectives in Chapter 3. Users and their  
24 activities vary greatly at Tenkiller Ferry Lake and satisfying these demands will be a constant  
25 challenge. Routine visitor use surveys will be conducted to identify user desires and  
26 preferences. Future management strategies will shift to accommodate the demands indicated  
27 in these visitor use surveys.

### 28 29 C. Environmentally Sensitive Area

30 These are areas where scientific, ecological, cultural, and aesthetic features have been  
31 identified. Designation of these lands is not limited to just lands that are otherwise protected  
32 by laws such as the ESA, the NHPA, or applicable State statues. These areas must be  
33 considered by management to ensure they are not adversely impacted. Typically, limited or  
34 no development of public use is allowed on these lands. No agricultural or grazing uses are  
35 permitted on these lands unless necessary for a specific resource management benefit, such  
36 as prairie restoration. There are four areas at Tenkiller Ferry Lake that fit this description.  
37 These areas total 789 acres on USACE land purchased for the construction of Etta Bend  
38 Public Recreation Area southeast and north northwest of existing road and boat ramp  
39 improvements, on USACE land purchased for the construction of Carters Landing south of  
40 primary access road into the Public Use Area, and on USACE land purchased for recreation,  
41 above the top of conservation pool elevation of 632.00 feet, along the north bank of the  
42 Barren Fork River, a tributary to the Illinois River. The management goal for these areas is to  
43 ensure conservation and preservation in compliance with the NHPA.  
44

1 D. Multiple Resource Management Lands. These are areas where predominate use is  
2 that of the classification. However, there are other compatible uses which may occur on these  
3 lands without impacting the predominant use. These lands can be divided into four sub-  
4 categories for the purposes of this master plan. These categories are; Low Density  
5 Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation  
6 Areas. The following is a description of each sub-categories resource objectives, acreages,  
7 and description of use.

8  
9 1. Low Density Recreation. These are lands with minimal development or  
10 infrastructure that support passive public use. There are 4,913 acres zoned Low Density  
11 Recreation which the allowable use within these lands can be categorized as either shoreline  
12 use (private floating structures/vegetative modification) or low density recreation.

13  
14 Portions of the Low Density Recreation lands are areas where USACE has  
15 determined that Limited Development can occur under a Shoreline Use Permit. These  
16 permits can authorize construction of private floating facilities on the lake as well as  
17 vegetative modification on fee owned land. Shoreline use is the major portion of work effort  
18 at Tenkiller Ferry Lake when it comes to natural resources management. These activities may  
19 be authorized in designated areas consistent with approved use allocations specified in the  
20 Tenkiller Ferry Lake SMP. The intention of the SMP is to protect natural resources while still  
21 providing limited private use activities. The issuance of a private shoreline use permit does  
22 not convey any real estate or personal property rights or exclusive use rights to the permit  
23 holder.

24  
25 The current status of shoreline management at Tenkiller Ferry Lake is there are  
26 approximately 281 permits issued for boat docks and approximately 20 active permits for  
27 vegetation modification related activities. It is anticipated this number will increase in future  
28 years due to the increase of development from the adjacent private property around the lake.  
29 Consult the Tenkiller Ferry Lake Shoreline Management Plan for specific information on  
30 how shoreline use is managed.

31  
32 The intention for these lands is to assure they are being managed in accordance with  
33 the objectives identified in Chapter 3, and the requirements in CFR, Title 36, Section 327.30.  
34 Tenkiller Ferry Lake staff will monitor permitted shoreline use in these areas to accomplish  
35 this task. Staff will assure the appearance of private exclusive use is not occurring and that  
36 USACE resource objectives are being met. The threshold for areas available for permitted  
37 private docks and vegetation modification is very nearly saturated; USACE will notify the  
38 public why additional shoreline use permits cannot be issued within that area as appropriate.  
39

40 2. Wildlife Management: These are lands designated for the management of wildlife  
41 resources. Wildlife management is conducted by USACE and the State of Oklahoma. There  
42 are currently 2590.125 acres of land licensed to the ODWC. These areas are primarily  
43 located in the Tenkiller Wildlife Management Area and powerhouse equipment yard.  
44 ODWC's primary strategy in these areas is to manage game species with the understanding  
45 those actions benefit both game and non-game species. The resource plan for ODWC

1 licensed land coincides with the objectives USACE desires to see on land classified as  
2 wildlife management. Therefore the plan for these areas is to continue allowing ODWC to  
3 implement their management plan.  
4

5 A special note about USACE involvement within ODWC licensed land is USACE is  
6 not directly involved with the work effort within these areas. However, USACE often  
7 provides support to ODWC when time and resources are available. Support often comes in  
8 assistance with creation of habitat, archeological reviews, identifying boundary line, and  
9 assistance with GIS mapping. USACE will continue to let ODWC be the lead agency when it  
10 comes to management of wildlife at these locations.  
11

12 In addition to the ODWC licensed areas, USACE has property directly managed  
13 within several units for the purpose of wildlife management. These areas are managed with  
14 the intentions of providing public hunting opportunities for both big and small game. A level  
15 one environmental inventory has been conducted for Tenkiller Ferry Lake, which is a GIS  
16 based measurement of existing wetlands, soils, and vegetative types. The next step is to  
17 perform a level two environmental inventory to continue cataloging existing natural  
18 resources. This survey is more labor intensive and requires actual field surveillance by staff  
19 to identify resources that need to be cataloged. These inventories will identify sensitive  
20 natural resources and their location as well as help develop management plans to enhance  
21 these natural resources. The management plans will include common wildlife management  
22 practices such as: planting of food plots, fencing, cattle grazing for vegetation control, and  
23 the use of special restrictions to manage wildlife populations.  
24

25 Non-game wildlife is something that is also managed by USACE. The species of  
26 focus within this area of consideration are animals listed as a threatened or endangered  
27 species under the ESA. These species (Table 2.2) will continue to receive attention to assure  
28 they are managed in accordance to their habitat needs and parameters identified in a  
29 biological opinion. Other non-game programs such as song bird nest box construction and  
30 installation of bat boxes are often performed on an intermittent basis. The plan is to continue  
31 providing effort to these initiatives in order to provide some form of management for non-  
32 game species.  
33

34 The goal for the areas leased to ODWC is to continue working with USACE partners  
35 to assure wildlife management is being conducted so that it benefits both game and non-game  
36 species. Those lands managed directly by USACE will continue being managed in a fashion  
37 to enhance the existing environment and benefit both game and non-game wildlife. A priority  
38 will be given to accomplishing the objectives identified in Chapter 3.  
39

40 3. Vegetative Management. These are lands that have vegetative types considered to  
41 be sensitive and needing special classification to ensure success. A good example of these  
42 types of vegetation would be forested wetlands and Cross Timber forests. No lands are  
43 currently identified at Tenkiller Ferry Lake for vegetative management purposes.  
44

1           4. Future/Inactive Recreation Areas. These are areas that were classified for  
2 recreation but were never developed. There are nine (9) islands totaling 158 acres occurring  
3 within the lake south of the highway 82 bridge. These areas are classified for High Density  
4 Recreation and have been previously leased to the State of Oklahoma. The current lease with  
5 the State of Oklahoma excludes these islands, however the State of Oklahoma would be  
6 interested in leasing these areas in the future if their inclusion is deemed economically  
7 justifiable. Therefore, they should remain as a potential recreational development location. In  
8 the interim it should be managed for wildlife and low density public recreation and allow  
9 activities such as, hunting, hiking, or wildlife observation.

10  
11           E. Water Surface. This is in reference to water surface management needs which the  
12 project utilizes to ensure project operations. There are two types of water surface zoning  
13 utilized at Tenkiller Ferry Lake. First would be an area that is prohibited for boat traffic. This  
14 area is located around the dam and is delineated with buoy lines. There are prohibited entry  
15 locations on both the upstream and downstream side of the dam in accordance with ER 1130-  
16 2-520. The purpose of this restriction is to limit public access to ensure the security of the  
17 structure and public safety. The second type of water surface zoning is for public safety  
18 related to cliff jumping and cliff diving. There are two locations at Tenkiller State Park where  
19 access to water and shoreline is prohibited for public safety. The goal for this zoning is to  
20 continue managing it to provide the optimal recreational experience for the user while still  
21 providing high levels of public safety.

## 22 23 **5.2. SPECIAL CONSIDERATIONS**

24           There is an abundance of cultural resources located around and within Tenkiller Ferry  
25 Lake. Special consideration should be given to any activity that may have a negative impact  
26 on cultural resources. Therefore, a thorough review of all actions that have soil disturbance  
27 must be conducted and reviewed by the District Archeologist. Any action found to have  
28 negative impact must be coordinated with the appropriate state or tribal entity before  
29 authorization of work is granted. In addition, the recently developed HPMP must be  
30 implemented for managing cultural resources.

31  
32           There are several endangered species that have a home range within the Tenkiller  
33 Ferry Lake area. Therefore, any work conducted on this project has to be in accordance to the  
34 ESA. The methodology to assure all work is done in compliance with ESA is to review the  
35 proposed action for impacts, conduct a field survey to ascertain if the species or suitable  
36 habitat is present, and if species or suitable habitat are present, follow the requirements of the  
37 ESA.

38  
39           Shoreline management at Tenkiller Ferry Lake is an integral part of the project.  
40 Therefore, it is a management topic that must be identified to help lay the ground work to  
41 assure compliance of the regulations. 36 CFR Section 32.30(d)(1) states:

42  
43                    “It is the policy of the Chief of Engineers to protect and manage shorelines of  
44 all Civil Works water resource development projects under Corps jurisdiction in a  
45 manner which will promote the safe and healthful use of these shorelines by the

1 public while maintaining environmental safeguards to ensure a quality resource for  
2 use by the public. The objectives of all management actions will be to achieve a  
3 balance between permitted private uses and resource protection for general public  
4 use. Public pedestrian access to and exit from these shorelines shall be preserved. For  
5 projects or portions of projects where Federal real estate interest is limited to  
6 easement title only, management actions will be appropriate within the limits of the  
7 estate acquired. “  
8

9 Generally, Tenkiller Ferry Lake has been historically managed to achieve the results  
10 required in the above policy statement. The intention is to continue managing in this fashion  
11 to achieve a balance between public desires for shoreline use and environmental  
12 sustainability. Through the recent analysis conducted it has become apparent that some  
13 changes need to occur to the SMP to assure compliance with this policy statement in the  
14 future.

1                   **CHAPTER 6 - SPECIAL TOPICS/ISSUES/CONSIDERATIONS**  
2

3                   **6.1. COMPETING INTERESTS ON THE NATURAL RESOURCES**

4                   Tenkiller Ferry Lake is a medium sized multi-purpose project with numerous  
5 authorized purposes. The authorized purposes have municipal and industrial users which  
6 have developed over time and are reliant on their provided benefits. These benefits are  
7 critical to the local and regional economies and are of great interest to the public. Due to  
8 these interests, competing desires on the natural resources develop. It is very difficult to  
9 balance these interests so the customer can benefit while insuring there are no adverse  
10 impacts. It is the intention of this document to outline a plan, which when executed, provides  
11 customer service and appropriate natural resource management.  
12

13                   **6.2. AMERICAN BURYING BEETLE (ABB)**

14                   The ABB can be found at Tenkiller Ferry Lake. It was proposed for federal listing in  
15 October 1988 (53 FR 39617) and designated as an endangered species on July 13, 1989 (54  
16 FR 29652) and retains this status. The ABB is an annual species and typically reproduces  
17 once in its lifetime. It competes with other invertebrate species, as well as vertebrate species,  
18 for carrion. Although ABBs are considered feeding habitat generalists, they are believed to  
19 be more selective regarding breeding habitat. Direct adverse impacts to ABBs during their  
20 inactive and active periods may occur as a result of impacts from clearing vegetation; soil  
21 compaction due to heavy equipment operation; fuel and chemical contamination of the soil;  
22 grading; soil excavation and filling; and re-vegetation and reseeded of disturbed areas.  
23 Excavating soils, clearing vegetation, and constructing access roads involve displacement of  
24 soils that could uncover ABBs. Uncovered ABBs could be exposed to predation, adverse  
25 environmental conditions, or crushed by equipment. If construction occurs during the active  
26 season, ABB broods could be displaced during soil excavation, adults could be separated  
27 from larvae/eggs, and/or both could be crushed by equipment.  
28

29                   Section 7(a)(2) of the ESA requires federal agencies to ensure that any action  
30 authorized, funded, or carried out by such agency is not likely to: 1) jeopardize the continued  
31 existence of any endangered or threatened species, or 2) result in the destruction or adverse  
32 modification of critical habitat. The term, "jeopardize the continued existence of", means to  
33 reduce appreciably the likelihood of both the survival and recovery of listed species in the  
34 wild by reducing the species' reproduction, numbers, or distribution. Jeopardy opinions must  
35 present reasonable evidence that the project will jeopardize the continued existence of the  
36 listed species or result in destruction or adverse modification of critical habitat.  
37

38                   While the action of revising a Master Plan is not likely to jeopardize the continued  
39 existence of the ABB, and is not likely to destroy or adversely modify critical habitat, it is  
40 possible that lake management in accordance with the proposed action could result in  
41 incidental take of ABBs.  
42

43                   Since incidental take may occur, the USACE will have a section 10 permitted  
44 biologist conduct presence/absence surveys using established survey procedures. These

1 surveys must be performed during the ABB active season and are valid until the beginning of  
2 the active season in the following year. Also, if soil disturbance has not commenced by the  
3 beginning of the active season in the following year, another survey will be conducted.

4  
5 If a survey for a project site is positive for the ABB the following best management  
6 practices would be implemented:

- 7
- 8 1. Project footprint will be minimized to the greatest extent practicable.
- 9 2. Equipment will utilize existing roads and all equipment will use the same path to  
10 minimize disturbance.
- 11 3. Habitat will not be altered until necessary for the project construction equipment  
12 access points to dredge disposal sites will be minimized to the greatest extent  
13 practicable.
- 14 4. Project sites will be canvassed and any carcasses that may be present will be  
15 removed. Searches for carcasses must be initiated at least two weeks prior to  
16 project-related soil disturbance and conducted once a week until soil disturbance  
17 begins.
- 18 5. The minimum amount of lighting necessary to meet the objectives of the project  
19 will be used. If night time work is required, lighting will be down shielded.
- 20 6. Vegetation will be established in areas not permanently impacted that were  
21 disturbed during project construction as soon as possible following construction.  
22 This will be accomplished with an appropriate mix of plant species native to the  
23 project site. Plants listed as invasive by the U.S. Department of Agriculture or the  
24 state of Oklahoma should be avoided.
- 25 7. At least an area equal to the suitable habitat impacted by the project actions  
26 (impacts of existing flood pools excluded) will be replaced through improved  
27 management or restoration of habitat suitable for ABBs. The Corps will prepare  
28 an ABB habitat plan outlining proposed habitat improvements and the improved  
29 or restored habitat must be in a location approved by the Service. Management  
30 and monitoring of these improved habitat areas must be incorporated to maintain  
31 these areas and such actions will be included in an annual report to the Service.
- 32

### 33 **6.3. WATER QUALITY**

34 Existing water quality is summarized in Section 2.4.

35  
36 Water quality at Tenkiller Ferry Lake is dependent upon many factors. The location  
37 and watershed are two primary factors which contribute to general water quality. Tenkiller  
38 Ferry Dam is located on the Illinois River at river mile 12.8 in Sequoyah County, Oklahoma.  
39 The reservoir area lies in northern portions of Sequoyah and southern portions of Cherokee  
40 Counties in Oklahoma. The watershed extends from northwestern Arkansas to northeastern

1 Oklahoma and encompasses 1,069,530 acres with 576,030 acres located in Oklahoma and the  
2 remainder located in Arkansas. The Illinois River is classified as a state scenic river from the  
3 Lake Frances Dam to the confluence of the Illinois River with the Barren Fork,  
4 approximately 70 river miles. An additional 35 river miles of the Barren Fork and 12 river  
5 miles of Flint Creek are classified as scenic rivers upstream of their confluence with the  
6 Illinois River.

7  
8 A number of water quality surveys have been conducted within the Tenkiller Lake  
9 watershed since 1999 by the USEPA, Oklahoma Conservation Commission (OCC),  
10 Oklahoma Water Resources Board (OWRB), United States Geological Survey (USGS),  
11 Oklahoma Department of Environmental Quality (ODEQ), and USACE. Additional Joint  
12 River Studies have been conducted by the States of Arkansas and Oklahoma. Several  
13 segments of the Illinois River, including Tenkiller Ferry Lake, are listed in the most recent  
14 303(d) listing of waters identified by the State of Oklahoma as not meeting WQS for  
15 designated beneficial uses. Tenkiller Ferry Lake is currently identified by the State of  
16 Oklahoma as a “Nutrient Limited Water”, indicating that nutrient enrichment of the lake (i.e.,  
17 eutrophication) is considered to adversely impacting the Public-Private Water Supply  
18 beneficial use. Osage Creek, Muddy Fork, and Spring Creek tributaries of the Illinois River  
19 in Arkansas are listed in the most recent 303(d) listing of impaired waters in Arkansas. No  
20 Total Maximum Daily Load (TMDL) has been established for the Illinois River or Tenkiller  
21 Ferry Lake, however the USEPA has initiated the collection of existing water quality data for  
22 TMDL development (75 FR 2860).

23  
24 More recent water quality impacts related to excessive nutrients (e.g., nitrogen,  
25 phosphorous) within the watershed is the now regular occurrence of cyanobacteria (blue-  
26 green algae) blooms throughout the lake since 2011. The primary sources of nitrogen and  
27 phosphorous in the lake are runoff from fertilized agricultural lands, septic systems, NPDES  
28 permitted waste water treatment discharges, and run off from fertilized lawns. Additional  
29 sources of nitrogen and phosphorus are internal loadings from organic matter containing  
30 nitrogen and phosphorous present in the lake water and sediment.

31  
32 Tenkiller Ferry Lake is typical of many of the reservoir in Oklahoma and surrounding  
33 states that were constructed in the 20<sup>th</sup> century. As a reservoir ages, water quality declines  
34 can be attributed to many factors, individually and collectively. Factors which generally  
35 contribute to decline water quality in aging reservoirs includes sedimentation, increased  
36 human habitation within the vicinity of the lake, changing land management practices within  
37 the watershed, increase urbanization and associated urban runoff, and increased reliance on  
38 allocated water supply. Recreation is one use that has already been adversely impacted by  
39 cyanobacteria blooms, low dissolved oxygen water, and increasing reliance on water supply  
40 by stakeholders with water supply contracts. Adverse impacts to the local economy due to  
41 water quality and quantity issues have been an increasing matter of local, state, and regional  
42 concern throughout the contiguous United States in recent years.

43  
44 Water quality and quantity concerns and future anticipated TMDL implementation by  
45 state and federal agencies will affect the selection and implementation of management plans

1 throughout the watershed. Addressing water quality and quantity concerns in conjunction  
2 with TMDL implementation could allow Tenkiller Ferry Lake to meet all authorized  
3 purposes into the future.

#### 4 **6.4. INVASIVE SPECIES**

5 The extent of invasive species currently documented to be present at the Tenkiller  
6 Ferry Lake project is presented in Table 2.3.

7  
8 The Arkansas River basin has been identified as a major pathway for the introduction  
9 of aquatic nuisance species. The following vegetative species are considered of special  
10 concern in Oklahoma: alligator weed, Eurasian watermilfoil, hydrilla, purple loosestrife,  
11 salvinia, and water hyacinth. Due to its proximity to the McClellan Kerr Arkansas River  
12 Navigation System, Tenkiller Ferry Lake is particularly vulnerable to the transport by boaters  
13 of these invasive plants as well as some invasive animal species. Salvinia and water hyacinth  
14 have been documented to occur in Tenkiller Ferry Lake but are not yet at population levels  
15 that allow them to have widespread impacts in the lake. Salvinia refers to a genus of  
16 perennial, aquatic ferns from South America that are common in water garden and aquarium  
17 industries. In Oklahoma giant salvinia has established in ponds, lakes and slow moving  
18 streams. It prefers nutrient rich waters and forms extensive mats that can completely cover  
19 water surfaces resulting in the degradation of natural habitats by shading natural plants,  
20 reducing available dissolved oxygen and creating large amounts of decaying plant material.  
21 Giant salvinia can clog water intakes which interfere with irrigation, water supply, and  
22 electrical generation. Human transport aids in the spread of this species, with plants adhering  
23 to anything entering infested waters including boats, trailers, vehicular wheels, intakes, and  
24 gear. Water hyacinth is common in Gulf Coast states and its presence has caused massive  
25 problems with navigation, water based recreation, canal systems, pumping stations, and  
26 water intakes. While the risk of establishment in Oklahoma is low due to cold winter air  
27 temperatures, its continued popularity in water gardens poses a threat that it could adapt to  
28 colder temperatures or become established in thermal refugia. In addition to aquatic invasive  
29 plants, Oklahoma has a total of 22 invasive plant species on the Oklahoma Invasive Plant  
30 Council problem list. Invasive terrestrial plants known to occur on Tenkiller Ferry Project  
31 lands include Japanese honeysuckle, Chinese lespedeza, Japanese climbing fern, kudzu, and  
32 autumn olive.

33  
34 Zebra mussels have not been documented in Tenkiller Ferry Lake. Population levels  
35 in surrounding lakes within the Arkansas River Basin have quickly risen to levels that are  
36 impacting raw water intakes for water supply and internal piping within the Tenkiller Ferry  
37 Powerhouse. At present these impacts are mainly in the form of increased maintenance costs  
38 due to having to remove the mussels. While zebra mussels have yet to spread to the lake,  
39 their spread is inevitable. Grass carp have been found in Tenkiller Ferry Lake but population  
40 levels remain low. Several invasive terrestrial species are known to occur on Tenkiller Ferry  
41 Project lands as presented in Table 2.3. Those species plant and animal species of greatest  
42 concern are the Eurasian collard dove and eastern red cedar.

43

1           Several native species pose problems for Tenkiller Ferry Lake and its surrounding  
2 lands. The most problematic of these are the Eastern Red Cedar, which is becoming  
3 widespread on project lands due to fire suppression, and various species of blue green algae.  
4 The spread of eastern red cedar reduces biodiversity and limits food supplies for various  
5 animal species by crowding out other plants that produce food. Wide spread blooms of  
6 cyanobacteria are the result of nutrient loading, drought, and excessively hot summers that  
7 have occurred regularly since 2011. Various species of cyanobacteria are capable of  
8 producing toxins which have the capability of causing illness and death in humans and  
9 animals. The presence of blooms and the associated publicity has impacted visitation at the  
10 lake.

## CHAPTER 7 - PUBLIC AND AGENCY COORDINATION

### 7.1. PUBLIC AND AGENCY COORDINATION

The USACE began planning to revise the Tenkiller Ferry Project Master Plan (MP) in spring 2014. The objectives for a MP revision were 1) update land classifications to reflect changes in USACE land management policies since 1995 and 2) to update the Project MP to reflect new agency requirements for MP documents in accordance with ER 1130-2-550, Change 7, 30 Jan 13 and EP 1130-2-550, Change 5, 30 Jan 13.

The first action was a scheduled public scoping meeting providing an avenue for public and agency stakeholders to ask questions and provide comments. This public scoping meeting was held on April 17, 2014 in Gore, OK. The Tulsa District placed commercial paid advertisements in the *Muskogee Phoenix*, *Sequoyah County Times*, *Vian-Tenkiller News*, *The Paper (Mayes County)*, *Pryor Daily News*, *Wagoner Tribune*, *Tahlequah Daily Press*, and *Tulsa World* on multiple dates during the two weeks prior to the public scoping meeting.

USACE employees hosted the workshop, which was conducted in a semi-structured manner. Participants were asked to sign-in at a table where staff provided the participants with information regarding the structure of the scoping meeting, comment forms, and postage paid envelopes to return comment forms. After signing in, participants were directed to an area where topic-specific information tables were set up. Large-scale boards were displayed at each table to convey information about the following topics:

- Public Involvement Process
- Project Overview
- Overview of the NEPA Process
- Master Plan and current land classifications
- How to Submit Comments

At each of the information tables and throughout the meeting room, USACE representatives were available to answer questions and receive comments. Interested persons had the opportunity to comment about the project using a variety of methods, including the following:

- Filling out a comment form at the open house;
- Taking a comment form home to be returned in a pre-stamped envelope;
- Submitting a comment using electronic mail; and
- Submitting a comment and mailing it in on letterhead or choice of paper.

One (1) comment was received following the April 17, 2014 public scoping meeting, interest groups, partner agencies, other government agencies, and businesses. In total, 25 persons, including USACE personnel, attended this public scoping meeting. The one

1 comment received by the USACE was general in nature and addressed the desire to work  
2 collaboratively on land management activities.

3

4 **Note: Remainder to be completed following Public and Agency review of the draft MP**  
5 **and draft EA/draft FONSI.**

DRAFT

1 **CHAPTER 8 - SUMMARY OF RECOMMENDATIONS**

2  
3 **8.1. SUMMARY OVERVIEW**

4 The following are the recommendation for the course of action necessary to manage  
5 Tenkiller Ferry’s current and future issues. The belief is actions taken today can ensure the  
6 future health and longevity of Tenkiller Ferry Lake while still allowing continued use and  
7 development. The factors considered cover a broad spectrum of public use, environmental,  
8 socioeconomic, and workload. The final MP for Tenkiller Ferry Lake will continue to  
9 provide for and enhance recreational opportunities for the public, improve the environmental  
10 quality, and create a management philosophy more conducive to existing staff levels at the  
11 Tenkiller Ferry Project.

12  
13 **8.2. RECLASSIFICATION OF LAND ALLOCATION**

14 A public notice was developed as part of the initial process for revising the Tenkiller  
15 Ferry Project MP. The public notice requested the public to provide proposals for the  
16 revision of the MP. During this process there were no proposals received. Reclassification  
17 proposals assessed during this process were formulated by Tenkiller Lake Project staff and  
18 Tulsa District Office staff assigned to the Project Delivery Team (PDT). Reclassification  
19 proposals are presented in Table 8.1.

20  
21 Table 8.1. Fee land reclassification proposals evaluated.

PROPOSAL	DESCRIPTION	RESPONSE
Reclassification Proposal 1	Reclassify all allocated lands above the conservation pool elevation, 632.00 feet, High Density Recreation	NO – does not align with SMP. Would not allow for permitted private docks. Does not meet natural resource management policy goals and objectives of USACE.
Reclassification Proposal 2	Reclassify all allocated lands above the conservation pool elevation, 632.00 feet, Wildlife Management	NO – does not align with SMP. Would not allow for permitted private docks. Does not meet recreation management and recreation policy goals and objectives of USACE.
Reclassification Proposal 3	Reclassify all allocated lands above Hwy 82 Wildlife Management	NO – does not align with SMP below Hwy 82. Would not allow permitted private docks in areas where they are currently permitted. Only partially meets natural resource and recreation policy goals and objectives of USACE.

22

1 Table 8.1 continued. Fee land reclassification proposals evaluated.  
 2

PROPOSAL	DESCRIPTION	RESPONSE
Reclassification Proposal 4	Reclassify 24 acres in Strayhorn Cove from High Density Recreation to Low Density Recreation	YES – SMP zoned for docks/existing permitted private docks.
Reclassification Proposal 5	Reclassify 46 acres on the south shore of Lender Branch Cove from Wildlife Management to Low Density Recreation	YES – SMP zoned for docks/existing permitted private docks.
Reclassification Proposal 6	Reclassify 98 acres in the vicinity east of Barnacle Bill’s Marina from Low Density Recreation to High Density Recreation	YES – aligns with SMP and currently permitted private docks.
Reclassification Proposal 7	Reclassify 424 acres in the vicinity of Sisemore Cove from Low Density Recreation to Wildlife Management	YES – shoreline not suitable for low density recreation.
Reclassification Proposal 8	Reclassify 125 acres in the vicinity of Pettit Creek Cove from Wildlife Management to Low Density Recreation	YES – SMP zoned for docks/existing docks.
Reclassification Proposal 9	Reclassify 81 acres in the vicinity of Pettit Creek Cove/Pettit Bay Recreation Area from High Density Recreation to Wildlife Management	YES – geography not suitable for High Density Recreation.
Reclassification Proposal 10	Reclassify 4 acres in the vicinity of S. Bayside Lane from High Density Recreation to Low Density Recreation	YES – SMP zoned for docks/existing docks.
Reclassification Proposal 11	Reclassify 77 acres extending east from Pettit Bay PUA from High Density Recreation to Wildlife Management	YES – area not suitable for high density recreation.
Reclassification Proposal 12	Reclassify 60 acres in the S. Boathouse Lane vicinity from Wildlife Management to Low Density Recreation	YES – SMP zoned for docks/existing docks.

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1 Table 8.1 continued. Fee land reclassification proposals evaluated.  
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PROPOSAL	DESCRIPTION	RESPONSE
Reclassification Proposal 13	Reclassify 118 acres on peninsula across from Standing Rock Landing PUA from High Density Recreation to Wildlife Management	YES – area not suitable for high density recreation.
Reclassification Proposal 14	Reclassify 75 acres in the P-21 road vicinity from Wildlife Management to Low Density Recreation	YES – SMP zoned for docks/existing docks.
Reclassification Proposal 15	Reclassify 24 acres in the vicinity of the tree nursery above Hwy 82 from High Density Recreation to Wildlife Management	YES – area not suitable for high density recreation.
Reclassification Proposal 16	Reclassify 140 acres from in vicinity of the tree nursery above Hwy 82 from Low Density Recreation to Wildlife Management	YES – shoreline is not suitable for low density recreation.
Reclassification Proposal 17	Reclassify 164 acres in the Carters Landing PUA from High Density Recreation to Environmentally Sensitive Area	YES – provide maximum protection for historically significant areas.
Reclassification Proposal 18	Reclassify 190 acres in the Carters Landing PUA from High Density Recreation to Environmentally Sensitive Area	YES – provide maximum protection for historically significant areas.
Reclassification Proposal 19	Reclassify 88 acres in T16N, S18 and S19 from Low Density Recreation to Environmentally Sensitive Area	YES – Provide maximum protection for historically significant areas.
Reclassification Proposal 20	Reclassify 335 acres in T15N, S5 and S6 from Low Density Recreation to Environmentally Sensitive Area	YES – provide maximum protection for historically significant areas.

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1 Table 8.1 continued. Fee land reclassification proposal evaluated.  
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PROPOSAL	DESCRIPTION	RESPONSE
Reclassification Proposal 21	Reclassify 638 acres along Caney Creek, Dry Creek and east bank of Illinois River from Low Density Recreation to Wildlife Management	YES – shoreline not suitable for low density recreation.
Reclassification Proposal 22	Reclassify 182 acres along Elk creek cove from High Density Recreation to Wildlife Management	YES – shoreline not suitable for high density recreation.
Reclassification Proposal 23	Reclassify 77 acres in Standing Rock area from Low Density Recreation to Wildlife Management	YES – shoreline not suitable for low density recreation.
Reclassification Proposal 24	Classify 140 acres currently unclassified lands adjacent to cottage site disposal	YES – area is suitable for low density recreation and is currently used for low density recreation.
Reclassification Proposal 25	Reclassify 83 acres in Carlile Cove from High Density Recreation to Low Density Recreation	YES – area not suitable for high density recreation. Permitted private boat docks and aligns with SMP.
Reclassification Proposal 26	Reclassify 54 acres in south of Carlile Cove from High Density Recreation to Wildlife Management	YES – area not suitable for low density recreation and aligns with aesthetic classification in SMP.
Reclassification Proposal 27	Classify 22 acres currently not classified north of Chicken Creek Point PUA as Low Density Recreation.	YES – area is suitable for low density recreation.
Reclassification Proposal 28	Reclassify 8 acres north of Woodhaven Drive from High Density Recreation to Low Density Recreation	YES – aligns with SMP.
Reclassification Proposal 29	Reclassify 371 acres in Snake Creek Cove from High Density Recreation to Low Density Recreation	YES – aligns with SMP.

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1 Table 8.1 continued. Fee land reclassification proposals evaluated.

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PROPOSAL	DESCRIPTION	RESPONSE
Reclassification Proposal 30	Reclassify 30 acres from Wildlife Management to Project Operations	YES – necessary for auxiliary spillway.
Reclassification Proposal 31	Reclassify 5 acres on north side of Hwy 100 from High Density Recreation to Project Operations	YES – currently used for project related stockpiles.
Reclassification Proposal 32	Reclassify 145 acres in the Overlook area from High Density Recreation to Low Density Recreation	YES – Not suitable for high density recreation.

3

### 4 **8.3. AMERICAN BURYING BEETLE (ABB)**

5 The ABB is identified as a federally endangered species with a possible distribution  
6 on Tenkiller Ferry Project fee lands. Under Section 7 of the Endangered Species Act, the  
7 Tulsa Districts assesses operation and maintenance impacts to the ABB under a Biological  
8 Opinion (BO) from the USFWS. This BO allows for incidental take for flood control  
9 activities within the reservoir. Impacts to the ABB on lands held in fee title above the top of  
10 the flood control pool (667.0 feet) requires consultation with the USFWS to ensure  
11 compliance with current ABB guidance. It is recommended the Tenkiller Ferry Project staff  
12 continue to ensure all project and outgrant related earth disturbing activities are conducted in  
13 a manner that ensures compliance with all applicable laws, policy, and guidance and  
14 minimize to the extent practicable adverse impacts to the ABB at Tenkiller Ferry Lake.

15

### 16 **8.4. SHORELINE MANAGEMENT**

17 Shoreline management workload is a component of project staff duties at Tenkiller  
18 Ferry Lake and is one of the primary work burdens for staff associated with private dock  
19 permitting and shoreline management activities. While shoreline management activities  
20 comprise a large amount of staff effort, shoreline management workload is currently stable  
21 with no appreciable growth anticipated in future years. Currently, the maximum numbers of  
22 allowable private dock and vegetation modification permits have been issued and activities  
23 associated with permits are limited to permit renewals.

24

25 USACE is mandated through Executive Order 13504 to reduce greenhouse gas  
26 emissions. The use of alternative energy is the preferred alternative for any future permit  
27 requests. This power could be provided in the form of wind turbine or solar and can be  
28 authorized with a Shoreline Use Permit. USACE recognizes that local utilities and individual  
29 permittees have many options available to provide energy produced by renewable energy  
30 resources and infrastructure necessary to provide power to private dock could closely  
31 resemble the infrastructure associated with conventional fossil fuel generated electricity. The  
32 inclusion of permit requirements to include renewable energy resources to power private  
33 docks would allow USACE to meet the policy goals and objectives for reducing reliance on  
34 fossil fuels and reduce manpower required for process or issuance of a license. If the

1 applicant can validate that it is unfeasible to use alternative power on site, they can provide  
2 documentation from the local electrical utility that electricity being purchased is being  
3 produce via renewable energy alternatives. If the applicant can validate that it is unfeasible to  
4 use and or acquire electricity from renewable resources they can request authorization of a  
5 conventional electric line to power the private dock.  
6

7 Changes to land use classification incorporated into this MP revision better align with  
8 the existing 1996 Shoreline Management Plan (SMP), however it is recommended this SMP  
9 be updated as soon as practicable following completion of this MP revision.  
10

### 11 **8.5. RECREATION**

12 USACE maintains and operates numerous recreation areas at Tenkiller Ferry Lake.  
13 The recommendation is to continue to provide the service to which the public has grown  
14 accustomed. This service is increasing in cost every year and has grown to become a  
15 substantial part of the operating budget. USACE should continue to strive in developing  
16 innovative and cost efficient methods to conduct business. Should budget constraints not  
17 allow for continued service then the recommendation is to either reduce services or  
18 campground availability or a combination of both in order to cut costs.  
19

20 Funds spent on recreational improvements are very limited but are, at times,  
21 authorized and appropriated by Congress. When these funds are appropriated and available  
22 there should be a priority system for improvement projects within recreational areas. At  
23 present, USACE has not conducted a recreation carrying capacity study of Tenkiller Ferry  
24 Lake. It is recommended the Tulsa District prioritize recreation carrying capacity studies to  
25 be undertaken at Projects with recently completed MP updates and that these studies include  
26 land-water interface recreation data and surveys, water-based recreation data and surveys,  
27 land-based recreation data and surveys, and dispersed-use recreation surveys. Survey results  
28 would then be available to assist the lake managers improve water based recreation  
29 management and water safety outreach and prioritize recreational areas for improvement  
30 projects and or partnership opportunities.  
31

### 32 **8.6. ENCROACHMENTS**

33 Encroachments have been an occasional issue for Tenkiller Ferry Lake.  
34 Encroachments occur for multiple reasons including areas with narrow land boundaries in  
35 some portions of the Project, a lack of adequate fencing in place along the Project boundary,  
36 and boundary monuments not visible and or located prior to initiation of the activities  
37 resulting in an encroachment. The unfortunate consequence results in occurrences when  
38 construction encroaches onto Government property held in fee title or flowage easement. The  
39 resolution is to have all encroachments removed or authorized by a real estate instrument. It  
40 is recommended that an encroachment policy be created which strives to have all  
41 encroachments removed unless determined to be justifiably on Government property and can  
42 be authorized with a Real Estate instrument.  
43

### 44 **8.7. PARTNERSHIPS**

1           The USACE has embraced the use of partnerships to provide services to the public  
2 which cannot be provided by the Government. This typically entails a second party that has  
3 resources with which to develop an area for a more enhanced recreational experience beyond  
4 what the USACE can provide. These opportunities, when available and if they provide a  
5 better opportunity for the public without negative effects to the lake, should be researched to  
6 determine if they are in compliance with applicable USACE regulation, policy, and guidance.  
7 If such a determination is positive, it is recommended that agreements be formalized with the  
8 new partner and the development be allowed to occur.  
9

## 10 **8.8. CULTURAL RESOURCES**

11           Cultural resources are abundant in the Tenkiller Ferry Lake area and are managed by  
12 USACE in accordance with the Historic Property Management Plan (HPMP). The HPMP is a  
13 five year plan developed to assist the government in management these historic and cultural  
14 properties and is prepared in compliance with applicable federal laws, regulations, and  
15 guidance. Currently there is no Historic Property Management Plan for Tenkiller Ferry  
16 Project. It is recommended the Tulsa District complete a HPMP for Tenkiller Ferry Project  
17 and incorporate HPMP components into the Operational Management Plan (OMP) for the  
18 Project.

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**APPENDIX A - LAND CLASSIFICATION AND RECREATION AREA  
DRAWINGS**

**APPENDIX B - NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)  
DOCUMENTATION  
(Includes summary of Public Comments)**