
***WHITE RIVER WATERSHED
BEAVER LAKE
ARKANSAS***

***MASTER PLAN FOR
DEVELOPMENT AND
MANAGEMENT OF BEAVER LAKE***



DRAFT: March 2018

PREFACE

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The Master Plan for Beaver Lake was first approved December 13, 1963. Subsequent revisions were prepared with the latest revision approved on February 23, 1976. The Master Plan is intended to serve as a guide for the orderly and coordinated development, management, and stewardship of all lands and water resources of the project. It presents data on existing conditions, anticipated recreational use and the type of facilities needed to service anticipated use, sensitive resources requiring protection, and an estimate of future requirements. Since the 1976 master plan revision, development has created new and unforeseen demands on the public lands and resources of the project in the Beaver Lake region. These new demands on project resources as well as naturally occurring changes to the resources, combined with the need to bring the master plan in line with current management practices at the project, and with new guidance and directives within U. S, Army Corps of Engineers (USACE), has dictated the preparation of this Master Plan revision.

This revised Master Plan presents an inventory of land resources and how they are classified, existing park facilities, an analysis of resource use, anticipated influences on project operation and management, and an evaluation of future needs as required to provide a balanced management plan for cultivating the value of the land and water resources. Included in the revised Master Plan is an evaluation of expressed public opinion, new resource use objectives, and a new land classification system. The format utilized for this plan is outlined in Engineer Regulation/Engineer Pamphlet 1130-2-550 (dated 30 January 2013), which sets forth policy and procedure to be followed in preparation and revision of project Master Plans. This guidance is different from the original Master Plan format, which was a design memorandum. Beaver Lake original Master Plan can be found in Design Memorandum 13-4; a listing of all the previous Master Plan design memorandums and prior supplements can be found in Appendix B.

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Chapter 1 Introduction

a. Project Authorization

Authorization is defined as permission to undertake a specific activity. In the context of this Master Plan revision, project authorization refers to congressional legislation which granted authority to the USACE to study, construct, and eventually operate the White River Basin reservoirs, specifically Beaver Lake. Initial authorizations for the project included the primary project purposes of flood control and generation of hydroelectric power, followed by subsequent authorizations for water supply, recreation, and fish and wildlife habitat.

In 1937, the Chief of Engineers presented a report to Congress providing an overview of flood-control plans for the Ohio and Mississippi Valleys. The report stressed the need for construction of a system of flood control reservoirs in the White River Basin. In reviewing the Chief of Engineers' report, the House Committee on Flood Control recommended and Congress authorized a comprehensive study of the White River basin.

In 1954, Congress adopted the recommendations from the Chief's report authorizing the construction of Beaver Lake. The Beaver Lake project was originally authorized as one of the multiple-purpose reservoir projects in the White River Basin for control of floodwaters, generation of hydropower, and other purposes by Section 4 of the Flood Control Act of 1938 and as amended by the Flood Control Acts of 1941 and 1944. The inclusion of storage in the lake for municipal and industrial water supply was authorized by the Water Supply Act of 1958.

Beaver Lake project authorizations include the following:

- The Flood Control Act approved 28 June 1938 (Public Law No. 761, 75th Congress, 3rd Session) as modified by the Flood Control Act approved 18 August 1941 (Public Law No. 228, 77th Congress, 1st Session) to include the authorization of the project for flood control and generation of hydroelectric power.
- Recreational purposes were provided for under section 4 of the Flood Control Act approved 22 December 1944 (58 stat 889), as amended by Section 4 of the Flood Control Act approved 24 July 1946 (60 stat 642), as amended by Section 209 of the Flood Control Act approved 3 September 1954, as further amended by Section 207 of the Flood Control Act of 1962, as further amended by Section 2 of the Land and Water Conservation Fund Act of 1965;
- Section 210 of the Rivers and Harbors Flood Control Act of 1968 authorized the Chief of Engineers, under supervision of the Secretary of the Army, to provide for recreational development and use of the lake projects under his control through the charging of fees.
- Section 6, Public Law 78-534. Under Section 6 of Public Law 78-534 (the 1944 Flood Control Act), the Secretary of the Army is authorized to enter into agreements for surplus water with states, municipalities, private concerns, or individuals at any reservoir under the control of the Department of the Army. The price and terms of the agreements may be as the Secretary deems reasonable. These agreements may be for domestic, municipal, and industrial uses, but not for crop irrigation.

- 1 • Section 201 of the Flood Control Act of 1954 authorized the construction of Beaver Lake
2 in the White River basin.
- 3 • Title III of Public Law 85-500 (the 1958 River and Harbor Act) is entitled the "Water
4 Supply Act of 1958." Section 301(a), established a policy of cooperation in development
5 of water supplies for domestic, municipal, industrial, and other purposes. Section 301(b)
6 is the authority for the Corps to include municipal and industrial (M&I) water storage in
7 reservoir projects and to reallocate storage in existing projects to M&I water supply.
8 However, as specified in Section 301(d), modifications to a planned or existing reservoir
9 project to add water supply, which would seriously affect the project, its other purposes,
10 or its operation, requires congressional authorization. This act was amended by Section
11 10 of Public Law 87-88 and by Section 932 of Public Law 99-662.
- 12 • Section 10 of Public Law 87-88 (the Federal Water Pollution Control Act Amendments
13 of 1961) modified the 1958 Water Supply Act. This modification permitted the
14 acceptance of assurances for future water supply to accommodate the construction cost
15 payments for future water supply.
- 16 • Section 932 of Public Law 99-662 (the Water Resources Development Act 1986),
17 amended the Water Supply Act of 1958, as amended. This amendment applies to Corps
18 projects but not to Bureau of Reclamation projects. The amendment eliminated the 10-
19 year interest free period for future water supply, modified the interest rate formula,
20 limited repayment to 30 years, and required annual operation, maintenance and
21 replacement costs to be reimbursed annually. This latter requirement had always been a
22 part of Corps policy and repayment procedures.
- 23 • Public Law 88-140, approved 16 October 1963, extended to the non-Federal sponsor of
24 water supply storage the right to use the storage for the physical life of the project subject
25 to repayment of costs. This removed an uncertainty as to the continued availability of the
26 storage space after the 50-year maximum period previously allowed in contracts.
- 27 • Public Law 104-303 (the Water Resources Development Act of 1996). Authorized
28 recreation and fish and wildlife mitigation as purposes of the project, to the extent that the
29 additional purposes do not adversely affect flood control, power generation, or other
30 authorized purposes of the project.

31 **b. Project Purpose**

32 Beaver Lake is a multiple-purpose water resource development project authorized primarily for
33 flood risk management, hydroelectric power generation, and water supply. Additional
34 authorized uses include recreation and fish/wildlife to the extent that they do not adversely affect
35 flood control, power generation, or other authorized purposes of the project.

36 **c. Purpose and Scope of Master Plan**

37 Master Plans are developed and kept current for Civil Works projects operated and maintained
38 by the Corps and will include all land (fee, easements, or other interests) originally and
39 subsequently acquired to support the operations and authorized missions of the projects.
40

41 The Master Plan is the strategic land use management document that guides the comprehensive
42 management and development of all project recreational, natural, and cultural resources
43 throughout the life of the water resource project. The Master Plan guides the efficient and cost-
44 effective management, development, and use of project lands. It is a vital tool for the responsible

1 stewardship and sustainability of project resources for the benefit of present and future
2 generations.

3
4 The Master Plan guides and articulates Corps responsibilities pursuant to federal laws to
5 preserve, conserve, restore, maintain, manage, and develop the project lands, waters, and
6 associated resources. The Master Plan is a dynamic operational document projecting what could
7 and should happen over the life of the project and is flexible based upon changing conditions.
8 The Master Plan deals in concepts, not in details, of design and administration. Detailed
9 management and administration functions are addressed in the Operational Management Plan
10 (OMP), which implements the concepts of the Master Plan into operational actions.

11
12 The Master Plan is not intended to address the specifics of regional water quality, shoreline
13 management, or water level management; these areas are covered in a project's shoreline
14 management plan or water management plan. However, specific issues identified through the
15 Master Plan revision process can still be communicated and coordinated with the appropriate
16 internal Corps resource (i.e. Operations for shoreline management) or external resource agency
17 (i.e. Arkansas Department of Environmental Quality for water quality) responsible for that
18 specific area.

19
20 This revised Master Plan replaces Design Memorandum No. 13-4, Updated Master Plan for
21 Development and Management of Beaver Reservoir approved February 1976.

22 **d. Brief Watershed and Project Description**

23 The project is located in the scenic Ozark Mountain region of northwest Arkansas. The total
24 area contained in the Beaver project, including both land and water surface, consists of 38,138
25 acres. Of this total, 1,432 acres are in flowage easement (Note: a small difference in acreage
26 figures exist throughout this document due to using GIS/survey plats data which is more accurate
27 and based on new technology versus the deed language which was derived many years ago
28 without the aid of technology). The region is characterized by narrow ridges between deeply cut
29 valleys that are forested with deciduous trees and scattered pine and eastern red cedar. When the
30 lake is at the top of the conservation pool (1120.43 mean sea level), the water area comprises
31 28,299 acres and 490 miles of shoreline. The shoreline is irregular with topography ranging from
32 steep bluffs to gentle slopes.

33
34 Construction of Beaver Dam was initiated in March 1960. The dam was completed in June 1966,
35 and the powerhouse and switchyard were completed in 1965. Beaver Lake was declared
36 operational for public use in 1965. There are 12 public use areas around Beaver Lake. There are
37 11 parks on the lake presently operated by the Corps of Engineers. The State of Arkansas owns
38 and operates Hobbs State Park Conservation Area, which covers 12,056 acres, and Devil's
39 Eyebrow Natural Area, which covers 2,503 acres. Both properties are adjacent to USACE lands.
40 There are two parks, Ventris, and Blue Springs that have been reduced to lake access only. One
41 Park (Big Clifty) is operated by Carroll County, Arkansas. A more detailed description of Corps
42 parks follow in Chapter 2.

1 **e. Listing of Prior Design Memorandum**

2 A listing of prior design memorandums and accompanying supplements are provided in a table
3 listing in Appendix C. The supplements are also provided in Appendix C and with the release of
4 this Master Plan, are considered incorporated into this document.

5 **f. Pertinent Project Information**

6 Although this revised Master Plan is focused on management of land and water surface related to
7 project purposes of outdoor recreation and environmental stewardship of natural and cultural
8 resources, the following information about primary project facilities is provided to aid in
9 understanding how all project purposes are interrelated.

10 Beaver Dam is concrete gravity structure with an embankment extension comprising a total
11 length of 2,575 ft. The height of the dam above streambed is 228 ft. Three auxiliary dams of the
12 embankment type have lengths of 840, 475 and 682 feet. The spillway has a concrete ogee
13 section of length 280 ft and is controlled by seven 37 ft tainter gates.
14

15 The reservoir contains 299,600 ac-ft of flood control storage and 925,100 ac-ft of power
16 regulation water supply. Flowage easements were acquired to elevation 1135 msl or up to
17 elevation 1148 m.s.l. on the White River and up to elevation 1144 msl on War Eagle Creek.
18 Beaver Dam and Power Plant are located on the White River approximately 10.5 miles northwest
19 of Eureka Springs, Arkansas. The project consists of a 1,333 foot long gravity dam with gated
20 spillway with seven 40 foot wide by 37 foot high tainter gates, one 5.67x10 foot outlet conduit
21 with service and emergency slide gates, a 1,000 foot long main embankment with three dikes,
22 and a power plant with two generators and 112 MW total capacity.
23

24 In 2005, the USACE started Screening for Portfolio Risk Analysis (SPRA). This analysis
25 screened each dam in the USACE inventory based on available information, to expeditiously
26 identify and classify every dam according to perceived risk. The screening has yielded a basic
27 understanding of the greatest risks and priorities for dams throughout USACE. The Dam Safety
28 Action Classification System (DSAC) is intended to provide consistent and systematic guidelines
29 for appropriate actions to address the dam safety issues and deficiencies of USACE dams.
30 USACE dams are placed into a DSAC class based on their individual dam safety risk considered
31 as a combination of probability of failure and potential life safety concerns. Other considerations
32 such as economic and environmental issues, while important, are secondary compared to life
33 safety issues. The DSAC table presents different levels and urgencies of actions that are
34 commensurate with the different classes of the safety status of USACE dams. These actions
35 range from recognition of an urgent situation requiring immediate action through normal
36 operations and dam safety activities for dams without known issues.
37

38 ***DSAC I (Very High Urgency of Action)*** – Dams where progression toward failure is
39 confirmed to be taking place under normal operations and the dam is almost certain to fail
40 under normal operations within a time frame from immediately to within a few years without
41 intervention, or the combination of life and/or economic consequences make probability of
42 failure extremely high.

43 ***DSAC II (High Urgency of Action)*** – Dams where failure could begin during normal
44 operations or be initiated as the consequence of an event. The likelihood of failure from one

1 of these occurrences, prior to remediation, is too high to assure public safety, or the
2 combination of life and/or economic consequences make probability of failure very high.

3 **DSAC III (Moderate Urgency of Action)** – Dams that have issues where the dam is
4 significantly inadequate, or the combination of life, economic, and/or environmental
5 consequences make the risks moderate to high.

6 **DSAC IV (Low Urgency of Action)** – Dams are inadequate but with low risk such that the
7 combination of life, economic, and/or environmental consequences make a probability of
8 failure low, although the dam may not meet all essential USACE engineering guidelines.

9 **DSAC V (Normal)** – Dams considered adequately safe, meeting all essential agency
10 guidelines and the residual risk is considered tolerable.

11
12 A Screening Portfolio Risk Analysis (SPRA) was performed on Beaver Dam in April of 2007
13 and approved in 2008, giving Beaver Dam a DSAC IV Rating. The 2007 SPRA classified the
14 dam according to relative risk in order to prioritize funding, investigations, and measures for
15 risk-informed dam safety management. Potential failure modes (PFMs) were identified and
16 engineering assessments were assigned to each PFM and assigned to each dam according to a
17 Dam Safety Action Class (DSAC).

18
19 Little Rock District Dam Safety performed a Periodic Assessment (PA) for Beaver Dam in
20 August of 2016. The recommended results of this assessment are to change the DSAC rating for
21 Beaver Dam. The PA team will develop an interim risk reduction plan after the PA is approved
22 by the Dam Safety Oversight Group. One of the interim risk reduction measures (IRRM) under
23 consideration is lowering the lake elevation (lowering flood pool storage). This would have an
24 impact to current conservation pool users including hydropower and current water supply storage
25 contract holders at Beaver Lake. There will not be a change to the DSAC or implemented
26 IRRMs before this study is completed. The lower safety rating is driven by operational factors;
27 and the dam safety team is not concerned about structural risk at this time.

28
29
30 For more information on USACE Dam Safety, please reference the following website:
31 <http://www.usace.army.mil/Missions/CivilWorks/DamSafetyProgram/ProgramActivities.aspx>

1

Table 1.1 General Dam Information

PERTINENT DATA OF THE DAM AND LAKE	
<u>General Information</u>	
Purpose	FC, P, W (1)
River	White River
State	Arkansas
Drainage area, square miles	1,186
Average annual rainfall over the drainage area, inches, approximately	45 inches
<u>Dam</u>	
Length in feet	2,575 ft
Height, feet above streambed	228
Top of dam elevation, feet above mean sea level	1,142 ft.
<u>Generators</u>	
Main units, number	2
Rated capacity each unit, kilowatts	56,000
Station service units, number	1
Rated capacity each unit, kilowatts	15
<u>Lake</u>	
Nominal bottom of power drawdown elevation, feet above msl	1,050
Area, acres	9,750
Nominal top of conservation pool Elevation, feet above mean sea level	1,120.43
Area, acres	28,299
Length of shoreline, miles	490
Nominal top of flood-control pool Elevation, feet above mean sea level	1,130
Area, acres	31,487
Length of shoreline, miles	547
(1) FC – flood control, P – power, W – water supply	

2

3

Chapter 2 Project Setting and Factors Influencing Management and Development (Existing Conditions)

a. Description of Reservoir

Beaver Lake is located in the Ozark Highlands of Carroll, Washington, Benton, and Madison Counties, Arkansas. Having 490 miles of shoreline (at conservation pool) and over 28,000 water surface acres, Beaver Lake is the largest reservoir in northwest Arkansas and the first federal impoundment on the White River.

Despite being located adjacent to the fast-growing communities of Fayetteville, Springdale, Bentonville, and Rogers, Arkansas and a regional population of over 500,000, the lake provides open spaces and a quality outdoor recreation opportunity. Many arms and coves of the lake offer secluded areas for traditional activities such as fishing, skiing, sailing and scuba diving, but also allow for passive recreation opportunities like photography and nature observation. Limestone bluffs, striking vistas, and heavily wooded shorelines combine to offer a natural setting for all types of outdoor activities. Recreation areas offering developed facilities to support camping, boating, and swimming are located across the Lake. Commercial concessions, such as marinas and resorts, provide services ranging from fuel and supplies to overnight lodging.

b. Hydrology and Groundwater

In the Interior Highlands of western and northern Arkansas ground-water supplies are more limited than in the Coastal Plain. Much of the Ozark Plateaus region is underlain by carbonate rocks, which are quite soluble in the presence of water. Solution by ground water has caused many large openings through which water passes so quickly that contaminants from the surface cannot be filtered out. Signs of these openings are caves, sink holes, springs and lost stream segments. As a consequence, the water in shallow wells may not be suitable for human consumption without treatment.

Three aquifers, which are part of the Ozark Plateaus Aquifer System, are located within northern Arkansas. The Springfield Plateau aquifer is generally under unconfined conditions, with ground water movement occurring through fractures and solution cavities formed by dissolution of carbonate rock. Local discharge is through springs and streams. The Ozark aquifer is generally under confined conditions, especially where overlain by the units of the Ozark Confining Unit (Chattanooga Shale). Most wells in the Springfield Plateau and upper units in the Ozark aquifer yield 5-10 gpm on the average, with yields greater than 25 gpm in rare cases.

The third aquifer, the Saint Francois, is formed by the Roubidoux Formation and the Gunter Sandstone Member of the Gasconade Formation in northern Arkansas occur at greater depth and constitute the only significant aquifer system in the Ozarks. Both are permeable sandstone and carbonate units of Ordovician age. These aquifers serve as the principal source of high-quality water for many communities in northern Arkansas where surface water sources are unavailable. Together these units may yield up to 500 gpm to wells. These formations do not outcrop anywhere in Arkansas but instead outcrop in southern Missouri.

1 **c. Sedimentation and Shoreline Erosion**

2 The White River above Beaver Lake has a relatively low sediment load, 0.0003 percent of
3 average annual flow, and was estimated at the time of design to be about 350 AF per year.
4 Sediment ranges have been obtained at nine (9) locations since the project was completed in
5 1966 (filling began in 1963). These ranges were obtained in 1965, 1977, and 1995. In those 30
6 years only three (3) ranges indicate any measurable deposition. Although the lake is now over
7 51 years old, there have been no reported sediment problems. Storage in Beaver for sediment is
8 not quantified but listed as one of the project purposes of the inactive pool. The inactive pool
9 contains 726,850 AF of storage below elevation 1,077 ft-NGVD. The maximum probable
10 drawdown is estimated to be 1,075 ft-NVGD, also the lowest rated pool for turbine operation,
11 sometimes referred to as dead pool, is 696,200 AF. Assuming that the sediment accruing in
12 Beaver Lake at the estimated rate of 350 AF per year; then, approximately 5.0 percent of the
13 storage below elevation 1,075 ft-NGVD, or less than 5 percent of the total inactive pool storage
14 would be filled in a 100 year period.

15
16 Erosion of the residual soil containing cherts and clays accounts for the tumbled gravels found in
17 streambeds of the watershed. Slopes can be as steep as 90 degrees and tend to be steeper in areas
18 close to creeks or water bodies. Noticeable erosion can be found where gravel roadways lead up
19 to boat launches and docks. Most of these embankments are steep and allow stormwater to pick
20 up speed as it heads toward the lake. As gravel washes into Beaver Lake it also carries smaller
21 sediments and soils. Sediment is a large contributor to nutrient input into any water body.
22

23 **d. Water Quality**

24 The waters of the Arkansas portion of the White River watershed have all been designated by the
25 Arkansas Department of Environmental Quality (ADEQ) for fisheries, primary and secondary
26 contact recreation, and domestic, agricultural, and industrial water supplies (ADEQ, 2012).
27 Beaver Lake is classified by ADEQ as a Type A water body, which includes most larger lakes of
28 several thousand acres in size, in upland forest dominated watersheds, having an average depth
29 of 30 to 60 feet, and having low primary production (i.e., having a low trophic status if in natural
30 [unpolluted] condition). Beaver Lake, like all other lakes of its size in the Ozark region,
31 stratifies chemically and thermally in the late spring with stratification extending into late fall
32 and early winter. During the warmer months, lake waters of the upper layer (the epilimnion) are
33 warmer and contain more dissolved oxygen, while the denser, lower layer waters (the
34 hypolimnion) are colder and contain very little or no dissolved oxygen, thus undesirable for fish
35 habitat.

36 This undesirable water, when discharged downstream may cause some problems in the
37 tailwaters. To combat this problem, the dissolved oxygen content is monitored and various
38 management measures are implemented to improve the dissolved oxygen concentration in the
39 hydropower releases. A highly productive trout fishery has been established in the Beaver
40 Tailwaters by the Arkansas Game and Fish Commission because of the available discharge of
41 cold, oxygenated water from the dam.

42 As the stratified epilimnion cools in the late fall and winter, the layers begin to mix (de-stratify)
43 and dissolved oxygen (DO) is more evenly distributed. This condition is more favorable to the
44 fishery of the lake and overall water quality.

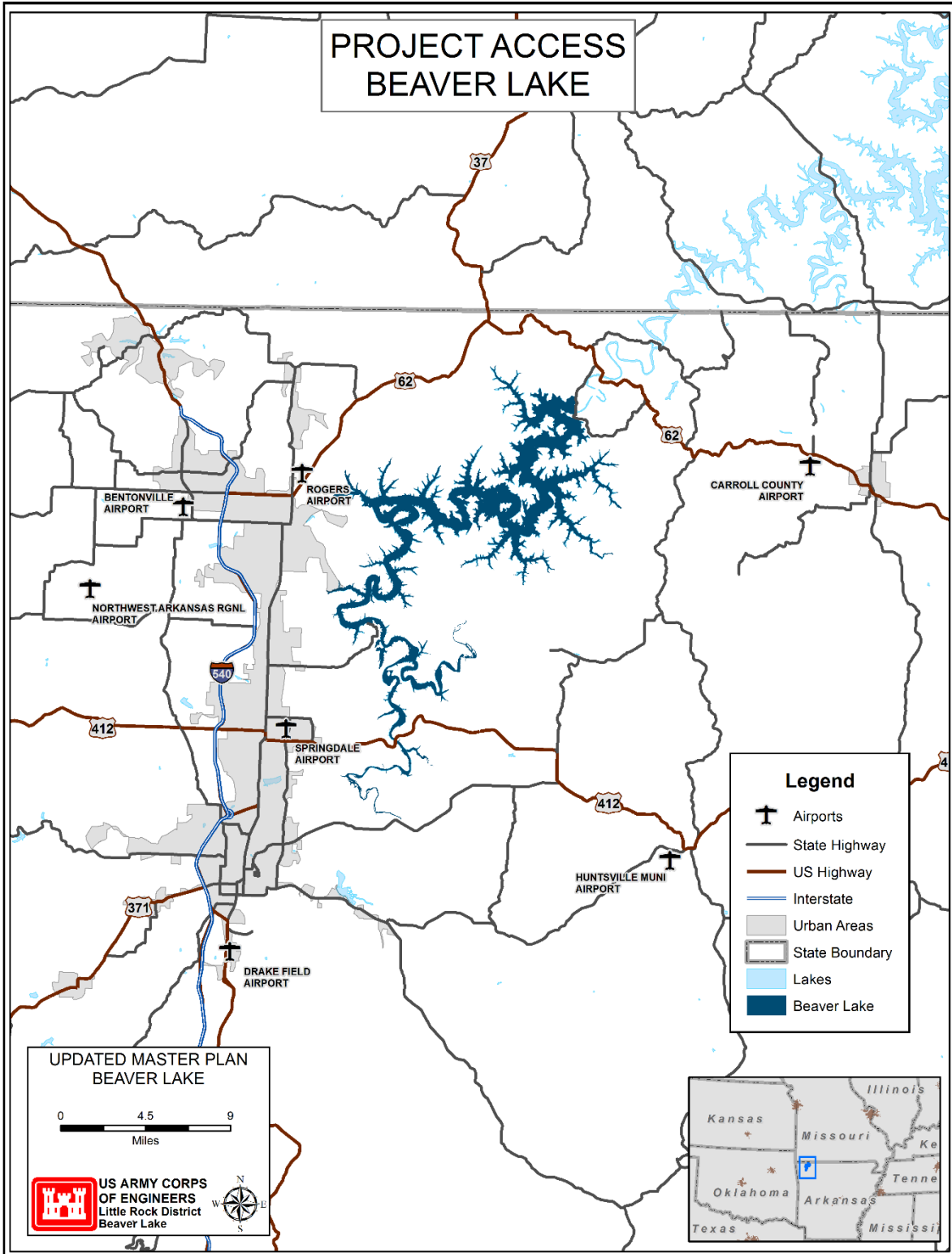
1 The upper 1,500 acres of Beaver Lake has been listed by the Arkansas Department of
2 Environmental Quality (ADEQ) on Arkansas' 303(d) list of impaired waters, approved by the
3 Environmental Protection Agency (EPA), due to turbidity (ADEQ, 2008). According to the
4 Arkansas 303(d) list, these excessive levels impact the local fisheries as well as primary contact,
5 both designated uses of Beaver Lake. The elevated turbidity levels are due to excessive silt from
6 surface erosion from agriculture activities, unpaved road surfaces, in-stream erosion – mainly
7 from unstable stream banks, and any other land surface disturbing activity. The Draft 2010
8 Integrated Water Quality and Monitoring Report (ADEQ, 2010) added pathogen indicator
9 bacteria as a contaminant for the same area of Beaver Lake. Surface erosion activities are listed
10 as the probable source for this contaminant as well.

11 Clean Water Act requires states to list waters that do not meet Federal water quality standards or
12 have a significant potential not to meet standards as a result of point source dischargers or non-
13 point source run-off. Subsequent to listing on the 303(d) list, the statute requires that the states
14 develop and set the Total Maximum Daily Load (TMDL) for water bodies on the list within 13
15 years. A TMDL establishes the maximum amount of a pollutant that can enter a specific water
16 body without violating the water quality standards. Values are normally calculated amounts
17 based on dilution and the assimilative capacity of the water body. TMDLs have not been
18 established by ADEQ for the upper Beaver Lake area.

20 **e. Project Access**

21 The lake is surrounded by US, State, and county roads, making access possible at many points in
22 any given area of the lake. Further highway and airport access can be referenced in Figure 2-1
23 Beaver Lake Project Access.

Figure 2.1 Beaver Lake Project Access



1 f. Climate

2 The climate in the Beaver Lake area is classified as humid subtropical according to the Köppen
3 climate model. A humid subtropical climate is characterized by hot, usually humid summers and
4 mild to cool winters. The Köppen definition of this climate is for the coldest month's mean
5 temperature to be between 26.6 °F (−3 °C) and 64.4 °F (18 °C), and the warmest month to be
6 above 71.6 °F (22 °C). Some climatologists prefer to use 32 °F (0 °C) as the lower bound for the
7 coldest month's mean temperature. Under the modern Trewartha climate classification, climates
8 are termed Humid Subtropical when they have mean temperatures of 50 °F (10 °C) for eight or
9 more months a year. In most locations classed within this system, the mean temperature of the
10 coldest month is between 35 °F (3 °C) and 65 °F (18 °C). Some climatologists consider the
11 Trewartha grouping of subtropical climates to be more real-world and fitting on a global scale.

12 While technically classified as humid subtropical, the climate in the Beaver Lake area is
13 considered moderate. The area experiences all four seasons and does receive cold air masses
14 from the north; however some of the Arctic masses are blocked by the higher elevations of the
15 Ozarks.

16 Average temperatures range from a high of 88 °F (31.1 °C) and low of 27 °F (−2.7 °C) in nearby
17 Rogers, Arkansas. Extreme temperatures rarely exceed 96 °F (35.6 °C) and 13°F (−10.6 °C).
18 Late summer is the time of maximum heat and least rainfall. During the winter months, midday
19 temperatures in the basin are relatively warm, around 55 ° to 60 ° F. Some short periods of cold
20 weather occur with temperature ranging from 0 ° to 10 ° F. On winter nights, temperatures from
21 40 ° F to below freezing are common. Highest recorded temperature in Rogers, Arkansas was
22 114 °F (45.6 °C) (recorded in July 1954). The lowest temperature recorded was −16 °F (−26.7
23 °C), in February 1996.

24 The relative humidity typically ranges from 41% (comfortable) to 91% (very humid) over the
25 course of the year, rarely dropping below 24% (dry) and reaching as high as 100% (very humid).
26 The air is *driest* around April 9, at which time the relative humidity drops below 49%
27 (comfortable) three days out of four; it is *most humid* around June 3, exceeding 87% (very
28 humid) three days out of four.

29 Dew point is often a better measure of how comfortable a person will find the weather than
30 relative humidity because it more directly relates to whether perspiration will evaporate from the
31 skin, thereby cooling the body. Lower dew points feel drier and higher dew points feel more
32 humid. Over the course of a year, the dew point typically varies from 19°F (dry) to 71°F
33 (muggy) and is rarely below 4°F (dry) or above 74°F (very muggy). There are two periods in the
34 year that are most comfortable: The first is between April 18 and June 6 and the second is
35 between September 3 and October 23. The air feels neither too dry nor too muggy during these
36 periods (<https://weatherspark.com/averages/31495/Rogers-Arkansas-United-States>).

37 Average annual rainfall for the Beaver Lake area is 45 inches per year. Precipitation is weakly
38 seasonal, with a bimodal pattern: wet seasons in the spring and fall, and relatively drier summers
39 and winters, but some rain in all months. The spring wet season is more pronounced than fall,
40 with the highest rainfall typically occurring in May. The average annual snowfall for the Beaver
41 area is about 12 inches. Snow packs are usually short lived and are not commonly a concern for
42 flooding.

1 Beaver Lake is located in the Ozark Mountains of northwest Arkansas. While situated between
2 the cities of Rogers, Arkansas (west) and Eureka Springs, Arkansas (east), the area is remote
3 from heavy smoke-producing industry or large mining operations. The air is very clean and smog
4 is virtually unknown in this region. None of the present operations of the project contribute to air
5 pollution. Arkansas state laws are restrictive pertaining to open burning. Open burning is allowed
6 only in residential areas and in certain controlled agricultural, forestry, wildlife, and industrial
7 activities. Ceremonial fires and campfires are excluded from control by the law.

8 Climate change became an area of concern due to the potential for effects on numerous aspects
9 of the environment, especially those related to water resources. The U.S. Global Change
10 Research Program (USGCRP) summarized information regarding climate change and its
11 potential effects in regional assessments
12 (<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>). In the
13 Midwest, which extends from Minnesota to Missouri, extreme events such as heat waves,
14 droughts and heavy rainfall events were projected to occur more frequently. Should these
15 events become significant to impact the operation of Beaver Lake, the Master Plan and
16 associated documents (i.e. Operations Management Plan and Shoreline Management Plan) will
17 be reviewed and revised, if necessary.

18
19 The Arkansas Water Plan is the state's policy for long term water management. The State of
20 Arkansas last updated their water plan in 1990. The water plan is currently undergoing revision;
21 The update will bring data, science, and public input together to define water demands, water
22 supplies, issues, and potential solutions to meet the state's needs for the next 40 years.
23 (<http://www.arwaterplan.arkansas.gov/>)
24

25 **g. Topography, Geology, and Soils**

26 The depositional environment of the rocks found in the Arkansas Ozarks is one of a relatively
27 shallow continental shelf, sloping toward deeper water generally toward the south. This shelf
28 emerged many times during the Paleozoic resulting in numerous unconformities throughout the
29 sequence. The Ozark Plateaus region of Arkansas is made up of generally flat-lying Paleozoic
30 age strata divided into three plateau surfaces. The lowest and northern-most plateau is the Salem
31 Plateau. The Springfield Plateau stands above the Salem a few hundred feet and is generally
32 capped by lower Mississippian age limestones and cherts. The southernmost and highest plateau
33 of the Ozarks is the Boston Mountains. All of these plateaus are deeply dissected by numerous
34 streams throughout the area. The faulting in the Ozarks is generally normal; most faults
35 displaying a displacement down on the southern side. However, some observations reveal that a
36 few strike-slip faults may be present. Gentle folds are noted but are generally of very low
37 amplitude. The depositional environment of the rocks found in the Arkansas Ozarks is one of a
38 relatively shallow continental shelf, sloping toward deeper water generally toward the south.
39 This shelf emerged many times during the Paleozoic resulting in numerous unconformities
40 throughout the sequence.

41
42 Beaver Lake is part of the Springfield Plateau that occupies primarily the western and
43 southwestern flanks of the Ozark Plateau province. The Springfield Plateau in this region rises
44 to an elevation of approximately 1400 feet and in many areas, forms extensive plains. Hilly
45 areas occur where rivers and their tributaries cut into the plateau surface, most notably in the

1 vicinity of the White River and Beaver Lake. As streams like the Buffalo National River cut
2 through the plateau down to the level of the White River, they sometimes carve spectacular
3 bluffs.

4
5 Lower Ordovician, Middle to Upper Devonian and Lower and Upper Mississippian age strata are
6 present around Beaver Lake. Upper Ordovician and Devonian strata crop out around Beaver
7 Lake and its tributaries. The Lower Mississippian Boone Formation comprises the surface rock
8 over the majority of the area and forms the surface of the heavily dissected Springfield Plateau.
9 In addition to the Boone Formation, Cotter and Jefferson City formations (Jefferson City
10 formation has not been successfully differentiated from the Cotter Formation in Arkansas), and
11 the Powel formation, all of Ordovician age are present in the area. Formations in the Devonian
12 strata include the Chattanooga, Clifty and Penters.

13
14 The Boone Formation consists of gray, fine- to coarse-grained fossiliferous limestone
15 interbedded with chert. This formation caps the higher hills in the area. Since limestone is easily
16 dissolved by water, cave and solution (karst) features are prominent. The Boone Formation is
17 well known for dissolutional features, such as sinkholes, caves, and enlarged fissures. Surface
18 water may drain directly into channels in limestone, where it can move rapidly and without
19 filtration to the surface as a spring, at a location that is unpredictable without extensive testing.
20 Therefore, water pollution problems are of particular concern in this region. The thickness of the
21 Boone Formation is 300 to 350 feet in most of northern Arkansas, but as much as 390 feet has
22 been reported.

23
24 The Cotter Dolomite is composed of dolostone of predominantly two types: a fine-grained,
25 argillaceous, earthy textured, relatively soft, white to buff or gray dolostone called "cotton rock",
26 and a more massive, medium-grained, gray dolostone that weathers to a somewhat hackly
27 surface texture and becomes dark on exposure. The formation contains chert, some minor beds of
28 greenish shale, and occasional thin interbedded sandstone. The thickness is about 340 feet in the
29 vicinity of Cotter, but the interval may range up to 500 feet thick in places.

30
31 The Powell Dolomite is generally a fine-grained, light-gray to greenish-gray, limy, argillaceous
32 dolostone with thin beds of shale, sandstone, sandy dolostone, and occasionally chert. The
33 formation's thickness may be as much as 215 feet, but is often much thinner.

34
35 The Chattanooga Shale Formation is typically black, fissile clay shale that weathers into thin
36 flakes. The beds are usually cut by prominent joints creating polygonal blocks upon weathering.
37 The upper part of the formation may be slightly sandy and usually contains abundant pyrite.
38 Thickness ranges from 0 to about 85 feet; normally averaging about 30 feet (AGS).

39
40 The Clifty Formation is thin, very sandy limestone and sandstone. Maximum thickness of this
41 formation is only four feet, but is usually thinner, averaging 2 feet or less (AGS).

42
43 The Penters Chert is a fine-grained, fossiliferous, dolomitic, limestone with some chert and
44 siliceous replacement overlain by a massive, dense, mottled gray chert with some patches of
45 fine-grained limestone. The thickest outcrop exposure is about 25 feet; however, at least one
46 report suggests a maximum thickness of about 90 feet (AGS).

1
2 The strata throughout the region are nearly horizontal. One predominant geological feature of
3 the lake area is a low, persistent, limestone bluff, which occurs just above the Ordovician-
4 Mississippian contact.

5
6 The faulting in the Ozarks is generally normal; most faults displaying a displacement down on
7 the southern side. Lineaments and faults characteristic of northwest Arkansas are present around
8 Beaver Lake. The Fayetteville Fault lies beneath Beaver Lake. This fault is the west side of a
9 graben that has down-dropped the Boone Formation to lake level. The Starkey Fault bounds the
10 east side of the graben. Both faults trend approximately N 450E. One section of the Starkey fault
11 trends N 60-700E. The Clantonville Lineament – Monocline is a northeast to southwest trending
12 structural feature that extends from north of Clantonville to Ventris Hollow. The location of this
13 feature was determined from the 1:24,000 three dimensional quadrangle and from structural
14 disparities in the Lower Mississippian rock units. This structural feature could be responsible for
15 the presence of lead-zinc mineralization in an old prospect near Clantonville (north of Beaver
16 Lake). The trend of this lineament to monocline is N 30-400E. Paleokarst features within the top
17 of the Powell Dolomite are present around Beaver Lake and coincident with a lineament in
18 Limekiln Hollow near Garfield, northwest of Beaver Lake.

19
20 In general, the soils of the Ozark Plateaus are residual and are formed on a broad, domed,
21 upwarp consisting mostly of limestone and dolomite. The main difference in the soils is due to
22 different rocks from which the soils were formed. The main geologic materials are cherty
23 limestone; cherty, very siliceous dolomite; cherty, siliceous dolomite; and alluvium, which are
24 weathered and water transported products of the first three materials. Glade-rock soil occurs
25 where the cherty, very siliceous dolomite is exposed to the soil formation. Dolomite is more
26 resistant to weathering than limestone and siliceous dolomite is even more resistant, so very
27 shallow soil results. In areas where the dolomite is less siliceous, more weathering has taken
28 place; however, the soils produced are not as deep as soils formed by limestone.

29
30 The following eight soils associations are found in and around the Beaver project area: Captina-
31 Nixa, Captina-Nixa-Pickwick, Clarksville-Nixa-Baxter, Corydon-Sogn, Enders-Allegheny-
32 Mountainburg, Razort-Captina-Etowah, Linker-Apison-Hector, and Captina-Pembroke.
33

Figure 2.2 Geology and Fault Lines of Beaver Lake and surrounding area

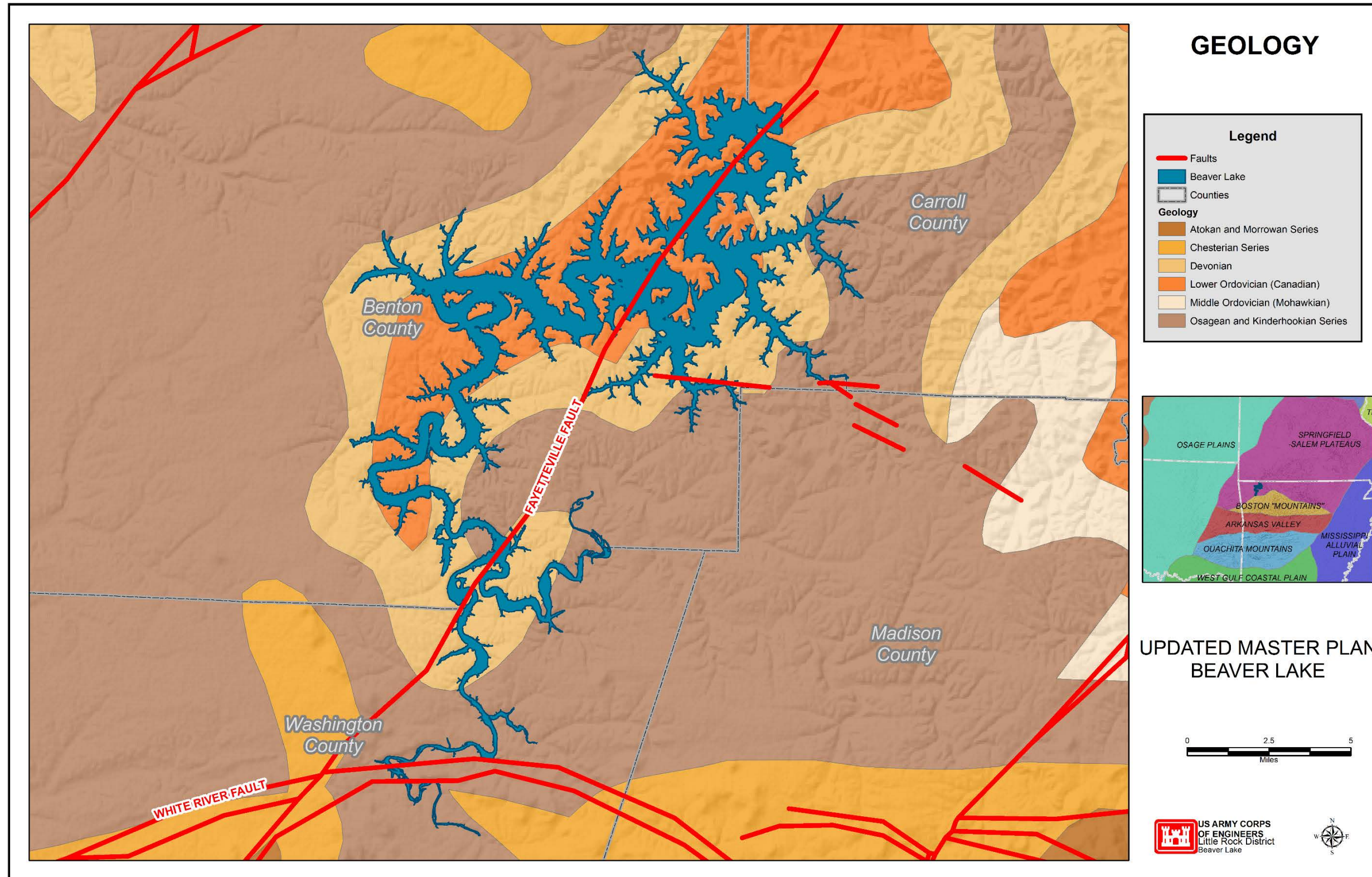
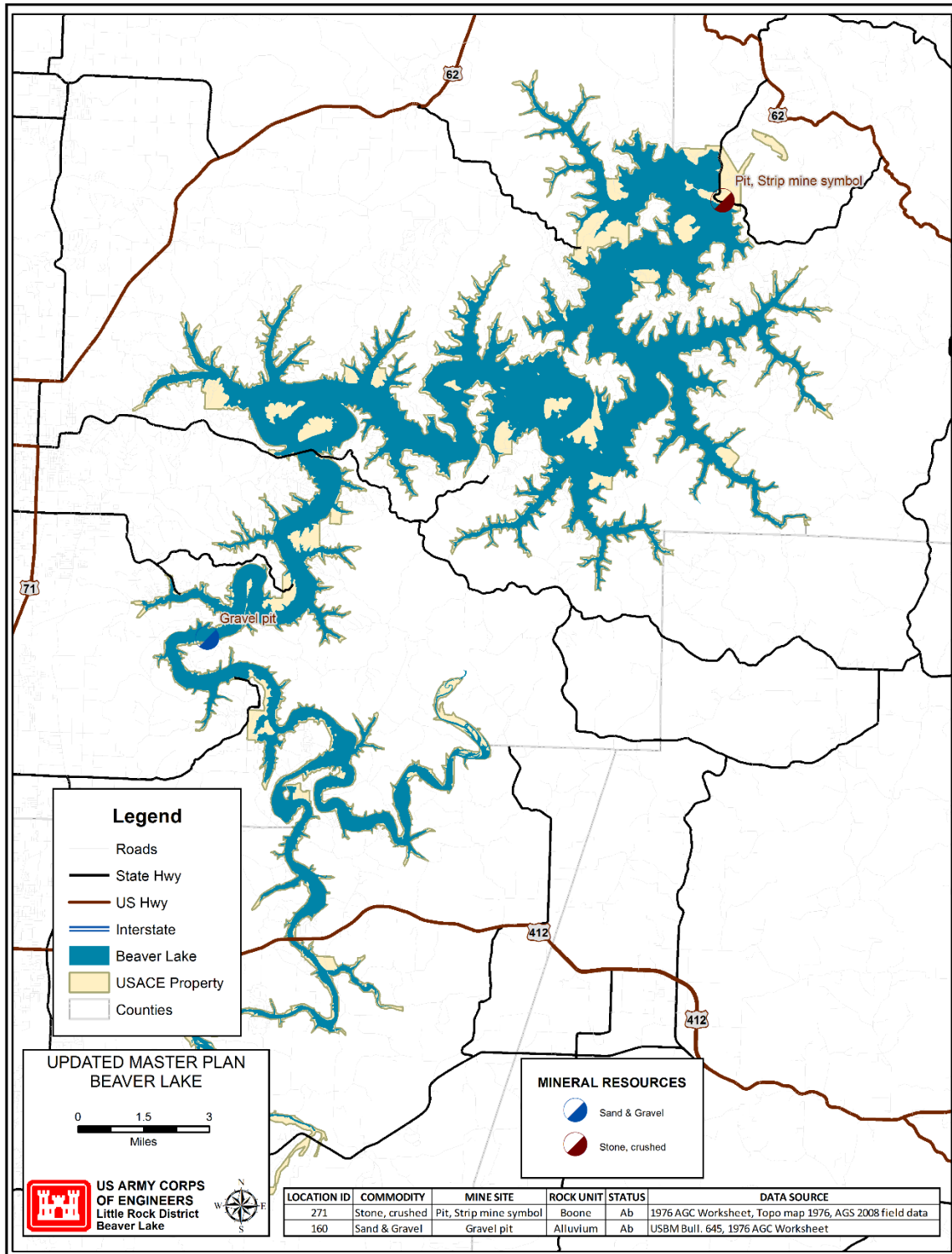


Figure 2.3 Minerals at Beaver Lake



1 **h. Resource Analysis (Level One Inventory Data)**

2 Operational civil works projects administered by USACE are required, with few exceptions, to
3 prepare an inventory of natural resources. The basic inventory required is referred to within
4 USACE regulations (ER and EP 1130-2-540) as a Level One Inventory. This inventory includes
5 the following: vegetation in accordance with the National Vegetation Classification System
6 through the sub-class level; assessment of the potential presence of special status species
7 including but not limited to federal and state listed endangered and threatened species, migratory
8 species, and birds of conservation concern listed by the U.S. Fish and Wildlife Service
9 (USFWS); land (soils) capability classes in accordance with the Natural Resource Conservation
10 Service (NRCS) criteria; and wetlands in accordance with the USFWS' Classification of
11 Wetlands and Deepwater Habitats of the United States. This basic inventory information is used
12 in preparing project Master Plans and Operation Management Plans (OMP). An overview of the
13 natural resources and related management actions at the project is provided in the following
14 sections and paragraphs.

15 **(1) Fish and Wildlife Resources**

16 The impoundment of the White River, War Eagle River, and other tributary streams and rivers
17 which form Beaver Lake resulted in changes in the composition of the fish populations.
18 Smallmouth bass was the principal game fish found in the White River and War Eagle River
19 prior to impoundment. Arkansas Game and Fish Commission (AGFC) is the agency primarily
20 responsible for managing the fishery and through their efforts, a variety of fish species are well-
21 established in the lake. Sport fish species currently found include: largemouth bass, spotted bass,
22 smallmouth bass, white bass, striped bass, hybrid white-striped bass, walleye, flathead catfish,
23 channel catfish, white crappie, black crappie, and various species of sunfish. Due to the quality
24 and diversity of the fishery, Beaver Lake serves as a national fishing destination, hosting
25 approximately one hundred fishing tournaments annually.

26
27 Beaver Lake was first impounded in 1966 and much of the standing timber was cut prior to the
28 impoundment. Since impoundment, the few remaining native forests that were submerged
29 provided little structure and forage habitat for fish. Since this limited habitat has degraded over
30 time, in 1986, AGFC began an artificial habitat improvement project with the primary objective
31 to improve fish habitat within Beaver Lake. Since 1987, hundreds of fish habitat structures
32 known as "fish attractors" have been placed in Beaver Lake by AGFC. AGFC continues to fund
33 the maintenance of the attractors each year, adding fresh cover to keep the attractors productive
34 and increasing the habitat.

35
36
37 Walleye, smallmouth bass, striped bass, hybrid white-striped bass, and paddlefish have been
38 introduced into Beaver Lake to add diversity to the fishery. Natural reproduction of striped bass
39 and hybrid white-striped bass does not occur in Beaver Lake. Since 2004, AGFC stocks
40 approximately 100,000 walleye, 30,000 channel catfish, 30,000 blue catfish, and 200,000 striped
41 bass each year. While natural reproduction occurs in white crappie, black crappie, largemouth
42 bass, and smallmouth bass, AGFC supplements this reproduction by occasional stockings of
43 these species. Historically, there have also been introductions of northern pike, blue catfish, lake
44 trout, and threadfin shad.

1 Wilson Lake in the Fayetteville area was used for the supply hatchery for warm water species
2 until 1986. In 1986, a 30 acre fish nursery pond was constructed by AGFC on the north shore of
3 the Blackburn Creek arm of Beaver Lake for the purpose of rearing game fish for stocking
4 purposes. Historically, over 10,000 channel and blue catfish were raised in the summer months
5 and 15,000 walleye in the spring months for stocking purposes. Since 1986, the fish nursery
6 pond has been used to rear black crappie, largemouth bass, smallmouth bass, and walleye for
7 stocking directly into the lake.

8
9 The impoundment of Beaver Lake in 1966 caused environmental changes in the tailwater portion
10 of the White River from Beaver Dam to Table Rock Lake downstream. Hypolimnetic discharge
11 from Beaver Dam created cold-water habitat that was unsuitable for native, warm-water species,
12 such as smallmouth bass. To mitigate for the loss of the warm-water fishery, the AGFC began
13 stocking rainbow trout into Beaver tailwaters in 1966. Brown trout were first stocked in 1985 to
14 increase the diversity of trout species available to anglers. Cutthroat trout and brook trout were
15 introduced in 1989 and 1994 to further improve the quality of anglers' trout fishing experiences.
16 The Beaver tailwater fishery has gained popularity over the last few decades and is currently
17 among the most popular trout fishing locations in Arkansas.

18
19 The Norfork National Fish Hatchery, built and operated by the U.S. Fish and Wildlife Service
20 (USFWS) in 1957, supplies all trout that are stocked into Beaver tailwater. Intensive stocking of
21 trout is necessary due to a range of environmental factors that limit natural reproduction in the
22 fishery. Currently, an average of 96,000 rainbow trout and 5,000 brown trout are stocked each
23 year; cutthroat trout and brook trout stockings were discontinued in 2002 and 2004, respectively.
24 Biologists from the AGFC are responsible for trout management in the Beaver tailwater. This
25 fishery was the first trout water managed by the AGFC as part of their strategic planning process
26 and an individual management plan for the Beaver tailwater fishery was developed in 2005. The
27 Beaver Tailwater Management Plan can be found on the AGFC website (www.agfc.com).

28
29 White-tailed deer and eastern wild turkey are common game animals found and hunted in the
30 Beaver Lake area. Black bear have also become common in the area and are hunted on the
31 eastern areas of Beaver Lake. Small game species found in the open upland areas include
32 bobwhite quail, cottontail rabbit, and mourning dove. Gray and fox squirrels are common in
33 upland wooded areas and are also popular for sportsmen. Furbearing animals found in the
34 Beaver Lake area include coyote, red fox, gray fox, otter, mink, muskrat, beaver, bobcat, and
35 raccoon. Habitat management that includes wildlife food plot plantings, mowing, removal of
36 exotic species and application of prescribed fire do much to benefit these populations.

37
38 Since 1966, AGFC has leased lands and waters at Beaver Lake for fish and wildlife
39 management. From the 1970's through the 1990's, food plots were established in various areas
40 for wildlife management, but have not been funded in recent years.

41
42 The common goldeneye, hooded merganser, bufflehead, and ring-necked duck are the
43 predominant migratory waterfowl species visiting Beaver Lake. Mallards, gadwall, and other
44 duck species are also present; however, they are only transient visitors as their characteristic
45 feeding habits of obtaining food from shallow waters is limited. Resident Canada geese are so
46 numerous in many coves and recreation areas that their presence has become a nuisance.

1
2 Ring-billed gulls are seen frequently around the Beaver Lake area. Greater and lesser yellow
3 legs, pelicans, and large flocks of horned grebes are also seen during their peak migration in the
4 spring and fall. Beaver Lake is also one of the few places where visitors can see both the turkey
5 vulture and the black vulture at the same time in the winter. Beaver Lake has also become a
6 popular place that visitors come to observe bald eagles, commonly wintering 150 or more birds
7 and hosting 5-6 breeding pairs during the nesting period of March to June. The surrounding
8 woodlands and grasslands serve as prime nesting areas for resident and neotropical migratory
9 songbirds.

11 **(2) Vegetative Resources**

12 The area surrounding the lake is mostly forested. Trees and shrubs around the lakeshore include
13 upland oak and hickory species, persimmon, honey locust, hawthorn, dogwood, redbud,
14 coralberry, smooth and winged sumac, and buttonbush. Frequent periods of inundation keep a
15 thin strip of government owned lands around the lake in early stages of succession. Red cedar
16 and short-leafed pine, the principal evergreens, are dispersed throughout the region and are found
17 in many large, scattered groups. Ground covers consist of greenbrier, sedges, and native grasses.

18
19 Plant communities also include post oak savannas and glades. The post oak savanna ecosystem
20 exhibits an open canopy of low density trees allowing considerable light penetration to the
21 understory. This permits a wide variety of herbaceous species to perpetuate under natural
22 disturbances such as fire. Dolomite/limestone glades, which are characterized by barrens-like
23 communities of prairie type native forbs and grasses, occur on the shallow soil over outcroppings
24 of bedrock.

25
26 The largest tract of public land adjoining Beaver Lake is the 12,056 acre Hobbs State Park –
27 Conservation Area (HSP-CA) (Figure 2.4). HSP-CA adjoins Beaver Lake shoreline for
28 approximately 26-miles. The tract serves as the single largest landholding around the lake, as
29 well as in Benton County. Although the title ownership to the tract is under Arkansas
30 Department of Parks and Tourism, HSP-CA is co-managed by three state agencies: Arkansas
31 State Parks, Arkansas Game & Fish Commission and Arkansas Natural Heritage Commission.
32 Arkansas State Parks has developed facilities to include a state-of-the-art Visitor Center (the
33 nature center for Northwest Arkansas), 36-miles of trails including multi-use (hike, mountain
34 bike and equestrian), development of a significant historic site (Van Winkle Hollow), the only
35 public shooting range in Northwest Arkansas, as well as infrastructure and support amenities
36 (maintenance complex, staff residences, restrooms, etc.).

1 Figure 2.4 Hobbs State Park Conservation Area



2

1 Devil's Eyebrow Natural Area borders more than 5 miles of the northernmost shoreline of
2 Beaver Lake (Figure 2.5). It is more than 2,089 acres in size and very diverse with more than
3 550 vascular plant species documented, 25 of which are of state conservation concern. Staff and
4 contractors of the Arkansas Natural Heritage Commission and the Arkansas Game and Fish
5 Commission own and manage the land.
6

7 The Devil's Eyebrow area is home to Black Maple (*Acer nigrum*) trees. This is the only known
8 location of this species in Arkansas. Also identified in the area is the Rock Elm (*Ulmus*
9 *Thomasii*).
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DRAFT

1 Figure 2.5 Devils Eyebrow Natural Area



1 **(3) Threatened & Endangered Species**

2 There are many species in the Ozarks that are considered either threatened or endangered.
3 Species become imperiled for a variety of reasons including over-hunting, over fishing, and
4 habitat loss as a result of human development and pollution; of these, habitat loss is the main
5 contributor that imperils most species. A threatened species is one that is likely to become
6 endangered within the foreseeable future. An endangered species is one in danger of extinction
7 throughout all or a significant portion of its range.
8

9 The bald eagle (*Haliaeetus leucocephalus*) is common during the winter months around Beaver
10 Lake. Most winter counts range in the total of 100 to 150 in numbers. In the early 1990's, there
11 were also two golden eagles documented on Beaver Lake. In addition, there are currently four to
12 five bald eagle nests located around the lake. Although the bald eagle was delisted by USFWS
13 in 2007 due to recovery of the species, both the bald and golden eagles are still protected in
14 accordance with the Bald and Golden Eagle Protection Act. Beaver Lake was also home for
15 multiple years to the only known leucistic eagle. This attracted ornithologists from across the
16 nation to possibly see this rare bird.
17

18 Beaver Lake is home to the gray (*Myotis grisescens*), Indiana (*Myotis sodalis*), and northern
19 long-eared bats (**Myotis septentrionalis**). USACE works closely with the U.S. Fish and
20 Wildlife Service, AGFC, and ASP to protect the USACE owned cave recharge area and manage
21 the project lands and waters of Beaver Lake to protect the bat habitat. Transient populations of
22 gray, Indiana bats, and northern long-eared bats are documented in other caves located on and
23 near the Beaver Lake area.
24

25 Beaver Lake is also home to the Ozark cavefish (*Amblyopsis rosae*) which live in two known
26 underground crevices on or near Federal lands surrounding.
27

28 Missouri Bladderpod (*Physaria filiformis*) is a federally listed Threatened species in the mustard
29 family endemic to calcareous glades and barrens in the Interior highlands of Missouri and
30 Arkansas. The population is being managed through prescribed burns, herbicides and mechanical
31 removal of encroaching eastern red cedars, invasive exotic plants, and other woody species.
32 Herbicides use is restricted to June through August while seeds remain dormant until conditions
33 are favorable for germination later in fall. Monitoring enables us to evaluate population trends
34 and determine whether conditions for the bladderpod are improving, declining, or remain stable.
35 Also found in this area is Ozark Cornsalad (*Valerianella ozarkana*), which is a plant of global
36 concern.
37

38 The following species listed in Table 2-1 are from the U.S. Fish and Wildlife Service's federally
39 classified status list of species and the Arkansas Natural Heritage data sets which have been
40 reported and identified on project lands. There are other threatened and endangered species that
41 are known to be in the general area.
42

43

Table 2.1 Threatened, Endangered, and Species of Concern

Common Name	Scientific Name	Federal/State Status	State/Global Rank
Bald Eagle	<i>Haliaeetus leucocephalus</i>	*Protected under Bald and Golden Eagle Protection Act	
Gray Bat	<i>Myotis grisescens</i>	E/E	S3/G3
Indiana Bat	<i>Myotis sodalis</i>	E/E	S3/G3
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	E/E	S3/G3
Ozark Cavefish	<i>Amblyopsis rosae</i>	T/E	S1/G3
Ozark Cornsalad	<i>Valerianella ozarkana</i>	Inv	S3/G3
Mackenzie's Blue Wild Rye	<i>Elymus glaucus ssp. mackenzi</i>	Inv	S1/G5
Black Maple	<i>Acer nigrum</i>	Inv	S1/ G5T5
Rock Elm	<i>Ulmus Thomasii</i>	Inv	S1/ G5T5

Key to Status and Ranks

LE= Listed Endangered under ESA**INV**= Inventory Element, ANHC currently conducting active inventory work on these elements. Available data suggests these elements are of conservation concern.**SE**= State Endangered, species is afforded protection under AGFC Regulation.**G2**= Imperiled Globally, at high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.**G3**= Vulnerable Globally, at risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.**G4**= Apparently Secure Globally. Uncommon but not rare; some cause for long-term concern**G5**= Secure Globally. Common, widespread and abundant.**GNR**= Not applicable.**T-Ranks**= Given to global ranks when a subspecies, variety, or race is considered at the state level. Made up of a "T" plus a number or letter (1,2,3,4,5,H,U,X) with the same ranking rules as a full species.**S1**= Critically imperiled in the state due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors making it vulnerable to extirpation.**S2**= Imperiled in the state due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it vulnerable to extirpation.**S3**= Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer, recent and widespread declines, or other factors making it vulnerable to extirpation.**S4**= Apparently secure in the state. Uncommon but not rare; some cause for long-term concern due to declines or other factors.**SH**= Of historical occurrence, with some possibility of rediscovery.**SNR**= Unranked. The state rank not yet assessed.**Q**= Indicates element's taxonomic classification as a species is a matter of conjecture among scientists.**?**= Used to denote an inexact numeric rank.**B**= Refers to the breeding population of a species in the state.

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(4) Invasive species

In accordance with Executive Order (EO) 13112, an invasive species means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive species can be microbes, plants, or animals that are non-native to an ecosystem. In contrast, exotic species, as defined by EO 11987, include all plants and animals not naturally occurring, either presently or historically, in any ecosystem of the United States. Invasive species can take over and out compete native species by consuming their food, taking over their territory, and altering the ecosystem in ways that harm native species. Invasive species can be accidentally transported or they can be deliberately introduced because they are thought to be helpful in some way. Invasive species cost local, state, and federal agencies billions of dollars every year.

The Beaver Project is not protected from the spread of invasive species. Locally the project office works with its partners, AGFC, University of Arkansas Extension Services and United States Department of Agriculture, to help stop the spread of some of the Ozarks most unwanted species. These would include feral hogs, zebra mussels, sericea lespedeza, gypsy moth and the emerald ash borer. Project rangers post signage in all the recreation areas to communicate the dangers of spreading invasive species on project lands and waters. Rangers also place emerald ash borer and gypsy moth traps on project lands to monitor any infestations of these species.

(5) Ecological Setting

The Natural Resource Management Mission of the U.S. Army Corps of Engineers (ER 1130-2-550, Chapter 2, Paragraph 2-2.a.(1), dated 15 November 1996) states the following:

The Army Corps of Engineers is the steward of the lands and waters at Corps water resources projects. Its Natural Resource Management Mission is to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations.

In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance and restoration practices.

The Corps manages for long-term public access to, and use of, the natural resources in cooperation with other Federal, State, and local agencies as well as the private sector.

The Corps integrates the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life. (ER 1130-2-550, 1996)

1 In support of this mission statement, the following paragraphs describe the ecoregion where
2 Beaver Lake is located and the natural resources components found within the project area.

3
4 Ecoregions are areas with generally similar ecosystems and with similar types, qualities, and
5 quantities of environmental resources. Ecoregion boundaries are determined by examining
6 patterns of vegetation, animal life, geology, soils, water quality, climate, and human land use, as
7 well as other living and non-living ecosystem components.

8
9 A large area that includes generally similar ecosystems and that has similar types, qualities, and
10 quantities of environmental resources is known as an ecoregion. The purpose of ecological land
11 classification is to provide information for research, assessment, monitoring, and management of
12 ecosystems and ecosystem components. Federal agencies, state agencies, and nongovernmental
13 organizations responsible for different types of resources within the same area use this
14 information to estimate ecosystem productivity, to determine probable responses to land
15 management practices and other ecosystem disturbances, and to address environmental issues
16 over large areas, such as air pollution, forest disease, or threats to biodiversity.

17
18 The ecoregion Beaver Lake and surrounding areas fall under is labeled as the “Ozark
19 Highlands”. This ecoregion is defined as follows:

20
21 *Location:* This region covers a large portion of southern Missouri and northern Arkansas, and
22 small portions of northeastern Oklahoma and southeastern Kansas.

23
24 *Climate:* The ecoregion is on the boundary between mild and severe mid-latitude climates,
25 between humid continental and humid subtropical. It has hot summers and mild to severe
26 winters with no pronounced dry season. The mean annual temperature ranges from
27 approximately 12 degrees Celsius to 15 degrees Celsius and the frost-free period ranges from
28 140 to 230 days. The mean annual precipitation is 1,101 mm (43.4 inches), ranging from 965 to
29 1,244 mm (38-49 inches). Some snowfall occurs in winter, but lasts only a few days.

30
31 *Vegetation:* Oak-hickory and oak-hickory-pine forest stands are typical. Some savannas and
32 tallgrass prairies were once common in the vegetation mosaic. Post oak, blackjack oak, black
33 oak, white oak, hickories, shortleaf pine, little bluestem, Indiangrass, big bluestem, eastern red
34 cedar glades are common in the area.

35
36 *Hydrology:* Numerous perennial and intermittent streams flow in the region, of low to moderate
37 gradient, and mostly in a dendritic drainage pattern. There are numerous springs, few lakes, but
38 some sinkhole ponds and several large reservoirs.

39
40 *Terrain:* The terrain here is more irregular in physiography than the adjacent regions, with the
41 exception of the Boston Mountains (8.4.6) to the south. Mostly a dissected limestone plateau,
42 the region has karst features, including caves, springs, and spring-fed streams. There are some
43 steep, rocky hills, with elevations ranging from 80 to 560 meters above m.s.l., and some gently
44 rolling plains. Limestone, chert, sandstone, and shale are common, with some small areas of
45 igneous rocks in the east. Ultisols and Alfisols are typical with mesic and some thermic soil
46 temperature regimes and udic soil moisture regimes.

1
2 *Wildlife:* White-tailed deer, coyote, bobcat, beaver, gray bat, wild turkey, eastern bluebird,
3 bobwhite, warblers, collared lizard, many salamanders, and Ozark cavefish occur in the region.
4

5 *Land Use/Human Activities:* Less than one-fourth of the core of this region has been cleared for
6 pasture and cropland, but half or more of the periphery, while not as agricultural as bordering
7 ecoregions, is in cropland and pasture. Livestock farming of cattle and hogs, poultry production,
8 pasture and hay are common. Lead and zinc mining occurs. Forestry, recreation, rural
9 residential, urban uses also occur. There is some public national forest land. Larger towns and
10 cities include Joplin, Springfield, Rolla, Farmington, Eminence, Poplar Bluff, West Plains,
11 Tahlequah, Bentonville, Rogers, Springdale, Berryville, Harrison, Mountain Home, and
12 Batesville.
13

14 **(6) Wetlands**

15 Located within the Springfield Plateau of the Ozark Mountains region of northern Arkansas, the
16 area surrounding Beaver Lake is characterized by limestone, dolomite, or chert geology. The
17 many rivers and streams flowing through the region have created a landscape of level highlands
18 dissected by rugged valleys rich in karst features such as caves and sinkholes. Associated with
19 these streams and landscape features are a variety of wetland habitats representative of the five
20 wetland classes occurring within the region. These wetland classes include depressions, flats,
21 fringe, riverine, and slope. It is possible, and perhaps even likely, that all of these classes of
22 wetlands occur in the general area of Beaver Lake. However, those most likely to occur in the
23 area immediately surrounding the lake are fringe (most likely reservoir), riverine (most likely
24 spring runs) and slope wetlands (most likely calcareous slope). More detailed descriptions of
25 these classes, subclasses, and community types can be found at the Arkansas Multi-Agency
26 Wetland Planning Team web site: www.mawpt.org.
27

28 **i. Utilities**

29 Utilities passing through and providing service on project lands include telephone lines,
30 communication cables, electrical transmission and distribution lines, electrical switchyard, water
31 intake and distribution lines, sewage treatment facilities and pipe lines.

32 **j. Timber Resources**

33 Beaver Lake's native vegetation is primarily a climax oak-hickory type. Much of the tillable,
34 rich, river bottomland was in cultivation during the construction of Beaver Lake. As a result of
35 the dam, and subsequent impoundment of Beaver Lake, the bottomlands were inundated.
36 Upland hardwoods, near the upper levels of the flood control pool, have been subjected to
37 periodic flooding, siltation, and wave action. Presently, a new ecotone has formed between the
38 lakefront and the original forest. This area has been reforested naturally by pioneer species that
39 have a relatively short life span. Some park areas contain small natural pine stands or pine
40 plantations. Major forest vegetation types occurring around the lake include: Post oak, northern
41 red oak, black oak, hickory, eastern red cedar, shortleaf pine, sycamore, flowering dogwood,
42 plum, hawthorn and sassafras.
43

1 Much of the area adjacent to Beaver Lake has remained relatively undeveloped primarily due to
2 poor access. Since the impoundment of the lake, some extensive home and resort development
3 has occurred in some areas. The largest single ownership adjoining the lake is the Hobbs State
4 Park Conservation Area. As of this date, there are no large industrial or commercial land
5 ownerships that adjoin Beaver Lake. Project lands within the compartments of Beaver Lake
6 consist of developed and undeveloped parks and project acreage. The project lands outside of
7 park boundaries are a relatively narrow band, much of which remains undisturbed for various
8 reasons and are often unmanageable due to remoteness and small size. On Beaver Lake the
9 largest blocks of these types of manageable lands are located on the four large islands, which are
10 leased to the AGFC for wildlife management purposes.
11

12 **k. Paleontology**

13 Beaver Lake is situated in the Springfield Plateau region of the Ozark Highlands. Geologically,
14 rocks in the Ozark Highlands are dominated by well-lithified sandstones, shales, limestones, and
15 dolostones of Paleozoic age. A thin drape of younger unconsolidated clays, sands, and gravel,
16 termed alluvium, is often found in valley floors and associated with the streams and rivers.
17

18 Lower Ordovician, Middle to Upper Devonian and Lower and Upper Mississippian age strata are
19 present around Beaver Lake. The Ordovician and Devonian strata crop out around Beaver Lake
20 and its tributaries. Primary formations associated with the Lower Ordovician strata include the
21 Cotter and Powell Dolomite. The fossils known from the Cotter and Powell Dolomite are rare,
22 but include gastropods, cephalopods, trilobites and reef-building algae.
23

24 Formations associated with the Middle to Upper Devonian include the Chattanooga Shale, Clifty
25 and Penters. Fossils are typically rare to absent in these formations. Brachiopods and conodonts
26 have been collected on a few occasions.
27

28 The Upper Mississippian strata consists of the Boone Formation, which is gray, fine- to coarse-
29 grained fossiliferous limestone interbedded with chert. Crinoids are the most common fossil
30 found in the formation, but brachiopods, bryozoa, mollusks, corals, shark material, trilobites,
31 conodonts, and others fossils are known.
32

33 **l. Cultural Resources**

34
35 The following is a brief history of the human population of Arkansas:
36

37 **Paleo-Indian (12,000-8,000 B.C.)** – The earliest documented archeological manifestation
38 in the Ozark area relates to what the Paleo-Indian or Early Hunting Horizon (Klinger,
39 2013). There is evidence of Paleo-Indian inhabitants in the Ozark Highlands indicated by
40 the present of Clovis, Cumberland, and Folsom bifaces in isolated instances in Boone and
41 Newton Counties, Arkansas. No Paleo-Indian sites have been excavated in the Ozarks,
42 only surface sites and multi-component shelter sites are present.
43

44 **Archaic (8,000-500 B.C.)** - Around 8,000 years ago, the climate began to change. The
45 Pleistocene epoch gave way to the Holocene. Warmer temperatures, along with increased

1 hunting efficiency, brought about the extinction of the megafauna that the Paleo-Indians
2 had followed. Archaic people relied on the animals and plants that we see today.
3 Settlement patterns were seasonal, with bands of people staying in one area for entire
4 seasons before moving on to the next settlement. From these base camps, hunting parties
5 were sent out, sometimes for days, to kill game. Archaic period hunting camps abound in
6 the White River area.

7
8 **Woodland (500 B.C. – A.D. 900)** - One major technological change marks the beginning of
9 the Woodland period- pottery. Ceramics had begun to appear during the Archaic period, but
10 their proliferation marks the beginning of the Woodland period. Pottery signifies an
11 increasing reliance on domesticated plants. Horticulture had now spread throughout most of
12 the Eastern Woodlands, with the White River area being no exception. The bow and arrow
13 became a part of the tool assemblage, further increasing the efficiency of hunting game. For
14 the most part, however, the Woodland period is very poorly understood in the White River
15 area. Unfortunately, only a few sites containing Woodland period components have been
16 studied.

17
18 **Mississippian (A.D. 900 – 1541)** - The Mississippian period generally marks the transition to
19 full-scale agriculture and a chiefdom level of politics. An influence of religion from
20 Mesoamerica spread rapidly throughout the southeastern U.S. Large mound sites were
21 constructed, elaborate trade networks were established, and populations dramatically
22 increased. Ozark adaptations, however, were unique during the Mississippian period.
23 Domesticated crops were grown in the river valleys, but hunting and gathering likely made up
24 the bulk of the food supply. Small Mississippian period mound sites did exist in the White
25 River area, such as the Loftin Site, inundated by Table Rock Lake. Other Mississippian sites
26 in the area include open- air village sites and rock shelters. It had been speculated that these
27 communities were “outposts” of the Caddo culture located to the southwest. Recently,
28 however, researchers have demonstrated that these societies simply interacted with one
29 another on a frequent basis, with no evidence of Caddo colonization.

30
31 **Protohistoric / Historic Periods (A.D. 1541 –1865)** - The Protohistoric period began with
32 the De Soto expedition into the Southeastern United States. Generally speaking, De Soto did
33 not enter the Ozarks, but the aftermath of his expedition definitely did enter the area.
34 Diseases the Spaniard and his men brought with them, such as smallpox and influenza, had a
35 devastating effect. The tribes inhabiting the area had no immunity against these diseases, and
36 up to 90 percent of the populations were decimated. During this time period, the Ozarks were
37 primarily being used as a hunting ground for the Osage, who were centered more to the north.

38
39 Euro-American settlement began in the Ozarks in the late 18th century. People generally
40 subsisted on a combination of hunting wild game and herding domesticated animals. With the
41 creation of the Arkansas Territory in 1819, people from the upland South, or Appalachia,
42 began to move into the Ozarks. These people brought with them many aspects of their culture,
43 including fundamentalist religion, unique architectural styles, and an aptitude for farming
44 rocky terrain. Although slave holding was not unheard of, it certainly was not the norm. A
45 few major battles, such as Pea Ridge, were fought in the area. Theoretically, the battle of Pea

1 Ridge solidified Union control over southern Missouri. In reality, the entire Ozark region was
2 hostage to Bushwhackers, or outlaws that roamed the land and robbed people indiscriminately.

4 **Previous Investigations in the Beaver Lake Area**

5
6 During the past seventy years scientific investigation of archaeological sites in the Beaver Lake
7 area has been carried out in several phases. In 1922 and 1923, Mark R. Harrington of Phillip
8 Academy was the first archeologist to excavate sites on the area that is now Beaver Lake. He
9 excavated 13 bluff shelters. Between 1928 and 1935, the work of Harrington was continued by
10 S.C. Dellinger of the University of Arkansas Museum. Dellinger supervised the excavation of
11 21 rock shelters. In the early 1960's, a series of surveys were conducted by several archeologists
12 from the University of Arkansas Museum. Today, there are 280 known archeological sites along
13 or immediately adjacent to Beaver Lake. Of these, 271 are identified as prehistoric, seven are
14 historic and two sites have no known cultural affiliation.

16 **Table 2.2 Previously Recorded Resources at Beaver Lake**

Type of Site	Number of Sites
Historic	7
Prehistoric	271
No known cultural affiliation	2
Total	280
National Register Eligibility Status	
Not Evaluated	132
Not Eligible	5
Eligible	1

18 **m. Interpretation**

19 Interpretative programs at Beaver Lake are aimed at six areas of emphasis; water and boating
20 safety, natural resources and wildlife management, recreation, historical, and Project authorized
21 purposes. Water and boating safety remains the main focus for the majority of the interpretive
22 efforts. Park rangers provide programs throughout the year at local schools, summer camps,
23 community events, expos, sporting events, and Corps managed parks. The target age group for
24 water safety awareness is males, age 18-34, which is the age group where the majority of water-
25 related fatalities occur. The use of life jackets for swimming and boating safety is the area of
26 emphasis for all interpretive programs. Life jacket loaner stations are positioned at all
27 designated swimming areas on Beaver Lake. This initiative allows for swimmers to “borrow” a
28 life jacket for the day while swimming at the lake. On an annual basis, an average of 10,000
29 direct contacts are made through interpretive programs. During recreation season, the ranger
30 staff monitors boat ramps and swimming areas specifically for opportunities to provide water
31 and boating safety outreach. Many partners in water safety, such as the Beaver Lake Foundation,
32 County Law Enforcement Officials, Arkansas Game and Fish Commission and U.S. Coast Guard
33 Auxiliary also provide outreach in terms of water and boating safety. The Northwest Arkansas
34 region has a large presence of media. Rangers meet with the media for television interviews,
35 newspaper articles, and social media comments on a regular basis. Many of the interviews
36 involve current events at the lake such as summer holiday weekend campground status, boating
37 and water safety outreach, lake levels, dam operation, and public accidents. Within the project

1 office, a small visitor information center offers information and brochures on a host of recreation
2 and natural resource programs. The information desk is manned by a Corps employee to assist
3 the visiting public.
4

5 **n. Demographics**

6

7 The Fayetteville-Springdale-Rogers Metropolitan Statistical Area (MSA) that surrounds Beaver
8 Lake covers Benton, Madison, and Washington counties in Arkansas and McDonald County in
9 Missouri. Unlike most MSAs that are centered on one urban core, a number of large distinct
10 cities make up the MSA, and several are in close proximity to the Beaver Lake public access
11 points: Rogers (5 miles from the Prairie Creek Marina), Bentonville (12 miles from the Prairie
12 Creek Marina), Springdale (8 miles from the Hickory Creek Marina), and Fayetteville (20 miles
13 from both the War Eagle and the Hickory Creek Marinas).
14

15 The Fayetteville-Springdale-Rogers MSA is the seventh fastest-growing economy among large
16 metropolitan areas in the nation (IHS Global Insight 2014). The proximity to the lake and unique
17 characteristics of each city in the MSA suggest that the observed growth in demand for recreation
18 at Beaver Lake is likely to continue. Fayetteville, home of the University of Arkansas, is a major
19 source of skilled labor in the region, with 44.8 percent of residents aged over 25 holding a
20 bachelor's degree or graduate degree. Springdale and Rogers are home to Tyson Foods, a
21 multinational food corporation, and J.B. Hunt, a trucking and transportation company. Thirty-four
22 percent of Springdale residents are employed in one of the two sectors, while in Rogers, 22
23 percent of the population is employed in one of these sectors. Bentonville, the corporate
24 headquarters of Walmart, is the smallest but fastest growing city in the region. From April 2010
25 to July 2013, the city grew by 14 percent. Bentonville is also the wealthiest of the cities, with a
26 median household income exceeding \$60,000 in 2015 (Gascon and Varley 2015).
27

28 The Northwest Arkansas Regional Planning Commission (NWARPC) projects that the regional
29 population will be well over half a million by 2035. In the period from 2015 to 2035, NWARPC
30 projects that the population of Springdale, Bentonville, Bella Vista, Lowell, and Centerton will
31 more than double. Historical and future projected growth of the area suggests that demand for
32 recreational activities at Beaver Lake will continue to increase.
33

34 Data from the 2010 Census, the U.S. Bureau of Labor Statistics, and the 2014 American
35 Community Survey for population, employment, were used to summarize socioeconomic
36 conditions in the Project area. Table 2.3 shows 2014 population, 2010 population density, and
37 net migration rates for each county in the area. With the exception of Benton, Greene, and
38 Washington counties, the study area is largely rural. Near term growth in most counties is
39 positive and more or less in line with state and national average rates; however, population in
40 Douglas County, Missouri has declined slightly since the 2010 Census. With overall increases
41 approaching 10 percent over the last four years, the fastest growing counties include Benton
42 (Arkansas), Washington (Arkansas), and Christian. Benton and Washington counties host one of
43 the three Project sponsors (Benton Washington County Water District). Population density
44 ranges from 16 persons per square mile in Douglas County, Missouri to 356 in Greene County,
45 Missouri.
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Table 2.3 Population Levels and Trends in the Project Area

Table 2.3

Existing Population Levels and Trends in Project Area

Region or county	2010 Population	2014 Population	Population percent change (2010-2013)	Population density (persons per square mile)
United States	308,745,538	318,857,056	3.3%	35
State of Arkansas	2,872,684	2,933,369	2.1%	51
State of Missouri	2,915,918	2,966,369	1.7%	87
Barry (Missouri)	35,597	35,662	0.2%	44
Benton (Arkansas) ^a	221,339	242,321	9.5%	181
Boone (Arkansas) ^a	36,903	37,196	0.8%	57
Carroll (Arkansas) ^a	27,446	27,744	1.1%	40
Christian (Missouri)	74,422	82,101	10.3%	96
Douglas (Missouri)	13,684	13,546	-1.0%	16
Greene (Missouri)	275,174	285,865	3.9%	356
Madison (Arkansas) ^a	15,717	15,740	0.1%	17
Marion (Missouri)	28,781	28,920	0.5%	65
Taney (Missouri)	51,675	52,412	1.4%	24
Washington (Arkansas) ^a	203,065	220,792	8.7%	83
Webster (Missouri)	36,202	36,888	1.9%	52
Total project area	1,020,005	1,079,187	5.8%	84

^a Indicates that a county hosts water systems served by project sponsors.

Source: U.S. Census Bureau: 2014 American Community Survey. Accessed online: 14 August, 2015.

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Key income indicators (per capita income and median household income) for counties in the Project area vary with lower values characteristic of rural counties and higher values for urban counties (Table 2.4). Average per capita income weighted by population for the entire basin is \$23,750 and the median household income is \$46,605, both of which are lower than national figures (16 and 12 percent respectively); however both figures are comparable to state level per capita and household income. Earnings in counties supplied by Project sponsors are generally close to state figures, and median household income in Boone and Benton counties is considerably higher than the state value. Douglas County, Missouri is the only county where income measures are significantly lower than statewide figures. The distribution of employment by occupation category in most counties tends to follow national and state allotments.

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Table 2.4

Existing Employment and Income in Project Area

County	Per capita income	Median household income	Total civilian workforce	Management, business, science, and arts	Natural resources, construction, and maintenance	Production and transportation	Sales and office workers	Service
United States	\$28,155	\$53,046	141,864,697	51,341,226	25,645,065	34,957,520	12,863,316	17,057,570
State of Arkansas	\$23,045	\$39,633	1,245,432	388,270	214,286	300,168	135,496	207,212
State of Missouri	\$25,649	\$59,527	2,770,617	956,605	498,458	696,630	247,212	371,712
Barry (Missouri)	\$19,489	\$38,710	14,297	3,923	1,764	3,708	2,931	1,971
Benton (Arkansas) ^a	\$26,715	\$61,706	103,176	35,624	8,887	16,879	27,044	14,742
Boone (Arkansas) ^a	\$22,160	\$47,585	88,035	40,794	5,235	6,626	20,867	14,513
Carroll (Arkansas) ^a	\$20,637	\$36,584	11,843	2,987	1,557	2,965	2,303	2,031
Christian (Missouri)	\$25,134	\$52,838	37,289	13,403	3,260	4,376	10,028	6,222
Douglas (Missouri)	\$16,404	\$32,130	4,924	1,062	951	1,018	1,240	653
Greene (Missouri)	\$23,520	\$40,337	132,328	44,998	9,714	15,500	36,225	25,891
Madison (Arkansas) ^a	\$18,754	\$43,737	6,474	1,622	1,056	1,608	1,304	884
Marion (Missouri)	\$21,909	\$42,046	12,881	3,910	1,067	2,562	2,789	2,553
Taney (Missouri)	\$20,231	\$38,461	22,601	5,299	1,861	1,736	7,093	6,612
Washington (Arkansas) ^a	\$23,264	\$41,248	99,115	34,172	17,131	24,353	9,012	14,447
Webster (Missouri)	\$19,955	\$50,033	14,347	3,555	2,171	2,631	3,525	2,465
Total project area	\$23,570	\$46,605	547,310	191,349	54,654	83,962	124,361	92,984

^a Indicates that a county hosts water systems served by project sponsors.

Source: U.S. Census Bureau: 2014 American Community Survey. Accessed online: 18 August, 2015.

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In counties adjacent to Beaver Lake, tourism and recreation is also an important part of local economies. Given the scenic and natural beauty of northwest Arkansas, Beaver Lake is a popular recreation venue for instate and out of state visitors. On average from 1999 through 2012, about 2.5 million people visited the lake for at least one day (Table 2.5). Beaver Lake has a variety of recreational facilities (Table 2.6). Paved access roads wind through 11 developed parks with 683 campsites. Other facilities include swimming beaches, hiking trails, boat launching ramps, sanitary dump stations, and picnic shelters. Seven parks contain year-around commercial marinas, which offer grocery items, fuel, boat rental and storage, fishing guides and other supplies and related services.

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Table 2.5

Annual Number of Visitors to Beaver Lake Arkansas (1999 through 2012)

Year	No. of visitors
1999	2,388,827
2000	2,826,853
2001	2,909,192
2002	2,998,615
2003	3,763,057
2004	5,168,720
2005	3,144,639
2006	2,724,809
2007	3,151,898
2008	2,470,292
2009	2,572,053
2010	2,749,764
2011	2,366,977
2012	2,457,662
Average (1999 through 2012)	

Source: U.S. Army Corps of Engineers, Little Rock District

9

Table 2.6

Recreation Facilities at Beaver Lake, Arkansas

Facilities	Number of sites
------------	-----------------

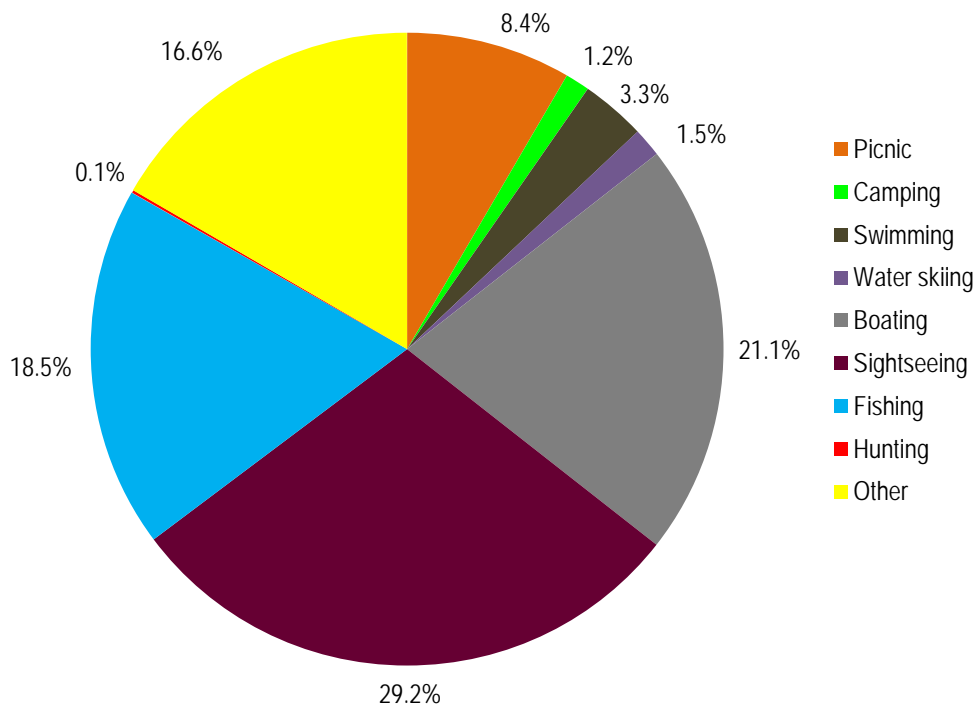
1	Recreation sites	28
2	Picnic sites	174
3	Camping sites	683
4	Playgrounds	19
5	Swimming areas	12
6	Trails	21
7	Trail miles	26
8	Fishing docks	1
9	Boat ramps	20
	Marina slips	2,016

10 Source: U.S. Army Corps of Engineers, Little Rock District

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Accounting for almost one half of reported activities, water sports (swimming, boating, skiing and fishing) are popular at Beaver (Figure 2.6). There are 20 boat launches, and the lake is home to bass, crappie, bream, stripers, and catfish. In addition to fishing and hunting, many other sports and activities await the visitor, picnicking, hiking and sightseeing are also reported recreational opportunities at or near Beaver Lake.

Figure 2.6
Distribution of Visitor Activities at Beaver Lake



1
2 Recreation at the lake has substantial impact to local economies based on surveys of visitor
3 spending and attendance at Corps projects. Based on 2012 data, roughly 2.45 million people
4 visited Beaver Lake, and spent \$84.7 million in local economies within 30 miles of the lake in
5 2012. This spending generated \$65.6 million in business sales revenue, and supported about 955
6 full and part time jobs with \$17.1 million in labor income.

7
8 The primary transportation system at Beaver Lake serves visitors and workers driving to and
9 from recreation and service areas. The road system is maintained by counties and the state, and
10 are high-standard, paved roads. Public access to the park requires a road system, although once
11 visitors reach the park, designated parking areas are available from which miles of trails can be
12 accessed. Nearby residents can access the park via foot or bike. Several U.S., State highways,
13 and county roads access the lake. The primary access roads to the shoreline are U.S. Highway
14 412 and 62 and State Highways 264, 187, 127 and 12.

15
16 Executive Order 12898, entitled “Federal Actions to Address Environmental Justice in Minority
17 Populations and Low Income Populations,” addresses potential disproportionate human health
18 and environmental impacts that a project may have on minority or low-income communities.
19 Thus, the environmental effects of the Project on minority and low-income communities or
20 Native American populations must be disclosed, and agencies must evaluate projects to ensure
21 that they do not disproportionately impact any such community. If such impacts are identified,
22 appropriate mitigation measures must be implemented.

23

1 To determine whether a project has a disproportionate effect on potential environmental justice
2 communities (i.e., minority or low income population), the demographics of an affected
3 population within the vicinity of the Project must be considered in the context of the overall
4 region. Guidance from the Council on Environmental Quality (CEQ) states that “minority
5 populations should be identified where either: (1) the minority population of the affected areas
6 exceeds 50 percent, or (b) the minority population percentage of the affected area is
7 meaningfully greater than the minority population percentage in the general population or other
8 appropriate unit of geographic analysis (CEQ 1997).”
9

10 Table 2.7 displays Census data summarizing racial, ethnic and poverty characteristics of areas
11 adjacent to construction sites (loops and compressor stations). The purpose is to analyze whether
12 the demographics of the affected area differ (i.e., Census Tract) in the context of the broader
13 region (the county as a whole); and if so, do differences meet CEQ criteria for an Environmental
14 Justice community. Based on the analysis, it does not appear that minority or low income
15 populations in the Project area are disproportionately affected.
16

17 Table 2.7 also displays the number of children adjacent to Project areas. The purpose of the data
18 is to assess whether the project disproportionately affects the health or safety risks to children as
19 specified by Executive Order (E.O.) 13045 - *Protection of Children from Environmental Health*
20 *Risks and Safety Risks* (1997). Overall, it does not appear that the Project would
21 disproportionately affect children.

1
2

Table 2.7

Racial Composition, Number of Children and Poverty Indicators in the Upper White River Basin

Region	White	Black or African American	Native American or Indian	Asian	Native Hawaiian or Pacific Islander	Hispanic or Latino	Other or two or more races	Percent Unemployed	Percent of population below poverty line	Percent of population under age 17
United States	56.10	12.6	0.9	4.8	0.2	16.3	9.1	6.2	15.4	23.7
State of Arkansas	70.60	15.40	0.80	1.20	0.20	6.40	5.40	5.1	15.8	24.2
State of Missouri	79.30	11.60	0.50	1.60	0.10	3.50	3.40	5.6	15.5	23.5
Barry (Missouri)	84.40	0.30	0.90	1.30	0.00	7.70	5.4	8.0	19.1	24.0
Benton (Arkansas)	63.70	1.30	0.90	2.70	0.10	18.70	12.60	3.6	12.2	18.0
Boone (Arkansas)	94.70	0.20	0.70	0.40	0.10	1.80	2.10	5.2	16.6	23.0
Caroll (Arkansas)	76.90	0.40	0.90	0.60	0.10	12.70	8.40	4.5	18.8	22.4
Christian (Missouri)	93.20	0.60	0.60	0.50	0.10	2.50	2.50	5.1	10.6	23.9
Douglas (Missouri)	96.30	0.20	0.60	0.20	0.00	0.80	1.90	5.4	22.6	22.0
Greene (Missouri)	88.20	2.90	0.70	1.60	0.10	3.00	3.50	5.4	18.7	21.2
Madison (Arkansas)	88.80	0.20	1.20	0.50	0.10	4.80	4.40	5.6	18.0	24.2
Marion (Missouri)	95.30	0.20	0.70	0.20	0.00	1.70	1.90	4.4	16.2	23.6
Taney (Missouri)	85.90	0.90	0.80	0.70	0.10	7.70	3.90	7.1	18.8	21.8
Washington (Arkansas)	64.80	3.00	2.00	2.20	2.00	15.10	10.90	5.0	20.7	25.2
Webster (Missouri)	94.60	0.90	0.70	0.20	0.00	1.70	1.90	4.7	18.9	30.8
Total Project Area	78.51	1.83	1.03	1.65	0.48	9.47	7.04	5.0	17.0	22.7

Source: U.S. Census Bureau: 2014 American Community Survey. Accessed online: 14 August, 2015.

3

4 **o. Recreation Facilities, Activities, and Needs**

5 The recreational resource of Beaver Lake Project is considered to be of great importance to this
 6 Northwest Arkansas region. The Corps of Engineers has taken advantage of the natural and
 7 scenic beauty and constructed a variety of recreational facilities around the lake. Beaver Lake
 8 Project offers many recreational activities such as sightseeing, camping, swimming, picnicking,
 9 SCUBA diving, boating, water skiing/wakeboarding, canoeing/kayaking, nature study, bird
 10 watching, fishing, hunting, and hiking. There are eleven designated recreation areas on Beaver

1 Lake operated by the Corps of Engineers. Carroll County Arkansas has a lease to maintain and
2 operate one park. Seven full-service marinas are owned and operated by commercial
3 concessionaires. Twenty-five boat ramps are licensed to local County or State Government.
4 Seven limited-motel/resorts have facilities on Government property and are owned and operated
5 by lease agreement. Beaver Lake's parks are some of the busiest in the nation. This is evidenced
6 by total fee collections ranking as one of the highest in the Corps of Engineers, consistently
7 ranking number 5 or below. The interest in using the project's resources of land and water in
8 and around the parks has been on the steady increase as the Northwest Arkansas area continues
9 to grow at a fast pace. The population of the area has exceeded 750,000 and is estimated to
10 rapidly exceed 1,000,000 in the next few years with no end in sight. This will only increase the
11 use of existing park areas on Beaver Lake.

12
13 The criteria discussed in this section are of a basic nature to be used for the planning,
14 development, and management of the project with consideration being given to the latest trends
15 in recreational activities and needs. These criteria furnish guidelines for determining the type and
16 number of facilities needed to satisfy the current and projected demand and also furnishes
17 guidelines for serviceability, operation, and maintenance of facilities. Considerations for the
18 physically handicapped will be included in the design of facilities.

19

20 1) Facility Information

21 The future development of parks and design/layout of facilities should consider the following
22 criteria: high-quality engineering, public safety, and promotion of the health, welfare, and
23 aesthetic satisfaction of the public. The location of each facility should result in a compromise
24 between conserving the natural resource and meeting the demands for providing public use.
25 New facilities should only be placed on the most adaptable terrain, with consideration to
26 preserving the majority of the natural features, in order to maintain the scenic significance for
27 other visitors. Facility design and placement should consider minimizing grading and clearing
28 for site preparation to safeguard existing environmental features.

29

30 2) Recreation Areas

31

32 a) Dam Site -

33 This Class A use fee park contains 513 acres above the top of conservation pool and
34 consists of six separate project site areas (PSA's). Dam Site parks are located 5 miles
35 west of Eureka Springs, Arkansas on State Highway 62, then 4 miles on State Highway
36 187.

37

- 38 a. **Dam Site Island** – situated on the western most tip of the mainland at the south
39 end of the dam. A causeway has been constructed which connects this tip to what
40 was an island, making it accessible by vehicle. This section of the park is heavily
41 used by the camping public. This area is also commonly referred to as Dam Site
42 Lake Park. Recreation facilities constructed within the area include 1 dump
43 station, 2 vault toilets, 1 waterborne restroom w/ showers, 1 gatehouse, 9 – 20/30
44 amp electric campsites, 37 - 20/30/50 amp electric campsites, 3 – 20/30/50 amp
45 electric w/ water and sewer campsites, 1 boat ramp (one lane), one courtesy dock,

1 1 designated swimming beach, 1 trail (1 mile), and 1 playground. Dam Site
2 Island’s water is municipally supplied by Carroll-Boone Water District.
3 Electricity is supplied by Carroll Electric Cooperative.
4

5 ***Anticipated park improvements for the future include:*** Renovate all campsites
6 with new living areas, parking areas, picnic tables, canopies, and individual water
7 supply connections. Install modern playground and other support facilities.
8 Design a new park entrance station area to include a park gatehouse with
9 waterborne pre-fabricated or design-build structure. Replace vault toilet located
10 adjacent to the boat ramp parking lot with a waterborne toilet. Relocate dump
11 station to an area with easier access for campers as they exit the park.
12

- 13 b. **Dam Site North Bluffs** - located on the northwestern shore of a large embayment
14 immediately upstream from the left abutment of the dam structure. Dam Site
15 North Bluffs is located 5 miles west of Eureka Springs, Arkansas on State
16 Highway 62, then 4 miles on State Highway 187, then 1 mile on Dam Site Road.
17 This area is commonly referred to as “The Bluffs”. This park is heavily used by
18 regional SCUBA diving enthusiasts. The park is also known for spectacular
19 views of the lake and dam from a large bluff. Access to the bluff area has been
20 delineated by visitor-made trails originating from designated picnic areas.
21 Recreation facilities constructed within the area include 1 vault restroom, 1 boat
22 ramp (one lane), and 23 picnic sites. Dam Site North Bluffs’ water is municipally
23 supplied by Gateway Public Water Authority. Electricity is supplied by Carroll
24 Electric Cooperative.
25

26 ***Anticipated park improvements for the future include:*** Improve SCUBA diving
27 access to the lake by creating “stair-step” platforms at various elevations along the
28 shoreline, accompanied by a significant parking expansion for each access point.
29 Create “no boats” area delineated by buoys along shoreline of park. Replace
30 individual day use sites on both sides of the main road in the upper section of the
31 park with a single parking lot area, several multi-family picnic shelters, and two
32 full-hook up campsites. Design a new park entrance and install park gatehouse
33 with waterborne pre-fabricated or design-build structure.
34

- 35 c. **Dam Site Overlook** – located on the southern end of the dam structure along the
36 downstream bluff directly overlooking the stilling basin and powerhouse. This
37 park provides multiple viewing points of the dam, lake, and river. In 2013, this
38 park was completely renovated with a new waterborne restroom, interpretive
39 panel complex, shelter, and scenic viewing platform. Recreation facilities
40 constructed within the area include 1 waterborne restroom, 1 interpretive display
41 (under shelter building), and 1 trail (2 miles). Dam Site Overlook’s water is
42 municipally supplied by Carroll-Boone Water District. Electricity is supplied by
43 the Beaver Powerhouse.
44

45 ***Anticipated park improvements for the future include:*** No improvements
46 anticipated.

- 1
2 d. **Dam Site Peninsula (Cut off Wall)**, located along the upstream side of dike 1,
3 north of the dam, on the western bank. This park was constructed after the
4 completion of Beaver Dam and included picnic sites. In the early 1990's this area
5 was expanded after the completion of the cut off wall structure in front of Dike 1.
6 This park provides day use opportunities that include swimming, picnicking,
7 fishing, photography, sightseeing, and SCUBA diving. Recreation facilities
8 constructed within the area include 1 vault restroom, 1 designated swimming
9 beach, 1 volleyball court, 21 picnic sites, and 1 group shelter. Dam Site Peninsula
10 water is municipally supplied by Gateway Public Water Authority. Electricity is
11 supplied by Carroll Electric Cooperative.
12

13 ***Anticipated park improvements for the future include:*** Replace vault toilet with
14 waterborne restroom. Design a new park entrance and install park gatehouse with
15 waterborne pre-fabricated or design-build structure. Re-design park entrance to
16 direct incoming traffic to gatehouse. Install modern playground and other support
17 facilities.
18

- 19 e. **Dam Site Riverview**, located below the dam, adjacent to the White River on the
20 northern bank. This park is very popular amongst trout fishermen. Recreation
21 facilities constructed within the area include 1 dump station, 1 vault toilet, 2
22 waterborne restrooms w/ showers, 1 gatehouse, 12 - 20/30/50 amp electric
23 campsites, 1 - 20/30/50 amp electric w/ water and sewer campsites, 1 boat ramp
24 (one lane), and 1 playground. This park contains two separate camping loops.
25 The first loop, "Riverview" contains 12 campsites with 20/30/50 amp electric
26 service and water to each site. The second loop, "The Pines" contains 25
27 campsites with 20/30 amp electric service. The Arkansas Game and Fish
28 Commission also has 3.2 acres of leased land and buildings within this park area.
29 It is used for regional office space. These buildings were constructed during the
30 building of Beaver Dam. Hidden Lake, which is the name of a small pond within
31 the area, is located adjacent to the entrance of the "The Pines" campground loop.
32 Dam Site Riverview Park's water is municipally supplied by Gateway Public
33 Water Authority. Electricity is supplied by Carroll Electric Cooperative.
34

35 ***Anticipated park improvements for the future include:*** Renovate all campsites
36 with new living areas, parking areas, picnic tables, canopies, and individual water
37 supply connections. Upgrade electric service to park, to include 50 amp service
38 to all campsites. Install modern playground at "Pines" loop to meet current
39 industry safety standards. Replace vault toilet with waterborne restroom. Install
40 park gatehouse with waterborne, pre-fabricated or design-build structure. Re-
41 design park entrance to direct incoming traffic to gatehouse. Renovate Hidden
42 Lake by removing vegetation in pond and around bank of pond. Design fishing
43 access points around Hidden Lake to include a continuous, ADA accessible trail
44 around the entire pond.
45

1 f. **Dam Site Parker Bottoms**, located below the dam, downstream approx. 2 miles,
2 adjacent to the White River on the southern bank. This park is very popular
3 amongst the trout fishermen. Recreation facilities constructed within the area
4 include 1 waterborne restroom w/ showers, and 25 – 20/30 amp electric
5 campsites. The Arkansas Game and Fish Commission maintains the Bertrand
6 boat ramp, which provides access to the White River. The AGFC also maintain 3
7 separate parking lots along the White River, which serve as improved access
8 points for fishermen. The project office consistently get requests to increase the
9 number of campsites in this area. Dam Site Parker Bottoms’ water is municipally
10 supplied by Gateway Public Water Authority. Electricity is supplied by Carroll
11 Electric Cooperative.
12

13 ***Anticipated park improvements for the future include:*** Construct camping area
14 or loop, as proposed in the 1975 Beaver Lake Master Plan, with approx. 20
15 campsites, located between the existing loop and Bertrand boat ramp. Renovate
16 all existing campsites with new living areas, parking areas, picnic tables,
17 canopies, and individual water supply connections. Upgrade electric service to
18 park, to include 50 amp services to all campsites. Design a park entrance and
19 install park gatehouse with waterborne, pre-fabricated or design-build structure.
20 Re-design park entrance to direct incoming traffic to gatehouse. Include full-hook
21 up campsite to be used by gate attendant for new gatehouse at this location.
22

23 **b) *Hickory Creek-***

24 This Class A use fee park contains 153 acres above the conservation pool and is located
25 on the west side of the lake approximately 7 miles northeast of Springdale, AR on State
26 Highway 264. This park provides access for many fishermen to the south end of the lake.
27 This park has high visitation due to proximity to Springdale, AR. This park also contains
28 one of the Project’s busiest and largest day use areas. Recreation facilities constructed
29 within the area include 61 – 20/30/50 amp electric campsites, 4 – 20/30/50 amp electric
30 with water and sewer campsites, 2 vault toilets, 1 shower/flush restroom, 1 flush
31 restroom, 1 trailer dump station, 5 multi-family shelters, 2 group shelters, 1 swim beach,
32 20 picnic sites, 2 playgrounds, 2 launch ramps, 2 sand volleyball courts, 1 soccer/multi-
33 purpose field, 1 gatehouse, and 1 commercial marina. Hickory Creek’s water is
34 municipally supplied by Springdale Water Utilities. Electricity is supplied by Ozark
35 Electric Cooperative.
36

37 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
38 with new living areas, parking areas, picnic tables, canopies, and individual water supply
39 connections. Replace vault toilet in “Pines” loop with flush restroom/shower facility.
40 Replace existing, degraded flush restroom/shower facility in camping loop with new
41 flush restroom/shower facility. Design a park entrance and install park gatehouse with
42 waterborne, pre-fabricated or design-build structure. Install modern playground and
43 support facilities.
44

1 c) *Indian Creek –*

2 This Class A use fee park contains 111 acres above conservation pool and is located
3 approximately 5 miles south of Gateway, AR and the end of Indian Creek Road off of
4 AR Hwy 62. This park has one of the highest occupancy rates per campsite on the
5 Project. SCUBA diving activities in this park are also very popular due to the clarity of
6 the water around the park. Designated “No Wake” buoys define area for safe SCUBA
7 diving activities. Recreation facilities constructed within the area include 1 vault toilet, 2
8 flush restrooms, 1 shower building, 2 boat ramps, 33 – 20/30 amp electric campsites, 1-
9 20/30/50 amp electric campsite, 1 swim beach, 8 picnic sites, 1 gatehouse, 1 hiking trail
10 (1 mile) and 1 trailer dump station. Indian Creek’s water is municipally supplied by
11 Gateway Public Water Authority. Electricity is supplied by Carroll Electric Cooperative.
12

13 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
14 with new living areas, parking areas, picnic tables, canopies, and individual water supply
15 connections. Upgrade electric service to park, to include 50 amp services to all
16 campsites. Design a park entrance and install park gatehouse with waterborne, pre-
17 fabricated or design-build structure. Replace converted vault toilet and stand-alone
18 shower facility into flush restroom/shower facility. Replace converted vault toilet in day
19 use area to flush restroom. Install modern playground to meet current industry safety
20 standards.
21

22 d) *Lost Bridge North –*

23 This Class A use fee park contains 441 acres above conservation pool and is located
24 directly across the Indian Creek arm of the lake from Indian Creek Park about 6 miles
25 from Garfield, AR off of AR Hwy 127. This park contains the longest and most used
26 hiking trail on the Project. The trail has an interpretive panel with information related to
27 the “Old Schrader Home Place”, which is located along the trail. This park is also the
28 only park on the Project with a “group camping area”. The group area provides two,
29 large impact sites for tent camping, a group shelter, and fire pit. Recreation facilities
30 constructed within the area include 48 – 20/30 amp electric service campsites, 1 flush
31 toilet, 1 shower building, 3 vault toilets, 1 trailer dump station, 1 group shelter, 1
32 playground, 1 swimming beach, 7 picnic sites, 1 commercial marina concession, 1 hiking
33 trail (5 miles), and 1 gatehouse. Lost Bridge North’s water is supplied by permitted well.
34 Electricity is supplied by Carroll Electric Cooperative.
35

36 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
37 with new living areas, parking areas, picnic tables, canopies, and individual water supply
38 connections. Upgrade electric service to park, to include 50 amp services to all
39 campsites. Design a park entrance and install park gatehouse with waterborne, pre-
40 fabricated or design-build structure. Provide municipal water supply to the park.
41 Replace stand-alone shower facility with one waterborne restroom/shower facility to be
42 located in lower camping loop. Replace vault toilet above launch ramp with flush
43 restroom/shower. Replace vault toilet in camp loop across the road from the park
44 entrance with a flush restroom/shower facility. Install modern playground and other
45 support facilities.
46

1 e) *Lost Bridge South* –

2 This Class A use fee park contains 50 acres above conservation pool and is located
3 adjacent to Lost Bridge North Park on 127 Spur about 6 miles from Garfield, AR. This
4 park currently has the highest average campsite occupancy rate on the Project. Recreation
5 facilities constructed within the area include 24 – 20/30/50 amp electric service campsites
6 with water, 13 – 20/30/50 amp electric service campsites, 5 picnic sites, 1 flush
7 restroom/shower building, 1 playground, 1 hiking trail (<1 mile), 1 swim beach, 1 launch
8 ramp, 1 trailer dump station, and 1 gatehouse. The trailer dump station is located near
9 Lost Bridge North Park. Lost Bridge South’s water is supplied by permitted well.
10 Electricity is supplied by Carroll Electric Cooperative.
11

12 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
13 with new living areas, parking areas, picnic tables, and canopies. Design a park entrance
14 and install park gatehouse. Provide municipal water supply to the park. Relocate dump
15 station to location more suitable for Lost Bridge South park campers. Install modern
16 playground and support facilities. Redesign and possibly relocate swim beach to location
17 directly adjacent to picnic sites.
18

19 f) *Starkey* –

20 This Class A use fee park contains 102 acres above conservation pool and is located on
21 the end of a large peninsula on the main body of the lake, approximately 10 miles west of
22 Eureka Springs, AR at the end of Mundell Road off of AR Hwy 187. Recreation
23 facilities constructed within the area include 4 vault toilets, 1 shower building, 1 boat
24 ramp, 16 – 20/30 amp electric service campsites, 7- 20/30 amp electric service with water
25 and sewer campsites, 1 – 20/30/50 amp electric service with water and sewer campsite, 1
26 group shelter, 8 picnic sites, 2 playgrounds, 1 trailer dump station, 1 gatehouse, and 1
27 commercial marina concession. Starkey’s water is supplied by permitted well.
28 Electricity is supplied by Carroll Electric Cooperative.
29

30 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
31 with new living areas, parking areas, picnic tables, canopies, and individual water supply
32 connections. Redesign and replace all picnic sites, add a swim beach. Relocate the boat
33 ramp. Upgrade electric service to park, to include 50 amp services to all campsites.
34 Design a park entrance and install park gatehouse with waterborne, pre-fabricated or
35 design-build structure. Replace all vault toilets with flush restrooms. Combine vault
36 restroom and shower near campsites 1-7 with one flush restroom/shower facility. Install
37 modern playground and support facilities.
38

39 g) *Rocky Branch* –

40 This Class A use fee park contains 164 acres above conservation pool and is located
41 approximately 15 miles east of Rogers, AR at the end of AR Hwy 303, off of AR Hwy
42 12. Recreation facilities constructed within the area include 7 - 20/30/50 amp electric
43 service campsites, 33 – 20/30 amp electric service campsites, 1 – 20/30/50 amp electric
44 service with water and sewer, 1 shower building, 1 flush restroom, 3 vault restrooms, 2
45 swim beaches, 2 boat ramps, 1 gatehouse, 1 trailer dump station, 2 group picnic shelters,
46 3 picnic sites, 1 commercial marina concession, and 1 hiking trail (2 miles). Rocky

1 Branch's water is supplied by Benton County Water Authority. Electricity is supplied by
2 Carroll Electric Cooperative.

3
4 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
5 with new living areas, parking areas, picnic tables, canopies, and individual water supply
6 connections. Upgrade electric service to park, to include 50 amp services to all
7 campsites. Design a park entrance and install park gatehouse with waterborne, pre-
8 fabricated or design-build structure. Replace all vault toilets with flush restrooms.
9 Replace stand-alone shower building with flush restroom/shower facility. Relocate swim
10 beach on campground side of park to original planned location in 1975 Master Plan.
11 Install modern playground to meet current industry safety standards.

12
13 ***h) Ventris -***

14 This lake access point contains 76 acres above conservation pool and is located in a
15 remote area 6.5 miles south of Garfield, AR off of AR Hwy 127. This park was initially
16 developed with recreational facilities, including picnic sites, 8 campsites, 1 group shelter,
17 drinking water, 3 vault restrooms, 1 launch ramp, and 1 overlook shelter. In 1982, the
18 park was closed for all recreational activities, with the exception of permitted primitive
19 camping and boat ramp use for lake access.

20
21 ***Anticipated park improvements for the future include:*** No improvements anticipated.

22
23 ***i) Prairie Creek -***

24 This Class A use fee park contains 192 acres above conservation pool and is located 3
25 miles east of Rogers, AR just off AR Hwy 12. Recreational facilities constructed within
26 the area include 95 – 20/30 amp electric campsites, 6 – 20/30/50 amp electric service
27 campsites, 9 – 20/30/50 amp electric service with water campsites, , 4 – 20/30/50 amp
28 electric service with water and sewer campsites, 6 flush restrooms, 3 vault restrooms, 2
29 flush restroom/shower facilities, 1 trailer dump station, 2 gatehouses, 1 group (300
30 person) shelter w/ full-service kitchen and flush restroom, 3 multi-family shelters, 2
31 group shelters, 1 swim beach, 24 picnic sites, 3 playgrounds, 1 hiking trail (1 mile), 1
32 ADA accessible fishing dock (leased by AGFC), fishing tournament weigh-in facility, 1
33 six-lane boat ramp, and a commercial marina concession. New water supply lines were
34 installed throughout the park. This park is the most visited park in terms of day use on
35 the Project. The close proximity to Rogers, AR, provides easy access to the lake,
36 especially for recreational boaters and fishermen. The majority of the fishing
37 tournaments on Beaver Lake originate at this park. The large parking lot and boat ramp
38 provide excellent accommodations for fishing tournament organizers. Prairie Creek's
39 water is supplied by Rogers Water Utilities. Electricity is supplied by Carroll Electric
40 Cooperative.

41
42 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
43 with new living areas, parking areas, picnic tables, canopies, and individual water supply
44 connections. Upgrade electric service to park, to include 50 amp services to all
45 campsites. Design a park entrance and install park gatehouse with waterborne, pre-
46 fabricated or design-build structure. Replace all vault toilets with flush restrooms.

1 Replace degraded flush restroom/shower facility at swimming beach with new flush
2 restroom/shower facility. Redesign/relocate the swimming area to reduce extreme
3 erosion within the beach area. Install modern playgrounds and support facilities.
4

5 **j) Horseshoe Bend -**

6 This Class A use fee park contains 189 acres above conservation pool and is located
7 approximately 7 miles east of Rogers, AR on AR Hwy 94. Recreational facilities
8 constructed within the area include 3 non-electric campsites, 109 – 20/30 amp electric
9 service campsites, 59 – 20/30/50 amp electric service campsites, 17 – 20/30/50 amp
10 electric service with water campsites, 6 – 20/30/50 amp electric service with water and
11 sewer campsites, 2 flush restroom/shower facilities, 9 vault toilets, 2 trailer dump
12 stations, 3 group shelters, 2 playgrounds, 2 launch ramps, 2 gatehouses, 1 hiking trail (1/4
13 mile), and 1 commercial marina concession. Horseshoe Bend’s water is supplied by
14 Rogers Water Utilities. Electricity is supplied by Carroll Electric Cooperative.
15

16 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
17 with new living areas, parking areas, picnic tables, canopies, and individual water supply
18 connections. Upgrade electric service to park, to include 50 amp services to all
19 campsites. Design a park entrance and install 2 park gatehouses. Replace all vault toilets
20 with flush restrooms (or consolidate). Replace both existing degraded flush
21 restroom/shower facilities with new flush restroom/shower facility and build new
22 restroom facility near the “Peninsula” camping loop to accommodate highest
23 concentration of campers. Relocate boat ramp in the day use area to more suitable area
24 and construct a large parking lot and add a restroom in the area directly north of the
25 existing day use boat ramp. Design and construct campsites in park referred to as “area
26 no. 10” in 1975 Master Plan. This is a large, flat, timbered area that would be ideal for
27 large campsites, with large living areas. Install modern playgrounds and support
28 facilities.
29

30 **k) War Eagle -**

31 This Class A use fee park contains 51 acres above conservation pool and is located
32 approximately 10 miles east of Springdale, AR off State Highway 412, then 5 miles north
33 on CR 95. The location of this park is on the south end of the lake, more commonly
34 referred to as “the river” end of the lake. Recreational facilities constructed within this
35 area include 26 – 20/30 amp electric service campsites, 1 – 20/30/50 amp electric service
36 campsite, 2 vault restrooms, 1 flush restroom/shower facility, 1 trailer dump station, 1
37 overlook viewing facility, 1 gatehouse, 1 group shelter, 1 swim beach, 1 boat ramp, and 1
38 commercial marina concession. Fishermen accessing the south end of the lake often
39 launch from this park. War Eagle’s water is supplied by Springdale Water Utilities.
40 Electricity is supplied by Ozark Electric Cooperative.
41

42 ***Anticipated park improvements for the future include:*** Renovate all existing campsites
43 with new living areas, parking areas, picnic tables, canopies, and individual water supply
44 connections. Upgrade electric service to park, to include 50 amp services to all
45 campsites. Design a park entrance and install park gatehouse. Replace all vault toilets
46 with flush restrooms. Replace existing shower facility with new restroom/shower

1 facility. Install modern playground and support facilities to meet current industry safety
2 standards.

3
4 **l) Blue Springs -**

5 This lake access point contains 71 acres above conservation pool and is located on the
6 north shore of the Bluff Creek arm of the lake near the junction of the Brush Creek and
7 Richland Creek Arms. Access by land is off of State Hwy 412, east of Springdale, AR.
8 This park was initially developed with recreational facilities, including picnic sites, 11
9 campsites, 1 group shelter, drinking water, 2 vault restrooms, and 1 launch ramp. In
10 1982, the park was closed for all recreational activities, with the exception of boat ramp
11 use for lake access.

12
13 **Anticipated park improvements for the future include:** No improvements anticipated.

14
15 **m) Big Clifty**

16 Operated by Carroll County, Arkansas
17
18
19

20 **3) Visitation Profiles (OMBIL)**

Table 2.8
Project Visitation 2003-2012**

2003	3,763,057
2004	5,064,730
2005	3,195,549
2006	2,709,072
2007	3,151,897
2008	2,470,294
2009	2,628,560
2010	2,643,229
2011	2,439,917
2012*	2,457,662

21 *New visitation program was launched.

22 **Visitation is from developed park areas. Dispersed use is not included in
23 these numbers.

24 **4) Recreation Analysis**

25 The Statewide Comprehensive Outdoor Recreation Plan (SCORP) is an integral part of capturing
26 the history and popular activities to enhance recreation opportunities in Arkansas. The SCORP
27 ties together voices from the users of recreation sites, planners and developers, government
28 officials, agency managers and elected officials. This collaboration effort is in place to lay out a
29 plan to guide recreation development in a useful, beneficial, and sustainable manner.
30

31 **5) Arkansas SCORP Data (2010-2014):**
32

1 Over the past 25 years the top 10 recreational activities that Arkansans prefer hasn't changed
2 substantially. Two activities have exchanged popularity from year to year, walking for pleasure
3 and exercise, and driving for pleasure. According to a recent survey, jogging or walking for
4 pleasure tops the list, with driving for pleasure ranking second. Burgeoning interest in healthy
5 lifestyles helps hold this timeless activity at the top. For driving, higher gasoline prices may be
6 one factor that influences driving habits, but this activity remains very popular as a way to view
7 and enjoy the beauty of the natural landscape.

DRAFT

1
2

Table 2.9 Popular Outdoor Activities

Recent Poll	1993	1984
Jogging or walking	Driving for pleasure	Walking for Pleasure
Swimming	Walking for Pleasure	Fishing
Nature Viewing and Outdoor Photography	Picnicking	Driving for Pleasure
Boating	Fishing	Picnicking
Picnicking	Swimming	Swimming
Visiting Historical and Ecological Sites	Visiting Historical Sites	Camping/Developed Sites
Camping	Wildlife Observation	Visiting Historical Sites
Bicycling	Short Hikes	Hunting
Playing Tennis	Pleasure Boating	Baseball/Softball
	Bicycling	Jogging/Running
	Camping/Developed Sites	Pleasure Boating
	Basketball	ORV Driving
	Jogging/Running	Bicycling
	Baseball/Softball	Canoeing/Floating
	Photography	Camping/Undeveloped Sites
	Hunting	Water Skiing
	Other Outdoor Games	Photography
	ORV Driving	Tennis
	Canoeing/Floating	Other Outdoor Games
	Camping/Undeveloped Sites	Horseback Riding

3 Along with walking and driving, other core interests involve access to water (swimming,
 4 boating), or common leisure time gatherings (picnics and camping). People often use trails as
 5 part of their activities, especially for bicycling, walking, hiking or nature viewing and
 6 photography, which makes trails an important type of facility in terms of planning for outdoor

1 recreation. Access to parks, trails and other facilities is primarily through automobiles and
2 roadways. With the steady interest in driving for pleasure (or total demand increasing with
3 population growth), and general access by car to most sites, the public roadways are becoming
4 ever more important to the broader functioning of recreational sites and facilities.

5 For a copy of the entire Arkansas SCORP it can be found at:
6 [http://www.outdoorgrants.com/InfoLinksResources/13-Dec-3%20SCORP%20FINAL%202014-](http://www.outdoorgrants.com/InfoLinksResources/13-Dec-3%20SCORP%20FINAL%202014-18.pdf)
7 [18.pdf](http://www.outdoorgrants.com/InfoLinksResources/13-Dec-3%20SCORP%20FINAL%202014-18.pdf)

8 **6) Future Park Development Areas**

9 There are currently no project land areas classified for future park development and none has
10 been added through this Master Plan revision. If future recreation development is needed,
11 development will be accommodated within the existing High Density classified land areas or the
12 reopening of previously closed camping loops where road systems and park facilities have
13 previously occurred.

14
15 Alpine – Future – At the writing of this master plan revision, the Corps does not have plans for
16 any development of this park (58 acres). It will remain classified as high density at this time.

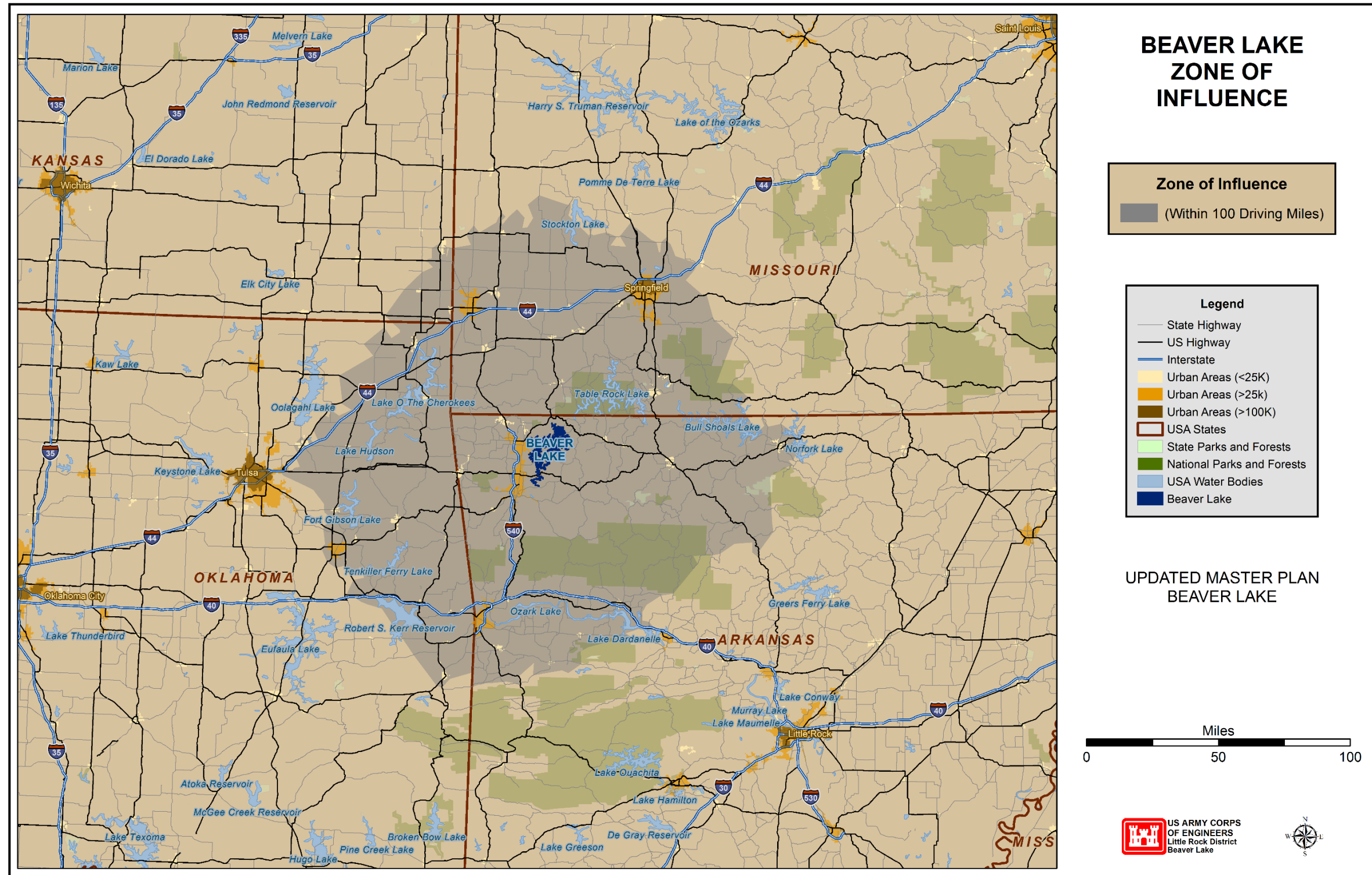
17
18 Engineering and Design Recreational Facility and Customer Service Standards can be referenced
19 in EM 1110-1-400 [http://publications.usace.army.mil/publications/eng-manuals/EM_1110-1-](http://publications.usace.army.mil/publications/eng-manuals/EM_1110-1-400_sec/toc.htm)
20 [400_sec/toc.htm](http://publications.usace.army.mil/publications/eng-manuals/EM_1110-1-400_sec/toc.htm)

21

22 **7) Zones of Influence**

23 The Beaver Lake Zone of Influence has been determined from visitor surveys to include those
24 counties situated with at least 50 percent of their population within 100 highway miles of the
25 lake. The zone includes counties in Missouri, Arkansas, Oklahoma, and Kansas (Figure 2.7).
26 Beaver Lake, its public and commercial facilities, and the scenic qualities of the area are
27 nationally advertised in vacation and sporting publications. The lake is well suited for the types
28 of recreational opportunities for which it is being utilized. Further project development as
29 proposed will not adversely affect the integrity of the resource characteristics. Development
30 plans and management practices will continue to be periodically evaluated to assure proper
31 resource use as well as the validity of planning assumptions utilized in this plan. A number of
32 diverse factors were studied in preparation of this Master Plan.

Figure 2-4 Zone of Influence for Beaver Lake



1 **p. Real Estate**

2 **(1) Acquisition Policy**

3 Construction of Beaver Reservoir was authorized for flood control, power, and other purposes by
4 the Flood Control Act of 1954, approved 3 September 1954 (Public Law 780, 83rd Congress, 2nd
5 Session), as recommended by the Chief of Engineers in House Document No. 499, 83rd
6 Congress, 2nd Session (referred to as the project document). A Design Memorandum was
7 completed, identifying all land and interests in land that would be necessary for the operation,
8 maintenance, and control of the reservoir. The fee acquisition line, as a general rule, was blocked
9 out along regular land subdivision or property ownership lines to include all lands below
10 elevation 1128 m.s.l. or to include the lands required for public access areas. Because of the
11 terrain, the blocking out process did embrace all lands required for the project in many places. In
12 areas where the blocked-out line did not encompass lands needed for occasional flooding,
13 flowage easements were acquired to elevation 1135 m.s.l. or up to elevation 1148 m.s.l. on the
14 White River and up to elevation 1144 m.s.l. on War Eagle Creek. In those areas where the
15 horizontal increment between the fee acquisition contour (1128 m.s.l.) and the flowage easement
16 contour (1135 to 1148 m.s.l.) was small, the blocked-out line for fee acquisition was extended to
17 include the flowage easement contour, since the acquisition of easements on extremely small
18 areas was not practical. As a result of this blocking out process, the Government boundary
19 around Beaver Lake is a very uneven line at varying elevations.

20 **(2) Management and Disposal Policy**

21 The Real Estate Management and Disposal program for Beaver Lake is administered by the
22 Little Rock District Real Estate Division in accordance with all applicable laws, regulations, and
23 policies. All requests for real estate related actions must be received via a written request made
24 to the Beaver Lake Operations Manager, who makes a recommendation through the Little Rock
25 District Chief of Operations to the Chief of Real Estate.

26 **q. Pertinent Public Laws**

27 **Application of Public Laws.**

28 Development and management of Federal reservoirs are regulated by a number of statutes and
29 guided by USACE documents. The following sections provide a summary of the relevant
30 policies and Federal statutes.

31
32 **Recreation**

33 The policies and public laws listed below address development and management of recreational
34 facilities on public lands and are pertinent to the Beaver Lake project.

35
36 PL 78-534, Flood Control Act of 1944 (22 December 1944), authorized the Chief of
37 Engineers to provide facilities in reservoir areas for public use, including recreation and
38 conservation of fish and wildlife.

39 PL 79-526, Flood Control Act of 1946 (24 July 1946), amends PL 78-534 to include authority
40 to grant leases to nonprofit organizations at recreational facilities in reservoir areas at reduced
41 or nominal charges.

42 PL 83-780, Flood Control Act of 1954 (3 September 1954), further amends PL 78-534 and
43 authorizes the Secretary of the Army to grant leases to Federal, State, or governmental
44 agencies without monetary considerations for use and occupation of land and water areas

1 under the jurisdiction of the Department of the Army for park and recreational purposes when
2 in the public interest.
3 PL 87-874, Flood Control Act of 1962, broadened the authority under PL 78-534 to include all
4 water resource projects.
5 Joint Land Acquisition Policy for Reservoir Projects (Federal Register, Volume 27, 22
6 February 1962) allows the Department of the Army to acquire additional lands necessary for
7 the realization of potential outdoor recreational resources of a reservoir.
8 PL 88-578, Land and Water Conservation Fund Act of 1965 (1 September 1964), prescribes
9 conditions under which USACE may charge for admission and use of its recreational areas.
10 PL 89-72, Federal Water Project Recreation Act of 1965 (9 July 1965), requires sharing of
11 financial responsibilities in joint Federal and non-Federal recreational and fish and wildlife
12 resources with no more than half of the cost borne by the Federal Government.
13 PL 90-480, Architectural Barriers Act of 1968 (12 August 1968), as amended, requires access for
14 persons with disabilities to facilities designed, built, altered, or leased with Federal funds.
15 PL 101-336, Americans with Disabilities Act of 1990 (ADA) (26 July 1990), as amended by
16 the ADA Amendments Act of 2008 (PL 110-325), prohibits discrimination based on
17 disabilities in, among others, the area of public accommodations and requires reasonable
18 accommodation for persons with disabilities.
19 PL 102-580, Water Resources Development Act of 1992 (31 October 1992), authorizes the
20 USACE to accept contributions of funds, materials, and services from non-Federal public and
21 private entities to be used in managing recreational facilities and natural resources.
22 PL 103-66, Omnibus Budget Reconciliation Act–Day Use Fees (10 August 1993), authorized the
23 USACE to collect fees for the use of developed recreational sites and facilities, including
24 campsites, swimming beaches, and boat ramps.
25 PL 104-333, Omnibus Parks and Public Lands Management Act of 1996 (12 November
26 1996), created an advisory commission to review the current and anticipated demand for
27 recreational opportunities at lakes and reservoirs managed by the Federal Government and to
28 develop alternatives to enhance the opportunities for such use by the public.
29

30 **Water Resource Protection and Flood Risk Management**

31 A number of public laws address water resources protection and flood risk management and
32 integration of these goals with other Project purposes such as recreation. The following are
33 pertinent to Beaver Lake.
34

35 PL 75-761, *Flood Control Act of 1938* (28 June 1938), authorizes the construction of civil
36 engineering projects such as dams, levees, dikes, and other flood risk management measures
37 through the USACE.

38 PL 77-228, *Flood Control Act of 1941* (18 August 1941), amended the Flood Control Act of 1938
39 and appropriated \$24M to support construction of multiple-purpose reservoir projects in the
40 White River Basin.

41 PL 78-534, *Flood Control Act of 1944* (22 December 1944), specifies the rights and interests
42 of the states in water resources development and requires cooperation and consultation with
43 State agencies in planning for flood risk management.

44 PL 79-14, *Rivers and Harbors Act of 1945* specifies the rights and interests of the states in
45 watershed development and water utilization and control, and the requirements for cooperation
46 with state agencies in planning for flood control and navigation improvements.

1 PL 85-500, *Water Supply Act of 1958* (3 July 1958), authorizes the USACE to include
2 municipal and industrial water supply storage in multiple-purpose reservoir projects.
3 PL 87-88, *Federal Water Pollution Control Act Amendments of 1961* (20 July 1961), requires
4 Federal agencies to address the potential for pollution of interstate or navigable waters when
5 planning a reservoir project.
6 PL 89-80, *Water Resources Planning Act of 1965* (22 July 1965), provides for the optimum
7 development of the Nation's natural resources through coordinated planning of water and
8 related land resources. It provides authority for the establishment of a water resources council
9 and river basin commission.
10 PL 89-298, *Flood Control Act of 1965* (27 October 1965), authorizes the Secretary of the
11 Army to design and construct navigation, flood risk management, and shore protection
12 projects if the cost of any single project does not exceed \$10 million.
13 PL 92-500, *Federal Water Pollution Control Act (Clean Water Act)* (October 18, 1972)
14 Establishes a national goal of eliminating all discharges into U.S. waters by 1985 and an
15 interim goal of making the waters safe for fish, shellfish, wildlife and people by July 1, 1983.
16 Also provides that in the planning of any Corps reservoir consideration shall be given to
17 inclusion of storage for regulation of streamflow. PL 95-217, *Clean Water Act of 1977* (15
18 December 1977), amends PL 87-88 and requires the Environmental Protection Agency (EPA)
19 to enter into written agreements with the Secretaries of Agriculture, the Army, and the Interior
20 to provide maximum utilization of the laws and programs to maintain water quality.
21 PL 99-662, *Water Resource Development Act of 1986* (17 November 1986), establishes cost
22 sharing formulas for the construction of harbors, inland waterway transportation, and flood
23 risk management projects.

24

25 **Fish and Wildlife Resources**

26 A number of public laws address protection and maintenance of fish and wildlife resources. The
27 following are pertinent to the Beaver Lake project:

28

29 PL 79-732, *Fish and Wildlife Coordination Act* (10 March 1934), provides authority for
30 making project lands available for management by interested State agencies for wildlife
31 purposes.

32 Title 16 U.S. Code (U.S.C.) §§ 668-668a-d, *Bald and Golden Eagle Protection Act of 1940* (8
33 June 1940) as amended, prohibits anyone, without a permit issued by the Secretary of the
34 Interior, from taking bald eagles (*Haliaeetus leucocephalus*), including their nests or eggs.

35 PL 85-624, *Fish and Wildlife Coordination Act* (12 August 1958), states that fish and wildlife
36 conservation will receive equal consideration with other project purposes and be coordinated
37 with other features of water resources development programs.

38 The *Federal Water Project Recreation Act of 1965* (PL 89-72) requires consideration of
39 opportunities for fish and wildlife enhancement in planning water resources projects. Non-
40 Federal bodies are encouraged to operate and maintain the project fish and wildlife enhancement
41 facilities. If non-Federal bodies agree in writing to administer the facilities at their expense, the
42 fish and wildlife benefits are included in the project benefits and project cost allocated to fish and
43 wildlife. Fees may be charged by the non-Federal bodies to repay their costs. If non-Federal
44 bodies do not so agree, no facilities for fish and wildlife may be provided.

45 PL 91-190, *National Environmental Policy Act of 1969* (NEPA) (1 January 1970), establishes

1 a broad Federal policy on environmental quality stating that the Federal government will assure
2 for all Americans safe, healthful, productive, and aesthetically and culturally pleasing
3 surroundings, and preserve important historic, cultural, and natural aspects of our national
4 heritage.

5 PL 93-205, Conservation, Protection, and Propagation of Endangered Species (28 December
6 1973), requires that Federal agencies will, in consultation with the U.S. Fish and Wildlife
7 Service (USFWS), further conservation of endangered and threatened species and ensure that
8 their actions are not likely to jeopardize such species or destroy or modify their critical
9 habitat.

10 PL 95-632, Endangered Species Act Amendments of 1978 (10 November 1978), specifies a
11 consultation process between Federal agencies and the Secretaries of the Interior, Commerce,
12 or Agriculture for carrying out programs for the conservation of endangered and threatened
13 species.

14 PL 101-233, North American Wetland Conservation Act (13 December 1989), directs the
15 conservation of North America wetland ecosystems and requires agencies to manage their
16 lands for wetland/waterfowl purposes to the extent consistent with missions.

17 PL 106-147, Neo-tropical Migratory Bird Conservation Act (20 July 2000) promotes the
18 conservation of habitat for neo-tropical migratory birds.

19 20 **Forest Resources**

21 The following law pertains to management of forested lands and is pertinent to the Beaver Lake
22 project:

23
24 PL 86-717, Conservation of Forest Land Act of 1960 (6 September 1960), provides for the
25 protection of forest cover in reservoir areas and specifies that reservoir areas of projects
26 developed for flood risk management or other purposes that are owned in fee and under the
27 jurisdiction of the Secretary of the Army and the Chief of Engineers will be developed and
28 maintained so as to encourage, promote, and ensure fully adequate and dependable future
29 resources of readily available timber through sustained yield programs, reforestation, and
30 accepted conservation practices.

31 The stewardship management concept derives primarily from Public Law 86-717, The Forest
32 Cover Act, which was written specifically to address the conservation and management of trust
33 resources at Corps projects. Section 1 of the Act states in part... "reservoir areas...owned in fee
34 and under the jurisdiction of the Secretary of the Army and Chief of Engineers, shall be
35 developed and maintained so as to encourage, promote, and assure fully adequate and
36 dependable future resources of readily available timber, through sustained yield programs,
37 reforestation, and accepted conservation practices, and to increase the value of such areas for
38 conservation, recreation, and other beneficial uses: Provided, that such development and
39 management shall be accomplished to the extent practicable and compatible with other uses of
40 the project." Section 2 of the Act further states in part that the, "Chief of Engineers, under the
41 supervision of the Secretary of the Army, shall provide for the protection and development of
42 forest or other vegetative cover and the establishment and maintenance of other conservation
43 measures on reservoir areas under his jurisdiction, so as to yield the maximum benefit and
44 otherwise improve such areas."

1 **Cultural Resources**

2 A number of public laws mandate protection of cultural resources on public lands. The
3 following are pertinent to USACE project lands at the Beaver Lake project:

4
5 PL 59-209, Antiquities Act of 1906 (8 June 1906), applies to the appropriation or destruction
6 of antiquities on federally owned or controlled lands and has served as the precedent for
7 subsequent legislation.

8 PL 74-292, Historic Sites Act of 1935 (21 August 1935), declares that it is a national policy to
9 preserve for public use historic sites, buildings, and objects of national significance for the
10 inspiration and benefit of the people of the United States.

11 PL 86-523, Reservoir Salvage Act of 1960 (27 June 1960), provides for the preservation of
12 historical and archaeological data that might otherwise be lost as the result of the construction
13 of a dam and attendant facilities and activities.

14 PL 89-665, National Historic Preservation Act of 1966 (NHPA) (15 October 1966),
15 establishes a national policy of preserving, restoring, and maintaining cultural resources. It
16 requires Federal agencies to take into account the effect an action may have on sites that may
17 be eligible for inclusion on the National Register of Historic Places.

18 PL 93-291, Archaeological and Historic Preservation Act of 1974 (24 May 1974), amends PL
19 86-523 and provides for the Secretary of Interior to coordinate all Federal survey and
20 recovery activities authorized under this expansion of the Reservoir Salvage Act of 1960. The
21 Federal construction agency may expend up to 1 percent of project funds on cultural resource
22 surveys.

23 PL 96-95, Archaeological Resources Protection Act of 1979 (31 October 1979), updates
24 PL 59-209 and protects archaeological resources and sites on public lands and fosters
25 increased cooperation and exchange of information among governmental authorities, the
26 professional archaeological community, and private individuals.

27 PL 101-601, Native American Graves Protection and Repatriation Act (16 November 1990),
28 requires Federal agencies to return Native American human remains and cultural items,
29 including funerary objects and sacred objects, to their respective peoples.

30
31 **Leases, Easements, and Rights-of-Way**

32 A number of laws and regulations govern the granting of leases, easements, and rights-of-way on
33 Federal lands. The following are pertinent to USACE project lands at the Beaver Lake project:

34
35 16 U.S.C. § 663, Impoundment or Diversion of Waters (10 March 1934), for wildlife
36 resources management in accordance with the approved general plan.

37 10 U.S.C. § 2667, Leases: Non-excess Property of Military Departments and Defense
38 Agencies (10 August 1956), authorizes the lease of land at water resource projects for any
39 commercial or private purpose not inconsistent with other authorized project purposes.

40 U.S.C. Titles 10, 16, 30, 32, and 43 address easements and licenses for project lands;

41 16 U.S.C. § 460d authorizes use of public lands for any public purpose, including fish and
42 wildlife, if it is in the public interest.

43 16 U.S.C. §§ 470h-3, Lease or Exchange of Historic Property (15 October 1966), for historic
44 properties.

45 PL 91-646, Uniform Relocation Assistance and Real Property Acquisition Policies Act of
46 1970 (2 January 1971), establishes a uniform policy for fair and equitable treatment of

1 persons displaced as a result of Federal or federally assisted programs.
2 PL 94-579, Federal Land Policy and Management Act of 1976 (21 October 1976) establishes
3 a policy that the Federal Government receive fair market value for the use of the public lands
4 and their resources unless otherwise provided for by statute. Provides for the inventory of
5 public land and land use planning. It also establishes the extent to which the executive branch
6 may withdraw lands without legislative action.

DRAFT

1 Chapter 3 Goals and Objectives

3 a. The Beaver Lake Master Plan Revision Statement

4 The Beaver Lake Master Plan Revision Project Delivery Team (PDT) developed the following
5 vision statement to help guide the process of revising the Beaver Lake Master Plan:

7 *“The Beaver Lake Master Plan Revision strives to balance public use of Federal lands and
8 waters with the conservation and protection of natural resources for future generations.”*

9 b. Policy and Master Plan Revision Schedule

10 Recreation and natural resource management policy and guidance are set forth in Corps
11 regulations ER and EP 1130-2-550 and EP 1130-2-540. Included in these guidance documents is
12 the process by which Master Plans are revised as well as broadly stated management principles
13 for recreation facilities and programs, and stewardship of natural and cultural resources. Of
14 particular importance in the formulation of recreation goals and objectives are the policies
15 governing the granting of park and recreation and commercial concession leases (outgrants)
16 which dictate that such outgrants must serve recreational needs and opportunities created by the
17 project and are dependent on the project’s natural or other resources. Other important guidance
18 for management of all resources is the policy governing non-recreational outgrants such as utility
19 easements as well as the guidance in ER and EP 1130-2-540 to adhere to ecosystem management
20 principles.

22 The Beaver Lake Master Plan Revision began in October 2014. During the revision process and
23 development of Master Plan alternatives, the team recognized decisions made during master plan
24 development would significantly impact the shoreline management plan. In September 2015, the
25 team met with SWL Leadership and proposed to combine the effort of updating both the master
26 plan and shoreline management plan concurrently. In addition, the team recognized that
27 additional information (i.e. a carrying capacity study) would be required to help in making
28 decisions for both plans. The team proposed that a carrying capacity study be done prior to
29 further development of the master plan and initiation of the shoreline management plan.

31 The Beaver Lake Carrying Capacity study was contracted out to CDM-Smith in June 2016. The
32 study characterizes current boating lake use during peak boating periods and boaters’
33 perspectives on safety and crowding at the lake. The primary focus of the study was to evaluate
34 existing recreational use and users’ perspectives against carrying capacity ranges researched and
35 developed specifically for the Beaver Lake setting.

37 Data was collected through aerial boat counts and simultaneous ground counts of empty boat
38 trailers and empty marina slips. This information was utilized to determine the number and types
39 of boats using the lake at any given time. The collected information also provides insights into
40 boat origin and existing utilization levels of lake access facilities and infrastructure during peak
41 times.

1 According to federal guidelines and requirements, a survey questionnaire was approved by the
2 U.S. Office of Management and Budget (OMB) prior to its administration in the fall of 2016.
3 The survey provided information on user characteristics, on-water activities, and perceptions of
4 safety, crowding, and preferred boat density. This information was used to develop an acceptable
5 range of social boating carrying capacity at Beaver Lake and to assess the impact of existing
6 boating density on the quality of the recreational experience and boating safety. The survey had
7 a response rate of 45 percent and provided a statistically valid sample for the analysis.
8

9 The final carrying capacity report was made available to the Corps PDT in February 2017.
10 Using this information, the team restarted both master plan and shoreline management plan
11 development.
12

13 The following outlines the process followed by the Beaver Lake Master Plan and Shoreline
14 Management Plan Revision:
15

16
17 **Assumptions:** Unlimited resources (i.e. contracting), this MP revision is everyone's 1st priority
18 (no other 'items' on plate), shoreline moratorium implemented.
19

- 20 **A. Phase 1 – Initiate Master Plan Revision Process. (November 2014- June 2015)**
- 21 1. Internal PDT coordination.
 - 22 a. Educate PDT/District Leadership/Vertical Team on Master
 - 23 Plans and proposed process
 - 24 b. Develop PMP (update as needed)
 - 25 c. Assign PDT Roles/Responsibilities and begin developing
 - 26 MP background information, MP outline/format and GIS
 - 27 database and Mapping needs.
 - 28 d. Id and engage Vertical Team. Develop appropriate IPR
 - 29 schedule.
 - 30 2. Scope and evaluate NEPA requirements (EA/EIS/Cat Excl.) and
 - 31 develop/approve sequence and timing of implementation. Incorporate
 - 32 decisions into PMP.
 - 33 3. Develop Communication Plan. Incorporate into PMP.
 - 34 a. Email/ mailing distribution list—options for contracting if
 - 35 we send a general initiation postcard out. Email is preferred
 - 36 method for distribution for updates.
 - 37 b. Web page (coordination of info among PDT, reviewed and
 - 38 posted by PAO)
 - 39 c. Other Social Media (FB, Twitter, other?)—District has FB
 - 40 page; PAO can add project specific new releases and MP
 - 41 updates to this page.
 - 42 d. News release and newsletter (by mail, computer and direct
 - 43 distribution).
 - 44 e. Correspondence to agency partners, stakeholders and
 - 45 political interests.

- 1 4. Data Inventory. Do we have data to comfortably put together a MP
- 2 revision (see MP layout above).
- 3 a. ID data needed or required
- 4 i. Market analysis
- 5 ii. Recreational Carrying Capacity
- 6 5. Scoping Workshops
- 7 a. Educate public on what a master plan is (it is not a SMP or
- 8 OMP)—30,000 ft view. Include this information in public
- 9 notices about scoping workshops, on website page, on any
- 10 social media
- 11 b. Agency, Partner, Stakeholder scoping workshops.
- 12 c. Conduct public orientation/input/scoping workshops.
- 13 6. Public Comment period. Collect comments. Comment analysis—develop
- 14 scoping report.
- 15 **B. Phase 2 – Develop Draft Master Plan. Round 1. (June 2015 – August 2015)**
- 16 1. Initiate Chapter Development (we can start on Chp 1 and Chp 2 now—
- 17 existing conditions—this will be concurrent with Phase 1 activities)
- 18 2. Scoping Report—take information from this and ‘digest’
- 19
- 20 **C. Phase 3 – Recreational Carrying Capacity Study (September 2015 – February**
- 21 **2017)**
- 22 1. Develop scope of work for carrying capacity study. Negotiate and award task
- 23 order to complete study.
- 24 2. Hold ‘rescoping’ workshops with public for continuing the draft master
- 25 plan and initiating the shoreline management plan update process.
- 26 3. Initiate and complete actual carrying capacity study. Draft report. PDT
- 27 complete review of draft report.
- 28 4. Final Carrying Capacity report. Use data to incorporate into MP/SMP
- 29 revision process.
- 30 5. Draft Rescoping Report. PDT complete review of draft report.
- 31 6. Final Rescoping Report. Use comments and data from workshops to
- 32 incorporate into draft documents.
- 33 **D. Phase 4 – Develop Master Plan and Shoreline Management Plan. Round 2.**
- 34 **(February – December 2017)**
- 35 1. Formulate Chapters 3, 4, 5, 6, 7, 8, and 9 of the Master Plan.
- 36 2. Develop draft shoreline management plan.
- 37 3. DQC draft documents
- 38 4. Conduct In Progress Reviews with Vertical Team.
- 39 5. News release and newsletter about draft documents public review and
- 40 input.
- 41 6. Correspondence to key partners and political interests explaining draft
- 42 documents with their comments from scoping.
- 43
- 44 7. Conduct public workshop(s) explaining documents with their comments
- 45 from scoping.

1 the lands and waters under the jurisdiction of the Little Rock District, Beaver Lake Project
2 Office. The objectives stated in this Master Plan support the goals of the Master Plan,
3 Environmental Operating Principles (EOPs), and applicable national performance measures.
4 They are consistent with authorized project purposes, Federal laws and directives, regional
5 needs, resource capabilities, and take public input into consideration. Recreational and natural
6 resources carrying capacities are also accounted for during development of the objectives found
7 in this Master Plan. The Arkansas State Comprehensive Outdoor Recreation Plan (SCORP) was
8 considered as well. The objectives in this Master Plan to the best extent possible aim to
9 maximize project benefits, meet public needs, and foster environmental sustainability for Beaver
10 Lake.

11 Recreational Objectives

- 12 • Evaluate the demand for improved recreation facilities and increased public access on
13 Corps-managed public lands and water for recreational activities (i.e. camping, walking,
14 hiking, biking, boating, swimming, scuba diving, hunting, fishing, wildlife viewing, etc.)
15 and facilities (i.e. campsites, picnic facilities, scenic overlooks, all types of trails, boat
16 ramps, courtesy docks, interpretive signs/exhibits, and parking lots). Goal A, C, D
- 17 • Assess current public use levels (i.e. with focus on boating, camping, and day use trends)
18 and evaluate impacts from overuse and crowding. Take action to prevent overuse,
19 conflict, and public safety concerns. Goal A, C
- 20 • Evaluate recreational activities for natural resource protection, quality recreational
21 opportunities, and public safety concerns. Goal A, B, C, D, E
- 22 • Follow the Environmental Operating Principles associated with recreational use of
23 waterways for all water-based management activities and plans. Goal B, C, E
- 24 • Increase universally accessible facilities on Beaver Lake. Goal A, C, E
- 25 • Evaluate the demand for commercial facilities on public lands and waters. Goal A, C, D
- 26 • Consider flood/conservation pool to address potential impact to recreational facilities (i.e.
27 campsites, docks, etc.); Note that water level management is not within the scope of the
28 Master Plan. Goal A, B, C, D
- 29 • Ensure consistency with USACE Recreation Strategic Plan. Goal E
- 30 • Reference the Arkansas Statewide Comprehensive Outdoor Recreation Plan (SCORP) to
31 ensure consistency in achieving recreation goals. Goal C, E

33 Natural Resource Management Objectives

- 34 • Consider flood/conservation pool levels to optimize habitat conditions, as long as there is
35 no interference with the Project's other authorized purposes, i.e. flood risk management
36 and hydroelectric power generation. Note that water level management is not within the
37 scope of the Master Plan. Goal A, B, D
- 38 • Actively manage and conserve forest, fish, and wildlife resources, especially special
39 status species, by implementing ecosystem management principles and best management
40 practices to ensure sustainability and enhance biodiversity. Goal A, B, D, E
- 41 • Consider watershed approach during decision-making process. Goal A, B, D, E
- 42 • Optimize resources, labor, funds, and partnerships for protection and restoration of fish
43 and wildlife habitats. Goal B, E

- 1 • Optimize resources, labor, funds, and partnerships for the management and prevention of
- 2 invasive species in Beaver Lake. Goal B, E
- 3 • Minimize activities which disturb the scenic beauty and aesthetics of the lake. Goal A, B,
- 4 C, D, E
- 5 • Continually evaluate erosion control and sedimentation issues at Beaver Lake. Goal A, B,
- 6 E
- 7 • Identify and protect unique or sensitive habitat areas. Goal A, B, D, E
- 8 • Stop unauthorized activities and uses of public lands such as agricultural trespass, timber
- 9 theft, unpermitted docks and other structures, clearing of vegetation, unauthorized
- 10 roadways, off-road vehicle (ORV) use, trash dumping, and placement of advertising signs
- 11 that create negative environmental impacts. Goal A, B, C, D, E
- 12 • Promote forest health through timber resource management actions to create diverse and
- 13 sustainable forest habitat. Goal A, B, D
- 14 • Evaluate and determine appropriate non-statutory mitigation for adverse environmental
- 15 impact actions. Goal A, B
- 16 • Identify, restore, and manage ecological land types. Goal A, B, D, E
- 17

18 Environmental Compliance Objectives

- 19 • Manage project lands and water to sustain healthy fish and wildlife populations and
- 20 habitat conditions and avoid negative effects to public water supply, ensuring public
- 21 health and safety. Goal A, B, C, D, E
- 22 • Consider both point and non-point sources of water pollution issues during decision
- 23 making. Goal A, B, D, E
- 24 • Improve coordination, communication, and cooperation between regulating agencies and
- 25 non-governmental organizations to resolve and/or mitigate environmental problems. Goal
- 26 A, B, D, E
- 27 • Ensure compliance with Environmental Review Guide for Operations (ERGO) at all
- 28 Beaver Lake facilities and outgrants (i.e. marinas, resorts, etc.). Goal A, B, E
- 29 • Ensure compliance with regulations prohibiting Privately Owned Domestic Sewer
- 30 Systems on Federal lands. Goal A, B
- 31

32 Visitor Information, Education, and Outreach Objectives

- 33 • Enhance communication between agencies, special interest groups, and the general
- 34 public. Goal A, D, E
- 35 • Provide educational and outreach programs on the lake. Topics to include Corps
- 36 missions, water quality, history, cultural resources, water safety, recreation, nature, and
- 37 ecology. Goal A, B, C, D, E
- 38 • Maintain a network among local, state, and federal agencies concerning the exchange of
- 39 lake-related information for public education and management purposes. Goal A, D, E
- 40 • Increase public awareness of special use permits or other authorizations required for
- 41 special activities, organized special events, and commercial activities on public lands and
- 42 waters of the lake. Goal A, B, C

- 1 • Capture trends concerning boating accidents and other incidents on public lands and
2 waters and coordinate data collection with other public safety officials. Goal A, C, D, E
- 3 • Promote Corps Water Safety message. Goal A, C, D, E
- 4 • Educate adjacent landowners on public land and shoreline use policies. Goal A, B, C, D,
5 E
- 6 • Continue to educate the public on the White River Water Control Plan, along with other
7 management and operation plans (i.e. Shoreline Management Plan, Operation
8 Management Plan, etc.). Goal A, C, D, E

10 Economic Impacts Objectives

- 11 • Balance economic and environmental interests involving Beaver Lake. Goal A, B, C, D,
12 E
- 13 • Evaluate the type and extent of additional development that is compatible with national
14 Corps policy on both recreation and non-recreational outgrants that may be sustained on
15 public lands. Goal A, B, C, D, E
- 16 • Work with local communities to promote tourism and recreational use of the lake. Goal
17 A, B, C, D, E

19 General Management Objectives

- 20 • Maintain the public lands boundary lines to ensure it is clearly marked and recognized in
21 all areas. Goal A, B, D
- 22 • Secure sustainable funding for business line programs such as water supply, flood risk
23 management, recreation, hydropower, and environmental stewardship. Goal A, B, C, D,
24 E
- 25 • Ensure consistency with USACE Campaign Plan (national level), Implementation Plan
26 (regional level), Operations Plan (District level). Goal E
- 27 • Adapt to funding level changes in future years. Goal E
- 28 • Ensure consistency with Executive Order 13148, ‘Greening the Government Through
29 Leadership in Environmental Management’ (21 April 2000). Goal E
- 30 • Ensure consistency with Executive Orders 13423 and 13514, ‘Strengthening Federal
31 Environmental, Energy, and Transportation Management’ (24 January 2007) and
32 ‘Federal Leadership in Environmental, Energy, and Economic Performance’ (5 October
33 2009), respectively, to guarantee compliance with Leadership in Energy and
34 Environmental Design (LEED) criteria for government facilities. Goal E
- 35 • Manage non-recreation outgrants, such as utility easements, in accordance with national
36 guidance set forth in ER 1130-2-550. Goal A, B, D, E

38 Cultural Resources Management Objectives

- 39 • Monitor and coordinate lake development and the evaluation of cultural resources with
40 State Historic Preservation Offices and federally recognized Tribes. Goal A, B, D, E

- 1 • Continue to inventory cultural resources on the project. Goal A, B, D, E
- 2 • Increase public awareness of Beaver Lake history. Goal B, D, E
- 3 • Maintain compliance with Section 106 and 110 of the National Historic Preservation Act;
- 4 the Archeological Resources Protection Act; and the Native American Graves Protection
- 5 and Repatriation Act on public lands surrounding the lake. Goal B, D, E
- 6 • Prevent unauthorized or illegal excavation and removal of cultural resources on project
- 7 lands. Goal B, D, E

DRAFT

Chapter 4 Land Allocations, Land Classifications, Water Surface Classifications, and Project Easement Lands

a. Introduction

Beaver Lake is a multipurpose project constructed primarily for flood control and generation of hydroelectric power. Recreation is a third project purpose resulting primarily from the impoundment of water and the presence of public land. Management of recreational resources must not conflict with the regulation of the lake for the two primary purposes for which it was authorized. Environmental stewardship of project lands and waters is also an important project purpose and must be taken into consideration in all project management activities. The principal concept in planning Beaver Lake was for public use and benefit. This concept has been implemented, and first among priorities for public use are stringent standards for public health, safety and sanitation. The Resource Plan in Chapter 5 considers these standards in land use classification and in planning for the recreational activities and stewardship of the lands and waters associated with the project.

To provide the greatest possible recreational/outdoor experience, safeguards have been implemented over the use of Government-owned land adjacent to the lakeshore. At Beaver Lake, much of the shoreline is being retained in its rugged, natural state. Forest management practices are implemented to maintain existing vegetation in a healthy state while juvenile plant material is being planted to revegetate open spaces.

Ownership of land adjacent to Government-owned land does not convey any rights to the adjacent landowner(s) that would allow private and exclusive access to the lake across Government-owned land. To satisfy public demand for access to the lake, access roads and docks of quasi-public nature are permitted provided that the nature and extent of these facilities satisfy a valid public need that is in harmony with the overall development of the lake and not in conflict with management practices as determined by the District Engineer.

The existing lands required for project operation purposes and recreation have been indicated on land classification Plates. The lands described in the various designations throughout the lake are very similar in general characteristics of soil, topography, and vegetative cover typical of the foothills of the Ozark Mountains.

Project land and water total 38,138 acres. There is an additional 1,432 acres of flowage easement lands. The easement lands lie above or landward of the fee acquisition line 1135 m.s.l. or up to elevation 1148 m.s.l. on the White River and up to elevation 1144 m.s.l. on War Eagle Creek and are indicated by the purple color on the land classification maps.

All lands in the Beaver Lake project are classified as project operations lands acquired and allocated to provide for safe, efficient operation of the project. Project operations lands reserved for recreational purposes and lands reserved for preservation of natural resources are indicated by color coding on the land classification maps. Land use allocations are discussed as follows:

1 **b. Land Allocations**

2 Lands are allocated by their congressionally authorized purposes for which the project lands
3 were acquired. There are four land allocation categories applicable to Corps projects:
4

5 (1) Operations. These are the lands acquired for the congressionally authorized purpose
6 of constructing and operating the project. Most project lands are included in this allocation.
7

8 (2) Recreation. These lands were acquired specifically for the congressionally authorized
9 purpose of recreation. These lands are referred to as separable recreation lands. Lands in this
10 allocation can only be given a land classification of “Recreation”.
11

12 (3) Fish and Wildlife. These lands were acquired specifically for the congressionally
13 authorized purpose of fish and wildlife management. These lands are referred to as separable
14 fish and wildlife lands. Lands in this allocation can only be given a land classification of
15 “Wildlife Management”.
16

17 (4) Mitigation. These lands were acquired specifically for the congressionally authorized
18 purpose of offsetting losses associated with development of the project. These lands are referred
19 to as separable mitigation lands. Lands in this allocation can only be given a land classification
20 of “Mitigation”.

21 **c. Land Classifications**

22 Land classification designates the primary use for which project lands are managed. Project lands
23 are zoned for development and resource management consistent with authorized project purposes
24 and the provisions of the National Environmental Policy Act (NEPA) and other Federal laws.
25

26 (1) Project Operations. This category includes those lands required for the dam, spillway,
27 switchyard, levees, dikes, offices, maintenance facilities, and other areas that are used solely for
28 the operation of the project.
29

30 Current acreage: 171.1 acres
31

32 (2) High Density Recreation. Lands developed for intensive recreational activities for the
33 visiting public including day use areas and/or campgrounds. These could include areas for
34 commercial marina concessions and quasi-public development.
35

36 Current acreage: 2,929.9 acres
37

38 (3) Mitigation. This classification will only be used for lands with an allocation of
39 Mitigation and that were acquired specifically for the purposes of offsetting losses associated
40 with development of the project.
41

42 (4) Environmentally Sensitive Areas. Areas where scientific, ecological, cultural or
43 aesthetic features have been identified. Designation of these lands is not limited to just lands that
44 are otherwise protected by laws such as the Endangered Species Act, the National Historic
45 Preservation Act or applicable State statutes. These areas must be considered by management to

1 ensure they are not adversely impacted. Typically, limited or no development of public use is
2 allowed on these lands. No agricultural or grazing uses are permitted on these lands unless
3 necessary for a specific resource management benefit, such as prairie restoration. These areas
4 are typically distinct parcels located within another, and perhaps larger, land classification, area.

5
6 Current acreage: 3,371.7 acres (*from 1976 plan, this area was called 'Natural Areas')

7
8 (5) Multiple Resource Management Lands. This classification allows for the designation
9 of a predominate use as described below, with the understanding that other compatible uses
10 described below may also occur on these lands. (e.g. a trail through an area designated as
11 Wildlife Management.) Land classification maps must reflect the predominant sub-classification,
12 rather than just Multiple Resource Management.

13
14 (a) Low Density Recreation. Lands with minimal development or infrastructure that
15 support passive public recreational use (e.g. primitive camping, fishing, hunting, trails, wildlife
16 viewing, etc.)

17
18 Current acreage: 2,501.8 acres

19
20 (b) Wildlife Management. Lands designated for stewardship of fish and wildlife
21 resources.

22
23 Current acreage: 460.3 acres

24
25 (c) Vegetative Management. Lands designated for stewardship of forest, prairie, and
26 other native vegetative cover.

27
28 (d) Future/ Inactive Recreation Areas. Areas with site characteristics compatible with
29 potential future recreational development or recreation areas that are closed. Until there is an
30 opportunity to develop or reopen these areas, they will be managed for multiple resources.

31 **d. Water Surface Classifications**

32 If the project administers a surface water zoning program, then it should be included in the
33 Master Plan.

34 (a) Restricted. Water areas restricted for project operations, safety, and security
35 purposes.

36
37 Current acreage: 36.2 acres

38
39 (b) Designated No-Wake. To protect environmentally sensitive shoreline areas,
40 recreational water access areas from disturbance, and for public safety.

41
42 (c) Fish and Wildlife Sanctuary. Annual or seasonal restrictions on areas to protect fish
43 and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.

1 (d) Open Recreation. Those waters available for year round or seasonal water-based
2 recreational use.

3
4 Current acreage: 28,288.9 acres

5 **e. Project Easement Lands**

6 All lands for which the Corps holds an easement interest, but not a fee title. Planned use and
7 management of easement lands will be in strict accordance with the terms and conditions of the
8 easement estate acquired for the project. Easements were acquired for specific purposes and do
9 not convey the same rights or ownership to the Corps as other lands.

10
11 (1) Operations Easement. Corps retains rights to these lands necessary for project
12 operations.

13
14 Current acreage: 18 acres

15
16 (2) Flowage Easement. Corps retains the right to inundate these lands for project
17 operations.

18
19 Current acreage: 1,432 acres

20
21 (3) Conservation Easement. Corps retains rights to lands for aesthetic, recreation and
22 environmental benefits.

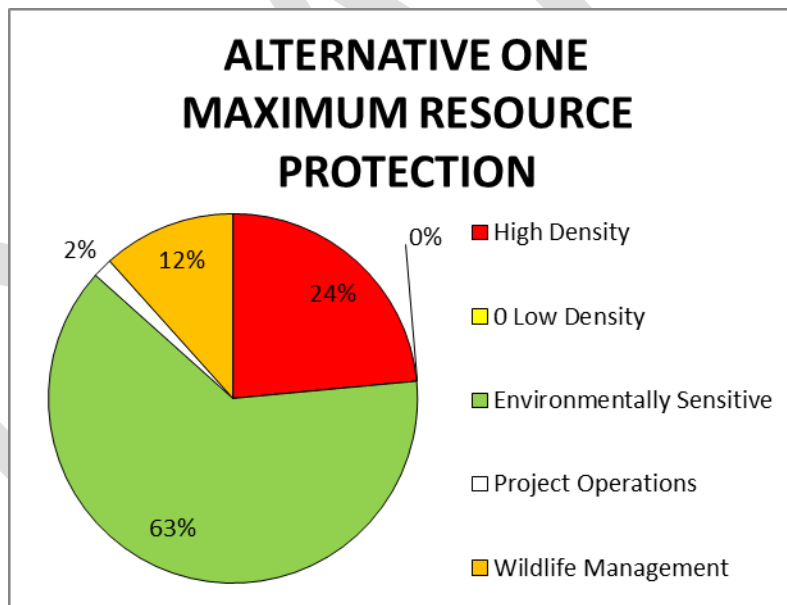
Chapter 5 Resource Plan

This chapter describes in broad terms how project lands and water surface will be managed. For Beaver Lake, the PDT chose the Management by Classification approach as set forth in EP 1130-2-550.

All alternatives are compared against the No Action alternative (in this revision process, Alternative 4 is the No Action alternative). A brief description for each alternative is as follows (a more detailed description is provided in the accompanying Environmental Assessment, Appendix D to this document):

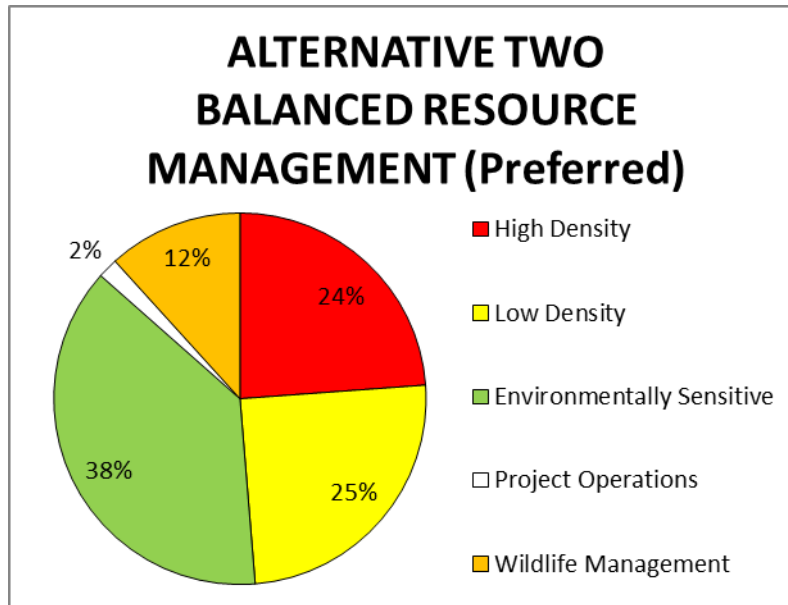
Alternative 1 Maximum Resource Protection

Alternative 1 reclassifies all Low Density lands to Environmentally Sensitive Areas (in comparison to the No Action alternative). Existing permitted shoreline uses are grandfathered and no new shoreline use permits would be issued. Comments received during the Scoping phase were considered, but most were not implemented due to not being feasible under this alternative.



Alternative 2 Balanced Resource Management (Preferred)

Changes from Alternative 4 to Alternative 2 included reclassifying some Low Density lands to Environmentally Sensitive Areas; reclassifying some High Density areas (i.e. future Corps parks) to Wildlife Management. All comments received during both scoping phases were considered and reclassifications were made where feasible.

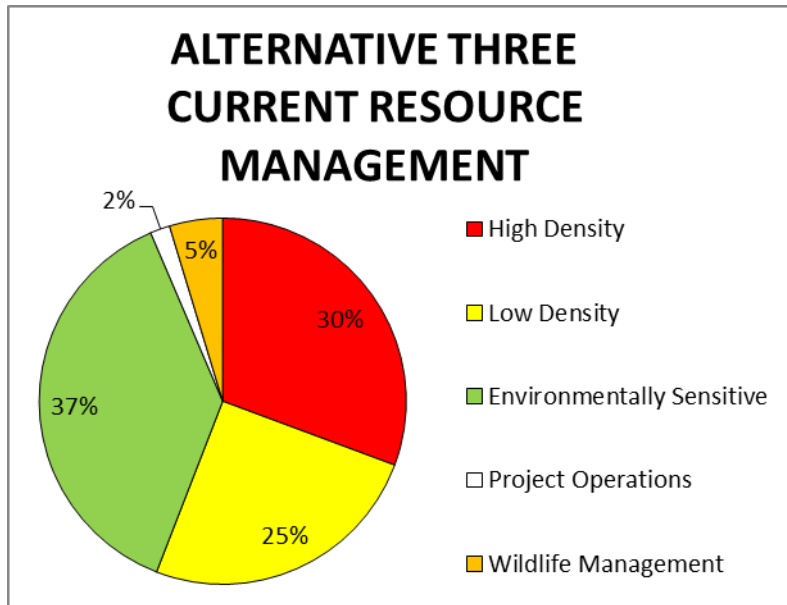


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Alternative 3 Current Resource Management

Under Alternative 3, the land classifications were mapped to reflect current land and resource management practices; agency and public comments received during both scoping phases were considered during the mapping process.

Changes from Alternative 4 to Alternative 3 included reclassifying portions of undeveloped Low Density land to Wildlife Management, Project Operations, or Environmentally Sensitive Area; reclassifying lands that contained active shoreline use permits or Limited Development Areas to Low Density; and lands that had no allocation were classified to match current land use.



1
2

3 **Alternative Four—No Action (1976 Plan)**

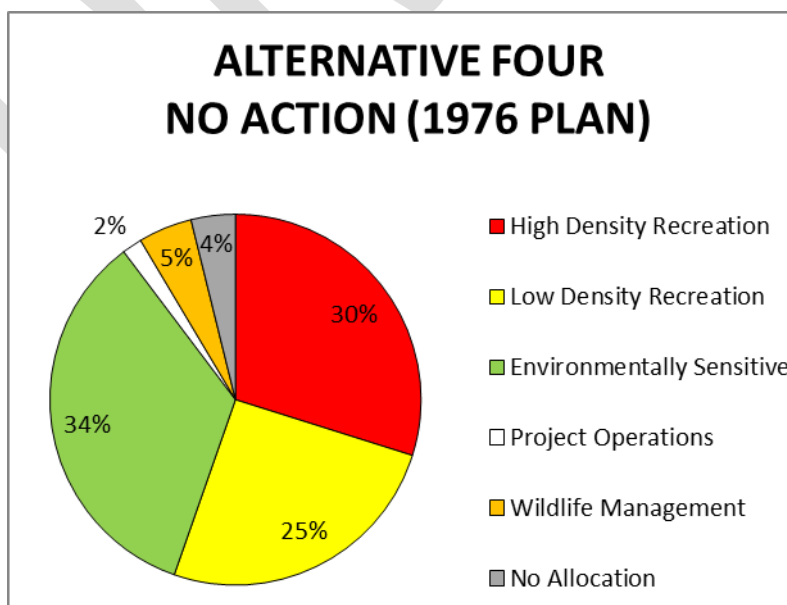
4

5 Under the No Action Alternative, the 1976 Master Plan land use classifications will remain the
6 same and none of the 9,812.6 acres of land around the lake will be reclassified. This alternative
7 will continue to allow for increased land and water based impacts within the Low Density land
8 classification.

9

10 Current land classifications do not accurately reflect the land use activities or resource
11 management of the lake. In addition, this alternative does not address resource management
12 laws, policies, and regulations that were implemented after the 1976 Beaver Lake Master Plan.

13

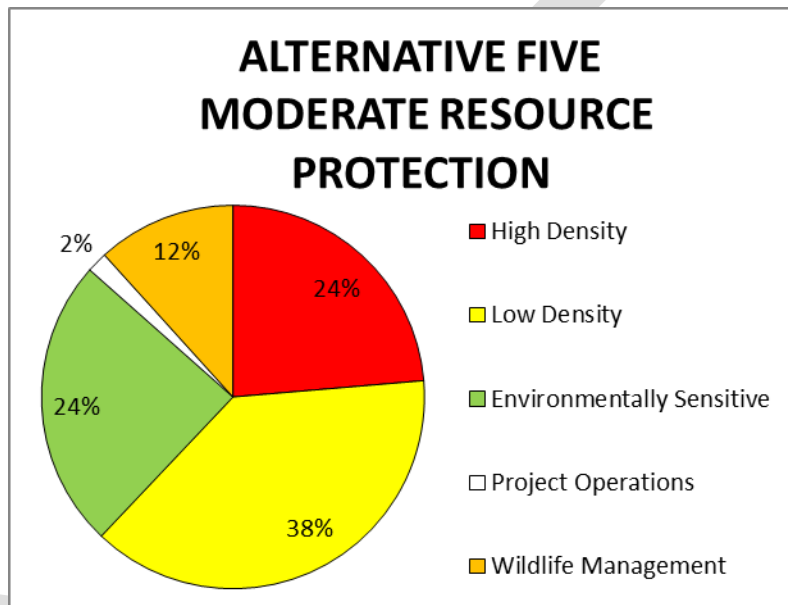


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Alternative 5 Moderate Resource Protection

Alternative 5 has the most potential for growth of private exclusive use (i.e. boat docks and vegetation modification) and passive recreational uses such as trails. Changes from Alternative 4 to Alternative 5 include reclassifying some High Density areas (i.e. future Corps parks) to Wildlife Management; many Environmentally Sensitive Areas were reclassified to Low Density. All comments received during both scoping phases were considered and reclassifications were made where feasible.



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Classification and Justification

The PDT made some general assumptions during the land classification process. Those assumptions include:

- All valid boat dock and vegetation modification permits would be located in the Low Density land classification;
- Past classification lines, legal access point to the Limited Development Area, edges of zoning and shoreline use permits/outgrants/roads, Corps boundary monuments and corners, and terrain such as drainage inlets were used as boundaries between classifications;
- Bluffs and outcroppings were identified based upon 2009 LiDAR data;
- Walking paths could be located in Environmentally Sensitive Area;
- GIS and hard copy permit information and various dated imagery was used to identify dock locations and vegetation modification (mowing).

26 In addition, the PDT considered what the land classification was before (from the 1976 master
27 plan),the feasibility of keeping or changing the land classification with the master plan revision,

1 potential future development needs around the lake, and all agency and public scoping comments
2 received during the public comment period during both scoping phases.
3

4 **Project Operations** land classification includes those lands required for the dam, spillway,
5 switchyard, levees, dikes, offices, maintenance facilities, and other areas that are used solely for
6 the operation of the project.
7

8 *Justification:* On Beaver Lake, the lands classified as Project Operations have been classified by
9 definition. Project Operations classification area associated with Dike 3 was expanded to include
10 the dike in its entirety. An area of Project Operations was reclassified to High Density near Dam
11 Site Riverview park entrance and AGFC Regional offices. Areas adjacent to water intake sites
12 were classified as Project Operations.
13

14 *Resource Objectives:* General Management

15 (Acreage = 170.0 acres or 2 % of Corps land)

16 **High Density Recreation** land classification is for those lands intended to be developed or are
17 currently developed for intensive recreational activities for the visiting public including day use
18 areas and/or campgrounds. These could include areas for commercial marina concessions and
19 quasi-public development.
20

21 *Justification:* There were various undeveloped future-use Corps parks on Beaver Lake that have
22 been reclassified as Wildlife Management Areas. Those areas include:
23

- 24 a. Blackburn Creek (190 acres)
 - 25 b. Bear Island (173 acres)
 - 26 c. Slate Gap (230 acres)
 - 27 d. Pine Top (93 acres)
- 28

29 High Density additions and expansions were made at the following areas:

- 30 a. Dam Site (Peninsula, White Bass Cove, Overlook, Riverview) from Project
31 Operations(13 acres)
 - 32 b. Monte Ne, Horseshoe Bend, Rocky Branch, Starkey, and Hobbs State Park (future
33 recreational improvements) from Low Density(12 acres)
 - 34 c. Prairie Creek (.05 acres) and land adjacent to Hobbs State Park (future recreational
35 improvements) from Environmentally Sensitive (7 acres)
- 36

37 Dam Site Park was subset from the 1976 master plan. The subset names are as follows:

- 38 a. Dam Site (Peninsula)
- 39 b. Dam Site (North Bluffs)
- 40 c. Dam Site (Parker Bottoms)
- 41 d. Dam Site (Riverview)
- 42 e. Dam Site (White Bass Cove)
- 43 f. Dam Site (Island)

1 g. Dam Site (Overlook)

2
3 Alpine – Future – At the writing of this master plan revision, the Corps does not have plans for
4 any development of this park (58 acres). It will remain classified as high density at this time.

5
6 No new future public requests for Limited Development Areas (LDA) in a High Density
7 classification will be granted based upon guidance received to keep private/community use
8 separated from commercial use activities.

9
10 *Resource Objectives:* Recreation, Economic Impacts, General Management

11
12 (Acreage = 2,324.8 or 24% of Corps land)

13 **Mitigation** land classification allows for lands with an allocation of Mitigation and that were
14 acquired specifically for the purposes of offsetting losses associated with development of the
15 project.

16
17 When Beaver Lake was created, no mitigation lands were purchased because it was not a
18 requirement at that time. Therefore, there are currently no lands classified as mitigation land at
19 the Beaver project.

20
21 **Environmentally Sensitive Area (ESA)** land classification is for those land areas where
22 scientific, ecological, cultural or aesthetic features have been identified. Designation of these
23 lands is not limited to just lands that are otherwise protected by laws such as the Endangered
24 Species Act, the National Historic Preservation Act or applicable State statutes. These areas
25 must be considered by management to ensure they are not adversely impacted. Typically,
26 limited or no development of public use is allowed on these lands currently; examples of permits
27 that could be issued are walking paths, specific erosion control measures, and removal of
28 invasive species. Public right-of-ways in the ESA land classification will be considered on a
29 case-by-case basis.

30
31 At Beaver Lake, approximately 0.11% of ESA lands have permitted residential amenities that
32 will be considered for renewal on a case-by-case basis. These areas include shoreline use
33 permits and outgrants.

34
35 No agricultural, grazing, or mowing for residential/commercial uses are permitted on these lands
36 unless necessary for a specific resource management benefit, such as prairie restoration.

37
38 *Justification:* ESA lands are classified as such to preserve the scenic, historical, archaeological,
39 scientific, water quality, or ecological value of the overall project.

40
41 Classification of lands as ESAs took into consideration the location or habitat of threatened,
42 endangered, and state species of concern at Beaver Lake. The classification of ESA also
43 considered locations of significant cultural or historic resource sites, as well as resource
44 protection (i.e. glade restoration areas, fragile habitats) and aesthetics. The ESA classification is

1 also responsive to public comment seeking to keep the lake natural, scenic and to ensure that
2 water quality is maintained for future generations.

3
4 Areas that were previously classified as Natural Areas (from the 1976 Master Plan) and have
5 active boat dock or vegetation modification permits, have been classified as Low Density
6 Recreation.

7
8 The backs of coves, tributaries/inlets, park buffer areas, and bluffs were reclassified to ESA in all
9 feasible areas. All islands are ESA, unless they were classified as Wildlife Management Area in
10 Alternative 2.

11
12 Criteria for existing vegetation modification permits (paths) in ESA (currently, 28 permits): If
13 there is an existing path in ESA, the permit will remain until permittee's property is sold, or
14 transferred, or the current permit expires, after which it would be maintained as an unimproved
15 path authorized by permit. Existing paths will be allowed to remain in their current condition,
16 however will not be allowed to add any materials.

17
18 There are public utilities (i.e. power lines, telephone lines, water lines, etc.) that are found in
19 ESA land classifications; this is taken into account under the "limited development for public
20 use" in ESA. As stated previously, future right-of-ways for public utilities in ESA will be
21 considered and reviewed on a case-by-case basis.

22
23 *Resource Objectives:* Environmental Compliance, Cultural Resource Management, Natural
24 Resource Management

25
26 (Acreage = 3,692.7 or 38% of Corps land)

27
28 **Multiple Resource Management** land classification allows for the designation of a predominant
29 use as described below, with the understanding that other compatible uses described below may
30 also occur on these lands (e.g. a trail through an area designated as Wildlife Management.) Land
31 classification maps must reflect the predominant sub-classification, rather than just Multiple
32 Resource Management. Right-of-ways for public utilities in Multiple Resource Management
33 land classifications will be considered and reviewed on a case by case basis.

34
35 **- Low Density Recreation** land classification includes lands with minimal development
36 or infrastructure that support passive public recreational use (e.g. primitive camping, fishing,
37 hunting, trails, wildlife viewing, shoreline use permits etc.). Low Density Recreation lands may
38 contain Limited Development Areas within the context of the Shoreline Management Plan
39 (SMP) (Note: Distribution of shoreline areas to Limited Development status requires revision of
40 the SMP).

41
42 *Justification:* In areas which had active boat dock permits, outgrants, and vegetation
43 modification (mowing) permits, these areas were classified as Low Density. Adjacent homes
44 without current vegetation modification (mowing) permits were not considered for
45 reclassification to Low Density. "Provisional" dock locations (those docks that were approved in
46 one location, but have since moved due to fluctuating water levels or other reasons) were treated

1 as existing docks and classified to Low Density. Existing public roadways in ESA were given
2 ‘slivers’ of Low Density.

3 In Devil’s Eyebrow, Low Density areas were limited to specific requested sites in response to
4 agency scoping comments.

5
6 All resort lease areas were placed in Low Density land classification. Limited motel/resorts
7 lease areas are quasi-private recreational facilities located on public land, but owned and
8 operated by individuals for commercial purposes. Resorts are located on private property and
9 are operated along with the supporting facilities on outgranted public land. The facilities on
10 public land are open to registered overnight resort guests only. Therefore, all current activities
11 related to limited motel/resorts must comply with the lease and follow the Project's approved
12 Shoreline Management Plan (SMP) and Master Plan to the maximum extent possible. For more
13 information on this type of lease, please refer to SWLR 405-1-16, Real Estate Outgrants, Limited
14 Motel/Resort Leases.

15
16 *Resource Objectives:* Recreation, Economic Impact, Natural Resource Management,
17 Environmental Compliance, Cultural Resource Management, Visitor Information and Education
18
19 (Acreage = 2,426.0 or 25% of Corps lands).

20
21 **- Wildlife Management** land is designated for stewardship of fish and wildlife resources.
22

23 *Justification:* On Beaver Lake, areas which have been classified as wildlife management lands
24 are larger tracts of land and shoreline areas where food plots and other wildlife management
25 activities can be established to supplement and enhance the existing wildlife forage. The areas
26 classified have been determined to contain suitable habitat for native wildlife and will be
27 protected for this purpose. The Arkansas Game and Fish Commission currently leases land and
28 water areas on Beaver Lake for the purposes of Wildlife Management.

29 *Resource Objectives:* Natural Resource Management, Recreation, Environmental Compliance
30
31 (Acreage = 1,143.0 or 12% of Corps lands)

32
33 **- Vegetative Management** land is designated for stewardship of forest, prairie, and other
34 native vegetative cover.

35
36 *Justification:* Some lands adjacent to Devil’s Eyebrow Natural Area are classified as
37 vegetative management. These lands will be managed for the preservation of unique and diverse
38 plant communities.

39
40 *Resource Objectives:* Natural Resource Management, Environmental Compliance
41
42 (Acreage = 56.1 or 2% of Corps lands)

43
44 **-Future or Inactive Recreation Areas** land classification is for those land areas with site
45 characteristics compatible with potential future recreational development or recreation areas that

1 are closed. Until there is an opportunity to develop or reopen these areas, they will be managed
2 for multiple resources.

3
4 The project has no developed recreation areas that have been completely closed. This plan
5 suggests that if future recreation development is needed, this development will be accommodated
6 either within the existing High Density classified land areas or on private property.

7
8 **Water Surface** is for those waters classified for particular purposes when the project administers
9 a surface water zoning program. Beaver Lake did not have water surface classifications in prior
10 master plans.

11
12 **-Restricted** surface waters are restricted for project operations, safety, and security
13 purposes.

14
15 *Justification:* Restricted water surface classifications are areas restricted due to Corps policy for
16 safety and security. These areas include immediately above and below the dam and areas around
17 water intake structures. In addition, it is generally understood that areas near designated swim
18 beaches are considered 'restricted' for swimmer safety.

19
20
21 *Resource Objectives:* General Management

22
23 (Acreage = 80.4; less than 1% of surface water)

24
25
26 **-Designated No Wake** surface waters are established protect environmentally sensitive
27 shoreline areas, recreational water access areas from disturbance, and for public safety.

28
29 Beaver Lake has no water surface area in this classification category; however, it is generally
30 understood (i.e. posted and/or buoyed) and in accordance with state laws that areas near
31 designated boat ramps, bridges, marinas, and other supporting structures are considered 'no
32 wake' for boater safety.

33
34 **- Fish and Wildlife Sanctuary** surface waters are areas where annual or seasonal
35 restrictions on areas to protect fish and wildlife species during periods of migration, resting,
36 feeding, nesting, and or spawning are present.

37
38 Beaver Lake has no water surface areas in this classification category.

39
40 **-Open Recreation Areas** classification is for those waters available for year round or
41 seasonal water based recreation use.

42
43 *Justification:* On Beaver Lake all water surface acres are classified as open recreation, with the
44 exception of restricted areas immediately above and below the dam and areas near water intake
45 structures.

1 *Resource Objectives:* Recreation, Natural Resources Management, Economic Impact, General
2 Management

3
4 (Acreage = 28,244.7; almost 99% of the surface water)

5
6
7 **Project Easement** land classification is for those lands for which the Corps holds an easement
8 interest, but not fee title. Planned use and management of easement lands will be in strict
9 accordance with the terms and conditions of the easement estate acquired for the project.

10 Easements were acquired for specific purposes and do not convey the same rights or ownership
11 to the Corps as other lands. The following types of easements were acquired for the Beaver
12 Project:

- 13 • **Operations Easement.** The Corps retains rights to these lands necessary for project
14 operations (access, etc.).

15 *Justification:* Beaver Lake Project operations easements are generally for road rights-of-way that
16 provide access to project facilities. Road rights-of-way purchased for the relocation of roads
17 inundated by the creation of the project have been disposed of to the appropriate operating
18 authority.

19
20 *Resource Objectives:* General Management, Recreation, Economic Impact, Natural Resource
21 Management

22
23 (Acreage: 17.6 Acres)

- 24
25 • **Flowage Easement.** The Corps retains the right to inundate these lands for project
26 operations.

27
28 *Justification:* The flowage easement estate grants the Government the perpetual right to
29 occasionally overflow the easement area, if necessary, for the operation of the reservoir; and
30 specifically provides that, “No structures for human habitation shall be constructed or maintained
31 on the land [...]”; and provides further that, “No other structures of any other type shall be
32 constructed or maintained on the land except as may be approved in writing by the representative
33 of the United States in charge of the project.”

34
35 The flowage easements acquired for the operation of Beaver Lake Project are typically
36 applicable to that portion of the described property lying between the GFTL and elevation 1135
37 m.s.l. (National Geodetic Vertical Datum) or up to elevation 1148 m.s.l. on the White River and
38 up to elevation 1144 m.s.l. on War Eagle Creek. I

39 *Resource Objectives:* General Management

40
41 (Acreage: 1,431.7 Acres)

- 1 • **Conservation Easement.** The Corps retains the rights to lands for aesthetic,
2 recreation, and environmental benefits.
3

4 There are currently no known lands classified as conservation easement lands on Beaver Lake.

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1 Chapter 6 Special Topics/Issues/Considerations

2
3 This chapter discusses the special topics, issues, and considerations the Project Delivery Team
4 identified as critical to the future management of Beaver Lake. Special topics, issues, and
5 considerations are defined in this context as any problems, concerns, and/or needs that could
6 affect or are affecting the stewardship and management potential of the lands and waters under
7 the jurisdiction of the Little Rock District, Beaver Lake Project Office Area of Responsibility
8 (AOR). For simplicity, the topics are discussed below under generalized headings.

9 a. Water Supply Intake Structures

10
11 There are currently four water districts that use Beaver Lake for water supply. They are Beaver
12 Water District, Carroll-Boone District, Madison County District and the Benton/Washington
13 Regional Public Water Authority. Beaver Lake is the drinking water source for 420,000
14 Arkansans, and is located in Benton, Carroll, and Washington counties in the Ozark Highlands of
15 northwest Arkansas, on the headwaters of the White River. As the principal water supply for the
16 Northwest Arkansas region, the lake is recognized as a lifeline for current citizens and
17 businesses, and for the projected growth of the region. The Beaver Lake watershed is 1,192
18 square miles in area, and primarily includes portions of Benton, Carroll, Madison, and
19 Washington counties along with 17 incorporated municipalities. A small portion of the
20 watershed is located in Crawford and Franklin counties to the south. The lake itself is
21 approximately 44 square miles in surface area and has an average depth of 60 feet throughout,
22 and contains on average 539 billion gallons of drinking water.

23
24 For purposes of this master plan revision, the PDT has classified the water surface within a
25 minimum of 300 feet of all intake structures as “Restricted”. Additionally, the land associated
26 with these intake structures is classified as “Project Operations”. Water districts are responsible
27 for restricting access into these areas.

29 b. Devil’s Eyebrow

30
31 Devil's Eyebrow Natural Area is located at the northern end of Beaver Lake along Indian Creek
32 and its tributaries. The terrain is rugged and steep, consisting of deep, bluff-lined hollows
33 separated by steep ridges. Much of the area is underlain by alternating layers of chert and
34 limestone that include caves and many springs. Plant communities are diverse and include high
35 quality glades, woodlands, bluffs, rich hardwood forests, and riparian forests. Devil's Eyebrow
36 supports one of the highest concentrations of rare plant species in Arkansas with several species
37 typically found far to the north and others that are restricted in distribution and considered
38 globally rare. The Arkansas Game and Fish Commission (AGFC) and the Arkansas Natural
39 Heritage Commission (ANHC) share undivided fee title and co-manage this natural area.

40
41 The U.S. Army Corps of Engineers currently owns approximately 83 acres of land adjoining the
42 Devil’s Eyebrow Natural Area. The managing state agencies have requested a lease to manage
43 adjacent government property concurrently with the natural area. The Corps shares the goals and

1 objectives for managing the unique and diverse plant species with the ANHC and the request is
2 under consideration.

3 **c. Hobbs State Park**

4
5 The Hobbs State Park – Conservation Area (HSP-CA) is managed jointly by the Arkansas
6 Department of Parks and Tourism, the Arkansas Natural Heritage Commission, and the Arkansas
7 Game and Fish Commission. HSP-CA consist of several tracts totaling 12,056 acres that adjoins
8 Beaver Lake shoreline for approximately 22-miles. This park's landscape consists of plateaus,
9 ridges, valleys, and streams featuring an upland forest of oak, hickory and pine. Many water
10 features including disappearing streams, springs and seeps have carved the many hollows in this
11 fragile limestone landscape and created cave-related features including numerous sinkholes.

12
13 The Corps has approximately 327 acres adjoining HSP-CA. Approximately 18 acres were
14 classified as “High Density” based on future recreational development plans of the Arkansas
15 Department of Parks and Tourism. Most of the remaining land was classified as “Environmentally
16 Sensitive” to be consistent with the current management efforts of Hobbs State Park.

18 **d. Monte Ne**

19 The current site of Monte Ne includes about five acres of USACE fee land along the west side of
20 Beaver Lake. Approximately five miles southeast of the city of Rogers, the area retains a
21 decidedly rural character, although many houses and summer cottages now line the lake and dot
22 the surrounding hillsides. Known structural remnants at the site include the masonry foundation
23 ruins of the resort’s three main hotels constructed at the resort, along with another hotel that was
24 never completed. In addition to foundation ruins, standing structures still mark the locations of
25 two hotels: Missouri Row and Oklahoma Row. A two-story concrete fireplace remains at
26 Missouri Row, and a much more substantial three-story concrete building or “tower” is at
27 Oklahoma Row. Other significant features of old Monte Ne still exist at least partially intact
28 under the lake. The most substantial of these, a concrete amphitheater, peaks above the lake
29 when water levels are low.

30
31 The U.S. Army Corps of Engineers, Little Rock District (USACE) faces a complexity of
32 management issues at Monte Ne, in large part due to the lack of maintenance and protection
33 afforded the structures, foundation ruins and grounds for over 50 years. One major management
34 issue of concern is the need to alleviate the numerous hazards to public safety at the site, and in
35 particular those in evidence at its most prominent architectural feature, the Oklahoma Row
36 tower. Open without windows and doors and no restrictions to access (until recently), the tower
37 became a lure for curious visitors and a host of illicit and often dangerous activities as well as
38 numerous acts of vandalism. Such intrusions are aided by the dense and unkempt cover of trees
39 and understory vegetation that blankets the site. Periodic exposure to high lake waters has also
40 contributed to the deteriorated and dangerous conditions at Oklahoma Row, especially the
41 foundation ruins. The USACE has proposed removal of the tower and ruins as a means to
42 address some of the safety concerns at Monte Ne. The proposal to remove the Tower/Oklahoma
43 Row remains requires careful consideration. More specifically, the USACE must consider
44 alternatives to avoid adverse effects in consultation with the Arkansas State Historic Preservation
45 Officer (SHPO) and other potential stakeholders.

1 **e. Re-classification of High Density**

2 High density areas that are currently undeveloped were evaluated to assess their future
3 development potential. The following areas were deemed to have either limited potential for high
4 density recreation or are currently being managed for wildlife: Bear Island, Blackburn Creek,
5 Pine Top, and Slate Gap. These areas were re-classified as Wildlife Management.
6

7 Due to the growth potential for Northwest Arkansas the following undeveloped/partially closed
8 High Density areas were retained: Alpine, Blue Springs and Ventris. These areas have access
9 roads and are located near potential growth corridors.

10 **f. Carrying Capacity Study**

11 During the summer of 2016, a recreational boating carrying capacity study was completed on
12 Beaver Lake, Arkansas for the Little Rock District of the U.S. Army Corps of Engineers
13 (USACE). This study characterizes current boating lake use during peak boating periods and
14 boaters' perspectives on safety and crowding at the lake. The primary focus of the study is to
15 evaluate existing recreational use and users' perspectives against carrying capacity ranges
16 researched and developed specifically for the Beaver Lake setting.

17 To establish the current (2016) summer recreational boating use profile for Beaver Lake, a field
18 survey was conducted consisting of coordinated aerial and ground surveys. The results and
19 analysis from these surveys recommended a lake-wide range of 10 to 20 acres per boat
20 developed using the WALROS methodology and the Observed Peak Boat Density of 16.8
21 useable acres per boat, Beaver Lake has currently reached but not exceeded the recommended
22 carrying capacity during peak use times.
23

24 The lake was broken up into zones for study purposes. Zones 1, 3, and 4 peak boating densities
25 indicate boating activities have reached but not exceeded the recommended ranges of carrying
26 capacity. Zone 2 exceeds the suggested benchmark carrying capacity range, with an estimated
27 peak density of 12 acres per boat compared to a suggested carrying capacity range of 14 to 17
28 acres per boat. Zone 5 was found to be underutilized, with an estimated peak summer density of
29 34 acres per boat.
30

31 **g. Water Management and Flood Risk Management**

32
33 Six White River Basin lakes are operated together as a system to reduce the frequency and
34 severity of floods. These lakes are Beaver, Table Rock, Bull Shoals, Norfolk, Greers Ferry and
35 Clearwater. Beaver, Table Rock and Bull Shoals lakes are in a row along the main stem of the
36 White River in Arkansas and Missouri. Norfolk Lake is on the North Fork River, which empties
37 into the White River near the town of Norfolk in north central Arkansas. Clearwater Lake is on
38 the Black River near Piedmont, Missouri. The Black River's confluence with the White River is
39 near Jacksonport, Arkansas. Greers Ferry Lake is on the Little Red River near Heber Springs,
40 Arkansas. The Little Red's confluence with the White River is near Georgetown, Arkansas.
41 Flood Risk Management is a primary purpose of the White River Basin lakes. These lakes were
42 among dozens Congress authorized the Corps of Engineers to build in the Mississippi River
43 Valley to reduce flood damage and loss of life. This was primarily in response to the great flood
44 of 1927, which swelled rivers across the entire Mississippi River Valley. That year incessant

1 rainfall soaked 31 states and two Canadian provinces. This and subsequent floods in the 1930s
2 and 1940s prompted legislation that led to construction of the Corps dams in the White River
3 Basin. These lakes also work in conjunction with a system of levees, which provide additional
4 reduction in flood damages. Since they were constructed, the White River Basin lakes and levees
5 have prevented an estimated \$1 billion in flood losses.

6
7 Flood risk management lakes work by capturing runoff in their ‘flood pools’ during heavy rain.
8 After rivers downstream begin receding, water is released in a controlled fashion following pre-
9 determined ‘operating plans’. Without the lakes, all that water would roll downriver at one time.
10 Flood crests would rise higher and spread over more land, thus causing more damage and
11 possibly loss of life. The water stored in the flood pool must be evacuated in preparation for the
12 next storm as quickly as downstream conditions permit without creating additional flooding. The
13 difficulty with repeated rain is engineers are not always able to release all the water captured in
14 the flood pool between rains. This can cause lake levels to rise with each new rainfall. When that
15 occurs, it can sometimes take many months to empty the huge volumes of water from the flood
16 pools and return all the lakes to their ‘conservation pools’. It is worth noting the lakes are not
17 intended to prevent all flooding. The lakes have limitations that Mother Nature can exceed, and
18 from time to time does. Therefore, downstream property owners should be judicious in how they
19 develop land within the flood plains. Floods are not as frequent because of the dams, and when
20 they do occur, they are typically not as severe as they were before the dams were built. But there
21 will still be occasions when significant floods occur downstream of these dams. Planting crops
22 on land that floods on occasion might be profitable in the long run. Building a home or business
23 on that same land might not be. Farming, running a business, or having a home in the flood plain
24 of a river is a risk that each landowner accepts.

25
26 When Congress instructed the Corps to build the White River Basin lakes, they also told the
27 Corps to include storage for hydroelectric power generation at five of them; Clearwater Lake
28 does not have hydropower. Water supply storage was also included at Beaver Lake, and
29 Congress gave the Corps authority to reallocate limited amounts of storage in each lake for
30 additional water supply. The storage space that holds water for hydropower generation and water
31 supply primarily comprises what is referred to as the ‘conservation pool’. Basically, the
32 conservation pool creates the lakes and provides the ancillary recreational opportunities. In
33 recognition of these opportunities, Congress also instructed the Corps to provide public access at
34 each lake, which led to the construction of Corps parks.

35
36 While Congress and the Corps recognize the value in recreation, the White River Basin lakes
37 were built to store water for hydropower and water supply during average weather and to store
38 floodwater during wet weather. Therefore, the lake levels are weather dependent. Levels can
39 range from very high during abnormally wet weather to very low during drought. This is how the
40 lakes were designed, and it is how they provide benefits to repay the taxpayer investment in
41 them. Just this decade, weather patterns have created both drought (2005-2007, 2012) and flood
42 conditions (2008, 2009, 2011, 2015 and 2017).

43 The Corps has had many requests to keep the lake levels more steady during the recreation
44 season, but the Corps does not have the legal authority to manage lake levels for recreation. The
45 Corps is bound under the law to follow the White River Water Control Plan, which dictates how
46 the system is operated.

1
2 The White River Water Control Plan has a lengthy history. In 1942, the Basis of Design for
3 Definite Project Report was developed, which included the original studies for the method of
4 operation for Bull Shoals and Norfolk. This report helped establish the size of the flood and
5 conservation pools in each lake. In 1952, the Plan of Flood Regulation for Bull Shoals and
6 Norfolk Reservoirs was developed. This report described the proposed plan of regulation for
7 Bull Shoals and Norfolk. In 1954, the Master Manual for Reservoir Regulation of the White
8 River Basin was first developed. This described the operating criteria for Bull Shoals, Norfolk,
9 and Greers Ferry. In 1963, the Reservoir Regulation Manual for Beaver, Table Rock, Bull
10 Shoals, and Norfolk Reservoirs was developed. This was revised in 1966. In 1993, the Master
11 Manual for Reservoir Regulation for White River Basin was developed. No changes to the Water
12 Control Plan were made, only basin conditions were updated. The economic analysis showed
13 that changing the allocation of storage for purposes other than flood control, hydropower, or
14 water supply was not economically justified. After years of additional study, a revision was made
15 in 1998 to the water control plan that lowered the regulating stages on the White River during the
16 growing season.

17
18 Rainfall amounts and consumer electricity demand are the keys that dictate the releases from a
19 White River dam, which are made primarily through power generation, and, if needed, through
20 spillway gates, or conduits. At times, water may be released through all three. In 2005, 2006,
21 2007, and again in 2012, the basin had below normal rainfall resulting in significant drought.
22 Because there was less water coming into the lakes, there was less water released from the dams,
23 but some power generation was still necessary to meet consumer demands for electricity.
24 Therefore, most lakes experienced lower lake levels. By comparison, 2008, 2009, and 2011
25 were wet, flood-producing years, and with so much water coming into the lakes, lake levels
26 remained high much of the time until all the stored floodwater could be released in a controlled
27 fashion according to the Water Control Plan.

28
29 Conditions in the lake and conditions downstream of the dam also help dictate releases. When a
30 lake is in its conservation pool, Southwestern Power Administration (SWPA) determines the
31 releases within certain limits. They are subjected to 7-day and 28-day drawdown limits, along
32 with having a minimum release requirement to ensure survival of fish species downstream
33 during the warm months. SWPA is also subject to maximum release limits based on downstream
34 conditions during high water. The maximum release is determined by the Corps' Water Control
35 Plan. Since the lakes are operated as a system, it gets still more complex. For instance, Beaver
36 Lake releases are determined by conditions in Table Rock and Bull Shoals lakes downstream.
37 Below Bull Shoals, Norfolk and Greers Ferry lakes, releases are determined based on river levels
38 miles downstream of the dams. The Corps will release water stored in the flood pools of Bull
39 Shoals and Norfolk based on the White River stage at Newport to empty the lakes as quickly as
40 possible. Both the Corps and SWPA are following the missions entrusted to them under the law.
41 The water control plan, simply stated, says releases from Beaver are dependent upon the
42 elevation in Table Rock and Bull Shoals Lakes; releases from Table Rock are dependent upon
43 the elevation in Bull Shoals Lake; and releases from Bull Shoals and Norfolk are dependent
44 upon the seasonal regulating stage at Newport, Arkansas. Release criteria for the lakes were
45 developed more specifically based upon the pool elevation, pool elevation of downstream lakes,

1 the time of year, and downstream river conditions. Bull Shoals and Norfolk releases are sized
2 based on the following criteria:
3 From 1 December through 14 April - Regulate to 21 feet except, if a natural rise exceeding 21
4 feet occurs, regulate to the lesser of the observed crest or 24 feet.
5 From 15 April through 7 May - Regulate to 14 feet except, regulate to 21 feet, from 15 April
6 through 30 April, and 18 feet, from 1 May through 14 May, if the four-lake system storage
7 exceeds 50% full.
8 From 8 May through 30 November - Regulate to 12 feet except, regulate to 14 feet from 15 May
9 through 30 November, if the 4-lake system storage exceeds 70% full.
10 Release a minimum of firm power and in extreme cases zero if a significant reduction in critical
11 immediate downstream flood conditions is possible.
12 Prorate the flood control releases between Bull Shoals and Norfolk to maintain equal
13 percentages of available flood control storage in NF and the BV-TR-BS.
14 Release a maximum of 32,500 cfs from BS and 10,500 cfs from NF subject to a 50,000 cfs flow
15 limit at Batesville.

16
17 Curtail secondary power generation 'releases exceeding firm power' until six days after the crest
18 at Newport. Secondary power releases should provide that stages above the regulating stage
19 continue to recede until the regulating stage is reached. While lowering lake levels in the winter
20 to prepare for spring rains does in effect increase the size of the flood pool, at the same time it
21 takes away from hydropower and water supply storage. The Corps does not have legal authority
22 to do this. The current allocation of storage for flood risk management was approved by
23 Congress. Changing that allocation would require Congressional action. Also, that is a very risky
24 action because there is no way to forecast long-range how much or how little rain will fall. If the
25 Corps artificially lowered lake levels in the winter and spring rains did not come, a shortage of
26 water to generate electricity, meet the needs of water utilities or provide viable recreation
27 opportunities could ensue. The water supply and power users pay for that storage. If the drought
28 progressed, instead of recovering, lake levels could continue to drop and cause an extreme water
29 shortage.

30
31 Regulation during storm periods is based on runoff predicted from the rain that has occurred and
32 can be measured. Rainfall forecasts are not sufficiently accurate to base operational decisions on
33 them. Because rainfall forecasts are inaccurate, pre-releasing would put downstream users at risk
34 if rain developed in the uncontrolled areas instead of upstream of the dam. Conversely, we are
35 also asked by some users to stop releases from the dams before a rainfall begins. This can also
36 cause issues since we would be holding water in the flood pool, which lessens our ability to
37 reduce peak downstream flows from large rainfall events.

38 Analysis of over 60 years of hydrologic data has proven that major floods develop from the
39 accumulation of storage in the lakes from persistent, repeated rain storms that do not allow
40 enough time in between to evacuate flood storage. In other words, flood storage is most always
41 filled at the lakes by several smaller storms rather than by one large storm. So using that long-
42 term perspective, the Corps prepares for the future by making releases whenever possible any
43 time flood storage is in use.

44
45 As the White River basin has developed, the request for operations keyed to specific interests has
46 intensified, and at times these requests are for conflicting operations. Farmers request lower river

1 stages; navigation interests request sustained rivers stages; downstream fisheries want sustained
2 cold water releases; hydropower interests would like sustained high pool levels; those concerned
3 with downstream flood control would like low pool levels; still others would like constant pool
4 levels. The water control plan managed by the Corps is a compromise to distribute the benefits
5 fairly among all stakeholders.
6

7 It is a matter of balancing flood storage among the lakes in this interconnected system to best
8 prepare for a variety of scenarios if more rain falls. This is a key part of the water control plan. It
9 helps to understand that Bull Shoals Lake has more than twice the flood storage capacity of
10 Beaver and Table Rock combined. The flood pool at Bull Shoals is 41 feet deep. By comparison,
11 the flood pool at Table Rock is only 16 feet deep, and Table Rock Lake is much smaller than
12 Bull Shoals. Let's say we've had heavy rain and Bull Shoals is 15 ft high. It still has more than
13 two-thirds of its flood storage capacity available to capture more rain runoff. When Table Rock
14 Lake is 15 feet high, it is 99 percent full and a fairly small rain event could cause it to spill and
15 flood homes and businesses downstream. So we would allow Table Rock Lake to release some
16 of its flood pool first.
17

18 The Corps attempts to balance the percentage of flood storage available in the three lakes on the
19 main stem of the White River (Beaver, Table Rock, and Bull Shoals) with the percentage of
20 flood storage available in Norfolk. This better ensures the full use of available flood storage
21 when needed. Computer simulations of 60 years of river data show that maintaining equal
22 percentages of available flood storage between the 3-lake sub-system and Norfolk Lake best
23 provides flood risk management to the lower White River valley. What do we mean by balance?
24 If Norfolk is using 85 percent of its flood storage capacity, we make releases trying to balance
25 the average flood storage capacity in use at 85 percent across Beaver, Table Rock and Bull
26 Shoals. This does not mean we try to hold each of these three lakes at 85 percent full, it is the
27 average among these three lakes. Keep in mind, Beaver provides supplemental storage for Table
28 Rock and is much smaller. Table Rock protects homes and businesses immediately downstream
29 of the dam. Bull Shoals Lake is larger than Beaver and Table Rock combined and has more than
30 double the flood storage capacity. Bull Shoals works with Norfolk Lake to reduce flood peaks in
31 the lower White River Valley. For example, holding flood water in Beaver's flood pool when
32 there is flood control storage in use at Table Rock and/or Bull Shoals provides the additional
33 flood storage for Table Rock. The result is generally that Beaver Lake fills first and empties last.
34 The releases from Beaver Lake are limited to 1,000 cubic feet per second daily average release
35 when either Table Rock or Bull Shoals is more than 2 feet into the flood pool. Once the current
36 pool elevations for both Table Rock and Bull Shoals are within 2 feet of their conservation pool
37 elevation, releases can be increased from Beaver Lake. Evacuating storage from Table Rock
38 provides the maximum downstream protection and ensures that if rain continues, Table Rock and
39 Bull Shoals will be in balance as both begin reaching their maximum capacities.
40

41 The Corps has a water management Website at www.swl-wc.usace.army.mil. Real-time data,
42 project operating data, and daily reports are a few of the items available. Also, the White River
43 Water Control Plan is available on this site. In addition, our personnel make annual presentations
44 to local elected officials and emergency managers from jurisdictions along the rivers. At other
45 times, presentations are made to various stakeholder groups at their request. The Reservoir

1 Control staff also fields numerous phone calls from the general public, media, and congressional
2 staffs throughout the year.

3
4 During the large floods in 2008 and 2011, the six lakes working in conjunction with levees
5 downstream in the river basins prevented an estimated \$230 million in flood damage, working
6 exactly as they were designed. Even though some of the lakes filled to record levels during either
7 of both events, peak discharges downstream were actually tempered by operating the spillway
8 gates. When the spillway gates were opened, they temporarily created or induced additional
9 flood storage because water could be stored to a higher level. Since the flow coming into the lake
10 was greater than the amount released, the lake rose while the downstream flood peak was
11 reduced.

12 For instance at Beaver Lake in 2008, the peak flow coming into the lake was 110,000 cubic feet
13 per second, but the peak flow released at the dam was only 92,400 c.f.s. During the flooding in
14 2011 at Table Rock, the flow coming into the lake was over 200,000 cubic feet per second for 36
15 consecutive hours. The peak flow released from Table Rock was 69,000 c.f.s. The 2011 event set
16 a couple of records at Bull Shoals Lake with record pool of 696.5' and a record release rate of
17 53,000 c.f.s. Maximum inflow into Bull Shoals for 6 hours was over 340,000 c.f.s and maximum
18 1 hour inflow was over 436,000 c.f.s. Norfolk Lake made a large spillway release in 2008. Peak
19 inflow to Norfolk was about 115,000 cubic feet per second and the peak flow released was
20 81,700 c.f.s. Although the releases from each dam were many more times larger than the
21 'typical' hydropower release, the dams performed exactly as designed by reducing the peak flow
22 released into the White River basin, which lessened the extent of downstream flooding and
23 undoubtedly contributed to saving lives.

24 25 **h. Dock Building Locations**

26 The Corps recognizes dock building and repair businesses are necessary on Beaver Lake, as the
27 SMP allows for issuing of boat dock permits. In 2003, Beaver Lake implemented a requirement
28 that boat dock builders build docks only at "shared" designated locations around the lake or on-
29 site. Prior to constructing, all builders are required to sign an agreement with the Corps
30 establishing terms and conditions of using the shared sites. This requirement has been beneficial
31 in regard to lessening the number of complaints.

32 33 **i. Encroachments and Trespasses**

34 Encroachments and trespasses, are a long-standing issue in the management of Beaver Lake. The
35 relatively small land base acquired for project construction (note: the land base is small when
36 compared to other comparably sized lakes) allows for home and other structures construction
37 near the water. This proximity of development to the water's edge has resulted in buildings
38 frequently being constructed on Federal lands and easements as well as frequent acts of trespass
39 involving unauthorized removal of trees, mowing, trail constructions, and placement of personal
40 property on public land. The Corps will continue to pursue removal of all encroachments and to
41 potentially prosecute those engaged in acts of trespass.

42
43 For the purpose of this master plan revision, and following existing encroachment and trespass
44 policies and regulations, no individual permits will be issued to permittees that have active
45 encroachments or trespass concerns.

1 **j. Shoreline Moratorium**

2 The Little Rock District implemented a moratorium on shoreline activity requests, including
3 private dock and vegetation modification requests, in February 2015. The moratorium was put
4 into place so that a baseline number of permits and docks could be determined for the master
5 plan revision. During the process of the revision, new facilities/permits were not allowed on the
6 project so that the number of permits would remain constant, allowing the team to complete the
7 new revision without changing conditions on the lake and to prevent processing actions which
8 may not align with the revised master plan. The moratorium was a necessary element of the
9 process and enabled the team to perform shoreline activity analysis of the lake while it was in a
10 static condition.
11

DRAFT

1 Chapter 7 Agency and Public Coordination

3 a. Introduction

4 No single agency has complete oversight of stewardship activities on the public lands and waters
5 surrounding Beaver Lake. Responsibility for natural resource and recreation management falls
6 to several agencies that own or have jurisdiction over these public lands and waters.

7
8 Increasingly, competition for the use of these lands and waters and their natural resources can
9 create conflicts and concerns among stakeholders. The need to coordinate a cooperative
10 approach to protect and sustain these resources is compelling. Many opportunities exist to
11 increase the effectiveness of Federal programs through collaboration among agencies and to
12 facilitate the process of partnering between government and non-government agencies.
13 To sustain healthy and productive public lands and waters with the most efficient approach
14 requires individuals and organizations to recognize their unique ability to contribute to
15 commonly held goals. The key to progress is building on the strengths of each sector, achieving
16 goals collectively that could not be reasonably achieved individually. Given the inter-
17 jurisdictional nature of Beaver Lake, partnering opportunities exist and can promote the
18 leveraging of limited financial and human resources. Partnering and identification of innovative
19 approaches to deliver justified levels of service defuse polarization among interest groups, and
20 lead to a common understanding and appreciation of individual roles, priorities, and
21 responsibilities.

22
23 To the extent practical, this Master Plan and a proactive approach to partnering will position
24 Beaver Lake to aggressively leverage project financial capability and human resources in order
25 to identify and satisfy customer expectations, protect and sustain natural and cultural resources
26 and recreational infrastructure, and programmatically bring Corps management efforts and
27 outputs up to a justified level of service.

28
29 Public involvement and extensive coordination within the Corps of Engineers and with other
30 affected agencies and organizations is a critical feature required in developing or revising a
31 Project Master Plan.

32
33 Agency and public involvement and coordination has been a key element in every phase of the
34 Beaver Lake Master Plan revision.

35 b. Scoping

36 As part of the initial phase of the environmental process, an agency scoping meeting was held on
37 March 9, 2015. Three public scoping open houses were hosted on March 10-12, 2015 to gather
38 public comments on the MP revision process and issues that should be examined as part of the
39 environmental analysis. The open houses also provided the public an opportunity to ask
40 questions and get more information about the current MP and the revision process. The process
41 of determining the scope, focus, and content of a NEPA document is known as “scoping.”
42 Scoping is a useful tool to obtain information from the public and governmental agencies.

1 In particular, the scoping process was used as an opportunity to get input from the public and
2 agencies about the vision for the MP update and the issues that the MP should address. Open
3 house attendees were provided a comment card that asked for responses to specific questions in
4 addition to providing general comments about the plan and the environmental review. The
5 specific questions included:

- 6 • How would you like to see Beaver Lake in 20 years?
- 7 • What about Beaver Lake is most important to you?
- 8 • What about Beaver Lake is least important to you?
- 9 • What changes, if any, would you like to see at the lake?

10 USACE published notice of the scoping meetings through an email blast, a direct mail postcard,
11 press releases, display ads in several regional and local papers, and announcements on the
12 Beaver Lake Master Plan webpage, the Beaver Lake Facebook page, and the Little Rock District
13 Facebook page. The postcard notice and email blast were sent to landowners adjacent to
14 USACE-owned lands around the lake, dock permit holders, marina and resort owners, dock
15 builders, National Recreation Reservation Service (NRRS) customers, and local area fishing
16 permit licensees. Postcards were sent to those for whom only a postal address was available; all
17 others received the email notice. Agency coordination letters were sent to potentially interested
18 resource agencies with regulatory authority inviting requesting their participation in the process.
19 The 30-day comment period was held from March 2 to April 3, 2015. Agencies, community
20 groups, members of the public, and other interested parties submitted 403 letters, e-mails,
21 comment cards, and faxes or made oral comments at an open house during this period.

22
23 A final scoping report documenting and analyzing all comments submitted to the Corps was
24 completed by CDM Smith in September 2015.

25
26 As noted earlier, the PDT recommended and received approval to initiate the shoreline
27 management plan update process concurrently with the master plan revision process at Beaver
28 Lake in September 2015. In doing so, the team recognized a ‘rescoping’ for both plans would be
29 required.

30
31 To continue the process and ‘rescope’, an agency scoping workshop was held on March 17,
32 2016. Three public scoping workshops were hosted on March 15-17, 2016 to gather public
33 comments on the combined MP and SMP revision process and issues that should be examined as
34 part of the environmental analysis. The workshops also provided the public an opportunity to ask
35 questions and get more information about the current MP and SMP and the revision process.

36
37 Comments submitted to USACE during both sets of scoping workshops were considered
38 together in developing alternatives and guiding the environmental analysis of proposed revisions
39 to both plans.

40
41 The rescoping process was used as an opportunity to get input from the public and agencies
42 about the vision for the MP and SMP updates and the issues that the MP and SMP should
43 address. Workshop attendees were provided a comment card that asked for responses to specific
44 questions in addition to soliciting general comments about the plans and the environmental

1 review. The comment card advised people that all comments previously submitted would
2 continue to be considered. The specific questions included:

- 3 • Please provide your comments and suggestions on items to update in the Beaver Lake
4 SMP.
- 5 • How would you like to see Beaver Lake in 20 years?
- 6 • What changes, if any, would you like to see at the lake?
- 7 • What about Beaver Lake is most and least important to you?

8 USACE published notice of the scoping workshops through an email blast, a direct mail
9 postcard, press releases, display ads in several regional and local newspapers, and
10 announcements on the Beaver Lake MP/SMP webpage and the Little Rock District Facebook
11 page. The postcard notice and email blast were sent to landowners adjacent to USACE-owned
12 lands around the lake, dock permit holders, marina and resort owners, dock builders, National
13 Recreation Reservation Service (NRRS) customers, prior commenters from the 2015 Master Plan
14 comment period, and local area fishing permit licensees. Postcards were sent to those for whom
15 only a postal address was available; all others received the email notice. Agency coordination
16 letters were sent to resource agencies with regulatory authority requesting their participation in
17 the process.

18
19 USACE accepted comments on both the Beaver Lake MP Revision and Beaver Lake SMP
20 Update throughout the entire scoping comment period from March 7 through April 8, 2016.
21 Agencies, community groups, members of the public, and other interested parties submitted 268
22 letters, emails, comment cards, and faxes or made oral comments at a workshop during this
23 period.

24
25 A final rescoping report documenting and analyzing all comments submitted to the Corps was
26 completed by CDM Smith in May 2016.
27

28 **c. Focus Groups**

29 Focus groups were used during other master plan and shoreline management plan revision
30 processes at other lake projects within the Little Rock District. While the discussions and
31 comments from the focus groups provided some insight and understanding in viewpoints outside
32 of the Corps; however the focus group process appeared to polarize and represent only a small
33 population of the public's opinion at large. A decision was made that public comment periods
34 and workshops more accurately captured the public's viewpoints and opinions; therefore, focus
35 groups for future master plan and shoreline management plan revision processes will not be
36 utilized.
37

38 **d. Draft Master Plan/Draft Environmental Assessment**

39 The draft release of the Beaver Lake Master Plan and associated documents is scheduled for
40 March 2018.

1 **e. Final Master Plan/Final Environmental Assessment**

2 The final release of the Beaver Lake Master Plan and associated documents is scheduled for
3 summer 2018.

DRAFT

1 Chapter 8 Summary of Recommendations

3 a. Summary Overview

4 The proposals made in previous chapters of this MP are for the courses of action necessary to
5 manage Beaver Lake’s current and future challenges. Actions set forth in this plan can ensure
6 the future health and sustainability of Beaver Lake’s natural resources while still allowing for
7 continued use and development. The factors considered cover a broad spectrum of issues
8 including, but not limited to public use, environmental, socioeconomic, and manpower.
9 Information on each one of these topics was thoroughly researched and discussed before any
10 proposals were made.

11
12 This master plan is considered to be a living document, establishing the basic direction for
13 development and management of the Beaver project consistent with the capabilities of the
14 resource and public needs. The plan is also flexible in that supplementations can be achieved
15 through a process to address unforeseen needs. The master plan will be periodically reviewed to
16 facilitate the evaluation and utilization of new information as it becomes available.

17
18 This MP for Beaver Lake will continue to provide for and enhance recreational opportunities for
19 the public, improve the environmental quality and create a management philosophy more
20 conducive to existing staffing levels at the Beaver Project.

22 b. Land Classifications

23 As described in detail in Chapter 5, the PDT strived to achieve a balanced resource management
24 in making the land classification decisions. The team took numerous factors and expressed
25 public concerns into consideration when determining land classification for the 2018 Beaver
26 Lake Master Plan revision, which included but are not limited to: how lands were previously
27 classified in 1976; what kind of development or non-development was taking place adjacent to
28 Corps property; if there were existing shoreline use permits and what SMP zoning existed in the
29 prior land classification; and what kinds of activities were taking place in those areas.

31 c. Recommendation

32 This revised Master Plan presents an inventory of land resources and how they are classified,
33 existing park facilities, an analysis of resource use, anticipated influences on project operation
34 and management, and an evaluation of existing and future needs (required to provide a balanced
35 management plan for cultivating the value of the land and water resources). It is recommended
36 that this Master Plan be approved as the basis for future development and management of the
37 Beaver land and water resources. Approval of the Master Plan is conveyed by the signing of the
38 Finding of No Significant Impact, located within the Environmental Assessment.

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