Harry S. Truman Dam and Reservoir Master Plan

Multiple purpose Project Osage River Basin, Osage River, Missouri

August 2023

US Army Corps of Engineers ®
Kansas City District

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PREFACE

The Master Plan for Harry S. Truman Dam & Reservoir (formerly Kaysinger Bluff Dam & Reservoir) was first approved in September 1964. Subsequent revisions were prepared with the latest revision dated October 1988.

In 2002 the U.S. Army Corps of Engineers (USACE) developed and released a set of Environmental Operating Principles to instill environmental stewardship across all USACE business practices. As the Nation's resource challenges and priorities have evolved, the principles have been refined and the USACE has re-committed to adhere to these principles. The re-energized Environmental Operating Principles are:

Foster sustainability as a way of life throughout the organization.

Proactively consider environmental consequences of all USACE activities and act accordingly.

Create mutually supporting economic and environmentally sustainable solutions.

Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the USACE, which may impact human and natural environments.

Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.

Leverage scientific, economic, and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.

Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

The format used for this plan is outlined in Engineering 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. Harry S. Truman Dam & Reservoir's original Master Plan can be found in design memorandum 8A: a listing of all the previous Master Plan design memorandums and prior supplements can be found in Chapter 1, Section e.

Chapter 1 – Introduction

a. Project Authorization

The Harry S. Truman Dam and Reservoir was authorized by the Flood Control Act of 1954 (Public Law 83-780) as amended by the Flood Control Act of 1962 (Public Law 87-874). The water resource project was named Kaysinger Bluff Dam and Reservoir at the time of authorization. It was renamed Harry S. Truman Dam and Reservoir in 1970 by Public Law 91-267.

b. Project Purpose

The project was originally authorized for flood control and conservation purposes. Later the Flood Control Act of 1962 added authorizations for hydropower, recreation, and fish and wildlife were added in accordance with the recommendation of the Chief of Engineers in House Document 578, Eighty-seventh Congress.

c. Purpose and Scope of Master Plan

This revised Master Plan replaces Design Memorandum 36A for Harry S. Truman Dam & Reservoir dated October 1988. The Master Plan is the strategic land-use management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of the water-resource project. The Master Plan guides the efficient and cost-effective management, development, and use of project lands. It is a vital tool for the responsible stewardship and sustainability of project resources for the benefit of present and future generations.

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

The Master Plan will be developed and kept current for Civil Works projects operated and maintained by the USACE and will include all land (fee, easements, or other interests) originally acquired for the projects and any subsequent land (fee, easements, or other interests) acquired to support the operations and authorized missions of the project.

The Master Plan is not intended to address the specifics of regional water quality, shoreline management, or water-level management; these areas are covered in a project's shoreline-management plan or water-management plan. However, specific issues identified through the Master Plan revision process can still be communicated and coordinated with the appropriate internal USACE resource (i.e. Operations for shoreline management) or external resource agency (i.e. Missouri Department of Natural Resources (MDNR) for water quality) responsible for that specific area.

d. Brief Watershed and Project Description

The Harry S. Truman Dam and Reservoir is located in the Osage River basin of west-central Missouri in Bates, Benton, Henry, Hickory, St. Clair, and Vernon Counties. The major arms are on the Osage, South Grand, Pomme de Terre and Sac Rivers. The dam is on the Osage River 1.5 miles northwest of Warsaw in the headwater area of the Lake of the Ozarks. Acquisition of the 166,864 acres of fee lands was required for project operations, separable recreation, and wildlife mitigation. An additional 102,846 acres of easement were acquired for flood storage purposes. Over 58,000 acres have been licensed to Missouri Department of Conservation (MDC) for fish and wildlife resources. At multi-purpose pool level of 706.0 mean sea level (msl), the lake is approximately 55,600 acres and extends above Osceola on the Osage River and to about 4 miles west of Clinton on the South Grand River. At peak flood control pool (elevation 739.6 msl), the lake swells to cover approximately 209,300 acres. Major metropolitan areas within 100 miles of the dam are Kansas City (about 95 miles to the northwest), Springfield (about 80 miles to the south), and Jefferson City (about 95 miles to the northeast).

The Osage River Basin drains about 11,500 square miles upstream of the dam. The basin area is roughly elliptical in shape with a length of about 250 miles and a maximum width of approximately 100 miles.

e. Listing of Prior DMs

Table 1. Listing of Prior Design Memorandums.

Design Memorandum	Title	Date Submitted	Date Approved
1	Hydrology	26 Feb 62	11 May 62
2	General Project Development Boundary Surveys and Marking – Supplement 1	26 Jun 62 2 Aug 66	7 Nov 62 18 Aug 66
3	Preliminary Cost Allocation	13 Mar 63 Rev 16 Apr 65 Rev 29 Jul 65 Rev 16 Sep 66	3 May 63 8 Dec 65 30 Nov 66
4	Geology	23 Jul 63	8 Oct 63
5	Sources of Construction Materials	29 Jun 64	1 Sep 64
6	Hydropower Capacity	10 Mar 64	25 Jun 64
6A	Hydropower Capacity	16 Apr 65 Rev 2 Aug 65	5 Apr 66
7	Spillway	25 Jun 64 Rev 6 Jul 65	17 Sep 65

Design Memorandum	Title	Date Submitted	Date Approved
7A	Spillway	29 Dec 67 Rev 8 Mar 68	13 May 68
8A	Preliminary Master Plan	8 Oct 64	28 Jan 65
8A	Preliminary Master Plan- Supplement 1	14 Jun 68	30 Dec 68
8B	Development Chapter, Phase I	15 Oct 68	27 Feb 69
8B	Development Chapter, Phase II	18 Sep 69	18 Dec 69
8B	Development Chapter, Phase III	30 Dec 69	25 Apr 70
9	Access Roads	12 Aug 64	1 Oct 64
9A	Access Roads to Sterett Creek Dike	8 Jul 70	11 Aug 70
10	Administrative Facilities	21 Dec 64	22 Mar 65
11	Soil Data and Embankment Design	19 Feb 65	19 Apr 65
12	Real Estate	27 Jul 65	20 Sep 65
12A	Access Road “B” Benton County	24 Nov 64	19 Jan 65
12B	Access Roads “A” and “C” and Service Road “A” Benton County	21 Mar 66	17 Jun 66
12C	Segments 17 thru 21 and Segment 39	8 Oct 65	23 Dec 65
12D	Segments 45, 46, 48, 50 thru 53	19 Nov 65	20 Jan 66
12E	Segment 7 thru 13 and Segment 16	10 Dec 65	14 Feb 66
12F	Segments 56 thru 60, Town of Osceola	25 Apr 66	30 Aug 66
12G	Segments 31 thru 37, 40 thru 44, 108 and subdivisions	29 Aug 66	30 Nov 66
12H	Segments 14, 15, 22, 23, and 24	3 Feb 67	16 May 67
12I	Segments 47, 49, 54, 55, and 61, and Tract 5951	5 Jan 67	23 May 68
12J	Sterett Creek Dike Outlet Swale (Drainage Ditch Easement)	21 Sep 66	7 Oct 66
12K	Exception to 300-foot Criteria Tract 517	18 Jul 66	30 Aug 66
12L	State and County Road Relocations	31 Aug 66	4 Nov 66
12M	St. Louis-San Francisco Railway	18 Jan 67 Rev 19 Oct 67	14 Aug 73
12N	Authority to Deviate from 300-Foot Criteria	4 Aug 66	
12O	Deviation from 300-foot Criteria, Segments 1 and 2	15 Aug 66	13 Oct 66

Design Memorandum	Title	Date Submitted	Date Approved
12P	Deviation from 300-foot Criteria, Segments 7 thru 13, 16, 45, 46, 48, and 50 thru 53	15 Sep 66	17 Oct 67
12Q	Segments 38, 109 thru 116	16 Jun 67	30 Oct 67
12R	Segments 62 thru 68, 71 and 76	22 Jun 67	20 Oct 67
12S	Segments 117 thru 121 and 126	28 Aug 67	29 Nov 67
12T	Landing Strip	22 Mar 67	5 Mar 68
12U	Segments 75, 80 thru 88, 90 thru 94, and 96 thru 98, North of Monegaw Springs	13 Sep 67	12 Dec 67
12X	Whiteman Cable Line Relocations	7 Jun 67	28 Nov 67
12Y	Segments 127 thru 130, 132, 135 and 136	12 Jul 68	3 Oct 69
12Z	Segments 122, 123, 125, and 134	24 Nov 67	7 May 68
12AA	Segments 25 thru 30	22 Sep 67	30 Apr 68
12BB	Tract 5951, Missouri Public Service Company	8 Feb 68	7 Jun 68
12CC	Segments 137 thru 142	27 Jul 68	17 Dec 68
12EE	Henry and St. Clair County Road Relocations	15 Dec 67	26 Mar 68
12FF	Bates and Vernon County Road Relocations	8 Aug 68	21 Jan 69
12 GG	Authority to Leave in Place Cemeteries and/or Burial Plots, above Full Pool	13 Nov 67 Rev 28 Jun 68	6 Nov 69
12JJ	Segment 15	15 Mar 68	16 May 69
12KK	Portions of Segments 127, 129, and 130, and all of 131 and 133	16 Jul 71	9 Dec 71
12LL	Portions of Segment 118 and 119	16 Oct 70	
12MM	Segment 124, Town of Ladue		
12NN	Relocation of Municipal Facilities, Town of Clinton	26 Feb 74	9 Jul 74
12OO	Additional Land in Vicinity of Proposed Information Center	20 Mar 74	28 Aug 74
12PP	Relocation of Municipal Facilities, Deepwater, Missouri	16 Apr 76	5 May 76
12QQ	Relocation of Water Intake System, City of Rockville	10 May 76	
12RR	Coal Mine Leasing		
12SS	Access Roads, Park		
12TT	Access Roads, Beds Cave		
12UU	Downstream Measures	12 Apr 81	

Design Memorandum	Title	Date Submitted	Date Approved
12VV	Degradation Ranges	22 Oct 82	
12WW	Access Road, Tract 1328E	11 Mar 83	
13	Sterett Creek Dike – Soil Data and Embankment Design	4 Mar 65	22 Apr 65
14	Turbine		
15	State and County Road Relocations	30 Dec 65	31 Mar 66
15A	Benton and Hickory County Road Relocations	29 Apr 66	4 Oct 66
15B	Henry and St. Clair County Road Relocations	10 May 67	6 Oct 67
15C	Bates and Vernon County Road Relocations	16 Oct 67	22 Dec 67
15D	Revised Hickory County Road Relocations	12 Jan 68	24 Jul 69
15E	State Highway Relocations-Drainage Design	16 Aug 68	26 Sep 69
15F	Benton County Road Relocations – Drainage Design	17 Dec 69	10 Apr 70
15G	County Road Relocations SC-31 and SC-36 and State Road No. 27	21 Jun 71	23 Nov 71
15H	Road Relocations HE-11, HE-30 and 31 Drainage Design	14 Sep 71	14 Jan 72
15I	Road Relocations, St. Clair County, SC-12, 19, 21, and 30	17 Jan 73	15 Feb 73
15J	State Road Relocation 31 Drainage Design	28 Feb 73	15 Mar 73
15K	Bates and Vernon County Road Relocations-Drainage Design	29 Nov 74	15 Jan 75
15L	Benton County Road Relocations	12 Dec 77	9 Jan 78
16	Cemetery Relocation, Plan A	14 Dec 65	11 May 66
17	Relocation of Railroad Facilities MO-Kansas-Texas Railroad Company	8 Mar 66	7 Jun 66
17A	MO-Kansas-Texas Railroad Relocation Drainage Design	13 Dec 72	12 Jan 73
18	Transmission Line Relocations	26 Jul 66	5 Oct 66
18A	KCPL Montrose Dam	10 Jan 67	27 Feb 67
19	Landing Strip	7 Nov 66	13 Dec 66
20	Relocation of Pipe Lines (Texaco-Cities Service Pipe Line Company)	8 Mar 67	8 Jun 67
21	Cemetery Relocation, Plan B	31 Jan 67	30 Aug 67
22	Powerline Relocations	2 May 67	7 Aug 67

Design Memorandum	Title	Date Submitted	Date Approved
22A	Revised Relocations and Associated Cost Estimates	19 Dec 69	26 Jan 70
22B	Additional Cost for Facilities Abandoned and Removed	4 Oct 75	14 Jan 75
23	Telephone Line Relocations	31 Jan 68	2 May 68
23A	Revised Relocations and Associated Cost Estimate	19 Dec 69	24 Feb 70
23B	Revised Relocations and Associated Cost Estimates	19 Dec 69	26 Jan 70
23C	Additional Cost for Facilities Abandoned and Removed	4 Oct 74	20 Jan 75
24	Cemetery Relocations – Plan C	19 Dec 68 Rev 25 Jun 69	9 Jul 69
25	Relocation of Municipal Facilities, City of Osceola, Missouri	26 Jun 68	11 Oct 68
25A	City Parks, Swimming Pool and Interceptor Sewer	14 Nov 69	30 Mar 70
26	Relocation of Intersite Communications Cable System, Whiteman Air Force Base	30 Jul 68	31 Oct 68
27	Cemetery Relocation – Plan D	10 Feb 77 Rev 27 May 77	
28	Relocation of Municipal Facilities, City of Deepwater	22 Apr 70	
29	Generator – Motors	8 Jun 70	4 Aug 70
30	Pump-Turbine Governor	10 Jun 71	17 Aug 71
31	Reservoir Clearing	18 Sep 72	23 Aug 76
32	Information Center	6 Oct 71	11 Jan 73
33	Relocation of Municipal Facilities, Clinton, Missouri	20 Nov 72	25 Oct 73
34	City of Rockville, Missouri, Water Intake System	27 Sep 74	30 Sep 75
35	Lake and Pumpback Determination Acoustic Velocity Meter	30 Apr 75	22 Jul 75
36	Master Plan	10 Oct 75 Rev 24 Aug 77	19 Mar 76 20 Nov 78
36	Windsor Crossing Swim Beach Letter Memorandum, Supplement 1	8 Jul 78	11 Jul 78
36	Revised Recreational Development for Osage Bluff, Fairfield and Long Shoal Public Use Area, Supplement 2	5 Dec 78	22 Dec 78
36	Revised Land Use Allocation in the Vicinity of Roscoe, Missouri, and Pavement of Pence Avenue for Use as a Public Use Area Access Road, Supplement 3	31 Dec 79	27 Feb 81

Design Memorandum	Title	Date Submitted	Date Approved
36	Management of Vacated Public Roads Located on Project Land, Supplement 4	30 May 80	13 Feb 81
36	Requirements for Maintenance and Storage Facilities at Warsaw and Clinton, Missouri Sites, Supplement 5	25 Aug 80	
36	Revised Land Use Allocation in the Vicinity of Osceola, Missouri, for the Sac-Osage Youth Fairgrounds, Supplement 6	21 Nov 80	5 Feb 81
36	Revised Land Use Allocation in the Vicinity of Clinton, Deepwater and Osceola, Supplement 7	18 Dec 81	5 Feb 82
36	Warsaw Public Golf Course, Supplement 8	9 Apr 85	26 Apr 85
36	Sewage Lagoon, Supplement 9		
36A	Master Plan	17 Nov 88	30 Jan 89
37	Preliminary Design Report, Power Plant	17 Jul 75	
38	Powerhouse, Analysis of Design		
39	Interpretive Prospectus	20 May 76	15 Jul 76
40	Project Electric Power from Station Service	30 Sep 77	Not Approved Deleted
41	Relocate Water Distribution Facilities, Missouri Public Service Company	6 Jan 78	18 May 78
42	St. Clair County Jail Relocation	9 Sep 77	
43	Interpretive Plan	5 Dec 77	14 Mar 78
44	Unit Breaker Failure Scheme	8 Aug 78	17 Jan 79
45	Cemetery Relocation, Plan E	12 Feb 79	14 May 79
46	Maintenance and Storage Facilities	29 Jun 79	3 Nov 80
47	Protection of Gray Bat Critical Habitat, Beck and Blackwell Caves	6 Apr 79	10 Apr 79
48	Intrusion Detection System	5 Mar 79	28 Mar 79
49	Maintenance of Satisfactory Downstream Water Temperatures and Dissolved Oxygen Concentrations Through the Use of a Skimming Weir	27 Nov 79	18 Dec 79
50	Relocation of Municipal City of Urich, Missouri	Jul 80	5 Aug 80
51	Cemetery Fencing Plan, Plan F	2 Apr 81	26 Aug 81
52	Downstream Measures	30 April 81	8 Jul 81
53	Operations Management Plan	17 Sep 82	2 Nov 82
54	Additional Gates and Hoists	21 Jan 86	29 Jul 86

f. Listing of Pertinent Project Information

Table 2. Pertinent Data.

General	
Location of Dam	The dam is located about 1.5 miles northwest of Warsaw in Benton County, Missouri, and at mile 175 on the Osage River
Date Construction Started	3 October 1964
Closure of Dam	21 July 1977
Date Placed in Operation	1 November 1979
Multipurpose Pool Initially Reached	29 November 1979
Project Life	100 years
Project Cost Federal Non-Federal	$500,000,000 (1985 Price Levels) $416,283,000 $133,717,000
Benefit/Cost Ratio	1.4
River Basin	
Basin	Osage River Basin
Stream	Osage River
Drainage Area Above Dam	11,500 square miles of total drainage area above the dam. 7,800 square miles of uncontrolled area downstream from Melvern, Pomona, Pomme de Terre and Stockton Lakes.
Land	
Fee Land	239 acres of Bates County 56,951 acres of Benton County 61,274 acres of Henry County 6,792 acres of Hickory County 41,597 acres of St. Clair County 11 acres of Vernon County 166,864 acres of total fee land *Includes 22 acres for municipal facilities relocation and 141 acres for downstream measures
Flowage Easement	21,715 acres of Bates County

General	
	843 acres of Benton County 238 acres of Cedar County 29,385 acres of Henry County 162 acres of Hickory County 30,682 acres of St. Clair County 19,281 acres of Vernon County 102,306 acres of total flowage easement interest
Separable Recreation	594 acres of Benton County 15 acres of Henry County 35 acres of St. Clair County 644 acres of total separable lands
Total Acquisition	268,170 acres (as of Jul 2023)
Fish and Wildlife General Plan (approved 15 Nov 82)	53,800 acres
Lake	
Water Surface Area Multipurpose Pool Flood Control	 55,600 acres (706.0 feet msl) 209,300 acres (739.6 feet msl)
Shoreline at Multipurpose Pool	958 miles
Dam and Embankment	
Type of Construction	Rolled earthfill
Fill Quantity	8,500,000 cubic yards
Top Width	35 feet
Base Width of Main Embankment	1,100 feet
Length	5,000 feet plus a 7,500 feet Sterett Creek Dike
Height Above Streambed	126 feet
Freeboard	4.5 feet
Spillway	
Location	Center of dam
Type	Gated ogee overfall

General	
Crest Elevation	692.3 feet, msl
Width	190 feet
Discharge Capacity at Top of Surcharge Pool	284,000 cfs
Tainter Gates Number, Width and Height	Four, 40 x 47.3 feet
Hydropower	
Generator Turbines	6 units
Generator Name Plate Capacity	160,000 KW
Turbine Rating	254,400 horsepower
Turbine Type	Kaplan (inclined shaft-reversible pump)
Discharges	
Maximum at Full Pool	79.2 feet (31,800 cfs)
Average at Power and Multipurpose Pool	42.5 feet (65,400 cfs)
Minimum	41.0 feet (64,800 cfs)
Reversible Pump Turbines	6 (any 5 units operating at any one time as 1 unit is required to supply the power for the pumping process)
Total Dynamic Head	50 feet
Discharge 5 units at Maximum Head	22,500cfs
Maximum Power Required	197,000 horsepower
Maximum Drawdown	704 feet, msl (at the end of a 5-day generation)

Chapter 2 – Project Setting and Factors Influencing Management and Development

a. Hydrology (surface water, ground water)

The Osage, South Grand, Pomme de Terre, and Sac Rivers are the major sources of water flowing into Truman Lake. The Osage River Basin drains approximately 15,300 square miles, of which 11,500 square miles are located above the dam (Britannica. 2022). The Osage River rises on the Eastern slope of the Flint Hills region of east-central Kansas. The river is known as the Marais Des Cygnes in Kansas and the Osage River in Missouri. The basin area is roughly elliptical in shape with a length of about 250 miles and a maximum width of approximately 100 miles.

The operation of Truman consists of the impoundment of excess runoff from the Osage River and its tributaries above Warsaw for the purpose of flood control, and the release of storage accumulations at non-damaging rates. The releases are made in accordance with plans, schedules, and ratings which have been prepared in advance to meet various conditions of inflow and demand. Electrical power, generated by the operation of six turbine-generator units in the powerhouse, which is part of the dam, is marketed by Southwest Power Administration and used to meet peak electrical requirements when conventional power plants cannot fulfill the public's demand for electrical energy.

Truman Lake is located primarily in the Salem Plateau Groundwater Province (MDNR. 2021). The main source of groundwater in the Salem Province is the Ozark Aquifer, which sometimes divided into the Upper and Lower Ozark aquifers. The Ozark Aquifer is composed of many geologic formations and is normally 800 to 1,000 feet thick. The Ozark Aquifer is recharged by precipitation falling on outcrops throughout the state and may receive up to 14 inches of recharge in a year.

Water in the Salem Province is generally of good quality with low total dissolved solids (TDS). Water can be more mineralized in the northern and eastern parts of the province and may contain higher amounts of radionuclides. The karstic nature of much of the Ozark Aquifer allows water to move through it quickly. Pollutants introduced to the aquifer can travel quickly and potentially affect domestic and public wells. Fortunately, once the contaminant source is removed, the aquifer quality will rapidly improve due to fresh water quickly replacing the contamination.

b. Description of Reservoir(s) and/or Navigation Pool(s)*

At multipurpose pool, Truman Lake covers about 55,600 acres and can expand to as much as 209,300 acres during periods of heavy rain as excess runoff is impounded to prevent downstream flooding. Truman Lake works in conjunction with other lakes operated by USACE to provide flood protection for the Osage, lower Missouri, and Mississippi Rivers.

Truman Lake has approximately 958 miles of shoreline which transverse up the Osage, South Grand, Pomme de Terre and Sac Rivers. The lake has 1,203,400-acre feet (af) of storage for multipurpose and sedimentation and at flood control pool increases to 4,005,949 af of storage.

c. Sedimentation and Shoreline Erosion

According to Graf et al. 2010, Harry S. Truman Dam and Reservoir has a mean annual capacity loss of 0.7% a year due to sedimentation. That equates to an average annual sedimentation rate of 8,800 acre-feet within the reservoir. Areas of highest sedimentation within the lake are the upper Grand River arm and the upper Osage River arm from Compartment 25 (Corbin Wildlife Area) and upstream.

Several factors contribute to shoreline erosion. Wave action from wind and boats can erode away at the shore. This is particularly bad along the windward shoreline. As waves crash into the unprotected shore, shoreline sediments are washed into the lake and re-deposited elsewhere. Fluctuation of lake levels is also contributory as it doesn't allow vegetation to grow on the lake edge.

d. Water Quality

In accordance with E.R. 1110-2-8154, Kansas City District Water Quality Program functions under an approved Water Quality Program Management Plan to ensure that water quality is integral to water management and that all projects comply with applicable Federal, state, and tribal laws and regulations. The ER states "The water quality management program provides one of the greatest opportunities for the Corps to demonstrate its commitment to environmental leadership, conservation, restoration, and stewardship." Kansas City District Water Quality Program collects water samples and physical water quality data at Harry S. Truman Lake and inflow streams from April through September annually (lake sites and outflow) and at three-year intervals from 7 inflows (Figure 1). Thirty-four chemical, physical, and biological parameters are measured to evaluate water quality and lake-bed sediment quality. USACE uses this data to describe conditions and changes from the inflow streams, within the main lake, and outflow focusing on eutrophication, nutrients, sediment, herbicides, metals, and contaminants. Truman Lake water quality improves by attenuation as water flows from inflow streams through the lake as settling, dilution, chemical and biological processes reduce concentrations of many compounds associated with poor water quality.

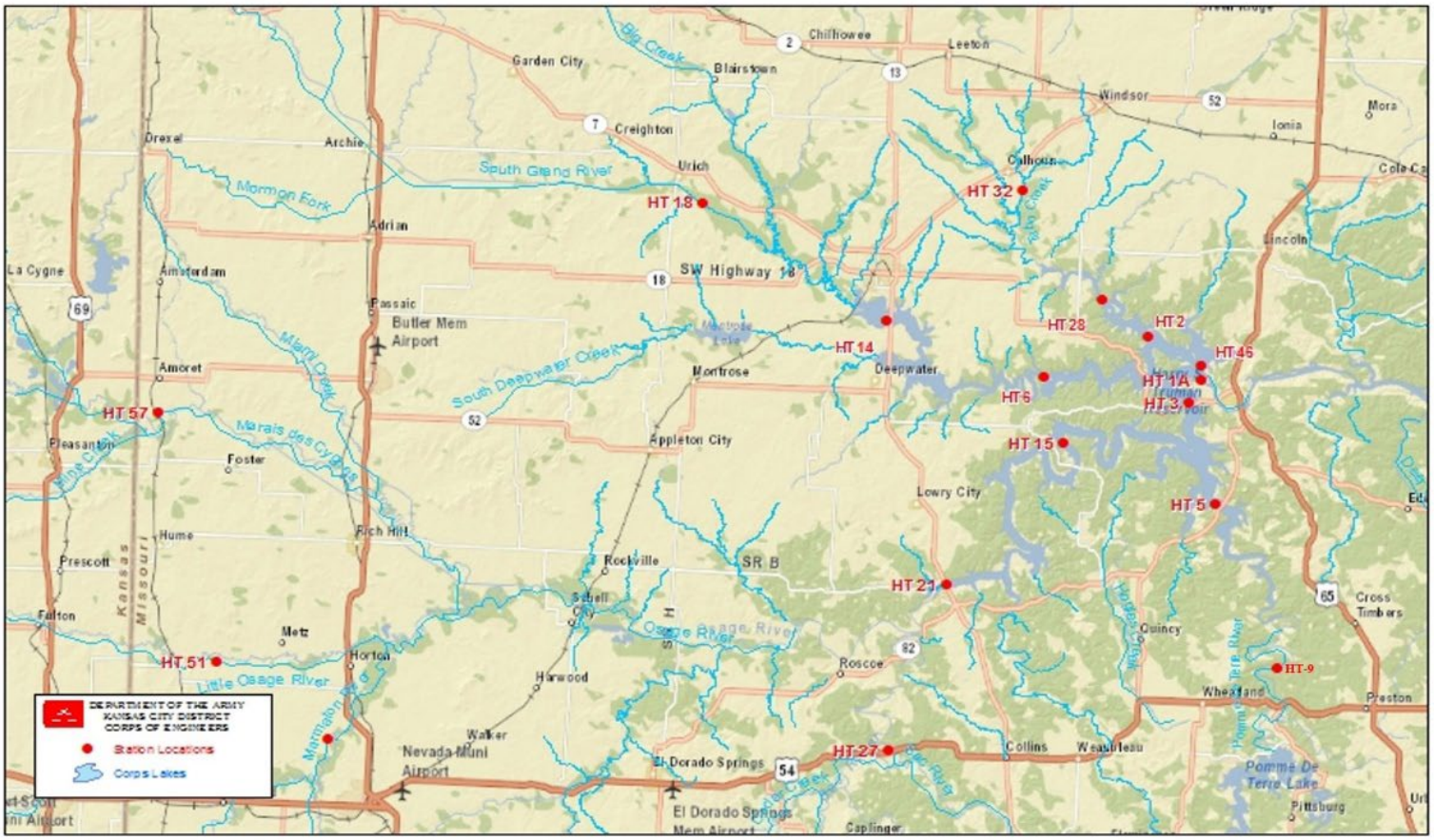


Figure 1. Water quality sample locations at Harry S. Truman Lake and inflow sites.

Water quality standards outlined in the Missouri Code of Regulations (10 CSR 20-7) encompass the fundamental elements for achieving the designated use of a water body, including the criteria necessary to safeguard the designated use(s), as well as antidegradation requirements. Missouri DNR-designated uses at Truman Lake are categorized as Livestock and Wildlife Protection (LWP), Protection of Warm Water Habitat (WWH), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), and Drinking Water Supply (DWS). Water quality complaints and recent data reports indicating the exceedance of the state's established water quality criteria can trigger MDNR investigations to determine whether the water body should be designated as impaired for a specific intended use. In order to enhance the water quality of impaired waters, the establishment of a Total Maximum Daily Load (TMDL) may be recommended to restrict the permitted discharge of specific pollutants into the system. Truman Lake is listed on the Missouri 303(d) impaired waters list (MDNR 2020) with a Total Maximum Daily Load (TMDL) for impairments to aquatic life from elevated summer chlorophyll concentrations resulting from non-point source nutrient pollution. Non-point source nutrient pollution is the primary water quality challenge to aging District lake projects in terms of the magnitude of pollution and long-term impacts to designated uses. Truman inflow streams flow through different ecoregions (i.e., Prairie and Ozark Plateau) and soil types. As a result, nutrient inputs are generally greater from streams entering from the west (e.g., Osage River at HT-21 and

South Grand River site HT-14) than from those entering from the south (e.g., Pomme de Terre River site HT-5) due to localized runoff events (Figure 2). It is apparent from figure 2 that nutrient concentrations are typically double the MDNR nutrient screening threshold, which is why the Total Maximum Daily Load (TMDL) was implemented. TMDL status benefits water quality by providing regulatory and management agencies a tool to determine and enforce allowable amounts of pollutants, nitrogen and phosphorus in this case, discharged into waters of the state by point sources permitted by National Pollutant Discharge Elimination System (NPDES) or Missouri operating permit limitations. Increased nutrient input from all NPDES permitted discharges is additive to current nutrient enriched state and will lead poor water quality including dissolved oxygen issues and increase in toxic algal blooms. Since 2020, there has been an increase in public comments and email/phone correspondence with local residence directed at Truman Lake water quality concerns from apparent runoff and dumping from confined animal operations and processing plants.

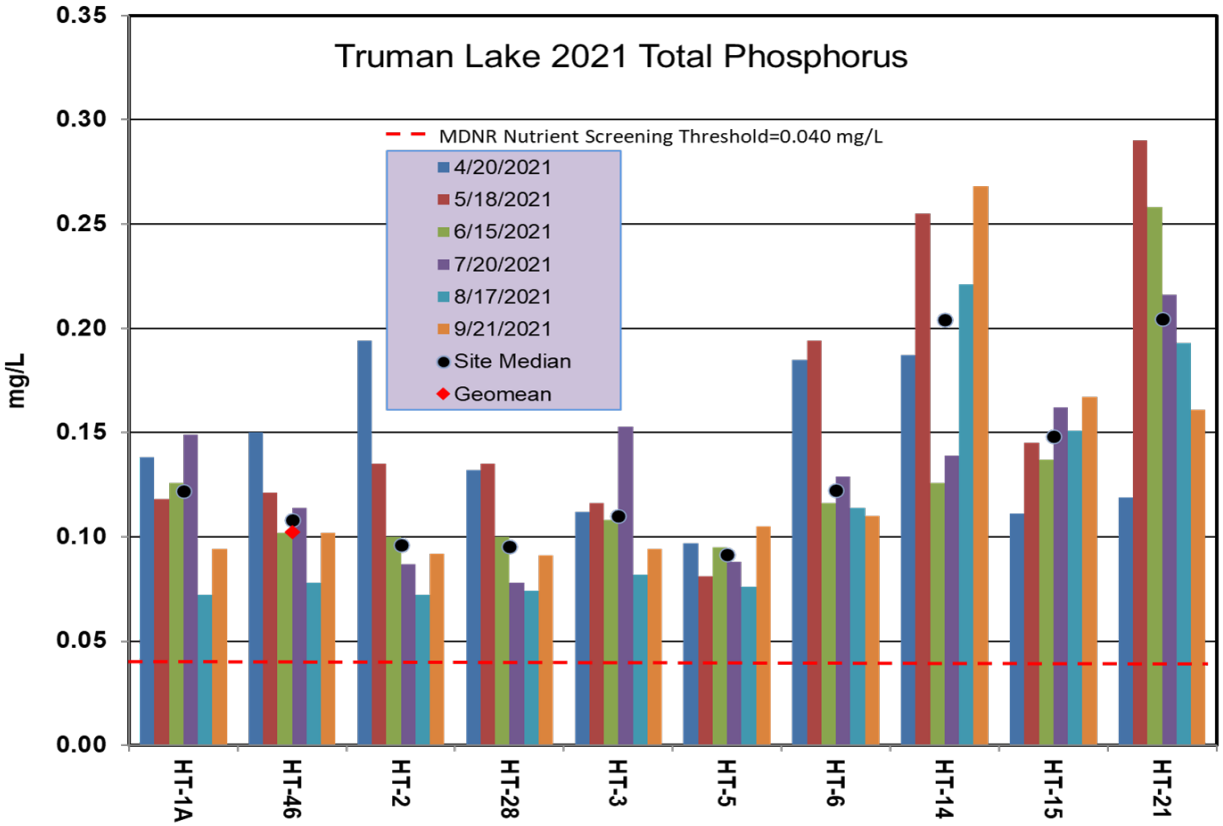


Figure 2. . Total phosphorus at Truman Lake sites in 2021. (Unpublished report. Harry S. Truman Lake Water Quality Summary 2021).

Water quality impacts and physical injury/mortality to fish in the outlet below Truman have been a frequent concern and occasional media topic since the dam became operational in 1978 (USACE 1981). A review of MDC fish mortality records database (MDC unpublished data accessed 2017) from Truman Lake and dam indicate that supersaturation has been cited as the main cause for largest

number of fish mortality, while physical injury, operational incidents or fish trapped in dam during critical oxygen situations, and low dissolved oxygen have increased proportionally as supersaturation mortality has been drastically reduced since dam modifications constructed in 1978. Supersaturation and physical injury mortality was addressed by discontinuing all pump back operation and installing spillway modification of concrete deflectors called “flip lip” to redirect releases toward the surface allowing entrained atmospheric gas (e.g., nitrogen and argon) to depressurize.

A submerged rock weir (skimming weir) is present at Harry S. Truman to prevent low dissolved oxygen (D.O.) in hydropower releases during peak stratification periods during summer months. “Skimming weirs” function as an underwater dam which create an impermeable wall to prevent release of low D.O. water from below the thermocline (Figure 4). They have been very successful at Kansas City District hydropower lakes, although all both projects report decrease in temperature and dissolved oxygen of releases when thermocline elevation exceeds the top of the weir. During the flood year of 2019, Truman Lake surface elevation exceeded the multipurpose pool elevation by 34 feet. Consequently, thermocline elevation measured during monthly water quality profiles, exceeded the crest of the skimming weir from June-September with peak 20 feet above the weir in June (Figure 5). During the worst case of low dissolved oxygen release during June 2019, approximately 51% of the water volume flowing over the skimming weir during 60,000 CFS flood release was composed water from the bottom layer. The minimum dissolved oxygen measured below Truman Dam (site HT-1a) in flood year 2019 was 6.4 mg/L in September while temperature measured below Truman Dam from the mixing zone (site HT-1A at fishing access pier) was 1.3°C lower than surface value measured at site HT-1 between skimming weir and dam.

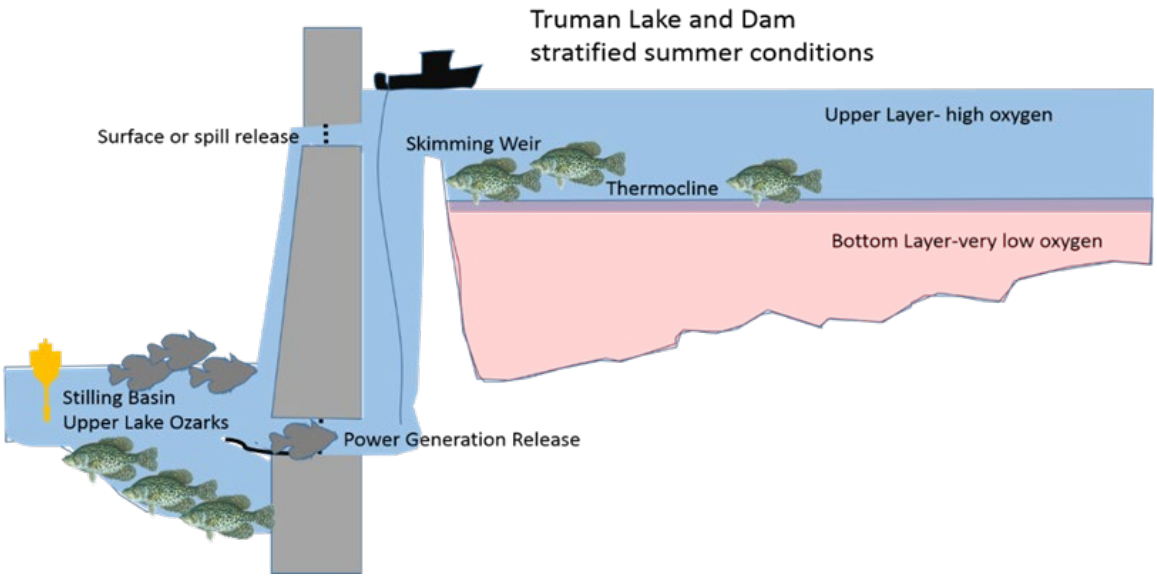


Figure 3. Truman Dam cross section diagram relationship between skimming weir and thermocline during typical summer conditions.

Truman Lake Dissolved Oxygen Work Group was formed in 2016 primarily to address fish mortality associated with low dissolved oxygen in the stilling basin and gate wells during a fish kill below the

Truman Dam in 2013. The work group is comprised of representatives from Kansas City District Corps of Engineers, Missouri Department of Conservation, Missouri Department of Natural Resources, and the Southwestern Power Administration (SWPA). Fish mortality associated with low D.O. has been greatly reduced because of monitoring and supplemental spill measures implemented after work group evaluation and suggestions outlined in the Truman Lake D.O. Action Plan. The plan is to serve as a framework and guide for interagency coordination and actions to investigate ways to minimize/avoid fish mortality associated with operation of Truman Dam. The plan establishes Eutrophication, oxygen demand and harmful algae blooms, sulfates, and taste & odor issues. The plan is reviewed annually.

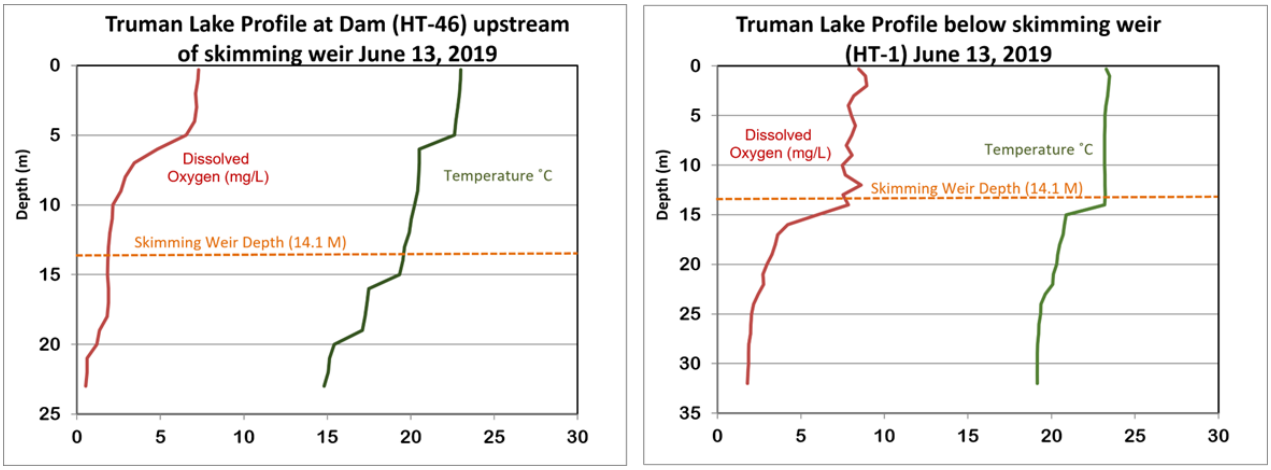


Figure 4. Truman Lake temperature and dissolved oxygen profiles above and below skimming weir.

e. Project Access

Truman Lake is adequately served by the Federal and state highway networks. Interstate 70 transverses Missouri from east to west. It provides access to the project from Kansas City, Columbia, and St. Louis. This interstate highway is located approximately 50 miles to the north of the project and is directly linked to the area by US 65 and State Highway 13. To the south is Interstate 44 on a northeast/southwest alignment, which intersects US 65 and State Highway 13 at Springfield, and State Highway 7 outside of Rolla near Ft. Leonard Wood.

Other highways in the immediate vicinity providing vehicular access to the project are US 50, 71, and 54. US 50 crosses Missouri on an east-west alignment and provides primary access from the north by way of State Highway 13 and 127. US 65 intersects US 50 at Sedalia. US 71 crosses Missouri on a north-south alignment. It provides primary access to the western portion of the project by way of State Highway 7, 18, and 52. US 54 crosses Missouri on a southwest/northeast alignment. It provides primary access to the southern part of the project by way of State Highway 13, 82, and 83. US 65 provides direct access to the east portion of the project.

Secondary vehicular access is provided to the project by State Highways 7, 13, 82, and 83. Access to most areas and parks is provided through a network of minor state and county roads.

f. Climate

The Osage River Basin has an essentially continental climate. There are frequent changes in the weather, both from day to day and from season to season. This area is in the path of the cold air moving south out of Canada, moist air coming north from the Gulf of Mexico and the dry air from the west. Annual precipitation averages approximately 40 inches. The winter months are comparatively dry, with most of the precipitation coming in the spring, summer and fall months. The winter precipitation is usually in the form of snow. Spring, summer, and fall precipitation comes largely in the form of showers or thunderstorms. Tornadoes are not uncommon, occurring primarily in the months of March through June. Temperatures over 100 degrees Fahrenheit are infrequent but have occurred. The highest temperature recorded in Missouri is 118 degrees Fahrenheit in Warsaw (in the study area) in 1954. Average temperatures range from 33.7 degrees in January to 80.5 degrees Fahrenheit in July. Besides the highest temperature in the region, Warsaw is also the location for the lowest temperature of -40 degrees Fahrenheit in February 1905. The average date for the first killing freeze is the third week in October, with the last freeze in mid-April (USACE. 1977 and WRCC. 2022).

Table 3. Climate Data for Truman Dam.

Climatological Data for Truman Dam														
	Temperature (F)									Precipitation (inches)				
	Means			Extremes		Mean # of Day					Snow	Mean Number of Days		
						Max		Min						
	Daily Max	Daily Min	Monthly	Record High	Record Low	90 and Above	32 and Below	32 and Below	0 and Below	Mean	Mean	.10 or More	.50 or More	1.00 or More
Jan	42.5	21.9	32.2	80	-29	0	7.8	26.8	0.8	1.75	2.4	3.9	1.0	0.4
Feb	46.8	25.1	36.0	86	-40	0	4.5	22.5	0.3	2.14	2.0	3.6	1.1	0.4
Mar	57.0	33.9	45.4	96	-12	0	1.0	14.8	0	3.04	0.7	6.9	1.8	0.4
Apr	67.7	43.7	55.7	94	10	0.1	0	3.1	0	4.60	0	7.5	3.3	1.4
May	76.1	55.1	65.6	104	27	0.6	0	0	0	5.52	0	8.3	3.6	1.6
Jun	84.9	64.9	74.9	111	37	7.4	0	0	0	5.24	0	6.9	3.3	1.6
Jul	89.7	69.4	79.6	118	44	15.5	0	0	0	4.70	0	6.1	2.7	1.4
Aug	88.8	67.3	78.0	113	40	13.9	0	0	0	3.96	0	5.8	2.6	1.2
Sep	81.6	58.5	70.1	108	1	4.9	0	0	0	4.11	0	5.6	2.6	1.6
Oct	69.9	46.3	58.1	98	11	0.2	0	2.0	0	3.45	0	6.0	2.2	0.7
Nov	57.3	35.6	46.5	89	-1	0	0.3	11.4	0	3.06	0.6	4.9	1.9	1.0
Dec	46.4	18.5	36.5	82	-19	0	3.8	23.9	0	1.97	1.9	3.6	1.3	0.3
Year	67.4	45.7	56.6	118	-40	42.6	17.4	104.5	1.1	43.54	7.8	69.1	27.4	12.0

Note: Monthly Normals 1991-2020: Truman Dam.

Records High and Lows from Period of Record General Climate Summary from 1893 to 1984: Warsaw, MO.

g. Topography, Geology, and Soils

The Osage River basin upstream of the dam site is situated in the Osage Plains and Ozarks sections of the Central Lowlands physiographic province. The boundary between the rugged, broken terrain of the Ozarks of the eastern part of the basin and the gently rolling, more subdued topography of the Osage Plains to the west is not everywhere readily discernible. Stream valleys with Ozark type character extend several miles headward into uplands with definite Osage Plains character.

The Ozarks section is a submaturely to maturely dissected region with narrow valleys incised up to 200 feet below the adjacent ridges. The area is generally underlain by cherty dolomite and limestone of Mississippian and Ordovician age that is fairly resistant to erosion, thus forming steep to vertical valley walls. Below Osceola, the Osage River and other streams have incised meanders with pronounced asymmetry of cross section, steep undercut slopes on the outside of the meander curves, and more gentle slip off slopes on the inside. The Osage Plains section is a maturely dissected gently rolling region with relatively wide stream valleys. The topography has developed on Pennsylvanian age shales with interbeds of limestone, sandstone, and coal. Erosion has produced an expansive, mildly rolling land surface with low, eastward facing escarpments along the outcrop belts of the more erosion resistant, westward dipping limestones (Johnson. 1999).

h. Resource Analysis (level 1 inventory data)

Operational civil works projects administered by the USACE are required, with few exceptions, to prepare an inventory of natural resources. The basic inventory required is referred to within USACE regulations (ER and EP 1130-2-540) as a Level One Inventory. This inventory includes the following: vegetation in accordance with the National Vegetation Classification System through the sub-class level; assessment of the potential presence of special status species including but not limited to federal- and state-listed endangered and threatened species, migratory species, and birds of conservation concern listed by the U.S. Fish and Wildlife Service (USFWS); land (soils) capability classes in accordance with the Natural Resource Conservation Service criteria; and wetlands in accordance with the USFWS Classification of Wetlands and Deepwater Habitats of the United States. This basic inventory information is used in preparing project master plans and the Operations Management Plan (OMP). The OMP is a five-year management plan setting forth detailed information required to implement the concepts set forth in the master plan. An overview of the natural resources and related management actions at the project is provided in the following sections and paragraphs.

(1) Fish and Wildlife Resources

Harry S Truman Reservoir is a combination of 55,600 acres of water and 122,874 acres of land during normal lake elevation. Four major tributaries feed into Truman to include

the Thibaut, Grand, Osage and Pomme De Terre rivers. The mainstem lake along with creeks, river, and ponds are all subject to fluctuation due to flooding and drought conditions. Major fish species include white and black crappie, Blue, channel, and flathead catfish, white bass, hybrid stiped bass, walleye, paddlefish, largemouth bass, spotted bass, and bluegill. Truman's fisheries are managed by the Missouri Department of Conservation out of the Clinton and Sedalia Offices. Beginning in 2009, the MDC placed numerous large cedar brush piles in Truman Lake. Fish attractors have been added to both deep and shallow water. This is a cooperative effort between MDC and COE staff. Lost Valley Fish Hatchery is also managed by MDC and provides the paddlefish and walleye fingerlings for Truman. Fisheries biologist annually collect walleye brood stock directly below Truman Dam. Fisheries at Truman provide a major economic benefit to local businesses and the surrounding communities through tourism.

Truman lake and surrounding project lands provide a diverse mix of aquatic, riparian and upland habitat types. The diversity of habitat types provides an environment inhabited by approximately 145 species of nesting birds, 95 species of wintering birds, 90 additional migrant species of birds, 19 species of resident amphibians, up to 46 species of resident reptiles, and approximately 55 species of mammals, of which 12 are bats which may migrate (Sparrowe. 1977).

Project lands provide resting and foraging habitat in the spring and fall for migratory waterfowl and shorebirds. Resident wood ducks' nest and raise broods in the Truman Lake area.

The Corps NRM staff manage a variety of habitat types such as native warm season grasses, wetlands, food plots, caves, timber management, and glades. The staff also manages an extensive agriculture lease program with 22 ag leases totaling over 3,000 acres of wildlife benefit and food source.

MDC manages for fish and wildlife on approximately 58,133 acres of land through a license agreement which are distributed around the reservoir in parts of Henry, Benton, Hickory, and St. Clair Counties.

(2) Vegetative Resources

As part of the Level I inventory the project lands were classified according to the National Vegetation Classification System down to the sub-class level. In addition, an assessment was made as to the condition of those lands to determine if they are sustainable.

Description of each of the assessment categories:

Sustainable - Meeting the desired state. The acreage is not significantly impacted by any factors that can be managed and does not require intensive management. The acreage also meets operational goals and objectives set out in the project OMP or other applicable management document. These acres are considered healthy and

sustainable for future generations. Only minor management practices may be required to maintain the health.

Transitioning - Managed to meet desired goals. The acreage is impacted by human or other environmental factors that require management of the acreage to meet goals and objectives outlined in the project OMP or other applicable management document.

Degraded - Does not meet desired goals. The acreage is significantly impacted by human or other environmental factors that prevent the acreage from meeting desired goals outlined in the project OMP or other management documents. The acreage is not considered healthy. Intense management may be required to meet desired goals.

Table 4. Truman Lake Vegetation and Classification Records for FY 2021.

Vegetation Class	Vegetation Order	Vegetation Sub-Class	Total Sub-Class Acres	Sustainable Acres	Transitioning Acres	Degraded Acres
Non-Vegetated	Non-Vegetated	Non-Vegetated	51992	0	51992	0
Herbaceous Vegetation	Herb Dominated	Annual graminoid or forb vegetation	14622	0	14622	0
Herbaceous Vegetation	Herb Dominated	Perennial graminoid vegetation (grasslands)	28152	13152	10000	5000
Shrubland (Scrub)	Shrub Dominated	Deciduous shrubland (scrub)	725	275	300	150
Closed Tree Canopy	Tree Dominated	Deciduous closed tree canopy	48510	42563	2500	3447
Closed Tree Canopy	Tree Dominated	Mixed evergreen-deciduous closed tree canopy	888	695	150	43
Open Tree Canopy	Tree Dominated	Deciduous open tree canopy	12115	8945	3120	50
Open Tree Canopy	Tree Dominated	Evergreen open tree canopy	6401	1701	3500	1200
Open Tree Canopy	Tree Dominated	Mixed evergreen-deciduous open tree canopy	222	0	222	0
Sparse Vegetation	Vegetation Not Dominant	Unconsolidated material sparse vegetation	662	662	0	0

The Osage River Basin lies in two distinct vegetation regions, the unglaciated Prairie region, known as the Osage Plains, and the Ozark region. The Ozark region is by far the largest area in Missouri covering most of the state south of the Missouri River. The Prairie region occupies a wedge-shaped portion of the western part of the state south of

the Missouri River. The boundary for the regions extends through northwestern Benton County, southeastern Henry County, and roughly divides St. Clair County in half with the Ozark region situated in the eastern half of the county (Yatskievych. 1999). These principal plant regions correspond generally to the location of the physiographic sections; however, the boundaries are not exactly the same. The natural vegetative composition is extremely varied and complex. Much of the land area is no longer in natural vegetation because of agricultural activity; however, some extensive areas remain (Johnson. 2009).

(3) Threatened & Endangered Species

The U.S. Fish and Wildlife Service maintains the list of federally listed Threatened or Endangered Species, and their designated Critical Habitat, under the Endangered Species Act. Missouri Department of Conservation is responsible for maintaining the state listed species. The state Endangered Species Act and Missouri Wildlife Code are the guiding legislation for the state. A table of Federal and state listed species believed to occupy Bates, Benton, Henry, Hickory, St. Clair, and Vernon Counties is found in the table below.

Table 5. Federal and State Listed Threatened & Endangered Species.

Name	State Status	Federal Status	Habitat
Bald Eagle (*Haliaeetus leucocephalus*)	S3-Vulnerable	-	Perch and occasionally nest in large trees adjacent to lake and rivers. Utilizes lake to hunt for prey (fish and waterfowl)
Osprey (*Pandion haliaetus*)	S2-Imperiled	-	Perch and occasionally nest in large trees adjacent to lake and rivers. Utilizes lake to hunt for prey
Bewick's Wren (*Thyromanes bewickii*)	S3-Vulnerable	-	It occurs in dense brushy areas, scrub, and open woodlands
Gray Bat (*Myotis grisescens*)	Endangered	Endangered	Roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel.
Indiana Bat (*Myotis sodalis*)	Endangered	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well-developed riparian woods; upland forests
Northern Long-Eared Bat (*Myotis septentrionalis*)	Endangered	Endangered	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests during spring and summer.
Tri-colored Bat (*Perimyotis subflavus*)	S2-Imperiled	Proposed Endangered	Inhabit landscapes that are partly open, with large trees and plentiful woodland edges. They are found in

Name	State Status	Federal Status	Habitat
			a variety of terrestrial habitats, including grasslands, old fields, suburban areas, orchards, urban areas and woodlands, especially hardwood woodlands.
Niangua Darter (*Etheostoma nianguae)*	Endangered	Threatened	All known Niangua darter populations are found in rivers and streams that are characterized as small to medium sized (between 3rd and 5th stream order) with a slight to moderate current, are relatively clear, and which drain hilly topography underlain by bedrock consisting of chert-bearing dolomites. Niangua darters prefer the margins of shallow pools and runs throughout the year. They are directly associated with silt-free gravel or scattered rocky substrates with occasional boulders or bedrock.
Blacknose Shiner (*Notropis heterolepis*)	S2-Imperiled	-	Occurs usually over sand in clear vegetated lakes and pools of creeks and small rivers.
Black Sandshell (*Ligumia recta*)	S2-Imperiled	-	Found in varying sizes of creeks, rivers, and lakes with sand and gravel bottoms and moderate current. Spawns in August, glochidia are released the following July; host fishes are American eel, bluegill, and white crappie.
Pink Mucket {pearlymussel} (*Lampsilis abrupta*)	Species of Conservation Concern	Endangered	Relatively silt-free substrates of sand, gravel, and cobble in good flows of smaller streams.
Spectaclecase {mussel} (*Cumberlandia monodonta*)	Species of Conservation Concern	Endangered	Medium to large rivers, in reduced current adjacent to swift water, among boulders, or in patches of gravel, sand, and cobble.
American Burying Beetle (*Nicrophorus amaricanus*)	Endangered	Experimental Population, Non-Essential	Adults typically emerge late in the summer and feed until fall, when they bury themselves in the soil to overwinter. In Missouri, they reemerge in May and begin mating. The male and female both assist in burying the carcass of a mouse or other small animal. The female then lays 10–30 eggs near the carcass. Assisted by both parents, the larvae feed on the carcass until they mature, then emerge as adults to feed on other carcasses until winter. This species is nocturnal.

Name	State Status	Federal Status	Habitat
Linda's Roadside Skipper (*Amblyscrites linda*)	S2S3 Imperiled to Vulnerable	-	Near woodland streams.
Monarch Butterfly (*Danaus plexippus*)		Candidate	During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily Asclepias spp.).
Ozark Woodland Swallowtail (*Papilio joanae*)	S1S2-Critically Imperiled to Imperiled	-	Found in cedar glades and woodland habitats.
Geocarpon (*Geocarpon minimum)*	Endangered	Threatened	Moist soils in exposed sandstone glades
A Liverwort (*Oxmitra incrassata*)	S1-Critically Imperiled	-	Unknown
Mead's Milkweed (Asclepias meadii)	Endangered	Threatened	Virgin prairies
Western Wallflower (*Erysimum capitatum* var. *capitatum*)	S3? -Vulnerable Uncertain	-	It is often found in rocky, clay or sandy open areas.
A Panic Grass (*Dichanthelium leibergii*)	SU-Uncertain	-	Sun; moist to dry; prairies, along railroads, open woods, bluffs

Endangered species management focuses on four species to include the gray bat, Indiana bat, Northern Long-eared bat, and the threatened *Geocarpum minimum*. Bats established maternity roosts colonies in Beck and Blackwell Caves before lake was impounded. Extensive protection measures prevent flood waters from entering Beck Cave. Although Blackwell Cave is not impacted by lake levels, a gate protects the cave from human disturbance. Management of both caves follows the guidelines described in Species Management Plan for the Indiana Bat and the Gray Bat in Missouri, MDC, September 1988.

The Northern Long-eared bat has been discovered in the Hay Creek (Arrowhead) Quarry in Henry County. The bat is listed as an endangered species on both the state and federal lists. Geocarpum is a small, rare, inconspicuous plant currently located in two isolated areas near Ottercreek in Henry County. The NRM staff will work with the MDC to establish management objectives to include removal of competing brush and tree growth to prevent shading of the sites. Total acreage for both locations is less than two acres. Although no longer listed as an endangered species, Bald eagles have successfully nested on Truman Lake since 1982 when the first documented Missouri nest in over 40 years occurred at McGuiness Bend. Since then, young eagles have fledged from numerous different nests on the lake. Nesting activity is monitored and documented. Additionally, large numbers of wintering eagles are usually present on the lake each year.

(4) Invasive species

A variety of aquatic and terrestrial species inhabit the lake and surrounding project land. A listing of those species and their prominence can be found in table 6.

Table 6. Invasive Species found on Harry S. Truman Dam and Reservoir Project Lands.

Species	Type	Prevalence	Active Management
Autumn Olive (*Elaeagnus umbellate*)	Terrestrial Plant	Moderate	Yes
Canada Thistle (*Cirisium arvense*)	Terrestrial Plant	Minor	Yes
Emerald Ash Borer (*Agrilus planipennis*)	Terrestrial Plant	Moderate	Yes
Johnson Grass (*Sorghum halepense)*	Terrestrial Plant	Moderate	Yes
Multiflora Rose (*Rosa multiflora*)	Terrestrial Plant	Moderate	Yes
Musk Thistle (*Carduus nutans*)	Terrestrial Plant	Moderate	Yes
Russian Olive (*Elaeagnus angustifolia*)	Terrestrial Plant	Moderate	Yes
Sericea Lespedeza (*Lespedeza cuneata*)	Terrestrial Plant	Major	Yes
Japanese Honeysuckle (Lonicera japonica)	Terrestrial Plant	Moderate	Yes
Eastern Red Cedar (Juniperus virginiana)	Terrestrial Plant	Major	Yes
Feral Hog (Sus scrofa)	Terrestrial Mammal	None	Yes
Zebra Mussel (*Dreissena polymorpha*)	Aquatic Invertebrate	Major	No
Sudden Oak Death (Phytophthora ramorum)	Fungus	Moderate	No
Hydrilla (Hydrilla verticillate)	Aquatic Plant	None	No

Note: As reported by project staff November 2022

The Invasive Species program is administered in accordance with ER and EP 1130-2-540 Chapter 3, ER and EP 1130-2-500 Chapter 14 and E.O. 13112. Invasive species have been introduced through routes called invasion "pathways." Transported by air, water, rail, or road, invasive species move beyond natural geographic barriers and inhabit new sites. By altering species diversity, hydrology, nutrient cycling, and other ecosystem processes, invasive species can change whole ecosystems and irreparably damage natural resources. Invasive species are serious threats. They threaten our nation's resources, impacting wildlife and fisheries habitat as well as human health, preventing or seriously hindering the operation of navigation, adversely affecting flood control, hydropower generation, and water supply, and limiting recreation use by the public. Invasive species impose enormous costs for eradication and management efforts. The economic costs can be staggering and cost to control is often excessive.

Integrated management of invasive species include prevention, early detection, and eradication through biological, chemical, and mechanical means.

(5) Ecological Setting

The project is situated within two natural physiographic divisions, the Ozark Hills and the Osage Plains. The boundary between these divisions is irregular in the project area giving rise to diverse ecological habitats and much scenic diversity that is attractive to visitors.

The Ozark Hills is characterized by thin, stony soils on steep slopes where the local relief may vary from 100 to 300 feet. Caves, springs, bluffs, massive rock outcrops and high-gradient, clear-flowing streams with entrenched meanders are characteristic features of the Ozarks. Limestone and dolomite underlie most of the Ozark Division and bedrock commonly is exposed along streams and ridges. Project lands in the Pomme de Terre River arm in Hickory County and the Osage River portion in St. Clair and Benton Counties have typical Ozark characteristics.

The Osage Plains are in the western half of St. Clair County and in Henry County is a plains region. The region is characterized by gently rolling topography and soils derived from Pennsylvania shale, sandstone, and limestone or from shallow loess. Streams commonly have shallow valleys and broad floodplains with sloughs and marshes. The upper reaches of the Osage River in St. Clair County, and the western reaches of the Grand River in Henry County have these characteristics.

Vegetation in the project area is influenced by the physiography of the two natural divisions. The steep slopes and thin soils of the Ozarks area support a forest area comprised of post oak, white oak, black oak, northern red oak, blackjack oak, shagbark hickory, elm, white ash, honey locust, eastern red cedar, persimmon, and walnut. The diverse topography of the Ozarks area has created a variety of plant microhabitats that make it the region of greatest species diversity in Missouri with a distinct biota including many native species. Glade areas where bedrock surfaces are common as are calcareous wet meadows along streams. Both these areas contain distinctive plant communities. Trees found in the relatively narrow floodplains of the Ozarks area include sycamore, cottonwood, boxelder, willow, silver maple, green ash, bitternut and shellbark hickory and walnut.

The rolling topography and deeper soils of the Osage Plains support grassland vegetation on upland sites and forest cover on steeper lands near rivers and on river bottoms. Some native prairies can be found in patches around the lake, but most areas were converted by former landowners to cool-season grasses, usually fescue. The native prairies consist mainly of big and little bluestems, Indian grass, switchgrass, sideoats grama and many native forbs and legumes.

Tree cover in the Osage Plains area occurs along streams and drainages too steep to cultivate, former home sites, and some fence lines. Major tree species include elm, honey locust, Osage orange, post oak, white oak, black oak, shingle oak, hickory ash,

cottonwood, silver maple, and walnut. Old home sites normally contain fruit trees and an occasional black locust, catalpa or Siberian elm. Trees found in the broad flat river bottom areas include pin oak, pecan, silver maple, cottonwood, burr oak, swamp white oak, river birch, and green ash.

Old filed succession is common on unused lands at the Truman project. Trees first to invade pastures and croplands include elm, honey-locust, Osage orange, persimmon, cedar, hawthorn, hickory, walnut, and smooth sumac (USACE. 1988).

(6) Wetlands

Much of the wetland systems classified at the project are associated with the lake and the tributaries feeding into the lake and with their associated riparian areas (USGS 2023). Classification of the wetlands was derived from the USFWS Classification of Wetlands and Deepwater Habitats of the United States. A table listing the wetland Systems and acreages is found below.

Table 7. Wetland Area within Harry S. Truman Dam and Reservoir Project.

System	Sub-System	Class	Class Acres
Palustrine	NO SUB-SYSTEM	Emergent Wetland	11,299
Palustrine	NO SUB-SYSTEM	Scrub-Shrub Wetland	1,536
Riverine	Lower Perennial	Unconsolidated Bottom	167
Palustrine	NO SUB-SYSTEM	Forested Wetland	18,055
Lacustrine	Littoral	Unconsolidated Bottom	215
Palustrine	NO SUB-SYSTEM	Aquatic Bed	3
Palustrine	NO SUB-SYSTEM	Unconsolidated Shore	3
Lacustrine	Littoral	Unconsolidated Shore	300
Lacustrine	Limnetic	Unconsolidated Bottom	46,514
Riverine	Lower Perennial	Unconsolidated Shore	5
Palustrine	NO SUB-SYSTEM	Unconsolidated Bottom	984

Note: Data in OMBIL (FY2019).

In 2005, USACE partnered with a variety of stakeholders to restore over 1,000 acres of emergent wetland, scrub-shrub wetland, and native wet prairie habitat in the upper Osage River drainage basin. This restored nine sites within the flood basin of Truman Lake.

i. Borrow Areas and Utilities

Several large borrow areas were used to construct the dam abutment. The largest of these is on the West side of the dam in what is now Shawnee Bend Recreational Area. Other large borrow areas are directly below the dam as well as further downstream of the dam just south of 7-highway across the channel from downtown Warsaw. The remaining borrow area was used to form the Sterett Creek Marina basin.

No utility corridors have been established for the project. Project lands have variety of utility easement located throughout. These include:

- Electric – 16
- Telephone/Communications – 5
- Water – 3
- Gas – ~10
- Major Roads/Highways – 6
- Other – 21
- Right of Way – 77

A total of 1,000 acre-feet of water is allocated from the lake. With Henry County Water Company having 172 acre-feet, Public Water Supply District #2 of Henry County having 504 acre-feet, and 324 acre-feet not currently under contract.

j. Mineral and Timber Resources

There are no timber stands of great commercial value on project lands so timber management program of the USACE and the MDC are oriented toward improving forest wildlife habitats through the use of firewood sales, timber salvage of valuable species, and limited timber sales.

No commercial mineral extraction occurs on the project. There have been some prior requests from the local counties to take gravel out of the creeks for use on local county roads, but none were granted due to lack of a mineral extraction real estate instrument.

k. Paleontology

The most significant paleontological sites found to date are in the project area are located in the Pomme de Terre River valley. It is in this area that Rogers Shelter and Trolinger, Kirby, and Jones Spring Bogs are found. Large concentration of Pleistocene megafaunal remains have been found.

l. Cultural Resources

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. A number of laws and regulations have been established to protect cultural resource sites on federal land including Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966;

Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally Owned and Administered Archeological Collections. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969, as applicable.

(1) Background

In Western Missouri, including the Harry S Truman Lake project, precontact periods of human occupation have been divided into broad time periods. The basic trends include the Pre-Paleoindian possibly as early as 20,000-11,550 years before present (B.P.); Paleoindian (11,500-9,800 B.P.); Archaic (9,800-2,700 B.P.); Woodland (2,700-1,000 B.P.); Mississippian (1,000-650 B.P.); Terminal Prehistoric (650 to 350 B.P); and Protohistoric (350-280 B.P.). Post European contact periods have been divided into the Early Historic Period (1673-1803 A.D.); Early American Period (1803-1854 A.D.); U.S. Civil War (1854-1865); Industrialization, Urbanization, and Changing Subsistence (1865-1930 A.D.); and Post-Great Depression Transformations (1930-to Dam Construction). Each of the above time periods is represented by diagnostic remains that represent cultural practices and adaptation to environmental factors.

Native American tribes inhabited the area from the earliest human settlement to the Euro-American settlement of the area starting in the mid-1820s. The Osage Nation has deep ancestral ties to the area that extend into the precontact period. Other tribes such as the Shawnee and Kickapoo were briefly in the area after they were forced westward by Euro-American settlement.

Numerous cultural resources from the Paleoindian period on have been recorded on Harry S Truman Lake project lands. Cultural resources are the physical remains of past human activity and occupation and include, but are not limited to, precontact and historic archeological sites, artifacts, features, burial sites (including mounds and cairns), buildings, structures, objects, landscapes, and traditional cultural places.

Previous Investigations

Harry S Truman Lake project lands have been subject to numerous archeological investigations both prior to and following construction of the lake project. Most of the larger investigations were conducted just before and after lake construction and prior to development of associated lake development such as campgrounds, parks, and access roads. Since the time of lake development, cultural resource investigations have been associated with specific USACE undertakings and real estate actions on leased lands. Most of these investigations have been on a smaller scale than the early investigations. To date, at least 51,267 acres of fee-tittle land (46.6%) above the standard operating pool have been inventoried for cultural resource sites while 58,800 (53.4%) have not been inventoried. Table 1 contains a list of the larger cultural resource investigations at the lake. Many smaller project specific investigations conducted by USACE archeologists or other archeologists on leased lands are not included in the table.

Table 8. Cultural Resource Reports at Harry S. Truman Lake Project.

Year	Report	Author
1965	Preliminary Archeological Investigation in the Kaysinger Bluff Reservoir Area	University of Missouri, Columbia (UMC) C. H. Chapman
1966	Archeological Investigations at the Rodgers Site, Kaysinger Bluff Reservoir, Missouri: The 1965 Field Season	UMC W.R. Wood and R. B. McMillan
1969	Archeological Salvage in the Kaysinger Bluff Reservoir, Missouri: 1969	UMC W.R. Wood and C. R. Falk
1972	Archeological Salvage in the Kaysinger Bluff Reservoir, Missouri: 1969	UMC W. R. Wood and K. Lippincott
1972	The Impact of the Harry S. Truman Dam and Reservoir on the Archaeological and Palaeoecological Resources of the Upper Osage River Basin, Missouri	Illinois State Museum (ISM) R.B. McMillan
1974	Archeological investigations in the Harry S. Truman Reservoir, Missouri: 1967-68	UMC W.R. Wood, C.R. Falk, and K. Lippincott
1974	Archeological investigations in the Harry S. Truman Reservoir Area: 1970	UMC W.R. Wood and R. Vehik
1975	A Survey of the Pleistocene Spring Bogs of the Lower Pomme de Terre Valley, Benton and Hickory Counties, Missouri	Illinois State Museum J. King
1975	Cultural Resources Survey Harry S. Truman Dam and Reservoir Project: Part I, Prior Surveys; and Part II, Survey of Borrow Areas and Relocations	UMC W.R. Wood and D. C. Roper
1976	The Phillips Spring Site 23HI216: Harry S. Truman Reservoir, Missouri	ISM NPS W.R. Wood, R. B. McMillan, and S.A. Chomko
1976	Cultural Resources Survey Harry S. Truman Dam and Reservoir Project: Lower Pomme de Terre Arm	UMC W.R. Wood
1977	Historical American Building Survey, Harry S. Truman Dam and Reservoir Project, Missouri	National Park Service (NPS), Office of Archeology and Historic Preservation (OAHP)
1977	Historical American Building Survey, Hall House and Batchelett House	Architects Collaborative J. Huffman

1977	Paleontological Resources Survey, Tebo, South Grand and Osage Arms, Harry S. Truman Dam and Reservoir, Osage River Basin, Missouri	ISM J. Saunders
1979	Architectural Inventory on Easement Lands, Harry S. Truman Dam and Reservoir Project, Missouri	NPS, OAHP
1979	Vol. II, Bridges Over the Osage, Harry S. Truman Dam and Reservoir Project, Missouri	Historical and Archeological Surveys, Inc. (HAS) R. Hayden
1980	Historical Resources Mitigation Vol. I, We Remember the Rivers, an Oral History Survey of the River Valleys in the Harry S. Truman Dam and Reservoir Project, Missouri (1978-1980)	HAS J. Sprunk C.M. Hendrickson
1981	An Assessment of Significance of Site 23SR339 Prior to the Development of an Area Park at Osceola, St. Clair County, Missouri	C. Helm and B.L. Purrington
1982	Holocene Adaptations Within the Lower Pomme de Terre River Valley Missouri (1976-1978)	ISM M. Kay
1982	National Architectural and Engineering Record Documentation, Middle Bridge, Benton County. Missouri	Gail White Associates G. White
1983	Mitigation of the Adverse Effects Upon the Local Paleontological Resources. Vol. I and II. Harry S. Truman Dam and Reservoir. Osage River Basin, Missouri (1977-1980)	ISM J. J. Saunders
1983	Phillips Spring, Missouri: Report of the 1978 Investigations	ISM M. Kay
1983	Archeological Reconnaissance in the Harry S. Truman Dam and Reservoir, 50 Year Flood Easement Lands, Osage River Basin, Missouri (1979-1981)	Iroquois Research Institute C. LeeDecker
1983	Cultural Resources Survey, Harry S. Truman Dam and Reservoir Project, Missouri, Volumes 1-10	UMC Various
1983	Prehistoric Cultural Continuity in the Missouri Ozarks: The Truman Reservoir Mitigation Project Management Summary	UMC D. C. Roper
1984	An Intensive Survey of Archaeological, Historic and Historic Architectural Resources, Roscoe Park and Recreation Project, Village of Roscoe, St. Clair County, Missouri	MDNR L. Grantham
1984	An Intensive Survey of Archeological, Historic and Historic Architectural Resources, Sunset Optimist BMX, City of Clinton, Henry County, Missouri	MDNR L. Grantham

1984	An Intensive Cultural Resource Survey of Proposed Erosion Control Waterways in the Truman Wildlife Management Area, Henry County, Missouri: 1984	Center for Archaeological Research, Southwest Missouri State U. (CAR) J H. Ray and Benn
1985	An Intensive Survey of Archeological, Historic, and Historic Architectural Resources, Warsaw Municipal Golf Course, City of Warsaw, Benton County, Missouri	MDNR L. Grantham
1986	Archeological Survey and Reconnaissance Within the Ten-Year Flood Pool Harry S. Truman Dam and Reservoir Parts 1 and 2	Commonwealth Associates L. Taylor
1988	Harry S Truman Dam and Reservoir, Missouri Historic Properties Management Plan Vol. 1 and 2	Historic Preservation Associates (HPA) T.C. Klinger and Hinkle
1988	A Cultural Resources Survey of Proposed Excess Tracts within the Harry S. Truman Reservoir Project Henry, St. Clair, and Bates Counties, Missouri	HPA T. C. Klinger L. L. Ayres
1988	National Register Testing at 23BEI007, 23BEI008, and 23BE1010, Downstream from the Harry S. Truman Dam and Reservoir, Benton County, Missouri	Soil Systems, Inc. W.B. Lees, R.D. Mandel, and K.A. Parker
1988	An Archeological Reconnaissance of Proposed Levees, Water-Oriented Recreation Facilities and Borrow Areas Downstream from the Harry S. Truman Dam and Reservoir, Benton County, Missouri 1980	CAR B. L. Purrington
1991	An Intensive Cultural Resource Survey Of Proposed Marshes And An Access Road In The Truman Wildlife Management Area In Henry, Hickory, And St. Clair Counties, Missouri: 1991	CAR P.W. Nichols and J.H. Ray
1992	Test Excavations at Twenty-Eight Sites to Determine Eligibility for the national Register of Historic Places, Harry S. Truman Reservoir, Missouri.	UMC D.C. Roper
1993	Prehistoric Cultural Continuity in the Missouri Ozarks: The Truman Reservoir Mitigation Project Vol. 1-4	UMC D.C. Roper
1993	Cultural Resource Investigations Phase II Testing Four Rivers Wildlife Area Wetlands Project Vernon County Missouri COE 404 Permit Project	Environmental Research Center of Missouri (ERC) C. Sturdevant
1994	Native American Graves Protection and Repatriation Act (NAGPRA) Inventory of the U.S. Army Corps of Engineers Collections curated at the University of Missouri-Columbia Sinclair Farms Facility	HPA Reports 94-21 T. C. Klinger, L. Bittenger, D. R. Dickson, K. L. Hoffman, and J. L. Gray, IV
1997	Cultural Resources Investigations of Route 13, St. Clair County, Missouri	J. Harcourt, W. Angelbeck, and T. Porter
1998	An Intensive Cultural Resources Survey for Proposed Improvements to Highway 13, St. Clair County, Missouri.	Wilbur Smith Associates

1999	Cultural Resource Investigations, Phase I Survey, Four Rivers Conservation Area, Vernon County, Missouri	Environmental Research Center of Missouri (ERC) C. Sturdevant
2000	Cultural Resources Investigation, Phase II Testing 23VE132, 23VEW184, and 23VE188 Four Rivers Wildlife Area, Vernon County, Missouri	Environmental Research Center of Missouri (ERC) C. Sturdevant
2003	Cultural Resource Survey of the Truman Training Site.	M. J. Cramer
2006	Cultural Resource Investigations Phase I Survey, Dehn Parking Lot/Observation Project, Henry County, Missouri.	Environmental Research Center of Missouri (ERC) C. Sturdevant
2016	Investigation of Truman Lake ARPA Violations at Site 23HE1961 in Henry County	T. Meade
2020	Archeological Survey, Pond Construction, Borrow Area, and Tree Clearance on Easement Land, Harry S Truman Lake, Vernon County	G. Powell

(2) Known Cultural Resources at Harry S Truman Lake

There are approximately 2,884 cultural resource sites recorded on Harry S Truman Lake Project fee owned lands. This number includes 2,309 archeological sites and 575 architectural sites. In addition, 251 sites are recorded on lake flowage easement lands. The archeological sites are divided into three broad categories: Prehistoric through early historic Native American sites, which span from the earliest known occupation through tribal removal in the 1820s; historic Euro/American settlement from the 1820s into the 20th century; and multi component sites, which have both precontact and post-contact components. All the recorded architectural sites were 19th and 20th century structures.

Table 9 summarizes the cultural resource sites recorded on Harry S Truman lands by site type, NRHP eligibility, and land status (fee and easement). By far most of the archeological sites recorded are precontact to protohistoric Native American archeological sites or sites with precontact components (n=2,506) with 2,264 of these sites on fee-owned land and 242 on easement lands. In contrast, there are 91 recorded post contact Euro-American archeological sites or sites with post contact components with 68 on fee-owned land and 23 on easement lands. The reason for the large difference between the recorded number of precontact in relation to post-contact Euro-American archeological sites is that most of the early investigations focused on precontact sites.

Most of the sites at Harry S Truman Lake have only been documented and have not been evaluated for their eligibility for the National Register of Historic Places (NRHP). To date, on fee-owned lands one site has been listed on the NRHP, 98 sites are determined eligible for the NRHP, 174 sites have been determined as not eligible for the

NRHP, and 2,036 have had no NRHP eligibility determination. On easement lands, one site is listed on the NRHP, 26 have been determined eligible for the NRHP, 46 sites have been determined not eligible for the NRHP, and 178 have no eligibility determination. A number of sites determined eligible for the NRHP that could not be avoided during lake related construction were subject to mitigation measures due to the adverse impacts. For archeology sites these mitigation measures consisted of archeological data recovery excavations. Information on those NRHP eligibility determination and mitigation measures are presented in the 1988 Harry S. Truman Lake Historic Properties Management Plan (HPMP).

The architectural sites were recorded during large studies of standing structures conducted just prior to the lake impoundment in the 1970s and early 1980s. All 575 structures evaluated were on fee owned lands. A total of 25 were determined eligible for the NRHP and 550 were determined not eligible for the NRHP. Mitigation measures were developed and for all the structures determined eligible for the NRHP. Mitigation efforts included documentation through the Historic American Building Survey/ Historic American Engineering Record (HABS/HAER). Some structures were preserved in place, or moved for public interpretation, such as the Hooper House. Specific mitigation measures and correspondence can be found in the 1988 HPMP.

Table 9. Cultural resource sites recorded on fee lands at Harry S. Truman Lake Project.

Cultural Resource Type	Listed	Eligible	Not Eligible	Undetermined eligibility	Total
Euro-American Archeological Sites	0	1	22	16	**39**
Precontact Archeological Sites	1	95	150	1989	**2235**
Multi Component Archeological Sites	0	2	2	25	**29**
Undetermined Archeological Sites	0	0	0	6	**6**
Architectural Resources	0	25	550	0	**575**

Table 10. Cultural resource sites recorded on flowage easement lands at Harry S. Truman Lake Project.

Cultural Resource Type	Listed	Eligible	Not Eligible	Undetermined eligibility	Total
Euro-American Archeological Sites	0	0	0	6	**6**
Precontact Archeological Sites	1	26	46	152	**225**
Multi Component Archeological Sites	0	0	0	17	**17**
Undetermined Archeological Sites	0	0	0	3	**3**
Architectural Resources	0	0	0	0	**0**

(3) Traditional Cultural Properties

Under the NHPA, properties of traditional religious and cultural importance to a living community may be determined to be eligible for inclusion on the NRHP. Commonly known as Traditional Cultural Properties (TCP), these properties are associated with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. Therefore, TCPs must be taken into account in order to comply with Federal cultural resources regulations. Additionally, Executive Order 13007 states that each Federal agency with responsibility for the management of Federal lands shall accommodate access to and ceremonial use of Native American sacred sites by religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. There have been no TCPs or sacred sites identified at this time at Harry S Truman Lake project. However, there has been no investigations or tribal consultation to date to identify TCPs. If TCPs or sacred sites are identified at Harry S Truman Lake in the future, they would be given additional protected status through TCP designation.

(4) Archeological Resource Protection Act

ARPA secures the protection of archeological resources and sites on lands owned and administered by the United States. According to ARPA, it is illegal to excavate, remove, damage, or deface archeological resources on public lands without a permit. It is also illegal to sell or transport archeological resources removed from public lands. The Kansas City District requires permits for archeological investigations at Harry S Truman Lake in accordance with ARPA and is increasing surveillance and coordination with law enforcement agencies to enforce ARPA civil and criminal penalties.

(5) Native American Graves Protection and Repatriation Act

According NAGPRA, it is the responsibility of a Federal agency to inventory human remains and associated funerary objects and summarize any potential sacred objects that existed within their archaeological collections prior to the passage of the law and to repatriate such objects to affiliated Tribes requesting their return. Additionally, there are responsibilities related to the inadvertent discovery of human remains or funerary objects that occur on Federal land that require consultation and repatriation. The Kansas City District NAGPRA collections have not yet been repatriated. The District has been engaged with Tribal Nations on the repatriation of collections over the years in compliance with NAGPRA regulations and will be completing the repatriation process in the near future.

(6) Cultural Resource Management

According to ER 1130-2-540, the District Commander shall ensure that a Historic Properties Management Plan (HPMP), where appropriate, is developed for USACE Civil Works Projects. The Harry S Truman has an HPMP that was finalized in 1988. The Kansas City District continues to follow all cultural resources management laws,

regulations, and policies prior to conducting work or allowing others to conduct work at the Project. ER 1130-2-540 directs that the District Commander shall implement a program, upon availability of funds, to accomplish an inventory of historic properties and site evaluation at each civil works water resource project under his/her jurisdiction and administration to comply with Section 110(a)(2) of the NHPA. EP 1130-2-540 directs that District Commanders shall ensure that historic properties are given full consideration in all management and construction activities on fee-title lands. The District Commander has full responsibility within existing statutes, administrative guidelines, and policy to protect, preserve, manage, and/or mitigate damage to historic properties on Project lands. These responsibilities include but are not limited to the following actions: real estate grants and land disposals, recreational development, wildlife management, construction, and operations and maintenance. Based on these responsibilities USACE would be required to identify and address impacts on cultural resources for all types of USACE undertakings.

(7) Long-term Objectives for Cultural Resources

As funding allows, a the HPMP shall be updated and incorporated into the Operational Management Plan in accordance with EP 1130-2-540. The HPMP is now over 34 years old and needs to be updated. Cultural laws and regulations have changed since the HPMP was completed, most notably NAGPRA enacted in 1990, ARPA regulations established also in 1990, and tribal consultation requirements for all pertinent laws and regulations. In addition, an electronic and GIS data base needs to be developed for cultural resource sites at Harry S. Truman Lake due to the large number of sites at the lake and site locational discrepancies discovered during the development of the 1988 HPMP. As less than half of fee-title land above the standard operating multipurpose pool elevation have ben been inventoried for cultural resources, completion of a full inventory of cultural resources at Harry S. Truman Lake is a long-term objective that is needed for compliance with Section 110 of the NHPA. All currently known and any newly recorded sites must be evaluated to determine their eligibility for the NRHP.

In accordance with Section 106 of the NHPA, any proposed ground-disturbing activities or projects, such as those described in this master plan or as may be proposed in the future by others for right-of-way easements, will require cultural resource surveys to locate and evaluate historic and prehistoric resources. Resources determined eligible for the NRHP must be protected from proposed project impacts, or the impacts must be mitigated. All future cultural resource investigations at Harry S. Truman Lake must be coordinated with the Missouri State Historic Preservation Officer and federally recognized Tribes to ensure compliance with the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act.

m. Interpretation/Visual Qualities

The general goal of USACE' interpretive programming is to inform and educate the public with regard to the purposes and concept of lake operations and the natural and cultural features of the area. Interpretation at Truman Lake includes nature trails, a series of school and community programs, park presentations and nature walks, and various water safety and environmental education programs. The Harry S. Truman Visitor Center provides numerous opportunities for programs and events that support the program goals. The purpose of the Harry S. Truman Regional Visitor Center is to educate visitors about the Corps, its history and its current missions, and to inform the visitor of the Harry S. Truman Project's primary mission of watershed management in the Osage River Valley. There are two special events held there annual, Heritage Days and Eagle Days, which bring in thousands of visitors who get the opportunity to learn about the history and natural resources of the area. There are also numerous displays covering everything from fishing, hunting, hydropower, history of the Osage River, how the dam was constructed, replicas of mastodon bones that were found in the area, along with many other topics. There is a theatre room that can sit approximately 75 people that is used for presentations and for viewing interpretive videos. The theatre is also used as a conference room for Corps sponsored training, public meetings, boat operator safety courses, congressional visits, and many more crucial visits. The center boasts a unique circular design hanging over a bluff with large windows where visitors can view the dam and the upstream and downstream areas. There are also buildings such as cabins, a general store, a schoolhouse, and a home located on the leased grounds of the area which provide more historical educational opportunities. In addition, USACE is often invited to speak or have an informational booth at local fairs, civic group gatherings, and school functions.

n. Demographics

The population of Missouri is over 6.1 million people. According to the Missouri Statewide Outdoor Recreation Plan (SCORP), population density of Missouri is shifting from rural agricultural areas to urban areas and areas rich in recreational amenities. Projections show these patterns will continue, and there will be more movement to urban fringe areas. The population is tending toward an older demographic, with projections that by 2035 adults aged 65 or older are projected to outnumber children aged 18 or less (MDNR. 2018). Projections indicate that Missouri's growth will slow in the coming decades. Overall growth between 2000 and 2030 will average roughly six percent per decade. Census Bureau models predict the nation to grow at about ten percent per decade.

The 2020 census data estimate the populations of Bates, Henry, Hickory, St. Clair, and Vernon Counties all lost population between 2010 to 2020. Out of the six counties surrounding the lake, only Benton County had a small increase in population during that same time period. Clinton, located along the South Grand River arm, is the largest city surrounding the lake, with a population of 9,217.

In general, when compared to the rest of the state, this population skews older with the six counties having 19.8%-32.1% population over the age of 65 compared to the state average of 17.6%. The population of the six counties is over 92.6% white as compared to the statewide projection of 78.7%.

All 6 counties have median household incomes far below the state average of $57,290. Each of the counties also have greater than state average persons living in poverty (U.S. Census Bureau. 2022). For a more detailed analysis of Socioeconomic conditions see Appendix A.

o. Economics

The money spent by visitors to USACE lakes on trip expenses adds to the local and national economies by supporting jobs and generating income. Visitor spending represents a sizable component of the economy in many communities around USACE lakes. Truman Lake Project contributed the below to the economy (USACE 2019):

1,375,481 visits per year (Fiscal Year (FY) 2019) resulted in:

$63,788,388 in visitor spending within 30 miles of the lake

$31,842,408 in sales within 30 miles of the lake

529 jobs within 30 miles of the lake

$13,089,490 in labor income within 30 miles of the lake

$16,821,993 in value added within 30 miles of the lake

$11,776,348 in National Economic Development Benefits

With multiplier effect, visitor trip spending resulted in:

$47,083,838 in total sales

663 jobs

$17,060,898 in labor income

$23,621,456 in value added (wages & salaries, payroll benefits, profits, rents, and indirect business taxes)

Cumulative damages prevented from project implementation through FY22 totaled almost $1.9 billion dollars.

Electrical power, generated by the operation of six turbine-generator units in the powerhouse, which is part of the dam, is marketed by Southwest Power Administration and used to meet peak electrical requirements when conventional power plants cannot fulfill the public's demand for electrical energy.

p. Recreation Facilities, Activities and Needs

(1) Zones of influence

The primary zones of influence are the Kansas City and Springfield, Missouri area along with the surrounding towns within west-central Missouri.

(2) Visitation Profile

During the period of FY14-FY21 visitation ranged from 0.97 million to over 1.74 million visits per year with an average of 1.35 million total visits to all USACE, State, and grantee managed areas. FY19 was impacted by prolonged flooding. FY20 was impacted by the presence of the COVID 19 virus outbreak, which had periods of time with facility closures or limited access. Total overnight visits during this time period ranged from 156,866 visits to 280,997 visits with an average of 214,067 overnight visits per FY. Day-use visits accounted for between 801,179 to 1,516,59 with an average of 1,134,976 day-use visits per FY during FY14-FY22.

Table 91. Total Visitation.

Fiscal Year	Visitation Total
2014	1,335,275
2015	1,314,338
2016	1,491,195
2017	1,565,341
2018	1,200,229
2019	1,167,406
2020	971,585
2021	1,746,969
2022	2,122,099

Note: Average visitation of this period is 1,434,937 visits per year.

(3) Recreation Analysis

By providing opportunities for active recreation, USACE lakes help combat one of the most significant of the nation's health problems: lack of physical activity. Recreational programs and activities at USACE lakes also help strengthen family ties and friendships; provide opportunities for children to develop personal skills, social values, and self-esteem; and increase water safety and awareness. The program also increases community involvement and ownership of shared resources. Physical

recreation contributes to a full and meaningful life, which is good for the mind and body, good for the economy, and great for the outdoors.

Truman's recreation areas, trails, and water add to the attraction, vitality, and appreciation for the outdoors. These areas provide a sense of place and allow a growing population to enjoy outdoor recreation opportunities in an ever-growing landscape.

Facilities in FY23

- 31 recreation areas
- 53 picnic sites
- 971 camping sites
- 16 playgrounds
- 6 zoned swimming areas
- 11 number of trails
- 114 trail miles
- 30 courtesy docks and fishing piers
- 42 boat ramps
- 1321 marina slips

Visits (person-days/nights) in FY21

- 1,746,969 in total
- 205,017 picnickers
- 170,406 campers/overnight visitors
- 296,481 swimmers
- 141,336 walkers/hikers/joggers
- 228,394 boaters
- 369,397 sightseers
- 138,840 anglers
- 45,026 special event attendees
- 47,045 others

(4) Recreational carrying capacity

No official study of carrying capacity has been done on Harry S. Truman Dam and Reservoir.

q. Related Recreational, Historical, and Cultural Areas

The recreational, historical, and cultural opportunities near Truman Lake are varied and vast.

Recreational:

- Municipal Parks
- Trails
- Swimming Pools
- Golf and Disk Golf Courses
- Fishing Tournaments
- Lake of the Ozarks
- Lost Valley Fish Hatchery
- County Fairs and Regional Rodeos
- Osceola Cheese
- Lucas Oil Speedway

Historical

- Benton County Museum
- Henry County Museum
- Heartland Community Theater
- Joe Dice Swinging Bridge
- Hooper House and Pioneer Village

r. Real Estate

Acquisition Policy* - Land acquisition was in accordance with the joint policy established by the Department of the Interior and Department of the Army on 22 February 1962.

The reservoir area lands were purchased in fee title, below the maximum full pool plus a reasonable surcharge for the effects of saturation, wave action, and bank erosion within the limits of the normal pool. Blocking, generally, has been along minor sectional subdivision lines, encompassing an area 300 feet horizontally from the full pool contour (elevation 739.6 feet, msl), based on sound real estate practice and manageable property lines. Easements were taken in remote areas the determination was made that

the lands have no substantial value for the project, public outdoor recreation, or other coordinated purposes. For the project, this has resulted in dividing the reservoir area into a downstream portion and an upstream portion. The division falling on mainstem and major tributary valleys, approximately where the valley floor lies four feet above the normal pool level or elevation 710 feet. The selected elevation of 710 feet, as a breakpoint between total fee purchase and easement, is also the approximate break between the gently rolling uplands of the Osage Plains area and the rough hilly area characteristic of the Ozarks. Upstream from the division line lands were purchased in flowage easement to elevation 742 feet.

s. Pertinent Public Laws

(1) Application of Public Laws

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

(2) Recreation

The policies and public laws listed below address development and management of recreational facilities on public lands and are pertinent to the Harry S. Truman Dam and Reservoir Project.

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

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

PL 83-780, Flood Control Act of 1954 (3 September 1954), further amends PL 78-534 and authorizes the Secretary of the Army to grant leases to federal, state, or governmental agencies without monetary considerations for use and occupation of land and water areas under the jurisdiction of the Department of the Army for park and recreational purposes when in the public interest.

PL 87-874, Flood Control Act of 1962, broadened the authority under PL 78-534 to include all water-resource projects.

Joint Land Acquisition Policy for Reservoir Projects (Federal Register, Volume 27, 22 February 1962) allows the Department of the Army to acquire additional lands necessary for the realization of potential outdoor recreational resources of a reservoir.

PL 88-578, Land and Water Conservation Fund Act of 1965 (1 September 1964), prescribes conditions under which the USACE may charge for admission and use of its recreational areas.

PL 89-72, Federal Water Project Recreation Act of 1965 (9 July 1965), requires sharing of financial responsibilities in joint federal and non-federal recreational and fish and wildlife resources with no more than half the cost borne by the federal government.

PL 90-480, Architectural Barriers Act of 1968 (12 August 1968), as amended, requires access for persons with disabilities to facilities designed, built, altered, or leased with federal funds.

PL 101-336, Americans with Disabilities Act of 1990 (ADA) (26 July 1990), as amended by the ADA Amendments Act of 2008 (PL 110-325), prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires reasonable accommodation for persons with disabilities.

PL 102-580, Water Resources Development Act of 1992 (31 October 1992), authorizes the USACE to accept contributions of funds, materials, and services from non-federal public and private entities to be used in managing recreational facilities and natural resources.

PL 103-66, Omnibus Budget Reconciliation Act - Day-Use Fees (10 August 1993), authorized the USACE to collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches, and boat ramps.

PL 104-333, Omnibus Parks and Public Lands Management Act of 1996 (12 November 1996) created an advisory commission to review the current and anticipated demand for recreational opportunities at lakes and reservoirs managed by the federal government and to develop alternatives to enhance the opportunities for such use by the public.

PL 104-303 (the Water Resources Development Act of 1996) authorizes recreation and fish and wildlife mitigation as purposes of the project, to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of the project.

(3) Water Resource Protection and Flood Risk Management

A number of public laws address water resources protection and flood risk management and integration of these goals with other Project purposes such as recreation. The following are pertinent to Harry S. Truman Dam and Reservoir:

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

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

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

PL 85-500, Water Supply Act of 1958 (3 July 1958), authorizes the USACE to include municipal and industrial water supply storage in multiple-purpose reservoir projects.

PL 87-88, Federal Water Pollution Control Act Amendments of 1961 (20 July 1961), requires federal agencies to address the potential for pollution of interstate or navigable waters when planning a reservoir project.

PL 89-80, Water Resources Planning Act of 1965 (22 July 1965), provides for the optimum development of the Nation's natural resources through coordinated planning of water and related land resources. It provides authority for the establishment of a water resources council and river basin commission.

PL 89-298, Flood Control Act of 1965 (27 October 1965), authorizes the Secretary of the Army to design and construct navigation, flood risk management, and shore protection projects if the cost of any single project does not exceed $10 million.

PL 92-500, Federal Water Pollution Control Act (Clean Water Act) (October 18, 1972) Establishes a national goal of eliminating all discharges into U.S. waters by 1985 and an interim goal of making the waters safe for fish, shellfish, wildlife, and people by July 1, 1983. Also provides that in the planning of any USACE reservoir consideration shall be given to inclusion of storage for regulation of streamflow. PL 95-217, Clean Water Act of 1977 (15December 1977), amends PL 87-88 and requires the Environmental Protection Agency (EPA) to enter into written agreements with the Secretaries of Agriculture, the Army, and the Interior to provide maximum utilization of the laws and programs to maintain water quality.

PL 99-662, Water Resource Development Act of 1986 (17 November 1986), establishes cost sharing formulas for the construction of harbors, inland waterway transportation, and flood risk management projects.

(4) Fish and Wildlife Resources

Several public laws address protection and maintenance of fish and wildlife resources. The following are pertinent to the Harry S. Truman Dam and Reservoir project:

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

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

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

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

PL 91-190, National Environmental Policy Act of 1969 (NEPA) (1 January 1970), establishes a broad federal policy on environmental quality stating that the federal government will assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings, and preserve important historic, cultural, and natural aspects of our national heritage.

PL 93-205, Conservation, Protection, and Propagation of Endangered Species (28 December 1973), requires that federal agencies will, in consultation with the USFWS, further conservation of endangered and threatened species and ensure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.

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

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

PL 104-303, Water Resources Development Act of 1996. Authorized recreation and fish and wildlife mitigation as purposes of the project, to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of the project.

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

(5) Forest Resources

The following law pertains to management of forested lands and is pertinent to the Harry S. Truman Dam and Reservoir project:

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

(6) Cultural Resources

Several public laws mandate protection of cultural resources on public lands. The following are pertinent to USACE project lands at the Harry S. Truman Dam and Reservoir project:

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

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

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

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

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

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

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

(7) Leases, Easements, and Rights-of-Way

Several laws and regulations govern the granting of leases, easements, and rights-of-way on federal lands. The following are pertinent to USACE project lands at the Harry S. Truman Dam and Reservoir project:

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

10 U.S.C. § 2667, Leases: Non-excess Property of Military Departments and Defense Agencies (10 August 1956), authorizes the lease of land at water-resource projects for any commercial or private purpose not inconsistent with other authorized project purposes. U.S.C. Titles 10, 16, 30, 32, and 43 address easements and licenses for project lands.

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

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

PL 91-646, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (2 January 1971), establishes a uniform policy for fair and equitable treatment of persons displaced as a result of federal or federally assisted programs.

PL 94-579, Federal Land Policy and Management Act of 1976 (21 October 1976) establishes a policy that the federal government receives fair market value for the use of the public lands and their resources unless otherwise provided for by statute. It also provides for the inventory of public land and land-use planning and establishes the extent to which the executive branch may withdraw lands without legislative action.

t. Management Plans

Operation Management Plan - Dated 2022

Whereas the Master Plan is a more conceptual framework to guide the park, the OMP gives more specificity to what work will be accomplished over the next five years. The OMP is updated annually.

Chapter 3 – Resource Objectives

Harry S Truman Reservoir is a 55,600-acre water resource development project under the administrative jurisdiction of the U.S. Army Corps of Engineers, Kansas City District. Acquisition of the 166,864 acres of fee lands was required for project operations, separable recreation, and wildlife mitigation. An additional 102,846 acres of easement were acquired for flood storage purposes. These lands varied in topography, soils, and vegetation and make up the majority of project lands. USACE operates and maintains 14 parks or access points at Truman. These areas provide the visiting public with a wide range of recreational opportunities and facilities and make a significant contribution to the recreation, fish, and wildlife resources of the region. The Missouri Department of Conservation is the largest licensee, having management responsibility over about 58,311 acres of the over 100,000 acres of project lands for wildlife management purposes. The Department is also responsible for fisheries management on Truman Reservoir and Lake of the Ozarks.

a. Recreation Management Objectives:

- Support recreation use by appropriate vegetation management.
- Maintain integrity of project lands through boundary protection activities.
- Maintain and improve the parks' potential by providing quality bank fishing and other day use activities.
- Upgrade and supplement existing facilities to better serve visitor needs.
- Provide functional and safe recreational facilities for public use.
- Continue to maintain and improve the park's ability to provide quality day use activities.
- Manage natural features to benefit wildlife and vegetative resources.
- Increase park efficiency.
- Improve park universal accessibility.
- Improve infrastructure needs.
- Maintain quality camping opportunities that will accommodate the needs of modern campers.
- Provide high water boat access.
- Provide water-based recreation opportunities and facilities.
- Provide organized group day use recreation, camping and education opportunities.
- Provide improved multi-use trail systems.
- Continue to look for leasing and partnership opportunities.
- Work in kind with stakeholders in management of our lands.
- Provide improved access opportunities for all user bases.

b. Operations Objectives:

- Maintain the dam and associated structures as specified by project operations and Maintenance Manual.
- Provide a functional, attractive, and safe area for staff and public use.
- Maintain flood control structures as specified by the project Operations and Maintenance Manual.

c. Natural Resource Management Objectives:

- Maintain integrity of project lands through boundary protection activities.
- Manage natural features to benefit native wildlife and vegetative resources.
- Protect historic and cultural resources from degradation.
- Provide public access to natural resources to include stream and river fishing access.
- To maintain natural and recreational resources for future generations.
- To provide a dedicated and secure site for long-term forestry research, extension, and improved tree seed production activities.
- Control invasive species to protect native fish, tree, wildlife, and plant species.
- Work with other agencies and stakeholder groups to leverage resources to achieve common goals.
- Preserve and protect special status species and habitat sources such as caves, quarries, timber stands, glades, native fields, ponds, and marshes.

Chapter 4 – Land Allocation, Land Classification, Water Surface, and Project Easement Lands

a. Land Allocation. *

The congressionally authorized purpose for which the project lands were acquired. A project map delineating land according to the following allocations will be included in the MP. There are only four land allocation categories applicable to USACE projects:

(1) Operations (i.e., flood control, hydropower, etc.).

Lands acquired for the congressionally authorized purpose of constructing and operating the project. Most project lands are included in this allocation.

(2) Recreation.

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

(3) Fish and Wildlife.

Lands acquired specifically for the congressionally authorized purpose of fish and wildlife management. These are referred to as separable fish and wildlife lands. Lands under this allocation can only be given a land classification (see below) of “Wildlife Management.”

(4) Mitigation.

Lands acquired or designated specifically for the congressionally authorized purpose of offsetting losses associated with development of the project. These are referred to as separable mitigation lands. Lands under this allocation can only be given a land classification (see below) of “Mitigation.”

b. Land Classification.

The primary use for which project lands are managed. Project lands are zoned for development and resource management consistent with authorized project purposes and the provisions of the National Environmental Policy Act and other Federal laws. Identification of these areas should be supported by a narrative. A project map delineating land according to the following classifications will be provided. (Agriculture or grazing use of project land is not a land classification but may be an interim use to meet management objectives.)

(1) Project Operations.

This category includes those lands required for the darn, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas that are used solely for the operation of the project.

(2) High Density Recreation.

Lands developed for intensive recreational activities for the visiting public including day use areas and/or campgrounds. These could include areas for commercial concessions marinas, comprehensive resorts, etc.), and quasi-public development.

(3) Mitigation.

This classification will only be used for lands with an allocation of Mitigation and that were acquired specifically for the purposes of offsetting losses associated with development of the project.

(4) Environmentally Sensitive Areas.

Areas where scientific, ecological, cultural, or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act or applicable State statues. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration. These areas are typically distinct parcels located within another, and perhaps larger, land classification, area. A brief narrative should be provided describing the associated resource analysis and/or inventory used in making the classification.

(5) Multiple Resource Management Lands.

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

Low Density Recreation.

Lands with minimal development or infrastructure that support passive public recreational use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing, etc.).

Wildlife Management.

Lands designated for stewardship of fish and wildlife resources.

Vegetative Management.

Lands designated for stewardship of forest, prairie, and other native vegetative cover.

Future or Inactive Recreation Areas.

Areas with site characteristics compatible with potential future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they will be managed for multiple resources.

(6) Water Surface.

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

Restricted —

Water areas restricted for project operations, safety, and security purposes.

Designated No-Wake —

To protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety.

Fish and Wildlife Sanctuary—

Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.

Open Recreation —

Those waters available for year-round or seasonal water-based recreational use.

c. Project Easement Lands*

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

(1) Operations Easement.

USACE retains rights to these lands necessary for project operations (access, etc.)

(2) Flowage Easement.

USACE retains the right to inundate these lands for project operations.

(3) Conservation Easement.

USACE retains rights to lands for aesthetic, recreation and environmental benefits.

Chapter 5 – Resource Plan.

Compartment 001 – Bledsoe Ferry Park

(1) Classification and justification: High Density Recreation

(2) Management agency: U.S. Army Corps of Engineers (USACE)

(3) Location/Acreage: 279 acres

Access to the south side of the compartment is from West Dam Access Road which leads to the administration area from Highway 7. Access to the north side is from North Dam Access Road which leads from Highway 65 to the administration area. The City of Warsaw is about a mile downstream.

(4) Description and use:

The park is divided by the outlet channel into two distinct areas, Bledsoe Ferry East and Bledsoe Ferry West. The dam tailrace and the old Osage River channel are the most conspicuous features of this compartment and sustain heavy fishing pressure from March through November. The City of Warsaw has leased the area south of the project maintenance building for recreational development.

Bledsoe Ferry East contains a boat ramp and several universally accessible fishing docks in addition to vault toilets, parking lots and picnic shelters. An open grass field inside the circulatory road serves as a parking area for the annual Heritage Days celebration.

Bledsoe Ferry West contains a comfort station in addition to vault toilets, picnic shelters and parking lots. A portion of this area is leased to the City of Warsaw. The city has constructed two lighted ball fields, a football/soccer field, a concession/restroom facility and parking lot on the area. Additional ball fields have been added along with a connecting walking trail.

Recreational use of the park is primarily fishing activities, particularly bank fishing. The outlet channel receives the heaviest fishing pressure per surface acre of water of any site on the project, all from the riprapped shoreline. The old river channel is also popular as it features several fishing docks, submerged fish attractors and a boat ramp. Secondary visitor use of the park includes picnicking, sightseeing and therapeutic walking activities.

(5) Resource objectives

(a) Support recreation use by appropriate vegetation management.

(b) Maintain and improve the park's potential for providing quality bank fishing and other day use activities, along with supporting the universal accessibility of the park.

(c) Upgrade and supplement existing facilities to better serve visitor needs.

(d) Continual maintenance and monitoring of dam tailrace features to allow for safe releases downstream for hydropower production, and floodwater releases.

(e) Continue to support the heavy day use pressure and provide the public with quality facilities.

(6) Development needs —

(a) Work with stakeholders and partners to support development of recreation features such as bank fishing, trail system expansion, and sports complex expansion.

(7) Special considerations —

(a) Possibly expansion of the City of Warsaw's lease may encompass the entirety or part of the compartment. This would support the recreational lease that is currently established.

(b) Ensure that operational uses for water releases are being met, and future operational needs such as pump-back can be supported.

Compartment 002 – Administrative Area

(1) Classification and justification: Project Operations

(2) Management agency: USACE

(3) Location/Acreage: 89 acres

The Administrative area can be accessed from Highway 65 via North Dam Access Road and from Highway 7 via West Dam Access Road.

(4) Description and use

Compartment 002 includes the powerhouse, spillway, embankment structures, switchyard, and maintenance building. The landscape is dominated by Kaysinger Bluff on the east and gently rolling terrain on the west end of the dam. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Ornamental trees, shrubs, and grasses have been planted around the powerhouse and project office. Native warm season grasses on the embankment backslope have been converted to cool season varieties east of the spillway but remain west of the powerhouse.

(5) Resource Objectives

(a) Provide an area maintenance, and operational facilities to ensure project purposes are being met while ensuring public safety.

(b) operations support to the hydropower and flood control objectives that the dam, and powerhouse provides.

(6) Development needs —

(a) Provide staff with faciliatory changes needed to support mission objectives and goals including potential removal of existing office buildings.

(b) Make updates to safety and security features to protect critical infrastructure, while providing a safe and secure location to store vehicles, equipment, and supplies.

(7) Special considerations —

(a) The operational imprint of the physical administrative office, ranger house, and CET house has been requested to be moved for future recreational development. The needed office space will continue to be a priority and optional areas have been identified for either office relocation or different work locations for staff. There is still a need to develop a path forward for this relocation and budget request is being made.

(b) Aging structure, utilities, and mechanical features continue to be an issue with all current buildings. Needed upgrades, replacements, or relocation are future goals that need to be met.

(c) Upgrade project security and force protection needs to meet current Army requirements.

Compartment 003 – Shawnee Bend Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 735 acres

This compartment is located just west of the dam adjacent to the Administration Area and is accessible from Highway 7 two miles to the south and from Highway 65 three miles to the east. The park extends south to Highway 7 and east to Compartment 2.

(4) Description and use

The park receives heavy visitation due to its location and day use facility development. Recreational use of the park consists of day use activities associated with the beach, boat ramp and golf course. Secondary activities include sightseeing and picnicking. Recreational development consists of a beach, waterborne restroom, three picnic shelters, two 4-lane boat ramps (one is equipped with a wheelchair loading ramp), high water boat ramp, vault toilets, two playgrounds and parking lots. In 2016, a 9-hole disc course was added to the area. A 235-acre portion of the park is leased to the City of Warsaw. The City of Warsaw developed a 9-hole golf course, Shawnee Bend Municipal Golf Course, with clubhouse, driving range and cart storage buildings on this leasehold. In 2018 a 2.5-mile walking trail was cut using a contractor to establish a 10ft. wide by 8 ft. tall path. This trail starts at the Shawnee Bend boat ramp parking lot and utilizes the large wildlife area directly to the south of the boat ramp. Future plans may include a tie-in with the existing trails that the City of Warsaw has already established.

The park is characterized by scenic steep bluffs to the southwest and level to slightly rolling terrain across the rest of the unit. Soils are generally thin and rocky. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Vegetative cover consists of scattered old fields overgrown with eastern red cedar and honey locust interspersed within heavily timbered tracts. The timber is native oak-hickory with an understory of sugar/black maple.

(5) Resource objectives

(a) Maintain operational condition of the rim dike located in this compartment.

(b) Continue to maintain and improve the park and its facilities for day use activities by the visiting public.

(c) Manage natural features to benefit wildlife and vegetative resources.

(6) Development needs —

(a) Modernize area features to allow for future recreational needs.

(b) The current City of Warsaw's lease allows for the expansion of the 9-hole golf course to 18 holes. This will require additional acreage within the park.

(c) Possible future expansion of the compartment for development of the area for recreational lodging, camping, and other activities.

(7) Special Considerations —

(a) The Warsaw Adventure Club holds a Handshake Agreement Partnership on this area for the use of a multi-purpose trail, and special events. The possible expansion of either the lease or development opportunities will need to be communicated with this group on impacts it may have to their partnership agreement.

(b) This area contains one of two high water boat ramps on Truman Lake. This needs to be considered in any future development of the area for users' access needs in high water situations.

Compartment 004 – Tatge Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 847 acres

Located east of the Osage Arm between Highway 7 bridge on the north and Laird's Bluff to the south.

(4) Description and use

Topography varies from steep bluffs on the north and south, with deep draws and long points (Subunit 4-1), to rolling hillsides with ponds and old fields in the central portion (Subunit 4-2). The best soils and therefore, the most management efforts, are concentrated on the central part of the unit. Tatge contains a 7-acre pond maintained and managed to benefit multiple waterfowl, aquatic plants, fish, reptiles, amphibians, and wildlife species. Project staff keep the levees mowed one to two times per year. Vegetation consists of oak-hickory forest and eastern red cedar glades on the bluffs and ridges, with some walnut and pecan on the better sites. The old fields are colonized by various grasses, forbs, and woody invaders (Subunit 4-3).

(5) Resource objectives

(a) Maintain operational condition of the rim dike located in this compartment.

(b) Manage natural features to benefit wildlife and vegetative resources.

(c) Protect cultural and historic resources from degradation.

(6) Development needs —

(a) Possible future expansion and upgrades of existing hunter parking lots to allow for user access.

(7) Special considerations —

(a) Continue maintenance of native fields and 7-acre pond for fish and wildlife benefits.

Compartment 005 – Laird's Bluff

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 164 acres

Laird's Bluff is located on the east shore of the Osage River arm, two miles north of the confluence of the Pomme de Terre and Osage Rivers. It is bordered by the Tatge Wildlife area to the west and the gravel portion of Cold Spring Ave, running north and south, at the end of the Turpin Creek Cove to the east.

(4) Description and use

This compartment contains a five-year license, Walnut Grove Association. The license consists of a road, boat ramp, turn around and parking lot. Licensed Boat Ramp Areas are approved at various locations to disperse use at project operated ramps and are typically managed and maintained by non-for-profit entities and adjacent homeowner's associations who have an interest in the area.

Soils are thin and rocky west and improve somewhat on the eastern half of the unit. This compartment consists of two distinct areas. The west end is dominated by a mile long bluff overlooking the lake. The eastern half consists of a heavily timbered drainage area. Vegetation ranges from oak-hickory forest on the west to a honey locust, eastern red cedar, and Osage orange on the east. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Support licenses to accommodate for user access.

(6) Development needs —

(a) Possible future expansion of license area.

(7) Special considerations —

(a) None

Compartment 006 – Turpin Branch Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 844 acres

Turpin Branch Wildlife Area consists of lands lying north and south of Turpin Branch and bound on the west by Cold Spring Ave extension and old Highway 83 and bounded to the South by Osage Bluff Park. Access is from Cold Springs Ave or by Osage Bluff Road to old Highway 83 to what is now Native Ave.

(4) Description and use

Topography is primarily steeply dissected and timbered side slopes with thin, rocky soils in the north half, interspersed with sloping old fields in the south half. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Forest cover is oak-hickory and eastern red cedar on the side slopes with scattered walnut, pecan, and sycamore in the draws. The old fields are colonized by remnant native grasses, broom sedge, and fescue, with scattered forbs and woody invaders.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) Maintain access roads, hunter parking lots, and fishing access.

(7) Special considerations —

(a) Continual monitoring of road terminations in this area includes sign maintenance and monitoring for unauthorized activities.

Compartment 007 – Osage Bluff Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 109 Acres

Osage Bluff Park is located six miles south of Warsaw. access to the park is from Highway 83 and Osage Bluff Road. The park is now a portion of a peninsula within Vance Branch Cove.

(4) Description and use

This compartment contains Osage Bluff Park. Primary recreation uses are camping and boating related activities.

Management of the parks recreational development is divided between the project and a commercial concessionaire. The project managed area consists of a 61-site campground with shower building, two vault toilets and a day use area consisting of a boat ramp, vault toilet, parking lot and a picnic area. The commercial concession area is discussed in the marina lease section.

The marina concession consists of a full-service marina, one-lane boat ramp, flush toilet, asphalt access road, water supply, force main sewer, and gravel parking lot. Marina services include slip and boat rental, boat and motor repair, fuel, bait, tackle, sandwich restaurant and guide service. The lodge complex has a 40-unit motel, swimming pool, and separate clubhouse with kitchen, meeting room and sleeping rooms.

The topography is characterized by gentle slopes. Vegetation consists primarily of oak-hickory forest with eastern red cedar on the xeric limestone glades. Several small old fields occur on the east end of the unit. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Provide quality recreational camping and day use facilities that are efficient and serve the public’s needs.

(b) Make improvements to facilities to improve efficiency and meet universal accessibility requirements.

(c) Continually support the commercial concessions to this area for recreational needs of the public.

(6) Development needs —

(a) Make facility improvements and upgrades to campsites, showerhouses, shelters, pit toilets, and playgrounds that meet user needs.

(b) Expansion of marina facilities that support recreational uses that the marina currently supports.

(c) During times of unusually high water the access road to the Osage Bluff marina becomes inundated and is impassable. Possible road improvement to this area would raise the elevation to provide access.

(7) Special considerations —

(a) Careful consideration is made when approving additional camping within commercial concession leaseholds to ensure adequate competition and market feasibility.

Compartment 008 – Mockingbird Hill

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 1,118 acres

Mockingbird Hill lies on the eastern shore of the Pomme de Terre River arm of the project. It encompasses project lands, including those small tracts which lie on the east side of Highway 83, between the Osage Bluff Park, and the Highway 83 bridge. Access is from Baptist Ridge Rd to the North, Pommosa Rd to the Center, and Mockingbird Road to the southern end.

(4) Description and use

This compartment contains two, five-year licenses, Pom-O-Sa Heights Landowners Assoc. and Mockingbird Hill Landowners Assoc. Each license consists of a road, boat ramp, turn around and parking lot. Licensed Boat Ramp Areas are approved at various locations to disperse use at project operated ramps and are typically managed and maintained by non-for-profit entities and adjacent homeowner's associations who have an interest in the area.

This compartment is characterized by steeply dissected slopes. Soils on the unit are generally thin and rocky. This compartment is covered by oak-hickory forest interspersed with stands of eastern red cedar. Several old fields exist on the area as well as two managed hay fields. Herbaceous cover consists of fescue, warm season grasses, broom sedge and forbs. The old fields are being invaded by honey locust and eastern red cedar. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Support licenses to accommodate for user access.

(6) Development needs —

(a) Possible future expansion of license area.

(7) Special considerations —

(a) This area contains multiple cemeteries including Mockingbird Cemetery, and access to this area needs to be maintained.

(b) Developed subdivisions around this compartment will continually need to be monitored to maintain the integrity of project lands through boundary protection activities.

Compartment 009 – Eastern Red Cedar Natural Area

(1) Classification and justification: Environmentally Sensitive Area

(2) Management agency: USACE

(3) Location/Acreage: 289 acres

The Eastern Red Cedar Natural Area occurs on the right bank of Whig Creek near its confluence with Pomme de Terre River. The compartment is bounded on the north by Highway 83 and Compartment 10 to the south.

(4) Description and use

The area is steeply dissected and characterized by shallow, rocky soils, limestone outcrops, and xeric growing conditions. This compartment is extensively forested by eastern red cedar and has been designated a natural area by the Society of American Foresters. Oaks and hickories occur on the mesic north slopes. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None

(7) Special considerations —

(a) None

Compartment 0010 – Lower Pomme de Terre Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 3,956 acres

Compartment consists of two zones of similar character on the east and west sides of the Pomme de Terre Arm. The east zone is bounded on the north end by the eastern red cedar environmentally sensitive area (compartment 9) and by the old Avery Bridge Road on the south. The west zone is bounded on the north by a recreation-low density area (compartment 15) near Fairfield Woods subdivision and by the old Phillip Ford Road on the south. Access to the east zone is by Highway CC and the adjoining county road network. Access to the west zone is from Highway K and B.

(4) Description and use

This compartment (Sub-unit 10-5) contains a five-year license, Avery-Breshears Boat Ramp. The license consists of a road, boat ramp, turn around and parking lot. Licensed Boat Ramp Areas are approved at various locations to disperse use at project operated ramps and are typically managed and maintained by non-for-profit entities and adjacent homeowners' associations who have an interest in the area.

Topography of the east zone is largely composed of gradual side slopes and includes the Whig and Prairie Creek drainages. Narrow ridge tops and steep bluffs are also present along with crop fields, old fields, and hay meadows. The west zone is similar, except that steep bluffs, and relatively flat crop fields and hay fields occur at a greater frequency. Soils are highly variable from thin and rocky on the ridges to rich and fertile on the drainages. Vegetation is commonly the oak-hickory-eastern red cedar association with native grass-forb communities present on the glades and ridge tops. Grasslands are mostly fescue with some woody invasion. Four agricultural leases are found on the area. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Managed hay/agriculture leases on this compartment allow for the production of annual hay and/or row crops with negotiated set asides for wildlife benefits.

(b) Manage high risk agriculture lease, to accommodate agriculture goals, but also accommodate flood pool storage during times of high water.

(c) Manage natural features to benefit wildlife and vegetative resources.

(d) Protect historic and cultural resources from degradation.

(e) Support license to accommodate for user access.

(6) Development needs —

(a) Possible future expansion of license area.

(b) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measures added to reduce soil loss and promote soil conservation.

(c) Maintain access roads, hunter parking lots and fishing access.

(7) Special considerations —

(a) Unauthorized roads have been identified in this compartment and have been bermed to mitigate the damage caused. Continued monitoring of these areas is needed to maintain the integrity of project lands through boundary protection activities.

(b) Access to subunit 1 contained in this compartment is obtained through private property. Government personnel may access this property through an existing easement.

Compartment 0011 – Buzzard Cave Bluff/Phillips Ford

(1) Classification and justification: Multiple Resource Management: Vegetation Management

(2) Management agency: USACE

(3) Location/Acreage: 1,105 acres

This compartment is divided into two zones. Buzzard Cave Bluff on the east and Phillips Ford on the west. The Buzzard Cave Bluff Vegetative Management area runs along the right bank of the Pomme de Terre River arm between Bell Branch and the historic Avery-Fristoe Road. The Phillips Ford Vegetative Management Area runs along the left bank of the Pomme de Terre River arm between Round Bottom Ford and Pippen's Cemetery.

(4) Description and use

Compartment is characterized by steep drainages dissecting spectacular limestone bluffs that rise to 200 feet above the lake. Soils are very thin and rocky except in the stream bottoms where soils are deeper. Avery Marsh is an 18-acre wetland managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations and vegetation control and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribed burning to achieve desired results. Vegetation is primarily oak-hickory forest with interspersed eastern red cedar and mixed cedar glades. Scattered small old fields and glades with native prairie grasses and forbs also occur.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Manage the 18-acre wetland cell to support seasonal migratory wildlife, along with shallow water aquatic species.

(6) Development needs —

(a) Possibly future expansion of hunter parking lots to accommodate additional users.

(b) Continually maintain access roads, hunter parking lots and fishing access.

(7) Special considerations —

(a) Continued future maintenance will be necessary for the successful management of the wetland area.

Compartment 0012 – Beck and Blackwell Caves

(1) Classification and justification: Environmentally Sensitive Area

(2) Management agency: USACE and MDC

(3) Location/Acreage: 148 acres

This compartment is in two zones. Beck cave is located on Bell Branch near its confluence with Truman Reservoir. Its zone is bounded on the north and south of Bell Branch by two small unnamed coves. Blackwell Cave is located on the upper Pomme de Terre River arm north of Hermitage. Its portion of this compartment is bounded on the north and south by Compartment 13.

(4) Description and use

Topography at Beck Cave is a timbered ridge top sloping sharply to Bell Branch. Blackwell Cave occurs in a large limestone bluff above flood plain crop fields. Vegetation at both sites is oak-hickory forest with associated eastern red cedar, walnut, ash, and sycamore. A limestone glade is found west of Beck Cave and is vegetated by native prairie grasses. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Provide and protect critical habitat for endangered species.

(b) Ensure that flood control operations and human disturbance are kept to a minimum.

(c) Access needs are being met to allow for maintenance and operational needs.

(6) Development needs —

(a) Continual maintenance needs for physical barriers, and the rim dike and pumping system to ensure that flood waters are kept out of critical habitat.

(7) Special considerations —

(a) Beck Cave’s access is through private property, an easement is in place on this property to allow gov’t officials access to this area and access needs to be monitored so that access restrictions are not in place, such as fences or gates. The easement access is for public officials and not the general public. No improved access exists across Federal property to either site.

(b) The USACE has the management responsibility for Beck Cave while the Missouri Department of Conservation has Blackwell Cave.

Compartment 0013 – Upper Pomme de Terre Wildlife Area

(1) Classification and justification: Multiple Resource Management: Vegetative Management

(2) Management agency: MDC

(3) Location/Acreage: 5,194 acres

Upper Pomme de Terre Wildlife Area is comprised of lands lying south of Compartment 12 on the east side and south of Round Bottom Ford on the west side, excluding Cross Timbers Access. Vehicular access is by Highway U from the east, Highway 54 from the south, and Highway Y from the west, along with county road networks. Access from the east bank to the west by Highway 54 bridge and Rough Hollow Bridge.

(4) Description and use

The floodplain and adjacent slopes are used for crop fields, hay meadows, or have become early successional old fields. These lands are presently licensed to the MDC for management and were acquired as wildlife mitigation lands.

Topography of this unit is characterized by long dissected ridges and steep bluffs on the outside bend of the old river channel. Soils are thin and rocky with numerous limestone outcrops. The inside river bends are largely wide, flat alluvial floodplains with relatively deep, well-drained soils. Vegetation consists of oak-hickory forest on the ridges and in the hollows with prominent glade openings colonized by eastern red cedar, native prairie grasses, and forbs. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) The compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(b) Work closely with lease holder to ensure public and lease holder needs are being met.

(c) Continue mitigation land purposes for wildlife management.

(d) Expansion of access areas to accommodate for additional user needs.

(6) Development needs —

(a) Provide access point to users to the upper Pomme de Terre arm at Sapp’s Landing.

(7) Special considerations —

(a) None.

Compartment 0014 – Cross Timbers Access

(1) Classification and justification: High Density Recreation

(2) Management agency: MDC

(3) Location/Acreage: 8 acres

The Cross Timbers Access area is located in the headwaters of the Pomme de Terre arm of the lake approximately 17 miles south of Warsaw. Vehicular access to the compartment is by county road 281 leading from Routes Y and U.

(4) Description and use

Compartment consists of a small, developed boat access operated and maintained by the MDC The area is relatively flat. The shoreline in this area provides bank fishing access and game and non-game fish species populations. The area has sparse tree cover.

(5) Resource objectives

(a) Expansion of the access area may be needed with increased use.

(6) Development needs —

(a) Provide an access point to the upper Pomme de Terre arm, at Cross Timbers Access, and allow incidental accommodations for seasonal hunting seasons.

(7) Special considerations —

(a) Camping is allowed at this access point, the heaviest use of this is during the firearms deer season, with some use during the spring/fall turkey season and fall archery deer season. Continual monitoring by the lease holder will ensure that there are no long-term camping activities.

Compartment 0015 – Winding Woods

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 281 acres

Negro Springs is located on the west side of the Pomme de Terre River arm between Highway 83 bridge on the north and wildlife management Compartment 10 on the south. Access is limited to old trails crossing private property.

(4) Description and use

Topography consists of a series of ridge tops and steep slopes, broken up by small drainages and coves. The shoreline in this area provides bank fishing access and game and non-game fish species populations. The forest cover is mostly oak-hickory, but nearly pure stands of eastern red cedar are present on the glades. Little herbaceous vegetation occurs on the unit.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None

(7) Special considerations —

(a) None

Compartment 0016 – Fairfield Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 564 acres

Fairfield Wildlife Area is located on the west side of the lower Pomme de Terre arm from Highway 83 bridge northwest to Fairfield Access. The Compartment also includes Indian Island at the confluence of Pomme de Terre and Little Pomme de Terre Rivers. Access is from highway 83 and Highway K to the Fairfield access road.

(4) Description and use

This unit consists of narrow ridges which fall sharply to shallower slopes near the floodplain. Soils are thin and rocky along the ridges and draws becoming deeper and more fertile on the lower slopes. Vegetation ranges from eastern red cedar on the glades to oak-hickory on the upper slopes. Walnut, sycamore, and ash are common on the lower slopes. Native warm season grasses and forbs communities are prevalent on the glades and some old fields. Other old fields, formerly in fescue, are succeeding to invasion by Osage orange and honey locust. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Managed hay/agriculture leases on this compartment allow for the production of annual hay and/or row crops with negotiated set asides for wildlife benefits.

(b) Manage high risk agriculture lease to accommodate agriculture goals, but also accommodate flood pool storage during times of high water.

(c) Manage natural features to benefit wildlife and vegetative resources.

(d) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) Removal of areas from the agricultural leasing program to ensure appropriate use of high-risk agricultural ground.

(b) Maintain access roads, hunter parking lots and fishing access.

(7) Special considerations —

(a) None.

Compartment 0017 – Fairfield Access

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 16 acres

The Fairfield Access is located approximately nine miles south of Warsaw on the Pomme de Terre River arm of the lake. The site is accessible from Highway 83 and Highway K.

(4) Description and use

The topography of this boat access consists of a forested ridge that slopes to rugged terrain to the west and old fields to the east. The shoreline in this area provides bank fishing access of game and non-game fish species populations. Much of the southern two-thirds consists of limestone glades and is colonized by eastern red cedar, oak, hickory, prairie grasses, and forbs. The northern third is primarily oak-hickory forest.

(5) Resource objectives

(a) Provide quality bank fishing opportunities and other day use activities.

(b) Update facilities to accommodate user needs.

(6) Development needs —

(a) Maintenance of current access road, boat ramp and parking lot facilities.

(b) Expansion of the boat ramp parking lot to accommodate larger vehicles/trailers to provide safer operational use may be needed.

(c) Addition of an additional ramp or wider ramp to accommodate for higher use of the area.

(7) Special considerations —

(a) None.

Compartment 0018 – Wisdom/Little Pomme de Terre Management Area

(1) Classification and justification: Multiple Resource Management: Vegetative Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 5,401 acres

Wisdom/Little Pomme de Terre Management Area is located on both sides of the Little Pomme de Terre River arm and lands along the south side of the lower Osage River Arm, including the Hogle's Creek drainage. Fairfield Access is the eastern boundary of this unit, the western terminus of which is a steep rock bluff one mile west of the Benton-St. Clair County line. Access to the Little Pomme de Terre area is from Highways 83 and EE. The western portion of the area can be reached from Highways EE and ZZ. Several County roads also service this compartment for access.

(4) Description and use

This large compartment exhibits a variety of topography, soils, and vegetation because of its size and spread. The Missouri Department of Conservation manages lands on the Little Pomme de Terre arm (Subunit 18-2) while USACE manages the remainder of the unit.

The south and east parts have narrow ridge tops with shallow soils sloping sharply to a wide, flat floodplain in the Little Pomme de Terre River bottom (Subunits 18-1 and 18-2). The lands surrounding the Hogle's Creek drainage have flatter ridge tops and less severe side slopes (Subunit 18-3). The western third of the unit (Subunit 18-4) is characterized by a number of old fields and open glades as well as bottomland crop fields. The ridges are wide and flat with steeply dissected side slopes and thin, rocky soils. Vegetation ranges from oak-hickory forest to dense stands of eastern redcedar (Subunit 18-2). Old fields are succeeding to wood invasion by honey locust, coralberry, and eastern redcedar. The open glades are colonized by native plant communities composed of native prairie grasses, forbs, and eastern red cedar. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Continued access to areas for bank fishing opportunities.

(d) A portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(e) Work closely with leaseholders to ensure public safety and lease holder needs are being met.

(f) Continue mitigation land purposes for wildlife management.

(6) Development needs —

(a) Continually maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with practices put in place to reduce soil loss and promote soil conservation.

(d) Hogle's Creek soil erosion has historically become more severe. Special work of rip/rap and tree planting to strengthen the streambank has been requested.

(7) Special considerations —

(a) Continual annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

Compartment 0019 – Scott's Camp

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE/MDC

(3) Location/Acreage: 3,361 acres

Scott's Camp with exception of the Equestrian Camp (Compartment 20) this compartment includes all lands on the south side of the Osage Arm from Highway ZZ bridge, north and east to the western boundary of the Wisdom/Little Pomme de Terre Wildlife Area. Access is from three county roads that run through the area.

(4) Description and use

Topography of the unit is variable and consists of high limestone bluffs overlooking the Osage arm, old fields sloping gently to the flood plain on the north, and ridges and deep draws on the east. Soils are generally poor along the ridges and side slopes and better in the deeper draws and along the flood plain. Forest type is predominantly oak-hickory with pockets of eastern red cedar. Old fields consist of fescue and native prairie remnants. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Support licenses to accommodate for user access.

(6) Development needs —

(a) Possible future expansion of licensed area.

(b) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with practices put in place to reduce soil loss and promote soil conservation.

(c) Maintain access roads, hunter parking lots and fishing access.

(d) Maintain established native fields and eliminate invasive plant species to enhance wildlife and small game habitat.

(e) Possible future expansion of hunter parking lots to accommodate additional users.

(7) Special considerations —

(a) This area contains Old Timer's licensed access and needs to be maintained to accommodate user access.

(b) Developed subdivisions around this compartment will continually need to be monitored to maintain the integrity of project lands through boundary protection activities.

(c) Protect and allow public access to Gilbert Cemetery.

Compartment 0020 – Equestrian Camp

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 70 acres

Equestrian Camp is located approximately 12 miles north of Iconium. Access to the area is from Highway 13, Highway Z, and Highway ZZ to the first county gravel road on the east side of the County Line Bridge, then north to a “T” intersection, then east one mile.

(4) Description and use

Located on a preexisting abandoned 18-mile equestrian trail, this unit was initially intended for outgrant to an equestrian group. Further equestrian development of this area is unlikely. The primary management focus for this compartment will shift to wildlife.

Level ridge tops with steep slopes to the water on the north and more gradual slopes to the south characterize this unit. Soils are marginal on most of the unit but will support some field crops. Vegetation is mostly oak-hickory forest with old fields scattered throughout the unit. Grass cover consists of mixed fescue and prairie remnants. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None

(7) Special considerations —

(a) None

Compartment 0021 – Valhalla/Talley Bend Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 2,933 acres

The Valhalla/Talley Bend Wildlife Area is located along the right bank of the middle Osage River arm. It stretches from Talley Bend Park on the south border to Highway ZZ bridge on the north.

(4) Description and use

The east two thirds of the area is managed by the MDC (Subunit 21-1). The west third is managed by USACE (Subunit 21-2). Subunit 21-1 is nearly 100% forested (Subunit 21-1). Oak-hickory is the predominant type with small glades and eastern red cedar thickets also present. Subunit 21-2 is more varied with open fields and heavily forested woodlots. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural resource features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) Maintain access roads, hunter parking lots and fishing access.

(7) Special considerations —

(a) A portion of this compartment is currently leased to the Missouri Department of Conservation. Due to the inaccessibility of the only hunter parking lot that they manage. MDC has expressed their intent to turn back this portion of the lease for USACE management.

(b) Protect and allow public access to Johnson cemetery located within this compartment.

Compartment 0022 – Talley Bend Park

(1) Classification and justification: Subunit A: High Density Recreation, Subunit B: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: A: 100 acres, B:179 acres, Total: 279 acres

Talley Bend is located six miles east of Lowry City via C highway off of Highway HH on the Osage Arm.

(4) Description and use

Talley Bend campground (subunit B) was closed in 2020 due to low utilization. Although USACE has received a few requests to lease the campground, none have materialized. All structures related to the campground have been removed as of 2022. The lagoon is all that if left and will be removed as well pending funding.

The compartment is a moderately steep bank, with grade work and level areas created for the campground. Lower levels gently slope into the floodplain. Oak-hickory is the predominant vegetation type with small glades and eastern red cedar thickets also present. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

Highway C bisects the park with the boat ramp (subunit A) to the north off Highway HH and the previous campground to the south. Primary recreation use is boat launching.

(5) Resource objectives

(a) Manage natural resource features to benefit wildlife and vegetative resources.

(b) Provide quality day use facilities to support boat launching and access to the Osage River arm of Truman Lake.

(c) Maintain functional and safe recreational facilities for public use.

(6) Development needs —

(a) Expansion of parking lot to sustain future growth and use to the area.

(b) Possible future leasing of this area has been identified as an area that could sustain a small/seasonal recreational outgrant.

(7) Special considerations —

(a) Maintain integrity of project lands through boundary protection activities.

(b) The northern portion of the compartment’s day use facility sustains very heavy pressure during the spoonbill snagging, and crappie spawn seasons in the late winter/early spring. Removal and maintenance of previously available amenities have removed this area from the day use fee program.

(c) The infrastructure left from the removal of campground features in the southern portion of the compartment, such as the campground and loop roads, may support smaller recreational uses such as walking trails, wildlife viewing, or access. However, years of remaining fallow will take more resources for these activities to occur in the future.

Compartment 0023 – Shady Grove Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 496 acres

Shady Grove Wildlife Area is located on the east side of the Osage River arm and is bounded by Talley Bend Park on the north and Moore Hollow on the south. Access to this area is from Highway C.

(4) Description and use

This unit has no public access roads. Soils are thin and rocky throughout the compartment. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Vegetation consists primarily of heavily timbered side slopes of oak-hickory forest. A large open field of bluegrass with mature walnut timber is conspicuous in the central portion of the unit. Several other small openings are colonized by prairie vegetation.

(5) Resource objectives

(a) Maintain integrity of project lands through boundary protection activities.

(b) Manage natural features to benefit wildlife and vegetative resources.

(c) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None

(7) Special considerations —

(a) This compartment is located adjacent to Twin Oaks Harbor subdivision. Continual monitoring for off road vehicles and other encroachments will be necessary for protection of project lands.

Compartment 0024 – H. Roe Bartle Boy Scout Reservation

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 669 acres

The Heart of America Council, H. Roe Bartle Scout Reservation, exists on the right bank of the Osage River arm between Briley Creek and Moore Hollow. It historically composed the outside arc of the old horseshoe bend stretch of the Osage River.

(4) Description and use

The Heart of America Council, H. Roe Bartle Scout Reservation, presently leases 603 acres of the 669-acre compartment. The scouts' use at Truman is in keeping with a USACE directive entitled “Catch the Scouting Spirit and Take Pride in America - Guide and Resource Book”.

Topographically the area is comprised of rugged river hills dissected by small permanent and intermittent streams. Several high bluff areas (Cedar Point, Lookout Point, Devil’s Staircase, etc.) are carved from the rugged rocky ridges by the Osage River. The area is entirely forested except for a few small old fields in the stream bottoms. The timber is primarily oak-hickory with scattered cedar glades on the south facing slopes. The area is transected by several roads and trails that are used by members and participants of the quasi-public scout reservation. Old Highway ZZ is the primary public use access through the area.

Recreation and management activities are performed by the Council in conjunction with its use of the adjoining lands within the H. Roe Bartle Scout Reservation.

(5) Resource objectives

(a) Provide organized group day use recreation, camping, and educational opportunities.

(b) Provide water-based recreational opportunities, and facilities.

(c) Protect historical and cultural resources from degradation.

(d) Support current lease with the Heart of America Council, H. Roe Bartle Scout Reservation.

(6) Development needs —

(a) None

(7) Special considerations —

(a) Recreation and management activities are performed by the Council in conjunction with its use of the adjoining lands within the H. Roe Bartle Scout Reservation.

(b) The northern portion of this compartment is adjacent to Twin Oaks Harbor subdivision. Continual monitoring for off road vehicles and other encroachments will be necessary for protection of project lands.

Compartment 0025 – Corbin Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 5,414 acres

This large compartment consists of lands along both banks of the Osage arm as well as lands along Brush, Weaubleau and Bear Creeks.

(4) Description and use

The diversity of this unit is shown by steep ridges and bluffs alternating with rolling terrain. Wide, flat floodplains appear in the creek bottoms along with deep, fertile soils. Most of the gentler slopes consist of old fields and hay meadows with grasses and woody invaders prevalent. The steeper features are heavily forested in oak, hickory, eastern red cedar, and walnut. Pecan, sycamore, ash, and walnut are common on the lower slopes and floodplain.

Weaubleau Creek Marsh is a 70-acre wetland managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations and disking, dozing, mowing, herbicides, and prescribed burning to achieve desired results.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment, produce annual hay and/or row crops with negotiated set asides for wildlife benefits.

(d) Manage high risk agriculture lease, to accommodate agriculture goals, but also accommodate flood pool storage during times of high water.

(e) A portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(f) Work closely with leaseholders to ensure public and leaseholder needs are being met.

(g) Continue mitigation land purposes for wildlife management.

(6) Development needs —

(a) Continually maintain access roads, hunter parking lots, and fishing access.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with practices put in place to reduce soil loss and promote soil conservation.

(7) Special considerations —

(a) Continual annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) Protect and allow public access to Wisner & Peebly Cemeteries.

Compartment 0026 – Brush Creek Access

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 50 acres

Brush Creek Access is located one mile east of Osceola at the confluence of Brush Creek with the south bank of the Osage River channel. Access is provided via county road 250.

(4) Description and use

Road access closed in Fall 2021 due to a failing culvert under the main access road to the area. The Friends of Brush Creek has secured funding to make repairs, and they will renew their lease to this area which has expired.

The topography in the area is relatively flat, with earth work creating the recreational and parking areas. The gently sloping shoreline in this area provides bank fishing access and game and non-game fish species populations. Vegetation in the wooded areas consist primarily of oak and hickory with some invasive of eastern red cedar, locust, and *Sericea lespedeza*.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) To provide leasing opportunities, for public access, and fishing opportunities.

(6) Development needs —

(a) Possible future lease holder may need to update recreational features and infrastructure for increased use.

(7) Special considerations —

(a) Historically, “Friends of Brush Creek” have managed this area for a recreational access point. Future growth or maintenance of this compartment will be managed by the lease holder.

(b) Removal of USACE infrastructure such as lagoon, and aging facilities will need to be addressed.

Compartment 0027 – Osceola City Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE/City of Osceola

(3) Location/Acreage: 784 acres

Osceola Park is located adjacent to and within the corporate limits of the City of Osceola along the right bank of the Osage River. The compartment is between Brush Creek Access and the Sac-Osage Youth Fairgrounds.

(4) Description and use

This unit contains recreation facilities built by relocation contract and by the city itself. The topography is a gentle sloping hill down to the shoreline. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Vegetation includes large mature oak, hickory, and sycamores interspersed in the city-maintained campground. The mowed areas consist of largely native grass and fescue stands.

A significant portion of this compartment is leased to the City of Osceola. The park is operated and maintained by the City of Osceola for recreation purposes. Facilities located on project lands which were built as part of a relocation contract include a boat ramp, shelter houses, parking lots, picnic grills, and park roads. City developed facilities include a campground with shower building, ball field, playground, and picnic sites.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Provide quality bank fishing opportunities and recreational opportunities.

(d) Provide recreational opportunities such as boat launch, camping, and picnicking in association with other management activities provided by the lease holder.

(6) Development needs —

(a) Maintenance of current access areas, and recreational features.

(b) Update facilities which may include campsite renovation, and updates to playground, showerhouse, baseball fields, and pit toilets to accommodate user needs.

(c) Expansion of boat ramp parking lot to accommodate larger vehicles/trailers to provide safer operational use may be needed.

(7) Special considerations —

(a) Continual maintenance of the area, as this area is prone to sedimentation during and after flood events.

Compartment 0028 – Sac-Osage Youth Fair

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE/St. Clair County Commission

(3) Location/Acreage: 19 acres

The Sac-Osage Youth Fairground area is located just south of the Osceola city limits off old 82 highway.

(4) Description and use

The topography is a gentle sloping hill down to the shoreline. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Vegetation consists mainly of oak and hickory with open areas that consist of large mature walnut trees and infrequently mowed stands of fescue.

This area is leased to the St. Clair County Commission. Facilities existing in the area include a parking area, a pole barn, and a vault toilet. The primary use of the leasehold is for 4-H.

(5) Resource objectives

(a) Provide an organized group the opportunity to develop project lands for recreation and educational purposes.

(b) Provide exhibit facilities for organized group fairground uses.

(6) Development needs —

(a) Maintain facilities and make improvements for increased needs.

(7) Special considerations —

(a) None

Compartment 0029 – Upper Sac-Osage Access

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 12,485 acres

The Upper Sac-Osage Access encompasses all project lands on the Sac River Arm and on the right bank of the Osage River east of Highway E at Roscoe to its confluence with the Sac River, except for the Sac River Access.

(4) Description and use

Three wildlife management areas comprise this compartment licensed to the Missouri Department of Conservation. The bottomlands have been farmed extensively. This large unit exhibits a diverse topography ranging from high limestone bluffs along the Sac River, to the rugged river breaks of the Osage, to the flat prairies and bottomlands in between. Forest cover is primarily oak-hickory on the hills and ridges with pecan, walnut, sycamore, cottonwood, and willow common in the creeks and river bottoms. The flat prairie still exists in relatively large tracts, but much of it was converted to row crop over the last 100 years.

Mill pond is a 2.5-acre pond that benefits multiple waterfowl, aquatic plants, fish, reptiles, amphibians, and wildlife species. Due to difficulty in accessing this pond, it is not maintained. This compartment contains several marshes to including Gallinipper (83 acres), Salt Creek (33 acres), Sac River (56 acres), Kiefer #1 (70 acres), Kiefer #2 (15 acres), and Cauthon Bottom (90 acres). The wetlands are managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations and vegetation control and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribed burning to achieve desired results.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Provide and protect critical habitat for endangered species.

(d) Maintain integrity of project lands through boundary protection activities.

(e) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set asides for wildlife benefits.

(f) A large portion of this compartment is currently leased to the MDC. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(g) Work closely with leaseholders to ensure public and leaseholder needs are being met.

(h) Continue mitigation land purposes for wildlife management.

(6) Development needs —

(a) Maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measures to reduce soil loss and promote soil conservation.

(d) Abandoned bridge on Salt Creek is scheduled to be removed pending funding availability.

(7) Special considerations —

(a) Continual annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) Protect and allow public access to Pasley Cemetery.

Compartment 0030 – Sac River Access

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 9 acres

Sac River Access is the only access on the Sac River arm of the lake. It is located off 82 highway approximately five miles southwest of Osceola.

(4) Description and use

The area is relatively flat due to development of the recreational area. The shoreline in this area provides bank fishing access and game and non-game fish species populations. The area has sparse tree cover inside the recreational area but is predominately oak and hickory in the wooded areas.

(5) Resource objectives

(a) Provide quality bank fishing opportunities and other day use activities.

(b) Make facility updates to accommodate user needs.

(c) Provide boater access to the Sac river.

(6) Development needs —

(a) Maintenance of current access road, boat ramp, and parking lot facilities.

(b) Expansion of the boat ramp parking lot to accommodate larger vehicles/trailers to provide safer operational use may be needed.

(c) An addition of an additional ramp or wider ramp to accommodate for higher use of the area.

(7) Special considerations —

(a) None.

Compartment 0031 – Roscoe Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE/Village of Roscoe

(3) Location/Acreage: 184 acres

Roscoe Park includes all project owned fee property within the corporate limits of the Village of Roscoe and additional acreage north of the village between the lake, old E highway E highway.

(4) Description and use

The diversity of this unit is shown by steep ridges and bluffs alternating with rolling terrain. Wide, flat floodplains appear in the creek bottoms along with deep, fertile soils. Vegetation is commonly the oak-hickory-eastern red cedar association with native grass-forb communities present on the glades and ridge tops. Grasslands are mostly fescue with some woody invasion. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

The area is under lease to the Village of Roscoe. USACE constructed facilities include a boat ramp and access road with parking lot. The Village has constructed a picnic shelter, primitive campground, vault toilet, and ball field.

(5) Resource objectives

(a) Support recreation use by appropriate vegetation management.

(b) Maintain and improve the park's potential for providing quality bank fishing and other day use activities.

(c) Provide boat access to the upper Osage river arm.

(d) Continually support the lease holder for recreational needs of the public.

(e) Continue appropriate mitigation activities for removal of cultural/historic buildings that have been removed.

(6) Development needs —

(a) Upgrading and supplement existing facilities such as ball field, shelter, playground, and pit toilet to better serve visitor needs.

(7) Special considerations —

(a) Siltation has been an ongoing battle for the Village of Roscoe to keep this access open. Continual maintenance every five years will need to be accomplished to keep this access open.

(b) Current lease with the Village of Roscoe calls for USACE dredging to keep ramp access open. However, with limited resources and higher use areas taking priority, maintenance may fall on the lease holder to accomplish.

(c) Several historic buildings have been removed from this compartment, and continued maintenance of the mitigation signage will be required by USACE per SHPO requirements.

Compartment 0032 – Gallinipper Bluff

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 122 acres

Gallinipper Bluff is located on the north shore of the Osage arm and encompasses lands that are between Highway 13 bridge at Osceola and the mouth of Gallinipper Creek. Access is limited to foot traffic from Highway 13, Highway B, and Crowe's Crossing Park.

(4) Description and use

The topography of this unit consists of one limestone bluff that runs the entire length of the unit and two steep slopes that intersect it. Soils are thin and rocky. The west half of the area is covered by dense oak-hickory forest while the east part is sparsely vegetated by eastern red cedar, scattered hardwoods and prairie grasses and forbs. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None.

(7) Special considerations —

(a) An area of this compartment has been identified to accept dredged material from the adjoining compartment 033 to keep boater access open from siltation.

(b) The quarry within this compartment should be monitored in the future for bat habitat and any bat species on the T&E species list.

Compartment 0033 – Crowe's Crossing Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 71 acres

Crowe's Crossing Park is located one mile north of Osceola on the north end of the Highway 13 Bridge over the Osage arm of the lake. Access is provided by Highway 13 which borders the park on the west.

(4) Description and use

Recreation use of the area is a boat access for fishing activities.

The topography in the developed area is flat due to the development of the parking area and road. The area to the northeast is sloping into the flood plain. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Vegetation in the developed area is sparse. The heavily wooded area to the northeast is primarily oak and hickory.

(5) Resource objectives

(a) Provide quality bank fishing opportunities and other day use activities.

(b) Update facilities to accommodate user needs.

(c) Provide boater access to the Osage river arm.

(6) Development needs —

(a) Maintenance of current access road, boat ramp, and parking lot facilities.

(b) Installation of boat ramp that is perpendicular to the river channel. This will allow for greater user access by not allowing siltation fallout blocking the access point.

(7) Special considerations —

(a) Siltation has been an ongoing battle to keep this access point open. Continual maintenance every five years will need to be accomplished to keep the current access point open.

(b) Engineer study will be needed to allow for planning of any additional or modifications of current facilities.

Compartment 0034 – Horseshoe Bend

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 890 acres

Horseshoe Bend is located approximately seven miles east of Highway 13 at the end of Highway CC and across the lake from the H. Roe Bartle Reservation. It encompasses all project lands between Wolf Creek Cove and Corbin Wildlife Area (Compartment 24).

(4) Description and use

The topography of this unit varies from expansive floodplain fields to steep, rocky hills and draws. Vegetation is primarily the oak-hickory-eastern red cedar association on the hills and ridges. Osage orange and honey locust are common along the upland field borders with stands of mature pecan in the bottomlands. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set asides for wildlife benefits.

(6) Development needs —

(a) Maintain access roads, hunter parking lots, and fishing access.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measure to reduce soil loss and promote soil conservation.

(7) Special considerations —

(a) Continual monitoring for off road and other encroachments needs to be sustained to protect the integrity of project lands.

(b) During times of low lake levels, the peninsula area grows dramatically, and off-road use is a concern in the wet soil conditions.

Compartment 0035 – Turkey Hollow

(1) Classification and justification: Environmentally Sensitive Area

(2) Management agency: USACE

(3) Location/Acreage: 501 acres

Turkey Hollow is located on the left bank of the middle Osage River arm between Wolf Creek Road and Highway C. Vehicle access to the area is limited to NE 600 Road to the south and Highway C to the north.

(4) Description and use

This compartment consists of rugged, heavily forested hills and hollows along the left bank of the Osage arm. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Forest cover is primarily oak-hickory and a large stand of old growth oaks in the center of the unit is responsible for the compartment's classification.

(5) Resource objectives

(a) Manage natural features to protect unique ecosystems.

(b) Manage natural features to benefit wildlife and vegetative resources.

(c) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None.

(7) Special considerations —

(a) Ensure protection of habitat for specialized wildlife species.

Compartment 0036 – Muddy Creek Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 1,628 acres

Muddy Creek Wildlife Area is located on lands west of the Osage River arm between Highway C to the south and an environmentally sensitive area Compartment 37 (Buzzard's Roost) to the north. Access to the southern half of the compartment is from Highway C, but access to the north half Highway JJ is somewhat limited.

(4) Description and use

Topography of this compartment is dominated by the Muddy Creek drainage and consists of steeply dissected ridge tops sloping to a narrow creek bottom. Soils are mostly thin and rocky with some tillable areas along the creek. Forest cover consists of the oak-hickory complex along ridges and side slopes. Several old fields and scattered forest openings contain a variety of grasses and forbs, although the old fields are succeeding to woody vegetation.

Muddy Creek includes a 15-acre wetland managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations and vegetation control and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribed burning to achieve desired results.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Manage the 15-acre wetland cell to support seasonal migratory wildlife, along with shallow water aquatic species.

(6) Development needs —

(a) Continue maintenance in future for the successful management of the wetland area.

(b) Maintain access roads, hunter parking lots, and fishing access.

(7) Special considerations —

(a) One road termination is located in this compartment off of NE 681 road in St. Clair County, to provide hunter and fisherman access.

(b) Protect and allow public access to Bunch Cemetery.

Compartment 0037 – Buzzard's Roost

(1) Classification and justification: Environmentally Sensitive

(2) Management agency: USACE

(3) Location/Acreage: 169 acres

Buzzard's Roost is located on the north side of the Osage River arm one half mile west of the Ninnescah Park subdivision. This compartment is between the muddy creek Wildlife Area and Ninnescah Park subdivision.

(4) Description and use

This compartment consists of a single high bluff on the left bank of the Osage arm that owes its name to the turkey vulture nest sites it harbors. The xeric growing conditions of the bluff have fostered lichen glades with prickly pear cactus and eastern red cedar common. Except for scattered patches of native grasses, the unit is covered by dense oak-hickory forest. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None.

(7) Special considerations —

(a) Ensure protection of habitat for specialized wildlife species.

Compartment 0038 – Rancho Point

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 1,633 acres

This compartment consists of two separate zones of similar character situated on the north shore of the Osage River arm. The western zone is bounded on its west border by the Buzzard's Roost Environmentally Sensitive Area, and Compartment 39 on the east. The eastern zone stretches from the opposite side of Compartment 39 north to the southern edge of the West Haven Wildlife Area (compartment 40). Access to the western zone is limited to NE 1270 road. The eastern zone has four old county roads leading to the water's edge and encompasses the Higgins Landing Licensed boat ramp.

(4) Description and use

The west zone is made up of small limestone bluffs and steep side slopes around the lake shore. Soils are thin and rocky. The east zone is primarily composed of flatter terrain evidenced by the old crop fields and timbered fence rows present. Soils are suitable for limited crop production. The east zone has several small oak-hickory woodlots that provide an important forest component. With the exception of one large old field, the west zone is mostly oak-hickory forest. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set-asides for wildlife benefits.

(d) Support licenses to accommodate for user access.

(6) Development needs —

(a) Possible future expansion of license area.

(b) Maintain access roads, hunter parking lots, and fishing access.

(7) Special considerations —

(a) This compartment contains an unacquired use right ramp at Ninnescah park. During the acquisition phase of Truman Lake this area went to court that the road and ramp would stay in ownership of the subdivision and not go to USACE. The area includes the width of the road and ramp, and not the shoreline adjacent to the ramp.

(b) Developed subdivisions around the Ninnescah park ramp and compartment will continually need to be monitored to maintain the integrity of project lands through boundary protection activities.

(c) Protect and allow public access to Kindrick Cemetery.

Compartment 0039 – Fox Run

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 253 acres

Fox Run Vegetative Management Area is located along the western bank of the Rancho Point peninsula on the northern shore of the Osage River arm. This compartment encompasses lands between the Fox Run licensed boat ramp, and a graveled county road two miles to the north. Vehicular access is limited to two county roads on the compartment's north and south borders.

(4) Description and use

This unit accommodates nesting and roosting turkey vultures. This unit is a high bluff along the lake. Soils are thin and rocky. The compartment consists of a narrow rim of mature oak-hickory forest between the high bluff along the lake and the adjacent subdivision. Large stands of eastern red cedar are prominent along the bluff. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Support licenses to accommodate for user access.

(6) Development needs —

(a) Possible future expansion of license area.

(7) Special considerations —

(a) Developed subdivisions around this compartment will continually need to be monitored to maintain the integrity of project lands through boundary protection activities.

Compartment 0040 – West Haven

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 1,242 acres

West Haven Wildlife Area is along the left bank of the Osage River arm and is bordered on the east by Berry Bend Park and by old Highway ZZ to the west.

(4) Description and use

The old fields that occur along the gentler slopes are heavily overgrown and inaccessible to vehicles. Lack of access to this compartment severely limits management potential. This unit is characterized by steep river hills and hollows. Soils are thin to marginal across the unit. Vegetation consists of steep heavily timbered river hills and hollows with scattered old fields. The forest cover is oak-hickory with occasional eastern red cedar thickets and glades. The branch bottoms often contain walnut and pecan. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Provide recreational multi-use trail system that connects to the Berry Bend recreational park area.

(6) Development needs —

(a) Future maintenance needed on multi-use trail system to allow for recreational needs.

(7) Special considerations —

(a) Access to this trail system is limited from the east and west points of the trail in this compartment. User access in emergency situations is limited and access by boat to the middle part of the trail system is the only legal access. Emergency situational access from private property from the north part of the compartment may need to be explored for access to the trail. Henry County SE 1202 road provides emergency access from the west end of the Berry Bend Equestrian trail system.

Compartment 0041 – Berry Bend Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 615 acres

Berry Bend is located nine miles west of Warsaw via Z highway on the Osage arm of the lake. Berry Bend is essentially a peninsula in a bend on the Osage River and may be accessed over a paved county road two miles south of Highway Z.

(4) Description and use

This unit boasts one of the most scenic vistas of all the parks on the project located on a forested peninsula that is surrounded by scenic limestone bluffs. Recreational development is split between two a day-use portion to the north of the causeway and camping to the south. The compartment is a moderately steep bank, with grade work and level areas created for the campground. Lower levels gently slope into the floodplain. Sub-climax oak-hickory, eastern red cedar, and native prairie grasses vegetate the area in the typical glade association. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Berry Bend Equestrian Campground was closed in 2019 after the historical flood event and never reopened for camping in 2020. All infrastructure not including the well and lagoon, has been removed. The lagoon will be removed pending funding. The well will remain to service the adjacent day use areas.

(5) Resource objectives

(a) Provide quality recreational camping and day use facilities that are efficient and serve the public's needs.

(b) Make facility improvements and upgrades that meet user needs.

(6) Development needs —

(a) Make improvements to campsites, shelter, pit toilets, showerhouses, water-borne restrooms, and playground facilities to improve efficiency and meet universal accessibility requirements.

(7) Special considerations —

(a) This compartment contains a high-water boat ramp which serves as one of only a few access points to the lake during flood events. Continued maintenance will be necessary to keep it usable.

(b) The Berry Bend boat ramp cove is also identified as an area to provide a minor marina through a commercial concession lease agreement.

Compartment 0042 – Berry Blend Bluff

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 175 acres

Berry Bend Bluff is located on the northern shore of the Osage River arm and abuts the eastern boundary of the Berry Bend Park. The eastern boundary is marked by a large cove and the western boundary by Compartment 43.

(4) Description and use

The east leg of the Berry Bend equestrian trail traverses the forested portion of this area. This compartment consists of a large scenic bluff that rises 150 feet above the lake surface and exhibits a small cave and limestone outcroppings on the south face. Sub-climax oak-hickory, eastern red cedar, and native prairie grasses vegetate the area in the typical glade association. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Provide recreational multi-use trail system that connects to the Berry Bend recreational park area.

(6) Development needs —

(a) Future maintenance of muti-use trail needed to allow for recreational needs.

(7) Special considerations —

(a) Access to this trail system is limited from the east in this compartment. User access in emergency situations is limited and access by boat is the only legal access. Emergency access to the remote areas of the trails through private property may need to be explored in the future.

Compartment 0043 – Osage/Grand River

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 4,949 acres

Osage/Grand River lies in two different zones. The first zone lies on the north shore of the Osage River arm and encompasses project lands between the eastern edge of the Berry Bend Bluff (Compartment 42) and Highway UU south of the Harry S. Truman State Park. The second zone stretches from Highway UU westward to the Mount Zion Wildlife Area (Compartment 45) on the south side of the Grand River arm.

(4) Description and use

This compartment contains two licensed boat ramps, as well as a well-developed equestrian trail. This large compartment is characterized by rolling hills and long dissected drainages. Soils are generally thin and rocky, particularly along the ridges and side slopes. Most of the area is oak-hickory forest with numerous old fields scattered throughout. Greatest vegetative diversity occurs in and around these old fields. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Provide recreational multi-use trail system that connects to the Berry Bend recreational park area.

(d) Support licenses to accommodate for user access.

(6) Development needs —

(a) Future maintenance needed on multi-use trail system to allow for recreational needs.

(b) Possible future expansion of licensed areas.

(7) Special considerations —

(a) Access to the multi-use trail system, that is located in the southern part of the compartment, is limited from the middle and east part of the trail. User access in emergency situations is limited and access by boat to this portion of the trail system is the only legal access.

(b) Historically, USACE lands located adjacent to the Bent Tree subdivision located on the southern boundary of the northern portion of the compartment, has had severe off road UTV/ATV encroachments. Continual monitoring will be required to protect the integrity of project lands through boundary protection activities. Work closely with adjoining landowners and HOA's to limit encroachment violations, and limit future occurrences.

Compartment 0044 – Harry S. Truman State Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE/MDNR

(3) Location/Acreage: 1,475 acres

Harry S. Truman State Park is located seven miles northwest of Warsaw via 7 and UU highways. Situated at the end of a scenic ridge divide locally known as the "Devil's Backbone" separating the Tebo Creek, South Grand and Osage River drainages.

(4) Description and use

This large compartment is characterized by rolling hills and long dissected drainages. Soils are generally thin and rocky, particularly along the ridges and side slopes. Predominantly, oak-hickory, eastern red cedar, and native prairie grasses vegetate the area in the typical glade association. This area is managed largely with prescribed burning and are typical every few years encouraging an open understory. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

The Harry S. Truman State Park is leased to the Missouri Department of Natural Resources, Division of Parks and Historic Preservation, for public park and recreation purposes. The State administers, operates, and maintains the park and all facilities. Recreation development includes a full-service marina, a large campground, a boat ramp adjacent to the marina, a boat ramp adjoining the campground, swimming beaches, and a picnic area.

There are no lands within this compartment that do not aid the successful completion and operation of authorized project purposes.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) To provide recreational opportunities by means of a lease agreement with the Missouri Department of Natural Resources, including overnight camping facilities, day use and picnic opportunities, boat and bank fishing access, trail systems, swimming beaches, marina facilities and services.

(6) Development needs —

(a) Future maintenance needed campsites, showerhouse, water-borne bathrooms, pit toilets, and playgrounds to allow for recreational needs.

(b) Make facility improvements and upgrades to campsites, showerhouse, water-borne bathrooms, pit toilets, and playgrounds that meet user needs.

(7) Special considerations —

(a) This compartment is managed by the Missouri Department of Natural Resources and future development by the agency for a lodge/resort complex has been authorized.

(b) The Missouri Department of Natural Resources manages wildlife numbers in this compartment through special managed hunts that allows a carrying capacity that considers wildlife health and recreational needs balance.

Compartment 0045 – Mt. Zion Wildlife Area

(1) Classification and justification: Multiple Resource Management: Vegetative Management

(2) Management agency: USACE

(3) Location/Acreage: 4,550 acres

The Mount Zion Wildlife Area is composed of project lands on the south side of the Grand River arm and is bounded on the east by the old French Bridge Road and on the west by the county road running east from Brownington. These lands are accessible from Highways Z and U and their connecting gravel roads.

(4) Description and use

The topography, soils, and vegetation of this compartment are typical of the Ozark border ecosystem with steeply dissected and forested hills on the east grading into more open, rolling, prairie-like terrain on the west. A community boat launching access is located at South French Bridge.

The western two-thirds of the unit has soils suitable for crop production, but many abandoned crop fields are succeeding to woody invasion. Limestone bluffs characterize the outside bends of the old river channel on the eastern portion. Oak-hickory is the primary forest type while native prairie grasses, forbs, and fescue dominate the grasslands. Open fields with timbered edges and draws dominate the western portion. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture lease on this compartment produce annual hay and/or row crops with negotiated set asides for wildlife benefits.

(d) Manage high risk agriculture lease, to accommodate agriculture goals, but also accommodate flood pool storage during times of high water.

(e) Provide and protect critical habitat for endangered species.

(f) Support licenses to accommodate user access.

(6) Development needs —

(a) Possible future expansion of license area.

(b) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measure to reduce soil loss and promote soil conservation.

(c) Maintain established native fields and eliminate invasive plant species to enhance wildlife and small game habitat.

(d) Maintain access roads, hunter parking lots and fishing access.

(e) Continued maintenance of physical barriers, and possible upgrades to provide protection to critical habitat.

(7) Special considerations —

(a) This compartment includes the abandoned Hay Creek quarry. Continual off-road vehicle use and dumping in this area has led to the closure of the access to this feature. The flooded underground quarry has been deteriorating since abandonment. Failing quarry shafts are creating potentially hazardous sinkholes on the surface. Marking and fencing of these sinkholes/areas has been accomplished in the past to protect the public but will need to continue to keep users safe and aware of the danger.

Compartment 0046 – Brownington

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 203 acres

Brownington is located two miles east of the junction of Highways 13 and Z. It forms the northern limit of the Village of Brownington. An abandoned railroad line forms the western boundary, and the Mount Zion Wildlife Area (Compartment 45) borders on the east. Vehicle access is available from Highways Z and BB.

(4) Description and use

Topography consists of forested areas and fields gradually sloping to the shoreline. Soils are suitable for farming across most of the unit. Grasslands are primarily in fescue, with some native grasses and woody invasion. Osage orange, honey locust, pecan, walnut, and honeysuckle are common in the fencerows and ditches. The forested areas are oak-hickory. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) Continual wildlife management/maintenance practices will be necessary to keep fallow fields open for multi-species use.

(7) Special considerations —

(a) This compartment is located adjacent to the village of Brownington. Continual monitoring for off road vehicles and other encroachments will be necessary to protect the integrity of project lands.

Compartment 0047 – Cooper Creek Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 1,787 acres

The Cooper Creek Wildlife Area is located on both sides of Cooper Creek, bounded on the east by the old county road north of Brownington and on the west by the abandoned St. Louis and San Francisco Railroad track. The Compartment can be reached from Highway 13 and Highway BB, as well as both old and new Highway Z.

(4) Description and use

Strip pits are prevalent, and a wide, flat floodplain dominates the area nearer the lake. The terrain on this area consists of moderately sloping hillsides dissected by shallow draws leading to Cooper Creek. Typical vegetation consists of oak-hickory, elm, sycamore, and walnut. The area is dotted with mine spoils, and drainages. Open fields are mostly in crop production and have woody edges. Several old fields are colonized by fescue, native prairie remnants, forbs, and woody invaders. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set-asides for wildlife benefits.

(d) A portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(e) Work closely with leaseholders to ensure public and leaseholders needs are being met.

(f) Continue mitigation land purposes for wildlife management.

(6) Development needs —

(a) Continue maintenance access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(7) Special considerations —

(a) Annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

Compartment 0048 – Cooper Creek Park

(1) Classification and justification: Subunit A: High Density Recreation, Subunit B: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: A: 427 acres, B: 268 acres, Total: 695 acres

Cooper Creek Park is located at the east end of Henry County Road SE 700 one mile east of the town of Deepwater. It is located at the confluence of the South Grand River, Deepwater and Cooper Creek arms of the lake. Approximately 427 acres are available to the public for ATV use on the south side SE 700 road. The City of Deepwater has leased a 15-acre portion of the park on the East end of SE 700 road and constructed a boat ramp, gravel parking lot and shelter in addition to a half a mile of paved access road.

(4) Description and use

The majority of the area was once strip mined for clay and coal or used as a borrow area for the construction of 13 highway. Topography is rugged and erratic with extensive areas of exposed subsoil and broken vegetative cover. Vegetation in the south end of the park consists of invasive species such as locust, eastern red cedar and secondary oak/hickory due to the poor soil conditions. The northern end of the park consists of broken glades with native grasses as well as invasive grasses such as sericea lespedeza. There are fragmented old fields as well as stands of oak/hickory timber interspersed with sycamore and other natives. Aquatic resources within the park consist of strip pits left from mining of clay material.

The features of this park make it ideally suited to operation of off-road vehicles (ORV). A large portion of this park has been dedicated to Cooper Creek ATV Park. Use of the area by ORV enthusiasts continues to increase each year. Current facilities include one large parking lot with a vault toilet, bulletin board, and boundary fencing and signs.

The City of Deepwater has leased a small portion of the compartment where they maintain a boat ramp, parking lot, and picnic shelter.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Provide a public use area for recreational operation of ATVs, and dirt bikes.

(d) Maintain integrity of project lands through boundary protection activities. Ensure that users are aware of private lands surrounding the ATV area to prevent encroachment onto private property.

(e) Support licenses to accommodate for user access.

(6) Development needs

(a) Possible future expansion of license areas.

(b) Continual upkeep of pipe fencing that outlines ORV area.

(7) Special considerations —

(a) The southern portion of this compartment contains the ATV/dirt bike area. The trail systems in these areas continually change throughout the years with different trails being used and others being abandoned due to different factors. Future planning and implementation of trail upgrades and a trail marking system may be necessary in the future to aid in rider orientation and emergency response. This area is open to all-terrain vehicles (ATV) and motorcycles only. No dune buggies, four-wheel drive vehicles, side by sides, etc. are allowed. An ATV is a motorized vehicle having a maximum width of 50 inches, designed to be operated off-road, with handlebars for steering, and a seat that is straddled by the operator. Large off-road vehicles that are wider than 50 inches, UTV's with seats, or vehicles are not allowed due to the dangers of various size units being operated in the same location.

(b) Emergency access towards the center and southern portion of the riding area is limited to off road vehicles. Future development to include access may need to be addressed as use continues.

Compartment 0049 – Deepwater City Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE/ CITY OF DEEPWATER

(3) Location/Acreage: 480 acres

The lease area includes acreage both in and outside the Corporate Limits of the City of Deepwater, along the right bank of the Deepwater Arm of Truman Lake and at the confluence of Cooper Creek.

(4) Description and use

Topography of this area is largely composed of gradual slopes and includes crop fields, old fields, and hay meadows. Soils are variable from thin and rocky on the ridges to rich and fertile on the drainages. Vegetation is commonly the oak-hickory-eastern red cedar, native grass, and forb communities present on the glades and ridge tops. Grasslands are mostly fescue with some woody invasion. Several agricultural leases are found on the area. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

Located within Deepwater, the park contains approximately 30 acres composed of former city lots. Although no USACE constructed recreation facilities were built, a relocation contract provided for construction of a ballfield. City constructed facilities include a multipurpose recreation building, a playground, two picnic shelters, and a horse arena. An equipment shed, former dwelling, and an old block building are also part of the leasehold improvements.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set-asides for wildlife benefits.

(d) Manage high-risk agriculture lease, to accommodate agriculture goals, but also accommodate flood pool storage during times of high water.

(e) Support outgrant to accommodate user needs.

(6) Development needs —

(a) Maintenance and update of current recreational features such as shelters and museum building to accommodate user needs.

(b) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measure to reduce soil loss and promote soil conservation.

(7) Special considerations —

(a) This compartment is located adjacent to the town of Deepwater. Continued monitoring for off road vehicles and other encroachments will be necessary to protect the integrity of project lands.

Compartment 0050 – Deepwater/Clinton Sewage Treatment Facilities

(1) Classification and justification: Project Operations

(2) Management agency: USACE/CITY OF DEEPWATER/CITY OF CLINTON

(3) Location/Acreage: 235 acres

City of Deepwater's Lagoon is located outside of the northwest corner of the city, while City of Clinton's is located in the southeast corner of the city.

(4) Description and use

This compartment accommodates primary sewage treatment facilities for the cities of Deepwater (northwest corner of town) and Clinton (southeast corner of town, east of Hwy. 13). The unit consists of areas gently sloping to the south that feathering into the floodplain. The shoreline in this area provides bank fishing access and game and non-game fish species populations. Vegetation consists of row crops, hay, as well as oak-hickory forest.

(5) Resource objectives

(a) Provide an area for treatment of municipal sewage in a manner which does not adversely affect public health or the environment.

(b) Assist in protecting the water quality of the lake.

(6) Development needs —

(a) Update treatment facilities and lagoons to accommodate public health needs.

(7) Special considerations —

(a) The Clinton Sewage Treatment Facility is currently in a WRDA bill to excess the property for USACE ownership to the City of Clinton. This bill is still ongoing but expected to pass in the near future. This would remove approximately 221 acres from this compartment.

Compartment 0051 – Deepwater Creek Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 6,336 acres

Deepwater Creek Wildlife Area is located west of Highway 13 on the Deepwater-Marshall Creek arms of the lake as well as the lands between the southern portion of compartment 52 and east of the 13 Highway.

(4) Description and use

This unit is varied in both topography and vegetation. Abandoned coal strip pits are found on the east edge of the unit. With the exception of the portion east of Hwy. 13 which is managed by USACE, this compartment is leased to the Missouri Department of Conservation. Soils are generally deep and fertile, but quite erosive. Expansive bottomlands and mudflats provide ideal waterfowl management potential. Tower Road Marsh is managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations and vegetation control and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribed burning to achieve desired results. Timbered bluffs and woodlots, interspersed with crop fields, old fields, and grasslands provide quality upland game, deer, and turkey habitat.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set-asides for wildlife benefits.

(d) Manage high-risk agriculture lease, to accommodate agriculture goals, but also accommodate flood pool storage during times of high water.

(e) A portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(f) Work closely with leaseholders to ensure public and leaseholders needs are being met.

(g) Manage wetland cell to support seasonal migratory wildlife, along with shallow water aquatic species.

(h) Continue mitigation land purposes for wildlife management.

(6) Development needs —

(a) Continue to maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continual development of the agriculture leasing program to ensure appropriate use of high-risk agriculture ground. This may include removal of these areas from the program.

(d) Future maintenance needs to continue for the successful management of the wetland area.

(7) Special considerations —

(a) Continual annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) Within this compartment, the wetland along Missouri highway 13 at the Deepwater arm was a MoDot construction project for mitigation due to wetland habitat reduction due to the highway installation. Management of the wetland was turned over to USACE.

(c) MDC maintains a boat ramp on Deepwater Creek that offer public access to this section of the lake.

(d) Protect and allow public access to Bysor Cemetery.

Compartment 0052 – Sparrowfoot Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 412 acres

Sparrowfoot Park is located approximately five miles south of Clinton on the upper end of the South Grand River arm. Access is provided by Corps relocated Henry County Road SE 500 east of 13 Highway.

(4) Description and use

A crop-hay lease exists within the park. A former limestone quarry with associated underground shafts is located near the center of the compartment. The topography of this compartment is generally flat. Small woodlots and Osage orange fencerows persist. Vegetation consists of both warm and cool season grasses, forbs and ornamental trees and shrubs. Soils are good across most of the unit but are very erosive. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

Development includes a campground, picnic shelters, and boat ramps.

Primary recreation uses are boat launching, picnicking, shoreline fishing, and camping activities.

(5) Resource objectives

(a) Provide quality recreational camping and day use facilities that are efficient and serve the public's needs.

(b) Make improvements to facilities to improve efficiency and meet universal accessibility requirements.

(c) Provide an area for public rural water supply infrastructure.

(6) Development needs —

(a) Make facility improvements and upgrades to include campsites, shelters, showerhouse, pit toilets, playgrounds, and water infrastructure that meet user needs.

(b) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measure to reduce soil loss and promote soil conservation.

(7) Special considerations —

(a) This compartment contains a rural water supply intake pipe in the inundated abandoned limestone quarry. It also contains supporting infrastructure such as pumps, and pump houses. During times of high water, the road that provides access to this infrastructure may be inundated, requiring rural water personnel to use boats for access. If pumps go down during a high-water event access may be limited, and a request to raise these roads may be needed for access.

(b) Sedimentation is an increasing management issue in this area and the west end of Truman Lake. Shallow water depths during below normal elevations can cause boating hazards for the lake users if operating outside of the river channels. Further research is needed for long term sedimentation solutions.

Compartment 0053 – Grand River Bottoms Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 8,421 acres

Grand River Bottoms Wildlife Area is located on the Upper Grand River Arm of the lake, it extends from Sparrowfoot Park on the south side to Clinton City limits on the north.

(4) Description and use

A waterfowl refuge and prairie chicken management zone are present on this unit. Except for a small area on the east end of the compartment, the Missouri Department of Conservation has management responsibility.

Topography of this productive unit consists almost entirely of an expansive floodplain with little variation in elevation. Soils are deep and fertile and, but highly erodible, the majority being suitable for crop production.

Deepwater Marsh is a 19-acre wetland managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles and wildlife. Management activities include maintaining the water control structures for water level manipulations, vegetation control, and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribe burning to achieve desired results. The compartment also contains three ponds to include Hilty, Low, and High ponds. They are maintained and managed to benefit multiple waterfowl, aquatic plants, fish, reptiles, amphibians, and wildlife species. Project staff keep the levees mowed one to two times per year.

This compartment contains several wetlands managed by MDC to include Dehn Shorebird Viewing Marsh, 18 Highway North, 18 Highway South, and Hillebrand (25 acres), and are managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations, vegetation control, and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribe burning to achieve desired results.

Timbered bottom lands were populated by such species as pin oak, pecan, silver maple, cottonwood, and green ash. However, this habitat component was nearly totally lost to the severe floods of 1993 and1994. Willows, buttonbush, and other wetland shrubs are common along the lakeshore and will provide the next stage of succession in this flood zone. Although relatively scarce, small upland areas provide important diversity and are colonized by native and introduced grasses, forbs, and shrubs.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Manage hay/agriculture lease, to accommodate agriculture goals, but also accommodate flood pool storage during times of high water.

(d) A large portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(e) Work closely with leaseholders to ensure public and leaseholders needs are being met.

(f) Provide outdoor recreational opportunities to users of the area.

(6) Development needs —

(a) Continue to maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(7) Special considerations —

(a) Annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) The leaseholder manages and maintains the Golden Valley Shooting Range. Ensure that all environmental and public safety goals continue to be met.

(c) Several abandoned bridges are contained in this compartment. Future goals of removal to prevent any accidents or access problems in the future need to be addressed.

(d) MDC manages a boat ramp in this compartment called Grand River bridge and is open for public lake access.

Compartment 0054 – Clinton City Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE/CITY OF CLINTON/MDC

(3) Location/Acreage: 1,600 acres

Clinton City Park is located on the north side of the Grand River arm of the lake between Highway 13 and the Grand River Bottoms Wildlife Area. Portions are within the municipal limits of the City of Clinton, several of which are leased by the city.

(4) Description and use

Two agricultural lease units and a managed wetland complex are found in the south part of the compartment. Topography is generally flat to gently sloping. Soils are deep and fertile, but highly erodible. The vegetative component is a mixture of woodlots, fencerows, old fields, and crop fields.

Skidmore is a 200-acre wetland managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations, vegetation control, and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribe burning to achieve desired results. A half-acre pond is managed to benefit multiple waterfowl, aquatic plants, fish, reptiles, amphibians, and wildlife species.

One large city park and several smaller leased areas exist in this compartment. The city park includes Artesian Park, a BMX bicycle track, archery range, and several pocket playgrounds. The Golden Valley Radio Control Association has a lease within the compartment. The association operates a flying field for radio-controlled aircraft. The Meadow Lake Country Club also has a lease for a portion of the Meadow Lake Golf Course which occurs on 44 acres of the compartment. The area receives heavy bank fishing use especially in the spring and fall. Waterfowl hunters also use the vacated roads to launch their boats.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) A large portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(d) Work closely with leaseholders to ensure public and leaseholders needs are being met.

(e) Provide outdoor recreational opportunities to users of the area.

(f) Manage the 200-acre wetland cell to support seasonal migratory wildlife, along with shallow water aquatic species.

(g) Support outgrant to accommodate user needs.

(6) Development needs —

(a) Continue to maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continue to maintain Skidmore Marsh for the successful management of the wetland area.

(7) Special considerations —

(a) Annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) Several recreational features such as the bicycle track, archery range, and playgrounds may need upgrades in the future to allow for recreational growth.

(c) During times of high water, portions of the road that are located in the southeast portion of this compartment become inundated and are impassable. This road is S. 8th St. and is maintained by the special road district and signed during time that it is impassable. For user safety this must be maintained and signed as needed.

(d) Two smaller abandoned bridges are located in Artesian Park to be removed for safety reasons if funding is received and allocated.

Compartment 0055 – Missouri Department of Conservation, Truman District Headquarters

(1) Classification and justification: High Density Recreation

(2) Management agency: MDC

(3) Location/Acreage: 24 acres

The Missouri Department of Conservation maintains its headquarters for the Truman District on property just south of Clinton on the 2nd St. extension (old Highway 13). This compartment is bounded by old Highway 13 on the west, the project boundary on the north, and by Compartment 54 on the south and east.

(4) Description and use

The Missouri Department of Conservation maintains its Clinton office forestry wildlife, and enforcement personnel at this facility. This unit consists of mowed fescue and interspersed wooded drainages of oak/hickory, and a 1.3-acre pond maintained and managed to benefit multiple waterfowl, aquatic plants, fish, reptiles, amphibians, and wildlife species. The Missouri Department of Conservation staff stock the pond for fishing events and public fishing.

The area surrounding this facility is mostly level terrain and slopes to a small drainage east of the compound. Soils are mostly deep and well-drained. Vegetation on the site is a mixture of hardwood bottom trees composed of pin oak, pecan, and sycamore. Several of the open fields around the office have been planted to native warm season grasses as well as ornamental trees and shrubs.

The compartment continues to be used as the base of operations for the Department's wildlife, forestry, fisheries, and enforcement activities in the Truman District. Because the office building is located within the Truman Lake flood pool, steps may have to be taken to prevent basement flooding during high water periods.

(5) Resource objectives

(a) Provide an area for the Clinton office for the Missouri Department of Conservation.

(b) Provide outdoor recreational and interpretative opportunities for the public.

(6) Development needs —

(a) The Missouri Department of Conservation may need to request the installation of a flood control structure for protection.

(b) Maintain facilities to improve, and meet recreational needs of the public, and leaseholder.

(7) Special considerations —

(a) During times of extremely high water, the Missouri Department of Conservation have had to install sandbags for possibly flooding of their facility. A berm may need to be installed to prevent any flooding in the future of the facility.

Compartment 0056 – Bethlehem/Gaines Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 6,874 acres

Bethlehem/Gaines Wildlife Area is located on the north side of the middle Grand River arm. The compartment is bounded on the west by Deer and Coal Creeks and on the east by Highway U. Access is from Highway 7, AA, W, and U and the associated county road network.

(4) Description and use

This compartment is an excellent example of the Ozark border ecosystem. Some of the best wildlife lands on the project are found on this ecologically diverse unit. A community boat ramp is located at the Bethlehem Access. Management responsibility for this compartment is about equally divided between USACE and the Missouri Department of Conservation. Poor soils to the east grade subtly into richer soils to the west. Oak-hickory forests of the Ozark region transition into tall grass prairies to the west. AA marsh is an 18-acre wetland managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations and vegetation control and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribe burning to achieve desired results.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set-asides for wildlife benefits.

(d) A portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(e) Work closely with leaseholders to ensure public and leaseholders needs are being met.

(f) Manage the 18-acre wetland cell to support seasonal migratory wildlife, along with shallow water aquatic species.

(6) Development needs —

(a) Continue to maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measure to reduce soil loss and promote soil conservation.

(7) Special considerations —

(a) Annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) Continue maintenance for the successful management of the wetland area.

(c) Protect and allow public access to Reid and Bethlehem Cemeteries.

Compartment 0057 – U Highway

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE

(3) Location/Acreage: 137 acres

U Highway is located on the lands between the western edge of the Bucksaw Park and U Highway on the north side of the Grand River arm. Access is from Highway U, and a county road which runs through the middle of the compartment.

(4) Description and use

Topography consists of moderately sloping fields in the western half of the unit and steeper in the eastern half. Soils are mostly shallow and rocky, although some will support farming activities. Steep hardwood ridges exist in the east half of the unit. The old fields are predominantly rank fescue with small woody invaders. Some remnant native prairie grasses are also present. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) None.

(7) Special considerations —

(a) None.

Compartment 0058 – Bucksaw Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 436 acres

Bucksaw Park is located three miles south of Coal, Missouri and can be accessed via 7 and U highways. Situated on the old McGinnis Bend of the South Grand River, the park is characterized by steep timbered river hills tapering eastward to gently sloping open fields.

(4) Description and use

The park consists of primarily oak-hickory wooded areas with open fescue fields in the project managed areas of the campground. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

The northern portion of the park has been leased to a marina concessionaire. Recreation development on the northern portion includes a boat ramp, floating marina and restaurant, land-based motel and rental cabins, swimming pool, open air pavilion, and service/storage buildings. The southern portion of the park is managed by USACE and contains a large, highly utilized campground and swimming beach.

(5) Resource objectives

(a) Provide quality recreational camping and day use facilities that are efficient and serve the public's needs.

(b) Make improvements to facilities to improve efficiency and meet universal accessibility requirements.

(c) Continually support the commercial concessions to this area for recreational needs of the public.

(6) Development needs —

(a) Make facility improvements and upgrades to campsites, showerhouse, water-borne restrooms, pit toilets, shelters, and playground that meet user needs.

(b) Expansion of marina facilities that support recreational uses that the marina currently supports.

(7) Special considerations —

(a) Expansion of camping facilities in the commercial concessionaire's lease, will negatively affect utilization and efficiency in the adjoining USACE managed campground. Historical requests such as these for this compartment have been denied.

(b) The adjacent shoreline located adjacent to the marinas repair shop has eroded into their parking lot. A bank stabilization project will be needed to slow or stop the loss of the bank.

(c) During the 1990's, the ownership of several of the buildings (6 cabins and hotel) located on the lease went back to USACE and are currently on the Real Property list. Maintenance and upkeep of these structures fall on the lease holder and are their responsibility. Transfer of ownership has been discussed in the past but would have to go through a public sale through Real Estate.

Compartment 0059 – Gobbler's Knob Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 1,467 acres

Gobbler's Knob Wildlife Area is composed of lands lying north of the middle Grand River arm and is bounded by Bucksaw Park on the west and by a large unnamed cove on the east. This cove is also the western terminus of Compartment 60.

(4) Description and use

The Missouri Department of Conservation manages the Cedar Creek Wildlife Area while USACE has management responsibility on the remainder of the unit. Topography consists of wide, irregular, and relatively flat ridge tops with steep side slopes. The outside bends of the old river channel are characterized by sheer limestone bluffs. Soils on the unit are generally poor and rocky with numerous outcrops. Areas of better soils occasionally occur on the flat ridge tops. Vegetation is mostly oak-hickory forest with scattered openings. These openings had once been cleared fields but are succumbing to woody invasion. Native prairie grasses and forbs are common to the old fields and the limestone glades. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) A portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(d) Work closely with leaseholders to ensure public and leaseholders needs are being met.

(6) Development needs —

(a) Maintain access roads, hunter parking lots, and fishing access.

(7) Special considerations —

(a) Annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) Recent closure of vehicle access to lake shoreline at SE 971 Rd. in the central portion of this compartment was accomplished to deter off-road use, ensure cultural resource protection, and erosion control.

Compartment 0060 – Tightwad/Racket Area

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 1,889 acres

Tightwad/Racket area is located on the northern shore of the Grand River Arm. It includes project lands, excluding Long Shoal Park, between the Gobbler's Knob and the Tebo Creek Wildlife areas. Vehicle access is from County roads running north and south from Highway 7.

(4) Description and use

Numerous subdivisions on the adjoining private property exist to the east. The west portion of this compartment is characterized by a series of north-south ridges with points into the lake. The eastern portion has gentler slopes. Soils are mostly thin and rocky although isolated pockets of better soils exist on the lower slopes and drainages. Vegetation consists of a mature hardwood forest with several scattered old fields and fescue meadows. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Support licenses to accommodate for user access.

(6) Development needs —

(a) Maintain access roads, hunter parking lots, and fishing access.

(b) Maintain established native fields and eliminate invasive plant species to enhance wildlife and small game habitat.

(c) Possible future expansion of license area, and future licenses.

(7) Special considerations —

(a) The Tightwad access point off of SE 1151 Rd. has not been renewed for several years, due to lack of interest. The renewal of this outgrant would provide a benefit to the public to have an access point on the Grand arm.

(b) This compartment contains three unacquired use right ramps at Redbud North, Redbud South, and Karr's Park. During the acquisition phase of Truman Lake these areas roads and ramps would stay in ownership of the subdivision . The areas include the width of the roads and ramp, but not the shoreline adjacent to the ramp.

(c) Developed subdivisions in the eastern part of this compartment will need continued monitoring to maintain the integrity of project lands through boundary protection activities.

(d) Protect and allow public access to Houk Cemetery.

Compartment 0061 – Long Shoal Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 343 acres

Long Shoal Park is located approximately six miles west of Warsaw on the North side of the Grand River arm via 7 Highway. It is separated into four distinct areas; USACE operated boat ramp, campground, and day use/beach areas and a private marina concession area.

(4) Description and use

The compartment is a gently steeping bank, with grade work and level areas created for the campground. Lower levels gently slope into the floodplain. Wooded areas consist primarily of oak/hickory, mixed with other hardwoods, lower levels contain sycamore. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

Recreation development includes a full-service marina, a large highly utilized campground, a swimming beach, picnic facilities, and a boat launch access.

(5) Resource objectives

(a) Provide quality recreational camping and day use facilities that are efficient and serve the public's needs.

(b) Make improvements to facilities to increase efficiency and meet universal accessibility requirements.

(c) Continually support the commercial concessions in this area for recreational needs of the public.

(6) Development needs —

(a) Make facility improvements and upgrades to campsites, showerhouse, pit toilets, water-borne restrooms, shelters, and playgrounds that meet user needs.

(b) Expansion of marina facilities that support recreational users that the marina currently supports, while staying within lease boundaries.

(7) Special considerations —

(a) Current marina lease holder has requested to expand the marina further out into the water but has been denied due to the request being outside of their leasehold.

(b) Developed subdivisions on the northern part of this compartment will require continued monitoring to maintain the integrity of project lands through boundary protection activities.

Compartment 0062 – Tebo Creek Wildlife Area

(1) Classification and justification: Multiple Resource Management: Vegetative Management

(2) Management agency: USACE/MDC

(3) Location/Acreage: 13,687 acres

The Tebo Creek Wildlife Area is comprised of three separate sub-compartments Upper Tebo, Leesville, and Brush Creek Wildlife Management Areas. The Upper Tebo includes all the Tebo Creek arm from about a half-mile west of Highway PP to the project boundary. Leesville is bordered on the west by Windsor Crossing Park (Compartment 63) and the Bell Slough Road on the east. The area runs along the right bank of the Tebo Creek arm from Leesville to Racket. Brush Creek is bordered by Highway PP on the west and Compartment 64 to the east. This area runs along the left bank of the middle Tebo Creek arm including the lower Brush and Clear Creek drainages.

(4) Description and use

This large compartment encompasses three wildlife areas managed by the Missouri Department of Conservation and lies in the transition zone between the Ozark border region and the tall grass prairie region. This compartment exhibits great diversity of topography, soils, and vegetation and supports a large variety of wildlife habitats. Access to the east half of the unit is severely limited. The steeply dissected and heavily forested character of the lower Tebo Creek gradually gives way to the flat or gently rolling prairie-like grassland of the upper watershed. Soil quality also typifies this transition with the better prairie soils to the west and the thinner, rocky soils to the east. Vegetation consists of oak-hickory forest and eastern redcedar glades on the bluffs and ridges, with some walnut. The old fields are colonized by various grasses, forbs, and woody invaders. C Highway Marsh is a wetland managed to enhance and provide habitat for aquatic plants, waterfowl, amphibians, reptiles, and wildlife. Management activities include maintaining the water control structures for water level manipulations and vegetation control and maintaining the levee and access road. Vegetation control may utilize disking, dozing, mowing, herbicides, and prescribe burning to achieve desired results.

Unique features of the area include an abandoned limestone quarry that poses management problems from a public safety standpoint. Across the lake from the quarry is a limestone-dolomite ridge which creates a narrow hair pin bend in Tebo Creek. The area also includes a lease to the Missouri Army National Guard where training activities are performed.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Managed hay/agriculture leases on this compartment produce annual hay and/or row crops with negotiated set-asides for wildlife benefits.

(d) A large portion of this compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(e) Work closely with leaseholders to ensure public and leaseholder needs are being met.

(f) Continue mitigation land purposes for wildlife management.

(6) Development needs —

(a) Maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measure to reduce soil loss and promote soil conservation.

(7) Special considerations —

(a) Continual annual management plans are developed to ensure management objectives and needs are being met by the lease holder.

(b) Windsor Crossing campground was closed due to underutilization in 2018. A possible recreational lease in the closed camping area could be possible with proper development and increased recreational use/interest. Previous identification of and expansion of the recreation area has been identified on the west side of State highway PP adjacent to the closed campground located in this compartment.

(c) The Tebo Islands had previously been leased to both the Missouri Department of Conservation, and Missouri Army National Guard. The MDC request to relinquish this interest in the islands for wildlife management has been submitted and a singular leasehold for these islands is the objective.

(d) Protect and allow public access to Kennedy, Tindle, and Fewell Cemeteries.

Compartment 0063 – Windsor Crossing Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 58 acres

Windsor Crossing Park is located on the upper end of the Tebo creek arm, 1 mile north of Leesville on PP highway.

(4) Description and use

The smallest campground on the project, the park was converted from a free area to a class C fee park in 1994. Self-registration day use fee stations were constructed at the boat ramp and swim beach in 1995. In 2018 the park was closed due to underutilization and all buildings and amenities associated with the park were removed.

This area is primarily open and is gently sloping into the floodplain. Vegetation consists of primarily open areas where the campground was, this consists primarily of fescue but slowly transitions back to native grasses. There are also several mature eastern red cedars interspersed amongst other shade trees in the vacant campground. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Provide quality bank fishing opportunities and other day use activities.

(b) Update facilities to accommodate user needs.

(6) Development needs —

(a) Maintenance of current access road, boat ramp, and parking lot facilities.

(b) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, with measure to reduce soil loss and promote soil conservation.

(c) Expansion of the boat ramp parking lot to accommodate larger vehicles/trailers to provide safer operational use may be needed.

(7) Special considerations —

(a) Windsor Crossing campground was closed due to underutilization in 2018. A possible recreational lease in the closed camping area could be done with development and increased use/interest. Previous identification of and expansion of the recreation area has been identified on the west side of State highway PP adjacent to the closed campground located in the previous compartment.

Compartment 0064 – South Grand Point

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 893 acres

The South Grand Point area lies on a peninsula northwest of Warsaw on the north shore of the Grand River arm. The area encompasses land between the western edge of the Tebo Creek Wildlife Area. Access is from county roads running south off of Highway TT.

(4) Description and use

This unit is characterized by a series of north-south ridges which terminate in the lake. Adjacent private development is common along this compartment and includes a licensed parking access at Mack's Camp. The Missouri National Guard licenses a large portion of this compartment for military training exercises.

Soils are quite thin and rocky. Vegetation is almost entirely oak-hickory forest with scattered eastern red cedar, although several successional old fields are found in the area. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Provide an area to the Missouri Army National Guard to perform training activities, for their organization as well as other military organizations.

(d) Support licenses to accommodate for user access.

(6) Development needs —

(a) Possible future expansion of license area.

(7) Special considerations —

(a) The Tebo Islands had been requested by the Missouri Army National Guard to be kept in their lease.

(b) Developed subdivisions around this compartment will continually need to be monitored to maintain the integrity of project lands through boundary protection activities.

Compartment 0065 – Little Tebo Wildlife Area

(1) Classification and justification: Multiple Resource Management: Wildlife Management

(2) Management agency: MDC

(3) Location/Acreage: 1,725 acres

Little Tebo Wildlife area runs from the Thibaut Point Park completely around the arm to compartment 64.

(4) Description and use

The Missouri Department of Conservation licenses the entire compartment. This unit exhibits a steeply dissected and heavily forested topography. Oak-hickory-eastern red cedar association dominant forests. Many of the ridges exhibit a glade character and are colonized by glade vegetation adapted for xeric conditions. The floodplain vegetation is dominated by row crop and grassland with interspersed woody draws and fencerows. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) This compartment is currently leased to the Missouri Department of Conservation. They develop annual management plans to meet resource objectives for annual grain crop production, invasive species control, and maintenance of roads and parking lots.

(d) Work closely with leaseholders to ensure public and leaseholder needs are being met.

(e) Continue mitigation land purposes for wildlife management.

(6) Development needs —

(a) Continually maintain access roads and hunter parking lots.

(b) Possible future expansion of hunter parking lots to accommodate additional users.

(c) Possible expansion of walking trail into this compartment.

(7) Special considerations —

(a) The City of Warsaw has expressed interest in expanding a trail system to connect into the Frisco Trail line. The trail could possibly extend into the southeast portion of this compartment coming from the Thibaut Point campground. The Missouri Department of Conservation currently leases this property and the request for this trail and recreational purpose would come from them, if they allow.

Compartment 0066 – Thibaut Point Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 272 acres

Thibaut Point Park is located eight miles north of Warsaw. The Park is accessible by Highway 65 and Highway T respectively.

(4) Description and use

This unit exhibits a dissected and heavily forested topography. This area is primarily wooded and contains mostly oak/hickory. As the slope transitions downslope secondary growth is heavier and more water tolerant species exist. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

Recreation development includes a boat launching ramp, developed camping loops, group shelter, picnic areas, and a swimming beach.

(5) Resource objectives

(a) Provide quality recreational camping and day use facilities that are efficient and serve the public's needs.

(b) Make improvements to facilities to improve efficiency and meet universal accessibility requirements.

(6) Development needs —

(a) Make facility improvements and upgrades campsites, showerhouse, pit toilets, and shelters that meet user needs.

(b) Future development of a multi-use trail from the east side of this compartment to the west, would need to be explored further for day use features not to disrupt the overnight camping features and occupants.

(7) Special considerations —

(a) None.

Compartment 0067 – T Highway Area

(1) Classification and justification: Multiple Resource Management: Low Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 486 acres

T Highway Area is located on the north shore of the Sterett Creek arm and lies between the Sterett Creek and Thibaut Point Parks. Access is by foot from the parks or from adjacent private properties.

(4) Description and use

This unit consists primarily of rolling hills bisected by the Sterett Creek flood plain. Soils are generally good at the lower elevations but have wetness limitations due to clay pans. Upland soils are much thinner and exhibit typical Ozark character. Vegetation is mostly oak-hickory on the uplands with a mature sycamore grove on the floodplain. Mature stands of high-quality walnut also occur in this area but were adversely impacted by the 1993-94 floods. Long, narrow old fields occur along Sterett Creek and are vegetated by native grasses, fescue, clover, annual weeds, and forbs. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(6) Development needs —

(a) Future development of the multi-use trail for further recreational use.

(7) Special considerations —

(a) Development of a multi-use trail from the adjacent compartment 68 through this compartment into compartment 66 has been maintained off and on over several years. Future development of this trail may lead to future recreational use of this compartment.

Compartment 0068 – Sterett Creek Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 185 acres

Sterett Creek Park is located about five miles north of Warsaw. Access to the park is over a paved road leading from Highway 65.

(4) Description and use

This compartment consists primarily of the Sterett Creek Marina concession area (Subunit 68-1). A small portion of Lease Unit A3 (Subunit 68-2) lies along the park access road.

Recreation development includes a full-service Marina, a boat launching ramp, land-based restaurants, a motel, and a campground. The Sterett Creek Park is leased to a concessionaire who operates and manages the entire park. Use of the Sterett Creek Park is intensive.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historic and cultural resources from degradation.

(c) Manage hay/agriculture leases on this compartment, for the production of annual hay and/or row crops with negotiated set asides for wildlife benefits.

(d) Provide an area for quality recreational camping and day use facilities that are efficient and serve the public's needs.

(e) Support improvements to facilities to improve efficiency and meet universal accessibility requirements.

(f) Continually support the commercial concessions to this area for recreational needs of the public.

(6) Development needs —

(a) Expansion of marina facilities that support recreational uses that the marina currently supports.

(b) Continual development of the agriculture leasing program to benefit wildlife. High risk agriculture ground is currently being leased for farming, although future plans could change the land classification to wildlife management to reduce soil loss and promote soil conservation.

(7) Special considerations —

(a) The marina lease includes the entrance road from 65 highway. The agriculture lease located along the entrance road may need to find alternative access to not add additional maintenance costs to the lease holder.

(b) Access to the Sterett Creek dike is located on the far eastern portion of this compartment and access be allowed for maintenance of this project operations feature.

(c) Developed subdivision adjacent to the northern part of this compartment will continually need to be monitored to maintain the integrity of project lands through boundary protection activities.

Compartment 0069 – Sterett Creek Dike

(1) Classification and justification: Project Operations

(2) Management agency: USACE

(3) Location/Acreage: 60 acres

This unit contains the Sterett Creek dike and consists of a wide valley floor rising on the north and south to uplands. This compartment runs parallel to Highway 65 and is approximately two miles north from the City of Warsaw.

(4) Description and use

Steep man-made terrain. Combination of native grass and cool season grasses. NRM staff does a prescribed burn every 3 to 4 years to remove vegetation duff buildup from mowing. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

Terrain consists of a relatively wide flat valley floor supporting the embankment. The embankment rises gradually on the north end of the dike and abruptly on the south end. The dike and adjacent land are primarily covered by fescue sod, although remnant native prairie grasses have persisted on the site and are readily apparent on the downstream and northern portions of the unit. Several woody fence rows also exist. The remaining areas are limestone riprap.

The use of the compartment is crucial to the flood control operation of the lake and remains as the primary benefit. The adjacent lands will be managed through the use of hay and agricultural lease. Such interim use provides no conflict with the integrity of the dike structure or its operation.

(5) Resource objectives

(a) Provide flood control protection for low lying areas east of US Highway 65.

(b) Monitor the dike structure for safe operation and structural integrity.

(c) Manage adjacent lands for wildlife benefits through agricultural practices.

(6) Development needs —

(a) Continual maintenance of access to and on dike structure.

(7) Special considerations —

(a) None.

Compartment 0070 – Dump Road Area

(1) Classification and justification: Multiple resource Management: Low Density Recreation

(2) Management agency: USACE/City of Warsaw

(3) Location/Acreage: 715 acres

(4) Description and Use

Dump Road Area is comprised of lands between the Kaysinger Bluff Park, and the southern tip of the Sterett Creek Dike. A county road in the southern half of the compartment provides the only vehicle access. Description and use

Subunit 70-1 consists of those areas along Sterett Creek Dike included in Lease Unit A3. These fields are part of the old flood plain and exhibit good fertility but have wetness limitations. The remainder of the unit is made up of heavily forested draws and side slopes that terminate in the lake (Subunit 70-2). The City of Warsaw leases a portion of this unit for a mountain bike park.

Soils are thin and quite rocky. Forest cover is primarily oak-hickory with some walnut present. Several old fields and a powerline right-of-way provide grassy openings for wildlife. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

(5) Resource objectives

(a) Manage natural features to benefit wildlife and vegetative resources.

(b) Protect historical and cultural resources from degradation.

(c) Manage hay/agricultural leases on this compartment to produce annual hay and/or row crops with negotiated set asides for wildlife benefits.

(6) Development needs —

(a) Support licenses to accommodate for user access.

(b) Possible future expansion of license area.

(7) Special considerations —

(a) The western of this compartment is part of the City of Warsaw's lease. There are approximately 25 miles of multi-use trails that are used heavily during the recreation season and several mountain bike races are held.

Compartment 0071 – Kaysinger Bluff Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE

(3) Location/Acreage: 152 acres

Kaysinger Bluff Park is located one mile northwest of the City of Warsaw. Access to the park is provided by roads leading from 65 Highway one mile to the east and Highway 7 approximately three miles to the southeast. The compartment is comprised of lands between compartment 1,2, and 70. That make up the peninsular that the Harry S. Truman Visitor sits.

(4) Description and use

The park is located atop Kaysinger Bluff providing an excellent panoramic view of the lake, dam and downstream area. In FY22 two volunteer full hook up campsites were built in this area. Volunteers will be utilized in FY22 to operate the visitor center.

This area consists of a bluff top on the west end that drops sharply down to the lake, the center and eastern sections are sharply bisected by shallow ravines. Heavily wooded primarily of oak/hickory, with eastern red cedar, and maples growing predominately on the steep bluffs. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

Recreation development centers around the Harry S. Truman Visitor Center which is located atop Kaysinger Bluff. The bluff overlooks the Truman dam and reservoir and the upper Lake of the Ozarks. Additional development includes the Hooper House, a reconstructed historic building along with other interpretive structures related to the time period; as well as the Kaysinger Bluff Nature Trail.

(5) Resource objectives

(a) Provide information and interpretive facilities to assist visitor understanding and appreciation of project features and resources.

(b) Enhance the public's understanding of the role of the U.S. Army Corps of Engineers in the development and administration of water and land resources.

(c) Provide historical interpretive facility.

(d) Support lease to accommodate for user needs.

(6) Development needs —

(a) Possible planning, design, and modifications to the current visitors center and grounds to allow for additional office space and personnel needs.

(b) Connecting to City sewer and water to provide for additional user needs.

(7) Special considerations —

(a) The previous three years, there has been no funding provided for the continual operations of the visitor center. Ongoing public meetings and stakeholder interactions have not brought forth a partner that could possibly aide in the operations of the facility. However, moving office space to the visitor center has been discussed in reducing the three current buildings being used for office space into the visitor's center and lowering overall O&M costs.

(b) The Kaysinger Bluff Heritage Association leases approximately 20 acres in the central part of the compartment. They hold annual special events that draw in several thousand visitors. Continual support of these special events is needed for their success.

Compartment 0072 – Downstream Levee System

(1) Classification and justification: Project Operations

(2) Management agency: USACE

(3) Location/Acreage: 100 acres

The Downstream Levee System is located downstream of Harry S. Truman Dam. The right and left bank Levees were constructed to contain flood and power releases from the dam. The right bank levee begins at the south end of the Bledsoe Ferry Park and extends downstream where it joins Cold Springs Road. The left bank levee begins within Drake Harbor and extends downstream to a point just below the Highway 65 Bridge. There are three different ways to access the right bank levee. Access to the northern portion of the levee is from Highway 7 over West Dam Access Road through West Bledsoe Ferry. Access to the central portion is from Highway 7 over West Dam Access Road to Old Highway 7. Access to the southern end of the right bank levee is from Highway 7 over Cold Springs Road to the levee access road. Access to the left bank levee is from Highway 7 over Warsaw's Main Street to Harrison Street or White Road.

(4) Description and use

This compartment consists of the footprint for the left and right bank levees that provide downstream protection for the City of Warsaw. Also included is an area of riprap erosion protection opposite the discharge channel.

This area is largely man made to prevent any flooding from releases or pump back features, this compartment consists of a levee. Areas on the water side of the levee consist of low-lying species of trees such as sycamore. Areas along the levee are mowed once a year and were planted to a fescue mix. The shoreline in this area provides bank fishing access and game and non-game fish species populations.

The levees were constructed of compacted fill with a service road along their entire length. The lakeward sides of the levees are rip rapped. Between the rip rapped slope and the lake shore a variety of softwood trees occurs naturally. The back slopes of the levees were seeded to cool season grasses. For a distance of approximately 50 feet from the toe of the backslope, native warm season grasses were planted. A variety of tree and shrub seedlings were then planted.

Bank fishing access is the primary recreation use along the levee systems. A vault toilet and adjacent parking located at the intersection of Old Highway 7 and the levee This area is leased and maintained by the City of Warsaw. This parking lot provides access for bank fishermen as well as providing access to the Old Swinging Bridge, a historical structure that is now open to foot traffic only.

(5) Resource objectives

(a) Maintain operational condition of levee system, and six sluice gates.

(b) Provide protection from flooding during periods of high discharge from the flood control pool.

(c) Provide protection from flooding during periods of pump back from Lake of the Ozarks.

(d) Maintain vegetation on both sides of levee to provide protection of potential erosion.

(e) Provide recreational opportunities in association with other management activities.

(f) Provide bank fishing opportunities, trail system access, and access to the Old Swinging Bridge.

(6) Development needs —

(a) Modernize area features such as trail system and pit toilets to allow for future recreational needs.

(b) Maintain functionality of six sluice gates to mitigate flooding behind the levee system.

(7) Special considerations —

(a) The City of Warsaw has a partnership with the USACE to maintain the top portion of the levee system for a 10-mile multi-purpose trail. Surfacing and lighting have been accomplished in the past and may be included in future requests.

(b) Tract #147.12 located on the south-central portion of the compartment on the left levee just downstream of Drake harbor is not owned but is maintained by USACE per agreement with the landowner, Ameren UE. Future operations of the levee are still in line with their purpose.

(c) The six sluice gates located in the levee system are annually maintained, however, one sluice gate has become entirely silted over and is not operational.

Compartment 0073 – Drake Memorial Harbor Park

(1) Classification and justification: High Density Recreation

(2) Management agency: USACE/CITY OF WARSAW

(3) Location/Acreage: 35 acres

The City of Warsaw has a 25-year lease agreement to manage recreational opportunities under the lease in five different OMP compartments. The compartments are 001, Sports Complex (Bledsoe Ferry); 003, Shawnee Bend Golf Course; 070, Mountain Bike Trail, 072 Swinging Bridge Trail Staging Area, and 073, City Harbor, City of Warsaw totaling 293.6 acres. The lease is divided into five separate areas each with its own distinct facilities.

(4) Description and use

The Gordon Drake Memorial Harbor contains a boat ramp, courtesy dock, parking lot and flush toilet, river walk trail system, playground, amphitheater, and additional courtesy dock. The site is used for boating access on Lake of the Ozarks, bank fishing, walking/biking and recreational activities such as Heritage Days and Jubilee Days.

The harbor was constructed by USACE to replace the former boat launching access. A main component of the park is an excavated harbor containing the boat ramp with adjacent parking lot and flush toilet. Level grassed areas are located to the northwest and southeast of the launching ramp. These level areas were built with dredged material during construction of the harbor. A variety of trees and shrubs were planted on the level areas to beautify the area and provide shade. Fescue is the predominant grass. Riprap has been placed on the lakeside of this entire compartment to provide protection during power and flood releases. The park is within the city limits of Warsaw and is leased to the city for public park and recreation purposes. A fisherman access parking lot is located on the southernmost portion of the compartment providing access to the left bank levee.

Use of this park serves a wide variety of recreational users from trail enthusiasts to boating. The City of Warsaw has and will continue to develop the area and surrounding leased areas.

(5) Resource objectives —

(a) This compartment is currently leased to the City of Warsaw. They develop management plans to meet objectives and user needs.

(6) Development needs —

(a) Maintenance of current recreational features.

(b) Update facilities playground, pit toilet, shelter, and platform to accommodate user needs.

(7) Special considerations —

(a) Tract #147.12 located on the southeast portion of this compartment is not USACE owned. This area has been removed from the City of Warsaw's lease as any requests for use of this property needs to be to Ameren UE.

(b) Continual update to 5-year plan, to ensure management objectives are being met.

Compartment 0074 – Non-contiguous Tracts

(1) Classification and justification: Multiple Resource Management

(2) Management agency: USACE

(3) Location/Acreage: 1,565 acres

The Corps of Engineers owns several different sized non-contiguous tracts of property outside of the fee boundary. These properties were acquired during the acquisition phase due to a variety of reasons. Many of these original properties have been excessed and ownership has been transferred. However, there are still many tracts of property that are still retained under the U.S. Army Corps of Engineers ownership and management. The bulk of these properties are located in the upper reaches of the Thibaut, Osage, and Grand arms inside of flowage easement but outside of the recognized fee boundary. The size of each tract varies in size due to when the acquisition was completed.

(4) Description and use

The variety of these non-contiguous tracts and locations vary and the natural resource and habitats are varied as well due to their physical locations. The topography of these tracts is variable and can consist of river bottoms, upland prairie, high limestone bluffs, old fields gently sloping to the flood plain, narrow ridges, steeply dissected and timbered slopes, and a variety of other topography aspects. These tracts contain varied natural resources including, forested cover of oak-hickory with scattered walnut, pecan, ash, and sycamore in the draws. Interspersed glades contain easter red cedar with honey and black locust interspersed within the remnant native warm/cool season grasses, broom sedge, and forbs. Invasive species such as these have not been kept in check due to location of these tracts, and remnant fields that once existed on these tracts have transitioned from open meadows to a succession of Osage orange, honey locust, and other invasive species.

Soil conditions of these tracts vary due to physical locations. They are variable from thin and rocky along the ridges and draws becoming deeper and more fertile in lower slopes. Xeric growing conditions are apparent in some areas due to the shallow rocky soils, with limestone outcroppings.

Several of these tracts contain shoreline that provide bank fishing access for game and non-game fish species populations.

(5) Resource objectives –

(a) These compartments vary in size, resources, and locations. Due to a variety of factors including their hard-to-reach locations for resource management, and low public use, there are no objectives identified or being managed for.

(6) Developmental needs –

(a) None

(7) Special considerations –

(a) Many non-contiguous tracts have been disposed of thru real estate disposal management. The most recent disposals have been thru the Water Resources Development Act of 2020.

(b) Continual monitoring of these areas is difficult for project staff due to these non-contiguous tracts not having identifying boundaries like on fee owned property lines. Specifically, tracts owned in the Monegaw Springs area of the upper reaches of the Osage River basin have continually experienced unauthorized off-road vehicle use encroachments. These tracts are not physically identified thus enforcement of these encroachments cannot be managed by staff without knowing exactly where the property lines are in comparison to where the encroachment is taking place.

Chapter 6 – Special Topics/Issues/Considerations.

Items that are unique to the project and not covered in other parts of the plan. Examples include partnerships, tribal jurisdiction, adjacent development, utility corridors, invasive species, Clean Marina programs, oil and gas, Watchable Wildlife, etc.

(1) Special Events on Fee Owned Property

The project conducts several different special events on fee owned property. These involve different partners, and stakeholders specific to each event. One of these events is the Heritage Days event held usually on the third weekend in October of each year. This event is in partnership with the Kaysinger Bluff Pioneer Heritage Associated on their leased property and the Visitors Center grounds. This event annually brings in several thousand visitors and staff along with partners take part in management of the event.

A project sponsored event that partners with the local Masonic Lodge, and Missouri Department of Conservation is the Managed Deer Hunt. Since its inception in 1990, the deer hunt event for hunters with physical challenges have proven to be not only a valuable management tool to control deer populations in parks but also a popular public relations event. Additional work includes planting food plots for a total estimated cost of $5,000.00. Project staff also prepares all shooting lanes. Project labor costs associated with the hunt are estimated to be $10,000.00.

The project partners with several other smaller scale special events such as Kids Fishing Days, Kids Need to Fish Event, and other local events.

(2) Powerline Crossings

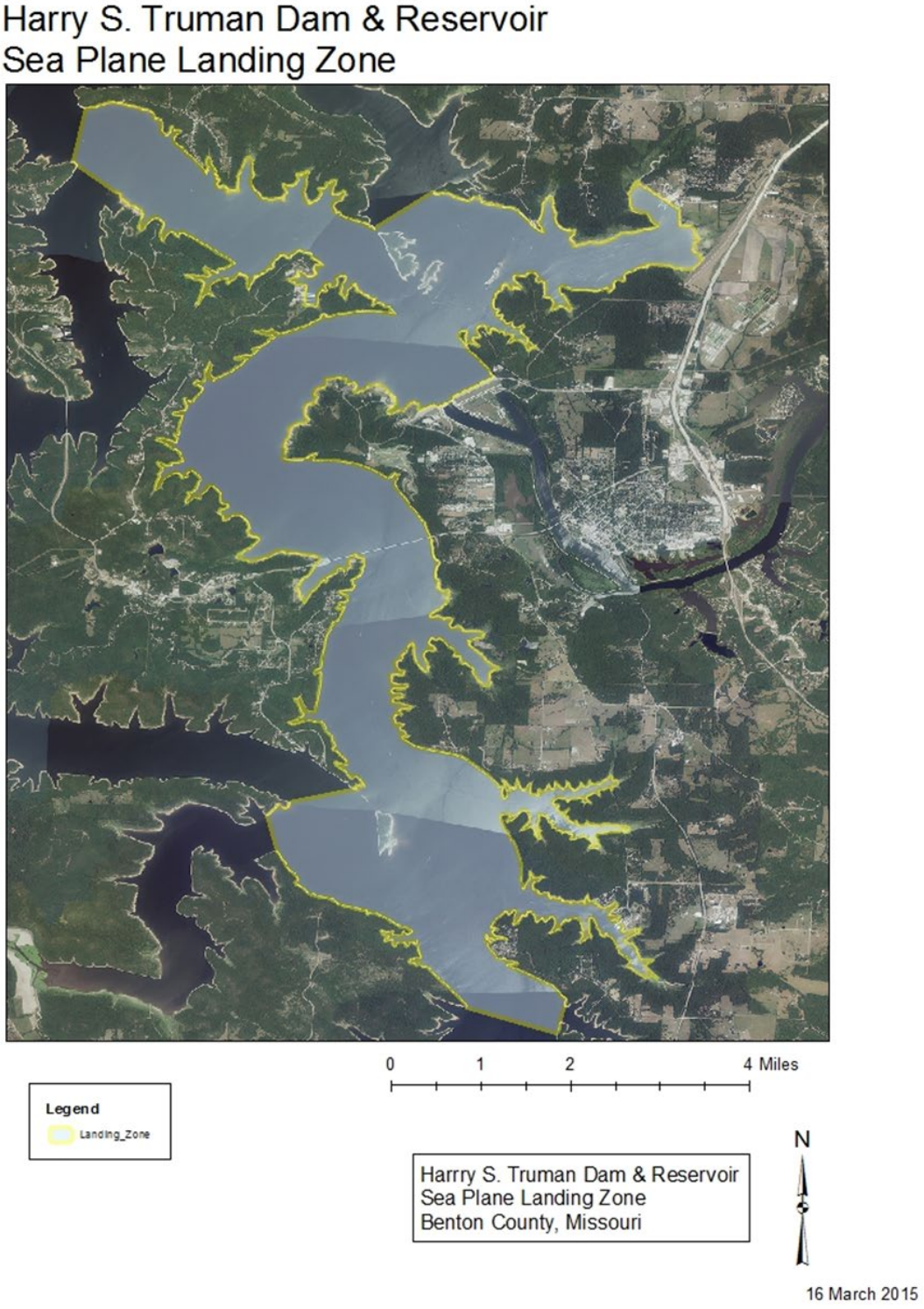
Some powerline crossings over access roads within the project boundary leading to boat ramps do not have the required clearance of 45 feet above the roadway. Orange anti-collision warning balls have been placed on them to alert visitors to the condition.

Some powerline crossings over portions of the lake accessible to sail-boaters may not have the minimum clearance of 45 feet above the top of the flood control pool. Sailors who moor their boats at marinas on the lake will be contacted to advise them of the potential hazard. Signs warning of powerline crossings will be placed at boat launching ramps as well. In addition, utility companies will be contacted and asked to provide specific elevation data for all powerline crossings over the lake. This information will be included on our project brochure.

(3) Sea Plane Landing

All shorelines are restricted to taxiing and mooring only of aircraft for a distance of 500 feet out into the lake. Developed recreation areas and high hazard areas (dam, bridges, etc.) are restricted to sea plane use for a distance of 1,000 feet in all directions.

Seaplane landing is permitted in the area identified in the attached “Harry S. Truman Dam & Reservoir Sea Plan Landing Zone Map.”



(4) Roads Submerged during Flood Operations

All roads that are subject to inundation during flood pool operations will be identified by location and agency responsible for operation and maintenance. Roads under Corps responsibility will be signed and/or barricaded in accordance with the Uniform Manual for Traffic Control and the Corps Sign Manual. The project will coordinate with other agencies concerning proper hazard notification on project roads under their jurisdiction.

(5) Restricted Areas

Delineation of hazardous areas immediately upstream and downstream of the powerhouse will be established in accordance with ER 1130-2-341. An evaluation team will determine the precise boundaries. The project has provided the team with a statement of existing conditions in accordance with Appendix B of ER 1130-2-341. The placement and enforcement of applicable signs and buoys restricting public access in the areas will be the responsibility of the project once the boundaries are determined.

Chapter 7 – Agency and Public Coordination.

A public release was issued on April 5, 2022, to announce the start or agency/public scoping period ending June 10, 2022, for the revision of the Harry S. Truman Dam & Reservoir Master Plan Revision and announce the stakeholder meeting on May 2, 2022, in Warsaw, MO and the May 5, May 23, and May 24, 2022, public meetings in Warsaw, Osceola, and Clinton, Missouri respectively. These meetings provided the stakeholders/public an opportunity to ask questions and make comments on the proposed master plan revision process. An extension of the scoping comment period to July 1, 2022, was announced on June 3, 2022.

Comments were encouraged via comment forms provided by USACE, by mailing letters and comment forms to U.S. Army Corps of Engineers, Harry S. Truman Dam & Reservoir Master Plan Revision, 15968 Truman Rd., Warsaw, MO 65355, via email to Harry.S.Truman@usace.army.mil, or online at http://go.usa.gov/xugxv. A total of 33 people participated in the stakeholder meeting and a total of 132 at the 3 public meetings combined.

During the comment period, 189 pieces of correspondence were received. Each piece of correspondence was read, and specific comments within each piece of correspondence were identified. For those comments that pertained directly to the Master Plan and planning process (substantive comments), they are summarized in Appendix D. Substantive comments are comments that raise specific issues or concerns regarding the project or the study process, suggest new alternatives, or question or raise concern over new impacts not previously addressed in the EA. A number of comments received were not related directly to the Master Plan. A majority of the comments received centered on keeping the Visitor Center open, funded, and having additional programs. These are budgetary matters and are outside the scope of this master planning process.

Chapter 8 – Summary of Recommendations

The Master Plan for Harry S. Truman Dam & Reservoir was last approved in 1988. Over the past 35 years population demographics as well as the economy have undergone changes. These changes can affect patterns of recreation and usage and require a frequent examination of project management objectives and facilities.

This Master Plan conceptually establishes and guides the orderly development, administration, maintenance, preservation, enhancement, and management of all natural, cultural, and recreational resources at Harry S. Truman Lake. The Master Plan is a land-use management document and does not address water-management operations and associated prime facilities (dam, spillway, etc.), as those operations are outlined in separate documents. The Master Plan is stewardship driven and seeks to balance recreational development and use with protection and conservation of natural and cultural resources.

FACILITY MODERNIZATION

It is the goal of the Harry S. Truman Dam & Reservoir to continue to modernize current facilities within existing footprints of recreation areas, bringing them up to modern standards.

RECREATIONAL AMENITIES

Additional amenities should be added as demand warrants and recreation trends dictate the types of facilities that be added, consistent with the USACE' recreation policy.

RECLAMATION OF LEGACY FACILITIES

Removal and/or reclamation of abandoned and little used facilities and amenities allows for restoration of previously used places to native vegetation. This decreases habitat fragmentation while also increasing habitat quantity and value.

Chapter 9 – Bibliography

Britannica. 2016. Osage River. https://www.britannica.com/place/Osage-River. Accessed 20 July 2022.

Graf, W.L., E. Wohl, T. Sinha, and J.L. Sabo. 2010. Sedimentation and Sustainability of Western American Reservoirs. Water Resources Research, Volume 46.

Johnson, M A. 2009. The Changing Landscape of a Rural Region: The effect of the Harry S. Truman Dam and Reservoir in the Osage River Basin of Missouri. Theses and Dissertation in Geography. University of Nebraska-Lincoln. 308 pp.

MDC. 2001. East Osage River Watershed Inventory and Assessment. https://mdc.mo.gov/sites/default/files/mdcd7/watersheds/EastOsageRiverWatershed300.pdf. Accessed on 25 Aug 2022.

MDNR. 2018. 2018-2022 Show Me the Missouri Outdoors: The Statewide Comprehensive Outdoor Recreation Plan for Missouri. https://mostateparks.com/sites/mostateparks/files/2018-2022%20Show%20Me%20the%20Great%20Outdoors_SCORP_Final.pdf. Accessed on 3 August 2022.

MDNR. 2020. 020 EPA Approved Section 303(d) Listed Waters | Missouri Department of Natural Resources (mo.gov). Accessed February 27, 2023.

MDNR. 2021. Groundwater Provinces of Missouri: Salem Plateau Groundwater Province – PUB3000. https://dnr.mo.gov/document-search/groundwater-provinces-missouri-salem-plateau-groundwater-province-pub3000/pub3000. Accessed 20 July 2022.

MDNR. 2022. Missouri's Water Quality Standards (WQS) [10 CSR 20-7]. Water Quality Standards, Impaired Waters and Total Maximum Daily Loads (TMDLs) | Missouri Department of Natural Resources (mo.gov). Accessed February 20, 2023.

NOAA. 2022. Summary of Monthly Normals 1991-2020: Truman Dam and RSVR, MO US USC00238466. National Centers for Environmental Information. Ashville, NC.

Sparrowe, R. D. 1977. Harry S. Truman Dam and Reservoir – A Case History in Fish and Wildlife Coordination. Transactions of the 42nd North American Wildlife and Natural Resources Conference. Wildlife Management Institute. Washington, D.C. pp 42-55.

USACE. 1973. Harry S. Truman Dam and Reservoir Environmental Statement. Kansas City District.

USACE. 1981. Supersaturation Studies, Osage River, Missouri downstream from the Harry S. Truman Dam and Reservoir. Water Quality and Sediment Unit. Kansas City District Corps of Engineers.

USACE. 1988. Design Memorandum 36A: Master Plan: Harry S. Truman Dam and Reservoir. Kansas City District.

USACE. 2019. Value to the Nation Fast Facts: Harry S. Truman Dam and Reservoir Missouri. https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll2/id/6025. Accessed on 21 July 2022.

USACE. 2021. Truman Lake Operational Action Plan.

U.S. Census Bureau. 2022. Census,gov: Quick Facts. https://www.census.gov/quickfacts/. Accessed on 4 Aug 2022.

USGS. 2023. NWI Wetland Mapper. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

Weatherspark.com. 2022. Average Monthly Snowfall in Warsaw. https://weatherspark.com/y/10280/Average-Weather-in-Warsaw-Missouri-United-States-Year-Round. Accessed 26 July 2022.

Western Regional Climate Center (WRCC). 2022. Warsaw, Missouri, Period of Record General Climate Summary from 1893 to 1984. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?mo8733. Accessed 2 August 2022.

Yatskievych, G. 1999. Steyermark's Flora of Missouri, Volume 1. Missouri Botanical Garden Press. 991 pp.

Appendixes

Appendix A: NEPA documents

Appendix B: Maps

Appendix C: Species that May Occur at or near Harry S. Truman Dam and Reservoir

Appendix D: Correspondence