US Army Corps
of Engineers
Kansas City District

OSAGE RIVER BASIN
POMME de TERRE RIVER

POMME DE TERRE LAKE MASTER PLAN

1/11/2016

PREFACE

The Master Plan (MP) for Pomme de Terre Lake was first approved June 14, 1961. Subsequent revisions were prepared with the latest revision approved in October 1988.

In 2002 the US Army Corps of Engineers (USACE) developed and released a set of Environmental Operating Principles to instill environmental stewardship across all the 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 utilized 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 MPs. THIS GUIDANCE IS DIFFERENT FROM THE ORIGINAL MP format which was a design memorandum. Pomme de Terre Lake's original MP can be found in design memorandum 17A: a listing of all the previous MP design memorandums and prior supplements can be found in Chapter 1, Section e.

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Chapter 1 Introduction

a. Project Authorization

The Pomme de Terre Lake project was authorized by the Flood Control Act of 1938 (Public Law 75-761), as set forth in the Flood Control Committee Document 1, 75th Congress. The Flood Control Act of 1938 was further modified by the Flood Control Act of 1941 (Public Law 77-228) and the Flood Control Act of 1944 (Public Law 78-534). These later two acts expanded the general comprehensive plan for the Missouri River Basin and authorized additional expenditures. The initial act was also modified by the Flood Control Act of 1954 (Public Law 83-780) by authorizing Pomme de Terre Lake for flood control, hydropower, water quality, navigation and other purposes substantially in House Document 549 Congress.

b. Project Purpose

Under the above cited authorizations, the specific project purposes at Pomme de Terre Lake included flood control, water quality, navigation and hydropower. In a letter dated April 5, 1954, the Federal Energy Regulatory Commission (formerly the Federal Power Commission) recommended that hydropower be deferred and placed in an inactive category in 1974. General project purposes at Pomme de Terre Lake include recreation and fish & wildlife.

c. Purpose and Scope of Master Plan

This revised Master Plan replaces Design Memorandum No. 17D, Master Plan for Pomme de Terre Lake dated August 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 USACE 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

Pomme de Terre Lake is located in Hickory and Polk Counties in the west central part of Missouri. It is approximately 60 miles north of Springfield, 140 miles southeast of Kansas City and 85 miles southwest of Jefferson City. Towns in the vicinity of the project include Hermitage, Bolivar, and Osceola. Hermitage is three miles north, Bolivar is 25 miles south, and Osceola is 22 miles southwest of the dam. The area surrounding Pomme de Terre Lake is served by federal and state highways and a county road system. The dam crosses the Pomme de Terre River at river mile 43.8.

The Pomme de Terre River and Lindley Creek are the major sources of surface water in the Pomme de Terre River basin. The drainage basin of the Pomme de Terre River is about 50 miles long, 28 miles wide and lies with its major axis in a northwest-southeast direction. The total area of the basin is 828 square miles of which 611 square miles are upstream of the dam. The lake has a flood control pool of 16,000 surface acres and a multi-purpose pool of 7,790 surface acres. Lake capacity for flood control is 406,821acre-feet and 237,356 for the multipurpose pool.

e. Listing of Prior Design Memorandums

Table 1.1

Design Memoranda	Title	Date Submitted	Date Approved
	Definite Project Report, Pomme de Terre Dam and Reservoir	Feb 48	11 Feb 59
	Appendix I, Hydrology Rev.	Jan 50	24 Nov 50
1	General Design Memorandum	5 May 53	16 Oct 53

2	Project Cost Estimates	5 May 53	16 Oct 53
3	Hydrology	26 Jun 53	27 Oct 53
4	Hydraulic and Structural Design	14 Aug 53	29 Oct 53
5	Real Estate Memorandum	18 June 56	
	Revised	13 Sep 56	26 Dec 56
6	Relocations	9 Oct 53	4 Feb 54
7	Navigation and Hydroelectric Power	15 Jul 54	
8	First-Stage Construction Embankment and Outlet Works Channel Excavation	26 Nov 54	24 Feb 55
9	Outlet Works (Description)	31 Dec 54	
	Revised	13 Sep 55	6 Jan 56
10	Geology	2 Feb 57	13 Mar 57
11	Soil Data and Embankment Design	15 Feb 57	1 May 57
12	Sources of Construction Materials	15 April 57	10 May 57
13	Outlet Works Design	28 Feb 57	23 May 57
14	Outlet Works – Control Gates	25 Jul 57	12 Sep 57
15	State Highway and County Road Relocations	24 Apr 59	13 Jul 59
16	Reservoir Clearing	26 Aug 59	17 Dec 59
17A	Master Plan	17 Feb 61	14 Jun 61
17A (C-1)	Water Supplies for Public Use Areas	10 Feb 61	30 Mar 61
17C	Master Plan Revised	31 Aug 67	23 Dec 69
	Revised	14 Feb 79	22 May 80
17C	Appendix IV (Outdoor Recreation Forest and Vegetation Management Plan)	11 Feb 70	

17C	Appendices A - E	16 Jul 76	12 Jan 77
17C	Appendix F (Lakeshore Management Plan)	17 Oct 75	10 Nov 75
17C	Operational Management Plan	15 Apr 81	4 Mar 82
18	Power and Telephone Line Relocations	7 Oct 60	30 Nov 60
19	Operator's Quarters	12 Dec 61	2 Feb 62
20	Preliminary Cost Allocation		
21	Wheatland Park Area Access Road Extension	18 Oct 63	12 Dec 63
22	Wheatland Park Area Access Road Extension, Real Estate	10 Jan 64	28 Feb 64
23	Improvement of Polk County Road to Adonis Public Use Area	27 Feb 64	23 Mar 64
24	Hermitage Public Use Area Access Road, Real Estate	11 May 64	25 Jun 64
25	Improvement of Hickory County Road to Lightfoot Public Use Areas	9 Jul 64	6 Nov 64
26	Repair of Stilling Basin Transition Slab	29 Aug 73	
27	Master Plan		
28	Consolidated Maintenance and Storage Building	31 Mar 81	
	Master Plan		

f. Pertinent Project Information

Table 1.2

GENERAL	
Location of Dam	The dam is located about 3 miles south of Heritage in Hickory County, Missouri, and at river mile 43.8 on the Pomme de Terre River
Operational and Jurisdictional Agency	US Army Corps of Engineers, Kansas City, Missouri
Purposes	Specific – Flood control, navigation, and water quality General – Recreation and fish and wildlife
Initial Authorization	Flood Control Act of 1938 (Public Law 75-761), 28 June 1938
Date Construction Started	11 January 1957
Closure of Dam	28 June 1960
Date Placed in Operation	October 1961
Multipurpose Pool Initially Filled	15 June 1963
Project Life	100 Years
Project Cost	$17,036,306 (through FY1986)*
Federal	$17,036,306
Non-Federal	$0
Benefit/Cost Ratio	1.6
*Includes $2,089,522 for supplemental recreation development.	

RIVER BASIN	
Basin	Osage River Basin
Stream	Pomme de Terre River
Drainage area above Dam	611 square miles
Channel Capacity Below Dam	3,500 cubic feet per second (cfs)
Start of Appreciable Damage	6,000 cfs
Time of Water Travel	18 hours to the mouth
LAND	
Fee Land	13,962 acres of Hickory County 4,391 acres of Polk County 18,353 acres of total fee land
Easement	589 acres of Hickory County 1,565 acres of Polk County 2,154 acres of total easement
Separable Recreation	0 Acres
Total Acquisition	20,507 acres (as of December 1986)
Acquisition Guideline Elevation	864 and 879 feet, mean sea level (msl)
Fish and Wildlife General Plan (Approved 27 Mar 64)	6,900 acres

LAKE			
Water Surface Area Multipurpose Pool Full Pool		7,790 acres – Revised Feb 85 (839 feet, msl) 16,000 acres – Revised Feb 85 (874 feet, msl)	
Shoreline at Multipurpose Pool Elevation		113 miles	
Storage Designation	**Elevation Range (feet, msl) From To**	**Capacity (acre-feet)**	**Area at Top of Pool (Acres)**
Surcharge	874 – 900.2	535,724	25,456
Flood Control	839 – 874	406,821	16,100
Multipurpose	750 – 839	237,356	7,820
Gross Storage	750 – 874	644,177	
Sedimentation Reserve		13,000 (all in multipurpose pool)	
Annual Sediment Inflow		260	

DAM AND EMBANKMENT	
Type of Construction	Composite rock and earth fill
Fill Quantity	5,000,000 cubic yards
Crest Elevation (top of dam)	906 feet, msl
Top Width	30 feet
Maximum Base Width	950 feet
Length	7,240 feet gross
Height Above Streambed	155 feet at elevation 906 feet, msl
Freeboard	5.8 feet
SPILLWAY	
Location	Right abutment
Type	Uncontrolled notch
Crest Elevation	874 feet, msl
Width	170 feet
Discharge Capacity at Elevation	73,000 cfs at 900.2 feet, msl

OUTLET	
Location	Right abutment
Type	Gated conduit with low-inflow outlet (Inlet elevation 750 feet, msl)
Tunnel, Number, Diameter	1 – 14 foot circular
Length	560 feet
Capacity at Elevation 900.2 feet, msl	1 gate open - - 8,100 cfs 2 gates open - - 12,750 cfs
Capacity at Elevation 874 feet, msl	1 gate open - - 7,300 cfs 2 gates open - - 11,500 cfs
Capacity at Elevation 839 feet, msl	1 gate open - - 6,130 cfs 2 gates open - - 9,630 cfs
Capacity at Elevation 738 feet, msl	1 gate open - - 2,000 cfs 2 gates open - - 3,000 cfs
Emergency Gate, Number, Size, Type	1 – 6.5’ x 14.0 feet crane handled
Service Gates, Number, Size, Type	2 – 6.5’ x 14.0 feet hydraulic slide
<u>Gate (Low Flow Only)</u>	
Low Flow Gate, Number, Size, Type	1 – 24 inch butterfly valve
Capacity at Elevation 874 feet, msl	1 gate open – 163 cfs
Capacity at Elevation 839 feet, msl	1 gate open – 140 cfs
Capacity at Elevation 733 feet, msl	1 gate open – 75 cfs

Chapter 2 Project Setting and Factors Influencing Management and Development

a. Description of Reservoir

At multipurpose pool Pomme de Terre Lake covers 7,790 acres and can expand to as much as 16,100 acres during periods of heavy rain as excess runoff is impounded to prevent downstream flooding. Pomme de Terre Lake works in conjunction with several other lakes operated by the US Army Corps of Engineers to provide flood protection for the Osage River Basin and the lower Missouri and Mississippi Rivers.

Pomme de Terre Lake has approximately 113 miles of mostly tree-lined shoreline which traverse up the Pomme de Terre River and Lindley Creek arms of the reservoir. The Lake has approximately 243,000 acre-ft of storage for multipurpose and sedimentation and at flood control pool increases to 407,000 acre-ft of storage.

b. Hydrology and Groundwater

The Pomme de Terre River and Lindley Creek are the major sources of surface water in the Pomme de Terre River Basin. The drainage area upstream of the dam is 611 square miles. Eleven springs have been identified in the Watershed.

Groundwater in the area is plentiful and of good chemical quality. The five principle freshwater aquifers most likely to yield a dependable, high quality supply of water in the area are from deepest to shallowest – Lamotte Sandstone, Potosi Formation, Eminence Formation, Gunter Member of the Gasconade Formation, and Roubidoux Formation. Wells in any of these aquifers must be deep, with a typical range from 400 to 850 feet. Normal yields are 400 gallons per minute (gpm) for the Potosi Formation to 170 gpm for the Eminence Formation which are all from the deeper aquifers with typical depths of 800 feet. Yields are 10 to 30 gpm with typical depths of 400 to 700 feet from the Gasconade and Roubidoux Formations. Occasionally, some water can be found in the Jefferson City Formation at shallower depths of approximately 250 feet with typical yields of 20 gpm or less.

c. Sedimentation and Shoreline Erosion

Shoreline erosion and deposition of silt are minor problems at Pomme de Terre Lake when the pool rises above the normal level. The shoreline and lower 10 feet of elevation of the flood control pool are unique and constantly changing. The shoreline has eroded by the wave action of the water. The shallow layer of soil that was originally along the shoreline has been washed away, leaving behind rock and gravel deposits which are much more resistant to erosion. The lake has an annual sediment inflow of approximately 260 acre-feet.

d. Water Quality

The Kansas City District Water Quality Program collects monthly water samples from standardized locations during the recreation season. Chemical, physical and biological parameters are measured to evaluate water quality at inflow streams, lake sites, and outflow. These data describe conditions and changes from the inflow streams, within the main lake, and outflow focusing on eutrophication, nutrients, sediment, herbicides, metals, and contaminants. Lake water quality improves as water moves through the lake as settling, dilution, and biological processes remove sediments and nutrients. Water quality meets state standards in the lake and outlet and is conducive to Project Operating Purposes. Water quality monitoring will continue as a critical part of a holistic, environmentally sound water quality management strategy for the project to continue to meet applicable federal and state environmental laws, criteria, and standards.

e. Project Access

The area surrounding Pomme de Terre Lake is served by federal and state highways and a county road system. The major vehicular accesses serving the project are: US Highway 54 to the north, US Highway 65 to the east, State Highways 83 to the west and 32 to the south. US Highway 54, a major east-west federal highway, parallels the dam at Pomme de Terre Lake about three miles to the north. US Highway 65, a major north-south highway parallels the project about six miles to the east. State Highway 83 parallels the project about three miles to the west. State highway 254 leads southward from US Highway 54 and Hermitage, then westward across the dam. It intersects with State Highway 83. State Highway 64 parallels the lake on the east from the dam to the town of Nemo. It then goes southwestward across the Lindley Creek arm of the lake approximately 11 miles and then east. A number of county roads link the state highway directly to the lake; these include routes H, RB, RD, RA, J, TT and P. There are over one hundred dirt and gravel surfaced access roads leading from county roads or housing developments adjacent to the project. Substantial pedestrian access is provided on trails leading from these housing developments to the lake. All of the major access roads are concrete or bituminous surface and provide adequate access to the lake.

f. Climate

The Pomme de Terre River basin lies in a temperate to semi-humid climate zone. The record high and low temperatures are 115 degrees Fahrenheit (F) and minus 19 degrees F. Mean annual precipitation in Bolivar, which is approximately 20 miles south of the dam, was 47.22 inches. Greatest daily precipitation was five and one half inches. The area receives on average about 13 inches of snowfall each year. Snow packs are usually short-lived and are not commonly a concern for flooding.

The effects of climate change for this region is projected by an increase in the average annual temperatures; however there would be large year-to-year variations. More

frequent high-volume rainfall events are expected along with an increase in periods of drought. These shifts in climate may lead to shifts in the growing season and allow species to shift their ranges northward.

	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	Greatest Monthly	Greatest Daily	Mean	Maximum Monthly	.10 or More	.50 or More	1.00 or More
Jan	42.6	21.4	32	77	-18	0	6.6	26.0	1.1	2.24	6.47	3.47	3.7	14.8	4.2	1.4	0.5
Feb	47.6	25.5	36.6	82	-19	0	3.5	20.8	0.9	2.41	6.88	4.54	3.1	8.9	4.3	1.7	0.6
Mar	57.6	34.3	45.9	86	-7	0	0.6	12.9	0.1	3.63	10.59	3.32	2.7	12.0	6.7	2.6	0.7
Apr	67.6	43.5	55.6	93	16	0.1	0	3.4	0	4.45	12.04	3.51	.2	2.8	7.3	3.0	1.2
May	75.8	53.8	64.8	95	28	0.2	0	0.2	0	5.83	14.70	5.41	0	T	8.5	4.1	1.9
Jun	83.9	62.7	73.3	104	40	4.4	0	0	0	5.15	13.09	5.46	0	T	8.0	3.4	1.5
Jul	88.8	66.9	77.9	115	44	13.8	0	0	0	4.43	16.16	5.50	0	T	5.6	3.1	1.3
Aug	88.9	65.5	77.2	105	36	14.6	0	0	0	3.57	11.66	4.40	0	0.0	4.9	2.5	1.0
Sep	80.8	56.0	68.4	106	19	3.5	0	0.3	0	4.52	18.23	4.80	0	T	5.5	2.8	1.3
Oct	69.7	44.1	56.9	95	18	0.1	0	3.6	0	4.11	11.90	4.57	0	T	6.0	2.5	1.1
Nov	57.4	34.8	46.1	84	-1	0	0.5	12.6	Xxx	3.94	10.25	3.52	1.3	16.3	5.9	2.7	1.4
Dec	45	24.6	34.8	75	-19	0	4.5	24.0	0.6	2.94	7.48	3.04	2.3	6.9	4.9	2.1	1.0
Year	67.1	44.4	55.8	115	-19	36.7	15.7	103.8	2.7	47.22	18.23	5.50	13.3	16.3	71.8	31.9	13.5

Table 2.1 Climatological Summary for Bolivar, Missouri Source: National Climatic Data Center, Monthly Normals, 1981-2010

g. Topography, Geology, and Soils

The topography in the vicinity of the Pomme de Terre Lake area is typical of maturely dissected plateaus with sub-maturely developed stream valleys and moderately rolling to steep hilly uplands. The original area before federal acquisition was mostly timbered. Although the bottomlands were cleared for farming, much of the uplands adjacent to stream valleys are too rugged for extensive cultivation and were therefore used for grazing livestock and left in their semi-natural state. This has produced a condition providing scenic properties for recreation. Most of the 113 miles of shoreline is tree lined except for those areas adjacent boat dock zones.

Some of the unique geologic features of the area include glades and limestone bluffs. Glades are open spaces in the forest that have exposed rock with scarce soil. As the rocks absorb heat temperatures are usually higher. Flora and fauna varies from the surrounding area due to the unique nature of these sites.

Soils in the basin are residual in nature from cherty limestone and range from rolling silt loams in the headwaters to roughly stony soils near the dam. These soils generally contain considerable amount of gravel and are shallow, particularly on steep slopes under woody vegetation. The most extensive soils in the project area have been classified into these series: Huntington, Plato, Christian, Clarksville, Gasconade, Hagerstown, Sawmill, and Union. The sparse soil originally found along most of the shoreline has been eroded by water fluctuations. The remaining rock and gravel deposits resist further erosion, but the erosion caused by fluctuation makes establishment of shoreline vegetation difficult.

h. Resource Analysis (Level One Inventory Data)

Operational civil works projects administered by 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 (NRCS) 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 Operation Management Plans (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

The impoundment of the Pomme de Terre River and other tributary streams and rivers, which form Pomme de Terre Lake, changed it from a riverine to a lake system. Fisheries in Pomme de Terre Lake are managed by the fisheries division of the Missouri Department of Conservation (MDC). A fisheries habitat improvement plan has been established and each year fish habitat is placed in a variety of spots around the lake to provide cover. A variety of sport and non-sport fish species are found in the lake. A list of fish species in the lake can be found in Appendix C.

The project lands with its variety of habitats supports a number of game animal, furbearers, and other mammal species. A wide variety of resident and migratory bird species utilize the project lands and water for at least a portion of the year. These provide visitors with both consumptive and non-consumptive uses. Reptiles and amphibians typical of the Ozark region are also located on Pomme de Terre Lake project lands.

2) Vegetative Resources

As part of the Level I inventory the project lands were classified according to the National Vegetation Classification System (NVCS) 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 2.2

Project Site Vegetation Classification and Condition Records for Fiscal Year 2013 Division

**** THE FOLLOWING CLASSIFICATION IS DERIVED FROM THE NATIONAL VEGETATION CLASSIFICATION SYSTEM ****

Division	Order	Class	Sub-Class	Total Sub-Class Acreage	Sustainable Acres	Transitioning Acres	Degraded Acres	Total Condition Acres
NON-VEGETATED	Non-Vegetated	Non-Vegetated	Non-Vegetated	8018	0	8018	0	8018
VEGETATED	Herb Dominated	Herbaceous Vegetation	Annual graminoid or forb vegetation	269	0	269	0	269
VEGETATED	Herb Dominated	Herbaceous Vegetation	Perennial gramimoid vegetation (grasslands)	845	425	253	167	845
VEGETATED	Shrub Dominated	Shrubland (Scrub)	Deciduous shrubland (scrub)	95	0	53	42	95
VEGETATED	Tree Dominated	Closed Tree Canopy	Deciduous closed tree canopy	6067	4269	1198	600	6067
VEGETATED	Tree Dominated	Closed Tree Canopy	Mixed evergreen-deciduous closed tree canopy	312	62	250	0	312
VEGETATED	Tree Dominated	Open Tree Canopy	Deciduous open tree canopy	1442	721	410	311	1442
VEGETATED	Tree Dominated	Open Tree Canopy	Evergreen open tree canopy	796	199	380	217	796
VEGETATED	Tree Dominated	Open Tree Canopy	Mixed evergreen-deciduous open tree canopy	79	0	40	39	79
VEGETATED	Vegetation Not Dominant	Sparse Vegetation	Unconsolidated material sparse vegetation	412	412	0	0	412
		POMME DE TERRE LAKE MISSOURI Totals		18335	6088	10871	1376	18335

3) Threatened and Endangered Species

The USFWS maintains the list of federally listed Threatened or Endangered Species, and their designated Critical Habitat, under the Endangered Species Act. MDC 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 Hickory and/or Polk County is found below.

Table 2.3

Name	**State Status**	**Federal Status**	**Habitat**
Gray Bat (*Myotis grisescens*)	Endangered	Endangered	Caves
Indiana Bat (*Myotis sodalis*)		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*)		Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests during spring and summer.
Niangua Darter (*Etheostoma nianguae)*	Endangered	Threatened and Critical Habitat	Rivers
Geocarpon (*Geocarpon minimum)*	Endangered	Threatened	Moist soils in exposed sandstone glades
Mead's Milkweed (Asclepias meadii)	Endangered	Threatened	Virgin prairies
Black-tailed Jackrabbit (*Lepuc californicus*)	Endangered		Large contiguous native grasslands

4) Invasive Species

Previously disturbed areas and areas near housing with ornamental landscaping are more highly susceptible to invasive and exotic species. Invasive species have also been introduced for a specific purpose such as wildlife habitat or erosion control without realizing the full ecological impacts. The invasive species known to occur on project lands includes autumn olive (*Elaeagnus umbellate*), Johnson grass (*Sorghum halepense*), multiflora rose (*Rosa multiflora*), musk thistle (*Carduus nutans*), field bindweed (*Convolvulus arvensis*), and Serecia lespedeza (*Lespedeza cuneata*). Out of these the Johnson grass and sericea lespedeza are the most prolific. The project staff has done some limited treatment of these species. Control of invasive species is guided by the Operations Management Plan in conjunction with the MDC and the MDNR.

In addition to those species currently found on the project, several species are found within the vicinity of the project and pose a serious threat to the health of the project ecosystem should they make their way onto project lands or waters. Feral hogs have been found in nearby areas such as Harry S.Truman Lake. Feral hogs are very destructive, causing damage to plant communities, bird and mammal populations, as well as destroying sensitive habitat sites such as glades, fens, and springs. They can be carriers of a number of diseases and can have explosive population growth, with the ability to have multiple litters a year.

Within the last two decades zebra mussels (*Dreissena polymorpha*) have been identified within Missouri waterbodies. They can spread by moving off a contaminated boat to an uninfected waterway. They can be transported by infected water that may be within bilge, livewells, or motor water intakes. The project has had one positive test for zebra mussels, believed to be the result of contaminated samples. All tests since that time have turned up negative. A large education effort by both state and federal agencies about zebra mussels and their mechanism of spread has potentially slowed the spread of this species. Once a waterbody becomes infested the mussels clump together and can cover power plants, industrial and public water intakes. They can also fowl boat hulls, cover docks and other structures, and decimate native mussel populations.

Hydrilla (*Hydrilla* spp.) is an aquatic plant that grows into a thick layer at or near the surface, shutting out light underneath. Hydrilla is an aggressive invader, outcompeting native aquatic plants and covering large areas, decreasing the amount of open water. Hydrilla has been located in a few ponds on private property in the Pomme de Terre River drainage near Springfield, Missouri. It has not yet been found in the creeks or river system itself.

5) Ecological Setting

The original area before federal acquisition was mostly timbered. Although the bottomlands were cleared for farming, much of the uplands adjacent to stream valleys are too rugged for extensive cultivation and were therefore used for grazing livestock and left in their semi-natural state. Most of the approximately 113 miles of shoreline is tree lined except for those areas around boat dock zones.

What little soil was originally found along most shoreline areas has been removed by water fluctuations. The remaining rock and gravel deposits resist further erosion, but the erosion caused by fluctuation makes establishment of shoreline vegetation difficult.

Very little of the grasslands at Pomme de Terre Lake can be classified as natural prairie. Many of the fields which were improved pastures before the dam was constructed still contain some cool-season grasses, including fescue, brome, red top, and orchardgrass. Open areas which were once cultivated have been invaded by native grasses such as broomsedge, poverty grass, purple top, indiangrass, little bluestem, and bluegrass. Wild flowers such as purple coneflower, yellow coneflower, butterfly-weed, black-eyed Susan, horsemint, beardtongue, and daisy fleabane are also present.

Native forest lands occupy about 50 percent of the project land surrounding the multipurpose pool. The timber stands found on this area are typical of the types of stands found in the northwestern Ozarks region of Missouri. The timber type on the ridge tops and prairie border areas is the post oak-blackjack oak type. These areas are poor site for commercial timber. The sloping tree covered areas normally contain an oak-hickory type stand. These areas, especially those with north and east aspects, are good timber growing sites. They are also well suited for recreation development, wildlife management, and watershed management. The lower slopes and creek bottoms support a bottomland hardwoods type stand. These are some of the best vegetative sites on the project area.

The glades and limestone bluffs form very poor timber growing sites. The major species found on these sites include eastern red cedar, hickory, ash, hawthorn, and chinkapin oak. These are very poor and fragile sites for growing plants. This is due to their very shallow soils over limestone bedrock.

Many of the fields which were pastures or crop fields when the dam was constructed are reverting back to woody species. The quality of these old fields as tree growing sites varies a great deal.

Project lands with their deciduous forest, cedar glades, and open fields support wildlife communities which are typical of the Ozarks region. White-tailed deer are found in the area along with small game and furbearing animals such as the cottontail rabbit, beaver, fox and gray squirrels, raccoon, opossum, spotted and striped skunks, red and gray foxes, woodchuck, coyote, muskrat, mink, and eastern chipmunk.

The project lands provide food and cover for a wide variety of avian life. Numerous songbirds, both resident and transient, can be found. Waterfowl, including wood ducks, mallards, blue winged and green winged teal, gadwall, shoveler, widgeon, Canada geese, blue and snow geese, and coots use the area as a resting place and at times a nesting site. The bobwhite quail, wild turkey, and mourning dove are common game birds of the area. Birds of prey commonly found on the project include the red tailed hawk, broad winged hawk, marsh hawk, sparrow hawk, Cooper's hawk, great horned owl, and the American bald eagle.

6) Wetlands

Much of the wetland systems classified at the project are associated with the lake and the tributaries feeding into the lake. 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 2.4

System	Sub-System	Class	Class Acres
Lacustrine	Limnetic	Unconsolidated Bottom	7713
Palustrine		Emergent Wetland	7
Palustrine		Forested Wetland	305
Palustrine		Scrub-Shrub	20
Palustrine		Unconsolidated Bottom	8
Riverine	Lower Perennial	Unconsolidated Bottom	24
Riverine	Lower Perennial	Unconsolidated Shore	2
Riverine	Upper Perennial	Unconsolidated Bottom	2
Riverine	Upper Perennial	Unconsolidated Shore	4

i. Borrow Areas and Utilities

Borrow area for fill utilized by the project is located below the dam. This area is less than one- half acre in size. There are no other active borrow areas on the project.

The project has utility easements for electric, water, fiber optic, antennas, telephone, and road rights-of-way. In total these easements comprise approximately 2,167 acres.

j. Mineral and Timber Resources

Some of the gravel along tributaries may be of commercial value for extraction. No oil or gas removal operations have occurred within the project area. If grants are issued authorizing extraction of mineral resources from the project, the grant would contain special conditions, and stipulations for protecting the natural, physical, structural, and cultural aspects of the project for its authorized purposes.

Many of the tree species growing at Pomme de Terre Lake are desirable for wildlife and/or have limited commercial forest values. Management opportunities are somewhat hindered because of the relatively limited forest resources and narrow fee ownership around the project.

k. Cultural Resources

1) Background

Numerous cultural resources have been recorded on Pomme de Terre project lands. Cultural resources are the physical remains of past human activity and occupation and include prehistoric and historic archeological sites, artifacts, features, burial sites including mounds and cairns, structures, landscapes, and traditional cultural places. In Missouri, including the Pomme de Terre project area, past periods of human occupation have been divided into broad time periods including the Paleo-Indian (9,250-7,500 B.C.), Early through Late Archaic (7,500-600 B.C.), Early and Middle Woodland (600 B.C.-A.D.450), Late Woodland and Early Mississippian (A.D. 450.-A.D. 1200) (Middle Mississippian and Late Mississippian (A.D. 1200 to A.D. 1600) and Historic (A.D. 1600 to present). Each of these time periods are represented by diagnostic remains that represent cultural practices and adaptation to environmental factors.

2) Previous Investigations

Initial archeological investigations for the Pomme de Terre Lake Project began shortly following it’s authorization under the Flood Control Act of 28 June 1938 (P.L. 75-761) as part of the Missouri River Basin Comprehensive Flood Control and Water Resources Development Plan. Archeological field reconnaissance of the proposed reservoir area was undertaken by the University of Missouri in1950 and was followed by surveys conducted by the Missouri Archaeological Society in 1950 and 1951. In 1952 the National Park Service contracted with the University of Missouri to complete the surveys and excavate six sites (Chapman 1954). Additional archeological investigations were carried out in 1957 at selected sites at the same time that construction commenced on the reservoir (Wood 1961). The lake was completed in 1961.

Since the 1950's investigations; the US Army Corps of Engineers has funded several large cultural resource projects as part of its obligations under the National Historic Preservation Act. The first was the 1977 development of a cultural resources management plan that identified immediate cultural resource needs and made recommendations on future work. Following development of the management plan, two large scale archeological survey projects were undertaken to identify and evaluate archeological sites. The first was a 1979 survey of the lake shore in public use areas in nine park areas between the elevation of 838 and 851 feet above mean sea level. The second was a 1982-84 survey of 4,030 acres and additional NRHP testing at 17 sites that couldn't be evaluated by survey alone. Since these large projects, smaller scale archeological investigations have been conducted by the US Army Corps of Engineers, Kansas City District archeologists for specific real estate and lake project undertakings. In 1996 a new and updated Historic Properties Management Plan (HPMP) was completed for Pomme de Terre Lake.

3) Recorded Sites

The Pomme de Terre Lake Project consists of 18,335 acres of USACE fee-owned land of which 4,702 acres (about 26 percent) has been professionally surveyed for archeological sites. A total of 326 cultural resource sites, all archeological sites, have been recorded on the fee-owned land. Of these 326 sites none are formally listed on the National Register of Historic Places (NRHP), however, 27 sites have been determined to be eligible for listing on the NRHP. Further investigations are required on another 102 sites to determine their NRHP eligibility. The remaining sites have been determined not eligible for the NRHP. Many sites were inundated by the lake or destroyed by lake construction activity. Since only 26 percent of USACE-owned lands have been surveyed at the lake, it is likely that many as of yet unrecorded sites are present in the areas that have not been surveyed.

4) Cultural Resources Management

The cultural resources management policy of the Kansas City District is to preserve and protect significant cultural resources in a spirit of stewardship for the nation. Federal law and USACE regulations require the USACE to identify, evaluate, and provide stewardship for cultural resource sites on USACE land at Pomme de Terre Lake. These laws include but are not limited to the National Historic Preservation Act, Archeological Resource Protection Act, and the Native American Graves Protection and Repatriation Act.

5) Historic Properties Management Plan

The HPMP for Pomme de Terre Lake is the primary tool used to provide proper stewardship for cultural resources on project lands. The HPMP specifies the appropriate management of cultural resources and serves as an appendix to the lake Operation Management plan. All organizational elements that have administrative and

management responsibilities for Pomme de Terre Lake have access to the plan. The HPMP is an effective way of identifying and meeting the District's cultural resource stewardship needs and requirements. HPMPs provide comprehensive overviews of all cultural resources on USACE-owned property and easement lands; information on current and future required stewardship actions; information on eligibility status of all known sites at the project; information on past investigations; information on land use restrictions; updates from site monitoring; future budget needs for specific actions; and an overview of current laws and regulations.

6) Standard Guidelines

All real estate actions or other undertakings that include ground disturbing activity require a cultural resources review to determine if the activity could impact cultural resource sites. The Kansas City District Archeologist reviews project plans, makes determinations on the necessity for field investigations, coordinates the undertaking with the Missouri State Historic Preservation Officer, and consults with appropriate federally recognized Native American tribes.

Sites listed on or eligible for listing on the NRHP are required to be monitored and protected from destruction or looting activity. For undertakings that have the potential to impact NRHP properties, avoidance is the preferred alternative. If avoidance is not possible, any disturbance would require SHPO tribal consultation. Mitigation measures would also be required for such disturbances. In the case of archeological sites, mitigation typically consists of intensive excavations. Unevaluated sites that could be impacted would require an NRHP eligibility determination prior to the undertaking. Sites determined not eligible for the NRHP can be modified in a manner consistent with land use classifications, resource management objectives, and environmental laws. Detailed guidance on land use is contained in the HPMP.

l. Interpretation & Visual Qualities

Pomme de Terre Lake is located in the natural division of Missouri commonly identified as the "Ozarks". The Ozark natural division is characterized by its often cherty, residual soil covering very steep-to-near-flat topography. Caves, springs, bluffs and high gradient, clear-flowing streams with entrenched meanders are characteristic features. Extensive forest, panoramic views, and high elevations make this regional division ideal for a wide variety of recreation uses.

Pomme de Terre Lake is a popular recreation spot in this regional division. The Pomme de Terre Valley has a maximum relief in the area of about 250 feet along the meandering stream and lake. The surrounding upland areas are gently rolling. The native woodlands on the ridge tops and prairie border areas are of the post oak-blackjack oak type. It has estimated that over 50 percent of the fee-owned land at the project is in native woodlands.

The green of the native woodlands offers striking contrast with the blue hue of the lake and scenic qualities for the region. The fall season also provides additional visual contrast when the leaves on the oaks change colors. Travelers, sightseers and persons that live and have second homes in the more than 100 subdivisions around the lake take advantage of these aesthetic qualities.

Several interpretive displays regarding Corps Missions, Project History, etc. can be found in the Pomme de Terre Lake Project Office Visitor Center on the East side of the dam. The State Park offers naturalist-led activities on weekends during the summer months to entertain and inform visitors.

m. Demographics

The population of Missouri is just shy of six million people. According to the Missouri State Comprehensive Outdoor Recreation Plan (SCORP), the population density in Missouri has steadily shifted from rural agricultural regions to urban areas and to rural areas that are rich in recreational amenities. The overall population of Missouri has been growing steadily at 6 percent per decade, which is lagging behind the national growth projection of 10 percent per decade. Missouri's population is aging and the number of people 65 and older is projected to become a larger proportion of the total population. Following another national trend, Missouri has become more racially and ethnically diverse over the course of the last decade. Minority populations in Missouri are growing faster than the general population, increasing over the past decade three times as fast as the state population as a whole.

The project is located within Hickory and Polk Counties. A summary of the demographic information and projections are as follows:

<u>Hickory County</u>

- Population estimates for Hickory County shows a slow growth in population until about 2025, then a population is projected to decline.
- Hickory County has one of the lowest proportion of population 18 and under than nearby counties and well below the state average; 17 percent versus 23.3 percent for statewide.
- Hickory County has one of the largest proportions of persons age 65 and over (30.7 percent) within the region and is more than double the statewide percentage (14.7 percent).

<u>Polk County</u>

- Population estimates predict that Polk County will continue to grow at a relatively quick pace.

- Polk County is much less diverse compared to the statewide demographics. White or Caucasian comprises 96.0 percent of the population compared to 83.7 percent statewide. Hispanic or Latino was the next largest ethnic group comprising 2.1 percent as compared to 3.9 percent statewide. Black or African Americans represented only 0.9 percent of the Polk County Population as compared to 11.7 percent statewide population.
- Polk County had a much higher proportion of the population below the poverty level 22.4 percent versus 15.0 percent statewide.

n. 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. Pomme de Terre Lake Project contributed the below to the economy.

1,498,481 visits per year (FY 2012) resulted in:

- $59,099,000 in visitor spending within 30 miles of the lake
- $26,923,000 in sales within 30 miles of the lake
- 518 jobs within 30 miles of the lake
- $9,764,000 in labor income within 30 miles of the lake
- $16,307 in value added within 30 miles of the lake

With multiplier effect, visitor trip spending resulted in:

- $36,119 in total sales
- 612 jobs
- $12,096,000 in labor income
- $21,711,000 in value added (wages & salaries, payroll benefits, profits, rents, and indirect business taxes)

Cumulative damages prevented from project implementation through FY 2009 totaled $68,239,000.

o. Recreation Facilities, Activities and Needs

1) Zones of Influence

The zones of influence for Pomme de Terre include the metropolitan areas of Kansas City, Columbia/Jefferson City, and Springfield, as well as towns and communities within a relatively short distance from the lake.

2) Visitation Profile

During the period of fiscal year (FY) 2002 – FY 2012 ranged from 1.3 million to over 2 million visits with an average of 1.6 million total visits. Total overnight visits during this time period ranged from about 73,771 to 126,434 with an average of 95,594 overnight visits per FY. Day-use visits accounted for between 1.2 million to 1.9 million with an average of 1.47 million day-use visits per FY during FY 2002 – 2012.

Table 2.5. Total Visitation and Recreation Day Equivalents		
Year	**Visitation Total**	**Recreation Days**
2002	1,309,776	970,794
2003	1,698,223	1,242,589
2004	1,645,166	1,294,780
2005	2,025,718	1,580,211
2006	1,762,784	1,360,172
2007	1,459,588	1,079,332
2008	1,499,503	1,035,609
2009	1,328,395	1,037,419
2010	1,512,505	1,187,816
2011	1,506,342	1,096,533
2012	1,498,481	1,107,118
Average over this period is 1,567,862Visits & 1,202,158 Recreation Days		

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 programs also increase 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.

Pomme de Terre's recreation areas, trails, and water add to the attractiveness, 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. While visitation in recreation areas remains strong, there are indications that there is new demand for upgraded facilities and non-traditional recreation opportunities. Recreation has evolved into a modernized and high-tech activity since the construction of Pomme de Terre's recreation areas. For example, sewer hookups, 50 amp electrical hookups, concrete sites, and wireless internet are becoming the new standard for campers. Technology has changed the habits of modern camping and campgrounds are vital to Pomme de Terre Lake. The popularity of cabins, all-season shelters, natural-surfaced trails, dog parks, educational centers, and archery ranges have also become apparent in other federal, state, county, and municipal parks in the region.

Recreational Facilities as of 2013

- 13 recreation areas
- 53 picnic sites
- 848 camping sites
- 14 playgrounds
- 4 swimming areas
- 5 number of trails
- 34 trail miles
- 4 fishing docks
- 13 boat ramps
- 309 marina slips

Visits (person-trips) in FY12

- 1,498,481 in total
- 88,959 picnickers
- 39,071 campers
- 373,715 swimmers
- 131,550 water skiers
- 669,838 boaters
- 472,958 sightseers
- 685,258 fishermen
- 52,104 hunters
- 269,574 others

4) Recreational Carrying Capacity

No formal recreational carrying capacity study has been conducted for Pomme de Terre Lake. The below table and discussion provide a look at recent occupancy data.

Table 2.6

Pomme de Terre Project Occupancy					
	FISCAL YEAR 2009 - 2013				
Park Name	**# of Nights Available**	**Occupancy**	**% Usage Weekdays (Mon-Thu)**	**% Usage Weekends (Fri-Sun)**	**Total Percent Usage**
DAMSITE	26,175	5,029	14.07%	28.85%	20.41%
LIGHTFOOT LANDING	10,834	2,573	18.42%	31.45%	24.00%
NEMO LANDING	29,532	5,834	14.14%	29.78%	20.84%
OUTLET PARK	5,650	1,070	11.68%	32.28%	20.53%
WHEATLAND	21,314	3151	8.48%	24.79%	15.47%
Total:	**93,505**	**17,656**	**13.36%**	**29.43%**	**20.25%**

The total weekday usage of 13.36 percent represents a much lower number than the weekend usage figure of 29.43 percent. The total occupancy of 20.25 percent is much lower than the national average of USACE facilities at 29 percent.

p. Related Recreational, Historical, and Cultural Areas

Several of the surrounding towns such as Hermitage, Wheatland, and Pittsburg hold several festivals annually.

Lucas Oil Speedway is a three-eighths of a mile oval-shaped dirt racetrack located in Wheatland with a capacity to seat 8,000 spectators. Also on the compound is Lucas Lake which is 4,000 feet long and 400 feet wide. It is used for drag-boat racing.

Hickory County Museum in Hermitage, Missouri is located in the historic John Siddle Williams house dating from the 1850's.

q. Real Estate Acquisition Policy

Acquisition policy for Pomme de Terre was established in 1953 in the Design Manual Memorandum number five which was revised in 1956.

Lands to be acquired in fee are described as those lands so frequently inundated as to destroy their usefulness to the owner except for (1) mineral rights, (2) possible recreation purposes, and (3) grazing and access to water for livestock. The joint policy established on 14 October 1953 allows the acquisition of land in fee 300 feet horizontally from the edge of the permanent pool, if any, or not to exceed the 5-year reservoir level unless special conditions exist. Generally the adopted policy provides that either the 300-foot line or the five-year flood line will be used uniformly on each separate reservoir. The remaining reservoir area, except for certain necessary lands for public use and access, will be required by flowage easement. On the basis of the above criteria, the proposed acquisition in fee and by flowage easements at Pomme de Terre Lake, are set forth.

r. 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 Pomme de Terre Lake 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 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 Pomme de Terre Lake:

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

A number of public laws address protection and maintenance of fish and wildlife resources. The following are pertinent to the Pomme de Terre Lake 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 U.S. Fish and Wildlife Service (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 (the 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 Pomme de Terre Lake 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

A number of public laws mandate protection of cultural resources on public lands. The following are pertinent to USACE project lands at the Pomme de Terre Lake 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 percent 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

A number of 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 Pomme de Terre Lake 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.

s. Management Plans

1) Operations Management Plan

Whereas the Master Plan is a more conceptual framework to guide the park, the Operational Management Plan (OMP) gives more specificity to what work will be accomplished over the next two to three years. The OMP is updated on a frequent basis. Several other plans have been incorporated into the OMP and are listed below.

2) Natural Resources Management Plan

This plan describes the overall goals and actions needed for all natural resources on the project land and waters.

3) Shoreline Management Plan

Establishes policy, provide guidance for the management of the shoreline; establish and maintain acceptable fish and wildlife habitats; maintain aesthetic quality and natural environmental conditions; promote the safe, healthful use of the shoreline for recreational purposes; and achieve a balance between permitted private use and resource protection for general public use.

4) Restricted Area Plan

Uses a series of criteria to determine buffer area around operations structures.

Chapter 3 Resource Objectives

a. Recreation Objectives

1) Update facilities to meet current recreational user needs (Utilities, sites, buildings, roads, etc.)

2) Continue management practices to improve park and operating efficiency.

3) Expand lake access (boat ramps) and day-use facilities to alleviate overcrowding at existing park area.

4) Investigate alternative management options for public use area, such as leases, cooperative agreements, etc.

5) Explore Partnership opportunities to leverage resources

6) Consider Environmental Operating Procedures (EOPs) in all aspects of the project management.

b. Natural Resource Objectives

1) Control noxious weeds and invasive plants and wildlife in selected areas.

2) Promote Biodiversity.

3) Work to improve access for the public to various natural resource areas.

4) Manage and improve habitat, both aquatic and terrestrial.

5) Work with other agencies and stakeholder groups to leverage resources and achieve synergy.

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

a. Land Allocation

Lands are allocated by their congressionally authorized purposes for which the project lands were acquired. There are 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 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 of “Wildlife Management.”

4) Mitigation

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

Table 4.1

Land Use Allocations	
Allocation	**Acres**
Operations	128
Recreation	6,100
Fish and Wildlife	4,313
Total Land Use Allocations	10,563
Water	7,890
Total Fee Acquisitions	18,453

b. Land Classification

Land classification designates the primary use for which the 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 (NEPA) and other federal laws. The land classifications in this Master Plan are found in EP 1130-2-500 dated June 2013 and differ from those found in the previous 1988 version of the Master Plan which was a design memorandum. The classification names vary only slightly from the previous classification system and do not result in any direct changes to the way the land is managed.

1) Project Operations

This category includes those lands required for the dam, 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 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

These are 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.

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 sub-classification, rather than just Multiple Resource Management.

a) 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.)

b) Wildlife Management

Lands designated for stewardship of fish and wildlife resources.

c) Vegetative Management

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

d) Future/ 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

The Pomme de Terre project does not administer an official surface water zoning program, however, there are various areas on the project waters that contain several types of marker buoys. The project staff maintains a “Buoy Plan & Restricted Area Plan” (Appendix E).

a) Restricted

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

b) Designated No-Wake

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

c) 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. There currently are no areas with this designation at the Pomme de Terre project.

d) Open Recreation

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

c. Project Easement Lands

Project easement land classification is for those lands for which the 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 of ownership to the USACE as other lands.

1) Operations Easement

The USACE retains rights to these lands necessary for project operations (access, etc.). The USACE retains no Operations Easements at Pomme de Terre Lake.

2) Flowage Easement

Flowage easement acquired for the operation of Pomme de Terre Lake is typically applicable to that portion of the described property laying between elevation 879 feet National Geodetic Vertical Datum, and the Government Fee Take Line. The typical flowage easement estate grants the Government the perpetual right to occasionally overflow the easement area, if necessary, for the operation of the reservoir; and specifically provides that, “No structure for human habitation shall be constructed or maintained on the land […]; and provided further that, “No other structures of any type shall be constructed or maintained on the land except as may be approved in writing by the representative of the United States in charge of the project.” All flowage easement deeds should be checked for exact rights acquired prior to proceeding on any action on the easement. There is a total of 2,154 acres of flowage easement at Pomme de Terre Lake.

3) Conservation Easement

The USACE retains the rights to lands for aesthetic, recreation, and environmental benefits. There are currently no lands classified as Conservation Easement lands on Pomme de Terre Lake.

Chapter 5 Resource Plan

a.Changes since 1988 Master Plan

Compartment 1 - Project Operations:

- Enlarged Area within the Security Fence
- Construction of two large open side sheds for storage of equipment
- Construction of a bulkhead storage building
- Construction of an Archery Range (in progress)
- Major rehab of Outlet Stilling basin, concrete walls and floor, sidewalks, and fencing.
- Installation of a single vault toilet at parking area of Stilling basin

Compartment 2 – Damsite Park:

- Replaced old shower house with new building
- Replaced sewage treatment plant with new version
- Following a Tornado in 2004 which destroyed many of the trees and campsites, constructed a new layout of road and campsites
- Removal of Old amphitheater
- Closure of Old boat ramp
- Construction of two handicap accessible fishing docks
- Construction of new shelter at Overlook #2 area
- Construction of playground for Overlook #2

Compartment 5 – Nemo Park and Marina:

- Removed 2 change houses
- Construction of three flush toilets
- Construction of one 4 stall shower house
- Addition of two sewage lift stations
- Construction of two double vault toilets
- Added extra parking for boat ramp
- Construction of 2 small shelters at beach
- Replacement of Sewage Lagoon with a Gravel Filtration Sewage Treatment Plant

Compartment 9 – Pittsburg Park

- Transfer of 142 acres into compartment #8 as Low density recreation
- Installation of 2 single vault toilets

Compartment 15 – Bolivar Landing

- Closure of the park to overnight camping. (1993)
- Removal of old shower house
- Removal of old park entrance station
- Relocation of picnic shelter to boat ramp.
- Constructed playground at boat ramp shelter
- Transfer of 208 acres to compartment 14
- Installation of two accessible fishing docks in cooperation with the Missouri Department of Conservation, Missouri Conservation Heritage Foundation, and Polk County.
- Installation of an approximately 15 mile long multi-use/equestrian trail, with a trailhead in Bolivar Park, the trail extends into part of Compartment 14.
- Installation of a vault toilet at the trailhead, vault toilet at boat ramp, vault toilet at fishing docks.

Compartment 17 – Lightfoot Park and Marina

- Construction of one composting toilet
- Construction of one flush toilet and lift station

Compartment 21 – Wheatland Park

- Removal of 2 change houses
- Installation of 4 stall shower house
- Construction of Laundry building.
- Construction of 2 small shelters at beach
- Installation of single vault toilet at Boat Ramp

Compartment 23 – Quarry Point Park and Marina

- Management of Area was transferred to Marina Lessee

Compartment 24 – Outlet Park

- Construction of a multi-purpose ball field with shelter
- Construction of a 3 mile long fitness trail
- Installation of one double vault toilet
- Installation of one double flush toilet
- Installation of one 4-stall shower house

b.Compartment Resource Objectives

Project Operations:

Compartment: 1

1) Provide some limited day-use recreational activities.
2) Provide the public with a facility to get information about lake and applicable policies.
3) Provide a safe & secure location to store vehicles, equipment, and supplies.
4) Provide office location and meeting area for project employees.

High-Density Recreation:

Compartments: 2, 4, 5, 9, 11, 15, 17, 21, 23, & 24

1) Provide safe, high quality camping opportunities
2) Provide safe, high quality day-use facilities, i.e. boat launch areas, designated swim beaches, and picnicking areas

Concerns:

1) Road Maintenance & Repairs
2) Accessibility
3) Aging facilities

Multiple Resource Management Lands/Low Density Recreation:

Compartments: 3, 6, 8, 10, 12, 13, 16, 18, 20, & 22

1) Provide recreational hunting and fishing opportunities and access points.
2) Provide quality habitat for wildlife through various methods such as food plots, prescribed fire, successional rotations, habitat improvements, Timber Stand Improvement.
3) Maintain Agricultural Leasing program to benefit wildlife and maintain diversity of habitat types.
4) Provide for unstructured/disperse use of project lands.
5) Control/manage private exclusive use of project lands through implementation of the Shoreline Management Plan.
6) Encroachment Detection & Resolution

Concerns:

1) Invasive Species Management & Control.
2) Unauthorized ATV Usage.

3) Increasing demand for private exclusive use. (dock space)
4) Boundary Clearing & Marking
5) Encroachments (Large $5K +)

Wildlife Management:

Compartments: 7, 14, & 19

1) Provide recreational hunting and fishing opportunities and access points.
2) Provide quality habitat for wildlife through various methods such as food plots, prescribed fire, successional rotations, habitat improvements, timber stand improvement.
3) Maintain agricultural leasing program to benefit wildlife and maintain diversity of habitat types.
4) Restrict private exclusive use of project lands through implementation of the Shoreline Management Plan, to Vegetation Modification Permits only.
5) Encroachment Detection & Resolution

Concerns:

1) Invasive Species Management & Control
2) Coordination with Partner Agency (Missouri Department of Conservation)
3) Unauthorized ATV Usage
4) Boundary Clearing & Marking
5) Encroachments (Large $5K +)

c.Resource Plan

Compartment 1- Administration Area

Land Classification: Project Operations (not a class B visitor center, now called information center.

Management Agency: US Army Corps of Engineers

Location/Acreage: Approximately 128 acres

Description and Use: This area includes the dam, control tower, project office, Information Center, maintenance building and storage area, radio tower, emergency spillway, weather station, storage building and garage, playground, group shelter, double flush toilet, single vault toilet, archery range and two project houses are located in this area. This provides the main location for project staff office space and equipment storage as well as a location to provide visitors information. The east project house is leased to

Missouri Department of Conservation for their use; the west house is used by the project for storage.

Resource objectives:

1) Provide the public with a facility to get information about lake facilities and applicable policies
2) Provide a safe and secure location to store vehicles, equipment, and supplies
3) Provide office location and meeting area for project employees
4) Maintain dam and associated flood control facilities to required specifications
5) Provide limited day-use recreation facilities

Development Needs:

1) Increase size of maintenance compound to provide a safer area to maneuver large equipment
2) Stabilize bank, erosion of rocks on the trail from Outlet Park to the Stilling basin
3) Installation of a vault toilet at the Archery Range

Special Considerations:

1) Project security & Force Protection
2) Aging structures, utilities, and mechanical features

Compartment 2 – Damsite Park

Land Classification and Justification: High-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: Damsite Park is 157 acres located just east of the USACE office/Information Center and adjacent the east abutment of the dam.

Description and Use: Campground side; 102 campsites (80 Electric, 15 Non Electric, 7 tent only), one playground ,two wells, two shower houses (East has 8 stalls; 4 each men/women, West has 12 stalls; 6 each men/women), 2 laundry facilities, two sewage treatment plants, five single vault toilets, one double vault toilet, one sanitary dump station, one entrance station. Overlook Side two group picnic shelters, two playgrounds, one double composting toilet, two fishing docks. Visitor use ranges from relatively heavy (camping) in the west portion of the campground area to very light on the east side. Overall, Damsite ranks second to Nemo in campground usage at Pomme de Terre. Picnicking use at the Overlook is moderate. Use of the fishing docks ranges from very heavy to light depending on weather and fishing conditions.

Development Needs:

1) Both sewage treatment plants are aging and have a high risk of catastrophic failure and currently have high O&M needs. Both Sewage treatment plants need to be replaced with a single plant capable of handling both sides of the park to ensure park facilities can properly treat sewage and meet Missouri Department of Natural Resources requirements.
2) Construct a new day-use area at Overlook Picnic Area with two four-lane launch ramps, large parking area (100 + spaces), and a shelter house to relieve congestion of other small ramps in nearby park areas.
3) Continue to upgrade/rehab recreation facilities to meet future needs and maintain compatibility with industry standards.

Special Considerations:

1) None Identified

Compartment 3 – Unnamed

Classification and Justification: Multiple Resource Management Lands: Low Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This compartment is located on the east side of the Lindley Creek arm of the lake near the confluence of Lindley Creek and the Pomme de Terre River two miles south of the dam. It contains 254 acres and is situated on both sides of the Pomme de Terre State Park (Hermitage Area).

Description and Use: Soils include very cherty silt loams on moderate slopes to rock outcropping on steep slopes. The entire area is forested with either an eastern red cedar or an oak-hickory forest association. Adjacent private land is heavily developed with at least nine residential subdivision located near the project boundary. The area receives dispersed public use. Vehicular access to the compartment is provided by nine licensed access or county subordinated roads. Numerous shoreline use permits for various forms of vegetative modification have been issued as a result to the amount of adjacent development. The adjacent residential and lodge development combined with poor soils and steep slope make the compartment undesirable for extensive upland wildlife habitat improvement projects.

Development Needs

1) None Identified

Special Considerations

1) None Identified

Compartment 4 – Hermitage Area: Pomme de Terre State Park

Classification and Justification: High-Density Recreation

Management Agency: Missouri Department of Natural Resources (MDNR)

Location/Acreage: The 356 acres Hermitage portion of Pomme de Terre State Park is located on the east bank of the Lindley Creek arm of the lake.

Description and Use: Consists of a long rather narrow peninsula with slopes varying from fairly gentle to very steep. The Hermitage area of the state park contains 124 campsites (97 with electrical hookups, 27 non-electric), two wells, one shower house/restroom, one sewage treatment plant, two double vault toilets, four single vault toilets, one sanitary dump station, one swimming beach, one double change-house, 22 picnic sites, one playground, one amphitheater, one camp store, a maintenance area, one park superintendent residence, a three-lane boat launching ramp with courtesy dock, and a four-lane boat launching ramp with courtesy dock. This area receives heavy usage from both day use and camping. The day-use boat ramp and the swim beach are extremely busy especially on weekends.

Resource Objectives:

1) Area is leased to the Missouri Department of Natural Resources, State Parks Division.

Development Needs:

1) To be determined by the MDNR though their Conceptual Development Plan (CDP)

Special Considerations:

1) Coordination/Communication with MDNR.

Compartment 5 – Nemo Park

Classification and Justification: High-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: Located approximately one mile southwest of the town of Nemo on the east side of the Lindley Creek Arm of the lake. Total acreage of the compartment is 101 acres. 58 acres located north of Highway 64 are leased to Nemo Landing Marina concessionaire (49 acres of land and 9 acres of water).

Description and Use: The USACE-managed area contains 116 campsites (49- Electric, 64-NE, three Tent Only), two shower houses (four men, four women, & four uni-sex stalls) one laundry facility, one sanitary dump station, three flush toilets (six total stalls, two- uni-sex, two each men/women), two double vault toilets, one well, one swimming beach, two small shelters, one group shelter, one playground, one park entry station, and a four lane boat launching ramp with courtesy dock. Facilities provided in the concession area include 140 boat slips, open dry boat storage, enclosed dry storage, gasoline dock, office and store dock, marine supplies, and one double vault toilets, and one residence for the Marina Lessee. Nemo Park receives the heaviest camping visitation of any USACE-managed park on Pomme de Terre Lake. The swim beach is popular during the peak recreation season with the heaviest use occurring on weekends. The boat launching ramp receives a large amount of use from both campers and day users. The group shelter is used primarily by registered campers and is not included in the project shelter reservation program because of the high amount of activity already concentrated in the area.

Development Needs

1) Rehab or replace older structures to meet current needs, specifically the original shower house is in need of upgrade/replacement.
2) Update campsites to meet modern camping needs i.e. electrical svc, water, larger impacted living area, and additional space to park.
3) Swim beach upgrade/repairs to prevent repeated erosion problems.
4) Update the Sewage treatment system to meet Missouri Department of Natural Resources requirements.

Special Considerations

1) Water quality concerns at the Swim Beach.
2) USACE retains responsibility for maintenance of main road to the marina.

Compartment 6- Unnamed compartment on the East Side of Lindley Creek Arm

Classification and Justification: Multiple Resource Management Lands: Low Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This compartment is located on the east side of the Lindley Creek arm of the lake south of Nemo Landing Park. It is generally a narrow compartment containing 509 acres.

Description and Use: Soils include very cherty silt loams on gentle to moderate slopes with rock outcroppings on steeper slopes. Drainages occurring on the eastern side of Lindley Creek have formed numerous small coves and a very irregular lake shoreline. The majority of the compartment is forested with an oak-hickory association or scattered stands or eastern red cedar. Various old fields in the shrub and fruiting tree stages of succession are located on sites with the least amount of slope. Eight licensed access or county subordinated roads provide vehicular access to the compartment. The compartment has some minimal potential for development of upland wildlife habitat.

Development Needs

1) None identified

Special Considerations

1) None identified

Compartment 7 – Unnamed Compartment on Upper Lindley Creek

Classification/Justification: Multiple Resource Management Lands - Wildlife Management

Management Agency: US Army Corps of Engineers, The Missouri Department of Conservation has a license to perform fish & wildlife management activities.

Location/Acreage: This compartment is located on both sides of the upper end of the Lindley Creek arm of the lake. It contains approximately 1,165 acres and is characterized by open bottom land fields.

Description and Use: At multipurpose pool, Pomme de Terre Lake is contained within the established channel of Lindley Creek. Primarily, soils consist of well-drained, deep silt loams in the bottom fields and cherty silt loams on the ridges and bluff. Timbered areas are generally confined to the stream banks, old fence rows, drainages, and bluffs overlooking the creek bottom. The primary method of wildlife management has been through the use of agricultural leases for crops and hay. Vehicular access is provided by numerous county roads and one access maintained by the USACE.

Development Needs:

1) Parking for access points.

Special Considerations:

1) Most of the agricultural lease units are considered “high risk” due their flood prone nature.

Compartment 8 – Unnamed low-density recreation area

Classification/Justification: Multiple Resource Management Lands – Low-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This compartment which contains approximately 429 acres is located along the west side of the Lindley Creek arm of the lake and occurs on both sides of Pittsburg Park. It extends from just north of the Hickory - Polk County line to the Highway 64 bridge crossing of Pomme de Terre Lake.

Description and Use: It is a very narrow compartment due to the relatively steep slope which occurs along most of the lake's shoreline. The area is almost entirely covered with an oak-hickory forest association. Soils generally are shallow, excessively drained clays with rock outcroppings. Vehicular access to the area is provided by three licensed access or county maintained roads.

Development Needs:

1) None Identified

Special Considerations:

1) None identified

Compartment 9 – Pittsburg Landing Park

Classification/Justification: High-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: Consists of 31 acres the west side of the Lindley Creek Arm of the lake approximately two and one half miles east of Pittsburg, Missouri.

Description and Use: This campground is a free area, no camping or day-use fees are charged. Two-lane boat launching ramp with parking area and courtesy dock, one well, two single vault toilets, one developed volunteer/host site with water, electric and septic, one playground, and one group picnic shelter. The primary uses are camping, fishing, and boating in light to moderate amounts. Camping is primitive due to the lack of developed facilities. Boat launching is primarily associated with fishing, with the heaviest activity occurring during peak fishing seasons. The shelter receives some use for activities such as picnics and family reunions.

Development Needs:

1) Construction of impacted campsite to reduce soil erosion and compaction
2) Continue to upgrade/rehab recreation facilities to meet future needs and maintain comparability with industry standards.

Special Considerations:

1) Volunteer/Host Program.
2) Free Camping Designation

Compartment 10 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Low-Density Recreation

Management Agency: US Army Corps of Engineers, The Missouri Department of Conservation has a license to perform fish and wildlife management activities.

Location/Acreage: This compartment is located on the west side of the Lindley Creek arm of the lake and extends from the Nemo Bridge to the boundary of the Pomme de Terre State Park (Pittsburg Area). It contains approximately 525 acres.

Description and Use: Nearly one half of this area is characterized by very cherty silt loam soils with either an eastern red cedar or a white oak-hickory forest association. Rock outcroppings occur on the steeper sides. The remaining half is old fields with less slope and deep silt loam soils. Vehicular access to the lake is provided by five licensed access or county maintained roads. One natural resource management area is located on a large gently sloping peninsula near the middle of the compartment.

Development Needs:

1) None identified

Special Considerations:

1) None identified

Compartment 11 – Pomme de Terre State Park – Pittsburg Area

Classification/Justification: High-Density Recreation

Management Agency: MDNR

Location/Acreage: Consists of 369 acres south of the confluence of the Pomme de Terre and Lindley Creek Arms of the lake, three and one half miles west of Nemo, Missouri.

Description and Use: Consists of 116 campsites (108 with electrical hookups, eight non-electric), two shower houses, one sanitary dump station, five double vaults toilets, six picnicking units, one group shelter, two playgrounds, one amphitheater, a two lane boat launching ramp with courtesy dock, a one lane boat launching ramp with courtesy dock, a swimming beach, a maintenance area, one park superintendent residence, and a marina. This park receives a large amount of both day-use and overnight camping. Day-use activities include swimming, picnicking, and boat launching.

Resource Objectives:

1) Area is leased to the Missouri Department of Natural Resources, State Parks Division.

Development Needs:

1) To be determined by the MDNR though their Conceptual Development Plan (CDP)

Special Considerations:

1) Coordination/Communication with MDNR.

Compartment 12 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Low-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This 778 acre compartment is located on the south and east side of the Pomme de Terre River arm of the lake.

Description and Use: The majority of this compartment is forested. Extensive development has occurred on private land adjacent to this compartment. Numerous subdivisions are located along the project boundary resulting in a large amount of private exclusive and disperse use of project lands. Vehicular access is plentiful. The compartment is serviced by 22 licensed accesses or county maintained roads.

Development Needs:

1) None identified

Special Considerations:

1) None identified

Compartment 13 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Low-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This 557 acre compartment is located on the east side of the Pomme de Terre River arm of the lake.

Description and Use: The slope varies from very steep along the limestone bluffs overlooking the lake to gently rolling old fields. Approximately one half of the compartment is forested with an oak-hickory association. An eastern red cedar association occurs on the steeper bluff areas. The remainder of the compartment is comprised of old fields in varying stages of plant succession. Vehicular access is provided by nine licensed accesses or county roads.

Development Needs:

1) None identified

Special Considerations:

1) None identified

Compartment 14 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Wildlife Management

Management Agency: US Army Corps of Engineers, The Missouri Department of Conservation has a license to perform fish & wildlife management activities.

Location/Acreage: This compartment is located on the upper end of the Pomme de Terre River arm of the lake. It extends from near the Hickory-Polk County line on the east side of the lake to lake road 83-53 near Inlet Village subdivision on the west side. The compartment contains approximately 2,695 acres.

Description and Use: The compartment is largely old fields, timbered ridges and open river bottom fields. Soils vary from well drained, deep silt loams in the bottom fields to cherty silt loams on the higher sites. Rock outcroppings occur on bluffs overlooking the river channel. The bluff and ridges are forested with oak-hickory or eastern red cedar associations. Species more conducive to wet locations such as sycamore, green ash, silver maple, blackberries and willows are located along the river channel and associated tributaries. The primary method of wildlife management has been through the use of agricultural leases for crops and hay. Vehicular access is provided by numerous county roads and one access maintained by the USACE. The area near PP Bridge has and access with boat ramp and parking area.

Development Needs:

1) Need road access to land-locked areas
2) Construct concrete launch ramp.
3) Enlarge and improve gravel parking area

Special Considerations:

1) Lack of access.
2) Repeated siltation of the boat ramp and parking area during high water events.

Compartment 15 – Bolivar Landing

Classification/Justification: High-density recreation

Management Agency: US Army Corps of Engineers, The Missouri Department of Conservation has a license to perform fish & wildlife management activities.

Location/Acreage: Bolivar landing is located north of the town of Bolivar on State Highway RB. The park contains 131 acres above multipurpose pool and was designed for day use and camping. The campground was closed in 1993 and the boat ramp/shelter area kept open.

Description and Use: Bolivar Park is a gently sloping area consisting of old fields in the early stages of plant succession and timbered tracts comprised primarily of oak-hickory forest associations. The soils are primarily well drained silt loams. The area includes a four-lane boat launch ramp with courtesy dock and parking area, one group picnic shelter, one playground, three vault toilets, one multi-use trail, accessible fishing docks with parking area. Show Me Back Country Horsemen have a lease for the multi-use trail.

Development Needs:

1) None identified

Special Considerations:

1) Coordination/Communication with Trail Lessee.

Compartment 16 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Low Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This 315-acre compartment is located on the west side of the Pomme de Terre River arm of the lake and is situated on both sides of the Hickory and Polk County line.

Description and Use: The compartment is narrow and contains numerous bluffs with very steep slopes. The majority of this compartment is forested. Forest associations vary from oak-hickory on the moderately sloping areas to eastern red-cedar on the very steep sites. An 18-acre agricultural field is located near the south end of the compartment where the soil is relatively deep and the slope gentle. The remaining acreage of the compartment is old field situations in various stages of plant succession.

Development Needs:

1) None identified

Special Considerations:

1) None identified

Compartment 17 – Lightfoot Landing Park

Classification/Justification: High-Density Recreation

Management Agency: US Army Corps of Engineers, (Marina Concessionaire has lease on South Portion)

Location/Acreage: Lightfoot Landing Park is located on the west side of the Pomme de Terre River arm of the lake five miles southeast of the town of Elkton on State Highway RB. The Lightfoot area contains 133 acres above multipurpose pool with in the southern portion of the park leased to a marina concessionaire.

Description and Use: Lightfoot Park is divided into two areas according to management responsibility. The USACE manages the north section while the Highway 83 Marina concessionaire is responsible for the south section. The USACE-managed area contains a four-lane boat launching ramp with courtesy dock and parking area, 38 campsites (i.e. 29 electric, six non electric, one tent only, two group), one two-stall compost toilet, one two-stall flush toilet, four-lane boat launch ramp with courtesy dock and parking area, one shower house (including: five stalls, two men's restrooms, two women's restrooms, one uni-sex restroom), one sanitary dump station, double-cell sewage lagoon, one playground, one group shelter, one well, two group camp areas, and a park entrance station. Facilities provided in the concession area include 48 covered boat slips, 36 stalls for dry storage, 47 full hookup campsites, 50 primitive campsites (estimated, open undesignated), motel with eight rental cabins, six park model rental camper trailers, two shower houses, gasoline and office dock, one residence, and a single cell sewage lagoon. The marina is included in the District Seasonal Camping Program. Moderate overnight camping occurs in both areas of the park. A small amount of group camping occurs on a reservation basis within the USACE-managed group use area. Day-use activities include boat launching and picnicking. The group shelter receives some use for reunions or other group functions.

Development Needs:

1) Develop Group Camp Area with vault toilets, potable water, and impacted campsites
2) Replace aging shower house with modern design.
3) Replace existing composting and flush toilets with new pre-fabricated vault toilets and flush toilets.
4) Replace original lagoon system with treatment plant

Special Considerations:

1) Marina lease coordination/communication

2) Seasonal camping program
3) COE retains responsibility for maintenance of main road to the marina

Compartment 18 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Low-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This 452-acre compartment is located on the west side of the Pomme de Terre River arm of the lake just north of the Lightfoot Park.

Description and Use: This compartment is primarily old fields in varying stages of plant succession. The forested areas are covered with an oak-hickory forest association. Slopes are gentle to moderate. Soils are primarily very cherty silt loams. Vehicular access is somewhat restricted to this compartment but four licensed access or county roads are present.

Development Needs:

1) None identified

Special Considerations:

1) None identified

Compartment 19 – Multiple Resource Management Lands – Wildlife Management

Classification/Justification: Multiple Resource Management Lands – Wildlife Management

Management Agency: US Army Corps of Engineers, The Missouri Department of Conservation has a license to perform fish & wildlife management activities.

Location/Acreage: This 452-acre compartment is located on the west side of the Pomme de Terre River arm of the lake in the vicinity of lake-mile marker P18.

Description and Use: It is comprised of; upland timber, old fields, and cultivated fields. Soils are primarily well drained, deep silt loams, with some very cherty silt loams occurring on moderately steep slopes. Timbered areas are mostly mature oak-hickory forest associations. Some scattered stands of eastern red cedar are present on the steeper, thin soiled slopes. The old field sites are various stages of plant succession with invasion of fruiting trees, eastern red cedar, persimmon and honey locust. Vehicular access is provided by numerous county roads and one access maintained by the US Army Corps of Engineers.

Development Needs:

1) None identified

Special Considerations:

1) Coordination/Communication with MDC

Compartment 20 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Low-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This small 73-acre compartment is located south and west of Wheatland Park and is divided into two separate areas.

Description and Use: The two areas are forested with either an oak-hickory or eastern red cedar forest association. The eastern-most portion is either old fields or mix stands of cool season grasses and annuals. Soils include both well drained and poorly drained, deep silt loams. Some moderately deep, cherty loams are also present. Vehicular access is well established with the presence of four licensed access or county maintained roads.

Development Needs:

1) None identified

Special Considerations:

1) Much of the area is prone to inundation by lake waters.

Compartment 21 – Wheatland Park

Classification/Justification: High-Density Recreation.

Management Agency: US Army Corps of Engineers

Location/Acreage: This 64-acre area is on the west side of the Pomme de Terre River arm of the lake approximately one mile south of Galmey, Missouri.

Description and Use: Two shower houses (East or beach side has four unisex stalls, the west side has two each men/women, and one uni-sex), one sanitary dump station, two playgrounds, 82 campsites (67-electric, six-non electric, nine-tent only) two wells, a designated swimming beach, two small shelters at the beach, one large group shelter, three single vault toilets, two cell sewage lagoons, two-lane boat launch ramp with courtesy dock and parking area, and a park entrance station. Wheatland Park annually generates the third largest amount of recreation user fees for overnight camping in parks managed by the USACE at Pomme de Terre Lake. The greatest amount of camping occurs on weekends during the peak recreation season. Popular day-use activities are swimming, picnicking, and boat launching. Swimming is also heaviest on weekends during the peak recreation season.

Development Needs:

1) Aging shower house needs replacement with modern facilities
2) Rehabilitate swim beach to prevent erosion
3) Create additional parking for boat ramp users

Special Considerations:

1) Water quality at swim beach

Compartment 22 – Unnamed

Classification/Justification: Multiple Resource Management Lands – Low-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: This 410-acre compartment is located on the northwest side of the Pomme de Terre River arm of the lake and extends from Wheatland Park to Quarry Point Park.

Description and Use: The southwest portion of the compartment is narrow and is characterized by moderately steep slopes. The northeastern portion is much wider and with more gentle slopes. Most of the compartment is forested with and oak-hickory or eastern red cedar association. The remaining areas consist of old fields in the early stages of succession. Lake access is readily available with the presence of subordinated roads.

Development Needs:

1) None identified

Special Considerations:

1) None identified

Compartment 23 – (Quarry Point Park) Harbor Point Campground, Restaurant, and Marina

Classification/Justification: High-Density Recreation

Management Agency: US Army Corps of Engineers (Leased to Concessionaire)

Location/Acreage: 109 acres on the southwest end of the dam.

Description and Use: Facilities provided in the concession managed area include 208 designated camping sites (168 water/electric/sewer, 25 water/electric, and 15 primitive sites) one shower house, one shower latrine, two single vault toilets, one double vault toilet, and a sanitary dump station, two cell sewage lagoon, and one residence. The marina facility offers 60 covered boat slips, 20 open boat slips, floating restaurant, sub-leased metal building, uncovered dry storage, four lane boat launching ramp with courtesy dock and a double vault toilet. Seasonal/long-term camping and marina use comprise the greatest amount of activity in the area. Moderate to heavy use is made of the boat launching ramp, especially on weekends. Many fishing tournaments conducted on the lake originate from this lake access. The marina campground is included in the District Seasonal Camping Program.

Development Needs:

1) None identified

Special Considerations:

1) Seasonal Camping Program
2) Marina lease coordination/communication
3) Issues with sewage collection and treatment.
4) USACE retains responsibility for maintenance of main road to the marina and to the boat ramp parking area.

Compartment 24 – Outlet Park

Classification/Justification: High-Density Recreation

Management Agency: US Army Corps of Engineers

Location/Acreage: Outlet Park is located west of the Pomme de Terre River below Pomme de Terre Dam. It contains 353 acres but only the portion along the river has been developed for extensive recreation use.

Description and Use: More than half of the area is comprised of old fields some of which are heavily invaded with eastern red cedar, fruiting trees, and shrubs. The remaining area is forested with an oak-hickory or eastern red cedar forest association, including some stands of large mature red cedars. There is an old borrow field near the center of the park that is a remnant of construction of the dam, the upper portion of the area still has useable fill dirt and is occasionally utilized as a borrow area for clean fill dirt. There is also a small borrow area in a field along the main park road, this area is utilized as a black dirt borrow area. The park has 22 campsites (14-electric, seven-non electric, one group, plus three volunteer sites with full hookups (sewer, elect. & water), one double vault toilet, three double flush toilets, one shower house (four uni-sex stalls), three group shelters, one multipurpose court, two playgrounds, a single lane boat launch ramp and small parking area, a ballfield, one well, one approximately three-mile-long graveled multi-use trail. The Outlet Park receives varied use. Light to moderate overnight camping occurs on the designated campsites along the river. The group camp area is used on a reservation basis primarily on weekends during the peak recreation season. The area receives a large amount of day use from fishermen due to the reputation of the outlet area as a good bank fishing site. Considerable hiking and walking occurs in the area. The multipurpose courts receive moderate use for playing tennis and basketball. The launching ramp is used occasionally as a river access for small craft and canoes. The trail, since its completion, has been heavily used by recreation hikers and the Hermitage school system has utilized it for several cross country races, including District meets.

Development Needs:

1) Upgrade Group Camping Area
2) Stabilize and improve access to bank fishing area.
3) Relocation of section of trail to bypass existing group camp.
4) Continue to upgrade/rehab recreation facilities to meet future needs and maintain comparability with industry standards.

Special Considerations:

1) Access from campground to stilling basin (rocks eroding at trail)

2) Volunteer Campsites Program

Chapter 6 Special Topics/Issues/Considerations

a.Invasive Species

In recent years the lands and waters of Pomme de Terre Lake have been heavily affected by various invasive species. Some invasive species obviously have had a greater impact and others are yet to be felt. Coordination with state agencies such as the Missouri Department of Conservation and the Missouri Department of Natural Resources is critical to the success of any large scale control or mitigation.

1) Aquatic:

During a routine sampling in 2009 the Missouri Department of Conservation detected zebra mussel veligers (juveniles) in high concentrations in multiple locations on the lake. Since that time sampling methods have yet to locate any adult or sub-adult mussels however the monitoring is ongoing. Zebra mussels can have a very serious impact upon the operation of various water control elements within the control tower. A facility risk assessment was performed by the Bureau of Reclamation upon the control tower in 2010, various points to watch and some control measures were discussed. Chemical control is not feasible; however the contract to fabricate and install a new trash rack on the front of the tower affords the opportunity to require a non-stick coating be applied to the upper racks to offset the possible presence of zebra mussels.

It is expected that an infestation of zebra mussels would result in an early population explosion with extremely high concentrations of adults, an increase in the clarity of the water, and subsequent odor issues related to a lowering of the lake below its normal elevation. The impact on private docks is unknown.

2) Herbaceous:

The two most common herbaceous invasive species are Johnson grass and Serecia lespedeza. Both of these plants are very common to the extent of being the dominant species in some areas. Areas that are routinely inundated by lake waters are especially susceptible to both species. They produce large amounts of seed and the Johnson grass also spreads rapidly by rhizomes as well. Control measures are primarily mechanical (mowing) and chemical (targeted spraying).

3) Woody:

Honey locusts, autumn olive, and red cedar. Honey locusts are a nuisance species which rapidly sprouts and grows well in old fields and early successional areas, traditional means of control is mechanical (chainsaw or clipping), followed by a stump treatment (Tordon RTU or similar) to prevent re-sprouting.

b. Accessibility

Many of the buildings in USACE managed areas were built in the 1960s and 70s and are not compatible with current requirements for accessible design. As new buildings are constructed to replace older ones we routinely incorporate an accessible design into them. In areas where replacement is not practical retrofitting will be necessary.

c. Habitat quality

Many of the wildlife management areas around Pomme de Terre Lake suffer from invasive species and benign neglect. Even with combined management strategy with the MDC, it is difficult to properly address them by installing food plots and resetting the successional stages by mechanical or chemical means to maintain a high quality habitat. Combined management strategies will continue with emphasis on areas with more manageable ground and attempt to “catch up” on other areas as time, money and labor allow.

d. Canada Geese – Water Quality, nuisance

The Canada goose is common in Missouri, including in urban and suburban areas. Most Canada geese migrate but an increasing number are becoming year-round residence. Nesting Canada geese can be aggressive, and when concentrated in large numbers, their feeding habits and droppings can result in nuisance and damage.

Each Canada goose can produce about one to two pounds of droppings each day. With the currently large and growing population it can create quite a mess. With the droppings come pollutants. These droppings can become a health risk by carrying Salmonella spp., E. coli, and Listeria spp. Heavy concentrations of goose droppings can also contain nitrogen which can pollute ponds and lakes, leading to excessive algae growth and reduced water quality

e. All-Terrain Vehicles (ATVs)

The use of ATV’s on USACE-managed lands around Pomme de Terre Lake increased rapidly for several years and there are several trails on USACE-managed lands. Rangers routinely check the areas most used and place signs to educate the riders that ATV’s are not allowed on the public lands. In some cases attempts have been made to block trails with fallen trees etc. but have had only a limited success.

Chapter 7 Agency and Public Coordination

During the period of July 22-25, 2014, scoping letters were sent to fifty-four politicians, government agencies, local governments and organizations, marinas, and resorts that have a potential interest in the management of Pomme de Terre Lake. In addition a public notice was posted on the Kansas City District website and the Pomme de Terre project website. The letters and public notices explained that the USACE was in the process of revising the Pomme de Terre Master Plan and invited recommendations to be considered in the Master Plan revision process.

The USACE received three comments during the scoping period. Commenter's included the Hickory County Commission, Charles Meyer of the Missouri State Highway Patrol, Troop D, and Andy Foster of the National Oceanic and Atmospheric Administration. Issues identified for evaluation during the revision process include: Limiting vessel size on the lake; the placement of regulatory buoys; incorporate weather hazard planning; and, address bank erosion, especially along the river.

Chapter 8 Summary of Recommendations

The Master Plan for Pomme de Terre Lake was last approved in 1988. Over the past 27 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 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 Pomme de Terre Lake. The Master Plan is a land use management document and does not address water management operations, associated prime facilities (dam, spillway, etc.), or shoreline management 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.

a. Facility Modernization

It is the goal of the USACE at Pomme de Terre Lake to continue to modernize current facilities within existing footprints of recreation areas.

b. Land Classification

There are two land-classification changes in addition to minor land-classification wording changes to comply with current master plan regulations.

Chapter 9 Bibliography

Kurz, Don. 2009. Shrubs and Woody Vines of Missouri: Field Guide. Conservation Commission of the State of Missouri. 154pp.

Kurz, Don. 2009b. Trees of Missouri: Field Guide. Conservation Commission of the State of Missouri. 148pp.

McMurty, Dan. 2006. Controlling Conflicts with Urban Canada Geese in Missouri. Missouri Department of Conservation.

National Weather Service. 2015. National Climatic Data Center, Monthly Normals, 1981-2010.

Pomme de Terre Lake Area Chamber of Commerce. 2014. Pomme de Terre Lake: 2014 Vacation and Service Guide.

U.S. Global Change Research Program. 2009. Global Climate Change Impacts in the United States. Cambridge University Press, New York. 196 pp

USACE. 2015. Saylorville Lake Master Plan; Des Moines River Watershed; Johnston, Iowa. Dated January 2015.

USACE. 2012. Pomme de Terre Lake Project: Operational Management Plan. Kansas City District. 85 pp.

USACE. 2009. Report of the Secretary of the Army on Civil Works Activities: Annual Report Fiscal Year 2008, Volume II. Kansas City, Missouri.

USACE. 1988. Pomme de Terre Lake: Master Plan, Design Memorandum 17D, dated August 1988.

Wade, Edge. 2014. A Birders' Guide to Missouri Public Lands: Pomme de Terre State Park. http://mostateparks.com/park/pomme-de-terre-state-park.

Appendix A Environmental Assessment and Draft Finding of No Significant Impact (FONSI)

US Army Corps of Engineers
Kansas City District

U.S. Army Corps of Engineers - Kansas City District

NEPA Review
Environmental Assessment & Finding of No Significant Impact

POMME DE TERRE LAKE MASTER PLAN, OSAGE RIVER BASIN POMME de TERRE RIVER

Hickory and Polk Counties, Missouri

January 2016

DRAFT

DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
600 FEDERAL BUILDING
KANSAS CITY, MISSOURI 64106-2896

Finding of No Significant Impact

POMME DE TERRE LAKE MASTER PLAN
OSAGE RIVER BASIN
POMME de TERRE RIVER
January 2016

Summary

The U.S. Army Corps of Engineers - Kansas City District (USACE) proposes to revise the Pomme de Terre Lake Master Plan. This revision would replace the Design Memorandum No. 17D, Master Plan for Pomme de Terre Lake dated August 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.

This revision brings the Master Plan in compliance with the current guidance for format and contents as outlined in Engineering Regulation/Engineer Pamphlet 1130-2-550, dated 30 January 2013.

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Alternatives

Alternative 1 - "No-Action" Alternative: Under the "No-Action" Alternative the current Master Plan dated August 1988 would remain in place. Management of the project lands and waters would remain unchanged.

Alternative 2 - Acceptance of Revised Master Plan (Recommended Alternative): This alternative is to accept the management plan as written. The proposed changes in this revision are minor terminology changes for land-use designations to be in compliance with Engineering Regulation/Engineer Pamphlet 1130-2-550 (DATED 30 January 2013). Proposed changes in facilities are detailed in Chapter 5 of the main Master Plan document, which includes such things as rehabilitation of campsites, rehabilitation/replacement of sewage treatment facilities, upgrade and expansion of boat ramp facilities, and erosion prevention along trails and swim beaches.

Summary of Environmental Impacts

The Recommended Alternative will help to modernize aging facilities and increase visitor safety. The Recommended Alternative would not likely adversely impact any federally listed threatened or endangered species or their habitat. There may be temporary localized impacts to water quality during construction of the boat ramp expansions. Construction of new shower house and/or wastewater treatment plant would also cause minor loss to wildlife habitat within the existing park footprint. There will likely be no impact to cultural or historic resources.

Mitigation Measures

The Master Plan is programmatic in nature and references project needs only in a programmatic manner. Site specific actions and infrastructure projects will require individual site-specific analysis to determine if any mitigation may be warranted.

Public Availability

Prior to a decision on whether to prepare an Environmental Impact Statement, the USACE circulated a Notice of Availability (Notice) of the Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI), January 13, 2016, with a thirty-day comment period ending on February 12, 2016 to the public and resource agencies. The notice informed these individuals that the EA and Draft FONSI were available on the USACE webpage or that they could request a hard copy of the EA and Draft FONSI in order to provide comment.

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Conclusion

After evaluating the anticipated environmental, economic, and social effects of the proposed activity, it is my determination that construction of the proposed emergency Master Plan update does not constitute a major federal action that would significantly affect the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date: _____ _____

Andrew D. Sexton
Colonel, Corps of Engineers
District Commander

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1.0 Introduction

The U.S. Army Corps of Engineers - Kansas City District (USACE), proposes to revise the Pomme de Terre Lake Master Plan. Revisions include changes to the land use category nomenclature and document content and format to meet current Master Plan Guidance (ER/EC 1130-2-550). The revision also includes an update of management objectives, management compartment boundary updates, list of current facility needs (i.e. wastewater management facility, increase in boat ramp parking, etc.). This Environmental Assessment (EA) provides the necessary information to fully address the potential environmental impacts of the proposed project as required under the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code [USC] 4321 et seq.); the President's Council of Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1500 – 1508); and USACE ER 200-2-2 (33 CFR 230) (USACE, 2008).

1.1 Purpose and Need for Action

The purpose of this project is to revise the Master Plan to respond to current and projected future recreational needs and to meet the content and format of the most recent Master Plan regulation/guidance found in Engineering Regulation/Engineer Pamphlet 1130-2-550 (dated 30 January 2013).

The project is currently using a Master Plan dated from August 1988. The recreational trends and the population estimates detailed in that Master Plan are outdated and in need of revision.

1.2 Project Location

Pomme de Terre Lake is located in Hickory and Polk Counties in the west central part of Missouri. It is approximately 60 miles north of Springfield, 140 miles southeast of Kansas City and 85 miles southwest of Jefferson City. Towns in the vicinity of the project include Hermitage, Bolivar, and Osceola. Hermitage is three miles north, Bolivar is 25 miles south, and Osceola is 22 miles southwest of the dam. The area surrounding Pomme de Terre Lake is served by federal and state highways and a county road system. The dam crosses the Pomme de Terre River at river mile 43.8.

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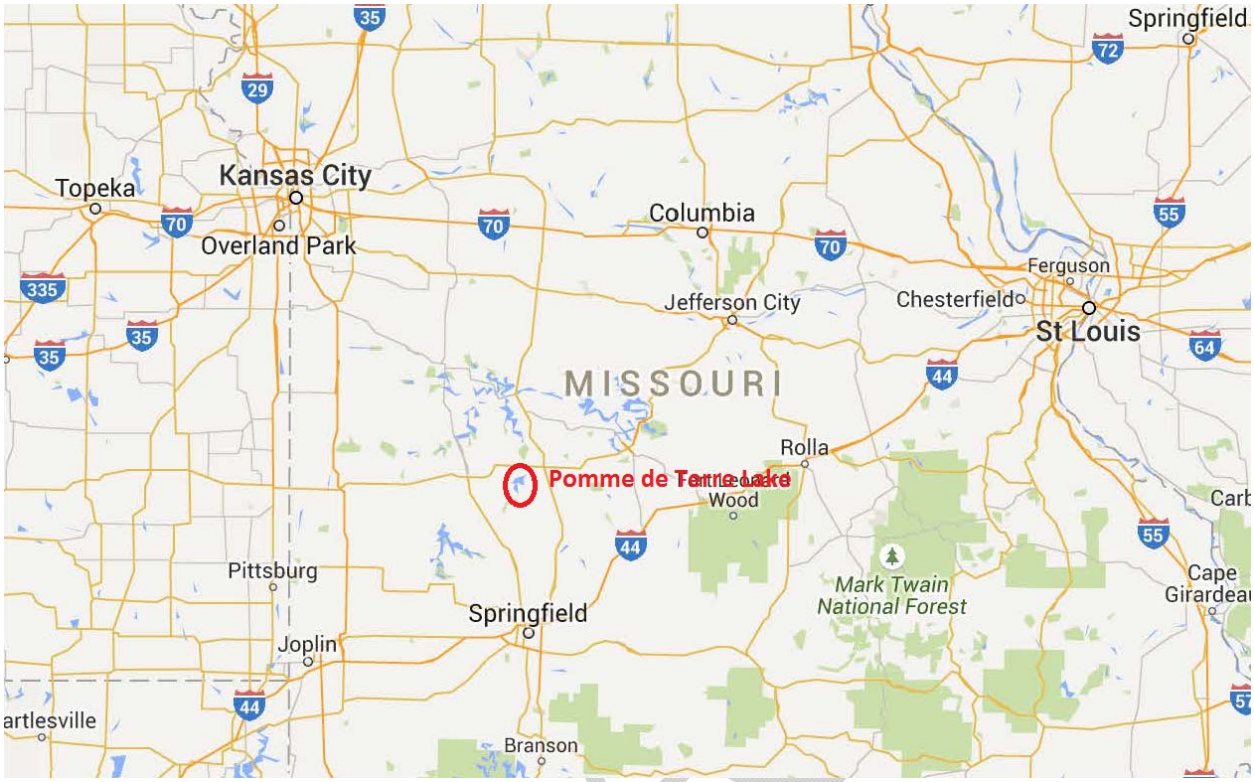

Figure 1. General Vicinity Map

2.0 Recommended Plan and Alternatives

2.1 Alternative 1 - "No-Action" Alternative:

Under the "No-Action" Alternative the current Master Plan dated August 1988 would remain in place. Management of the project lands and waters would remain unchanged.

2.2 Alternative 2 – Accept Revised Master Plan (Recommended Alternative):

This alternative would accept the management plan as written. The proposed changes in this revision are minor terminology changes for land-use designations to be in compliance with Engineering Regulation/Engineer Pamphlet 1130-2-550 (DATED 30 January 2013). Proposed changes in facilities are detailed in Chapter 5 of the Master Plan document, which includes such things as rehabilitation of campsites, rehabilitation/replacement of sewage treatment facilities, upgrade and expansion of boat ramp facilities, and erosion prevention along trails and swim beaches.

3.0 Affected Environment

The project area is all the project lands owned and leased by USACE at the Pomme de Terre Lake project located in the Hickory and Polk Counties, Missouri. Pomme de Terre Lake is comprised of 24 management compartments totaling approximately 10,541 acres.

Located in the tree-covered hills of the Southwest Missouri Ozarks, Pomme de Terre Lake covers about 7,820 acres at multi-purpose pool. The dam was constructed for flood control in the Osage River Basin and was finished in 1961. The lake consists of two arms; the Pomme de Terre Arm that follows up the Pomme de Terre River, and the Lindley Arm that follows the Lindley Creek. With 113 miles of shoreline, Pomme de Terre Lake provides ample recreational opportunity such as fishing, boating, swimming, tubing/water skiing, and jet skiing among other pursuits. Water quality of the lake is beneficial to the operating purposes of the project and did not exceed any of the Missouri state water quality standards for designated uses. Water quality at Pomme de Terre Lake improves as nutrients, herbicides and sediments are removed by settling, dilution, and biological processes as water moves from inflow streams to the dam.

The Pomme de Terre Lake project has nine high-density recreation parks (Damsite Park, State Park Hermitage Area, Nemo Park and Marina, Pittsburg Park, State Park Pittsburg Area, Bolivar Park, Lightfoot Park and Marina, Wheatland Park, Quarry Point Campground and Marina, and Outlet Park) that contain 848 campsites, 53 picnic sites, four fishing piers, 13 Boat ramps, four swimming beaches, 14 playgrounds, 309 marina slips, and five trails covering 34 miles.

There are currently 569 private docks on the lake at designated zones around the lake. The docks are permitted via a shoreline-use permit. Given the current lake bathymetry and the surrounding topography and private ownership restricting access, the lake is currently at capacity for the number of docks without additional rezoning.

Much of the remaining fee land around the lake is managed as either low-density recreation or wildlife management lands. Missouri Department of Conservation has a Fish and Wildlife License to manage approximately 4,804 acres to benefit wildlife. Most of this land's cover type is savanna, forest/woodland, glade, grassland, old field, and cropland cover types.

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Appendix C of the Master Plan lists flora and fauna found in and around the Pomme de Terre Lake project lands. Species will vary in any particular area due to a number of factors such as cover type, topography, access to water, and available food sources. Lands licensed to Missouri Department of Conservation are managed primarily for game species such as white-tailed deer, turkey, and quail. However, other non-game species benefit as well from their management practices.

Fisheries habitat is managed jointly by the USACE and Missouri Department of Conservation. Each year approximately 50-100 cedar trees are placed into the lake to provide loafing and escape cover for a variety of fish species.

The state and federally listed threatened and endangered species for Hickory and Polk Counties can be found in Table 1.

Table 1
Federal and State listed Threatened and Endangered Species
Hickory and Polk Counties, Missouri

Name	**State Status**	**Federal Status**
Gray Bat (*Myotis grisescens*)	Endangered	Endangered
Indiana Bat (*Myotis sodalis*)		Endangered
Northern Long-Eared Bat (*Myotis septentrionalis*)		Threatened
Niangua Darter (*Etheostoma nianguae)*	Endangered	Threatened and Critical Habitat
Geocarpon (*Geocarpon minimum)*	Endangered	Threatened
Mead's Milkweed *(Asclepias meadii)*	Endangered	Threatened

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Black-tailed Jackrabbit (*Lepuc californicus*)	Endangered	

The Indiana, northern Long-eared, and gray bats all use caves and mines as winter hibernacula, with the gray bat utilizing caves as year-round roosting sites. Indiana bats use trees with loose or peeling bark as maternity roosts, foraging along stream corridors with well-defined riparian woods. Northern long-eared bats also use trees with peeling bark, however they prefer a more upland habitat to roost and forage. Niangua darters are found in clear medium-sized streams that run off hilly areas underlain with chert and dolomite. Geocarpon is a plant that likes moist soils in exposed sandstone glades. Mead's milkweed is a plant that grows in prairies and rhyolite glades in Missouri.

Approximately 4,702 acres of fee owned land (about 26%) has been professionally surveyed for archeological sites. A total of 326 cultural resource sites, all archeological sites, have been recorded on the fee-owned land. Of these 326 sites none are formally listed on the National Register of Historic Places (NRHP). However, 27 sites have been determined to be eligible for listing on the NRHP. Further investigations are required on another 102 sites to determine their NRHP eligibility. The remaining sites have been determined not eligible for the NRHP.

4.0 Environmental Consequences (Impacts)

4.1 Water Quality

Alternative 1 - "No-Action" Alternative: In the no-action alternative, the water quality would remain the same. The lake would likely continue to meet all use criteria.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): This alternative may result in potentially minor, temporary, construction-related adverse impacts to water quality resulting in increased turbidity and suspended sediments from the construction/rehabilitation of the boat ramps and swimming beaches. These impacts would subside following construction. No long-term impact to water quality would be anticipated from this alternative.

4.2 Wetlands and other Waters of the U.S.

Alternative 1 - "No-Action" Alternative: The "No-Action" Alternative would likely result in placement of small amounts of fill (rip rap) in Waters of the U.S. as new areas of bank erosion arise. Each of these actions would need to undergo a Section 404/Section 10

analyses to determine if they meet permit criteria. It is likely that any such action would meet the requirements of a nationwide permit. It is anticipated that no wetlands would be impacted by this alternative.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): This alternative would have similar impacts as Alternative 1. In addition there is structural fill from the addition/upgrade of boat ramps. Depending on the method chosen to rehab the swim beach to prevent erosion, additional fill may be added below the ordinary high water mark (OHWM). A section 404 permitting analysis would need to be undertaken to make sure the project meets any applicable permitting conditions. It is not anticipated that this alternative would have any impacts to wetlands.

4.3 Fish and Wildlife

Alternative 1 - “No-Action” Alternative: Under the “No-Action” Alternative, no impacts to fish and wildlife would be expected. Missouri Department of Conservation would continue to manage fish and wildlife resources on the over 4,800 acres that are licensed to them as well as management of the fisheries in the lake. This is a long-term positive impact to fish and wildlife

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): Missouri Department of Conservation would continue to manage fish and wildlife resources on the over 4,800 acres that are licensed to them as well as management of the fisheries in the lake. There may be minor short-term impacts to fish and wildlife for any of the proposed construction activities. There may be some clearing of vegetation (<0.5 acre) for the expansion of boat ramp parking. This would create a minor long-term loss of wildlife habitat. These are within the high-density recreation areas already disturbed and fragmented from parking and other recreational features. A land-use change of 208 acres from a high density recreation Bolivar Landing to wildlife management compartment #14 and 142 acres from high density recreation to low density recreation compartment #8 will help preserve wildlife habitat from recreational development.

4.4 Threatened or Endangered Species

Alternative 1 - “No-Action” Alternative: The “No-action” Alternative would not likely affect any federally listed threatened or endangered species.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): Any minor land clearing associated with expansion of boat ramp parking or wastewater treatment plant construction would take place in the winter, outside the time when bats may utilize

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trees as hibernacula. The result would be not likely to affect any threatened or endangered species or their designated critical habitat.

4.5 Noise

Alternative 1 - “No-Action” Alternative: The “No-action” Alternative would not result in any additional impact to noise. Noise would continue at current levels. Noise levels being the loudest during busy recreation times and then remaining relatively quiet during tiles of low to no recreation.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): There may be brief localized impacts to noise associated with any of the proposed construction within the plan. However, once construction was complete it is anticipated that noise would return to preconstruction levels.

4.6 Health and Safety

Alternative 1 - “No-Action” Alternative: The “No-Action” Alternative would result in aging infrastructure such as sewage treatment plants, shower houses, etc. not being replaced. This could pose a health risk from treatment plants not keeping up with state standards. Trails not stabilized from erosion could pose health risks and cause a tripping and/or falling hazard.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): The Recommended Plan may cause short term impacts to health and safety from construction related activities. However, improvements to infrastructure should result in a long-term beneficial impact to health and safety.

4.7 Economics

Alternative 1 - “No-Action” Alternative: Under the No-Action alternative the economic effects would remain largely unchanged. The amount of visitors would be at least partially driven by the economy. During times of good economic growth visitation should rise as people have more disposable income. During times of recession, visitation should drop as people cut back on vacation and luxury goods such as boats and RV’s.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): This alternative would have a net economic benefit over the no-action alternative. As facilities are upgraded, such as creating more spacious camping pads and the larger 50 kwt electrical service, campgrounds will be able to attract larger RV’s and there should be a an increase in visitation. This would bring an increase in the local economy.

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4.8 Cultural Resources

Alternative 1 - “No-Action” Alternative: Under the no-action alternative there would likely be no impact to cultural resources.

Alternative 2 - Accept Revised Master Plan (Recommended Alternative): For any project that may involve ground clearance, plans would be developed. A qualified archaeologist would review the plans and site area to determine if they would impact cultural resources. There would also be coordination with the State Historic Preservation Officer (SHPO) as well as any applicable Tribal Historic Preservation Officer(s) (THPO).

5.0 Cumulative Impacts

The Council on Environmental Quality Regulations defines cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (CEQ, 1997).

The cumulative impacts addressed in this document consist of the impacts of multiple actions that each affects the human environment including those adjacent to Pomme de Terre Lake.

Pomme de Terre Lake and its surrounding area has been altered by past actions such as impounding the lake, bank stabilization, docks, recreational area development, land clearing, residential development, farming, road crossings, and other human uses. These activities have substantially altered the terrestrial and aquatic ecosystem within the Pomme de Terre watershed. In 1961, the Corps of Engineers finished constructing the Pomme de Terre Dam which impounded the Pomme de Terre River and Lindley Creek. This flooded approximately 7,790 acres, turning these acres that were once upland into lake habitat.

At the time of construction recreational areas were developed to accommodate the desire for camping and boating. In addition, three marina areas were developed by concessionaires. Besides a few minor infrastructure changes proposed in the plan, much of the area will remain the same. Relatively minor short-term impacts to the water quality and noise are anticipated during construction. Long-term, the project would have

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a minor loss of less than 0.5 acres of open forested habitat from expansion of parking. The project would benefit health and safety by bring the wastewater treatment facilities up to state standards and increase the maneuverability in the boat ramp parking lots.

USACE, which administers Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, has issued and will continue to evaluate permits authorizing the placement of fill material in the Waters of the United States and/or work on, in, over or under a regulated area. No new major actions are anticipated on Pomme de Terre Lake or its tributaries in the foreseeable future.

The cumulative impact of the proposed action (when added to other present and future actions) does not result in a significant impact to the natural or human environment.

6.0 Conclusion

The Recommended Plan would not likely result in any impacts to federally listed threatened or endangered species or their designated critical habitat. Water quality, fish and wildlife, and noise levels would be temporarily disturbed by the proposed construction activity. The proposed action would have no impact to sites listed on or eligible for inclusion on the National Register of Historic Places. The project would have a minor long-term benefit to health and safety. Of the two alternatives considered, the Recommended Plan is consistent with current regulations and the protection of the human environment.

7.0 Coordination and Comments

This draft EA and FONSI will be e-mailed to individuals, agencies, and businesses contained on the USACE Regulatory public notice list. They are also available on the USACE Regulatory webpage at:
http://www.nwk.usace.army.mil/Media/PublicNotices.aspx. Hard copies are available upon request.

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8.0 Agency Compliance with Other Environmental Laws

Compliance with other environmental laws is listed below.

Federal Policy Compliance

Archeological Resources Protection Act, 16 U.S.C. 470, et seq.
Not Applicable

Clean Air Act, as amended, 42 U.S. C. 7401-7671g, et seq.
Full Compliance

Clean Water Act (Federal Water Pollution Control Act), 33 U.S.C. 1251, et seq.
Full Compliance

Coastal Zone Management Act, 16 U.S.C. 1451, et seq.
Not Applicable

Endangered Species Act, 16 U.S.C. 1531, et seq.
Full Compliance

Estuary Protection Act, 16 U.S.C. 1221, et seq.
Not Applicable

Federal Water Project Recreation Act, 16 U.S.C. 4601-12, et seq.
Full Compliance

Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq.
Full Compliance

Land and Water Conservation Fund Act, 16 U.S.C. 4601-4, et seq.
Not Applicable

Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et seq.
Not Applicable

National Environmental Policy Act, 42 U.S.C. 4321, et seq.
Full Compliance

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National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470a, et seq.
Full Compliance

Rivers and Harbors Act, 33 U.S.C. 403, et seq.
Full Compliance

Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.
Full Compliance

Wild and Scenic River Act, 16 U.S.C. 1271, et seq.
Not Applicable

Farmland Protection Policy Act, 7 U.S.C. 4201, etseq.
Full Compliance

Protection & Enhancement of the Cultural Environment (Executive Order 11593)
Full Compliance

Floodplain Management (Executive Order 11988)
Full Compliance

Protection of Wetlands (Executive Order 11990)
Full Compliance

Environmental Justice (Executive Order 12898)
Full Compliance

NOTES:

a. Full compliance. Having met all requirements of the statute for the current stage of planning (either

b. Partial compliance. Not having met some of the requirements that normally are met in the current stage of planning.

c. Noncompliance. Violation of a requirement of the statute.

d. Not applicable. No requirements for the statute required; compliance for the current stage of planning.

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9.0 References

CEQ. 1992. Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR Parts 1500-1508, in accordance with 40 CFR 1507.3.

CEQ. 1997. January, 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Executive Office of the President, Washington, D.C. pp ix-x, 28-29 and 49-57.

FCA. 1941. Flood Control Act of 1941, 33 U.S.C. 701n, as amended (commonly referred to as Public Law 84-99, Flood Control and Coastal Emergencies Act).

USACE. 2008. Procedures for Implementing the National Environmental Policy Act. Engineer Regulations (ER) 200-2-2. 33 CFR 230.

10.0 List of Preparers

This draft EA and draft FONSI were prepared by Mr. Curtis Hoagland, Environmental Resources Specialist, with cultural resource assistance provided by Mr. Timothy Meade, District Archeologist. The address of the preparers is: U.S. Army Corps of Engineers, Kansas City, District; PM-PR, Room 529, 601 E. 12th Street, Kansas City, Missouri 64106.

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Appendix B Agency and Public Coordination

On 22 July 2014 Scoping Letters were sent to the following Agencies/Organizations/Individuals asking them to identify any issues they thought should be considered in the Master Plan Revision Process:

Federal	U.S. Senate	Roy Blunt
	U.S. Senate	Claire McCaskill
	U.S. House of Representatives	Vicky Hartzler
	U.S. Dept. of Agriculture	
	U.S. Fish and Wildlife Conservation Office	
	NOAA	Andy Foster
	USGS	
State	Governor	Jay Nixon
	Missouri Senate	Mike Parson
	Missouri House of Representatives	Warren Love
	Missouri House of Representatives	Sue Entlicher
	Missouri Dept. of Conservation	Craig Fuller
	Missouri Dept. of Conservation	Kevin Hedgpath
	Missouri Dept. of Conservation	Robert Vader
	Missouri Dept. of Conservation	Tim Pratt
	University of Missouri Extension Center	
	Missouri Dept. of Natural Resources	Laura Hendrickson
	Missouri Dept. of Natural Resources	Dave Herigon
	Missouri State Highway Patrol	Eldon Wulf
	Missouri State Highway Patrol	Troop D
Local	Hickory County Commissioners	
	Polk County Commissioners	
	Hickory County Sheriff	Sheriff Ray Tipton
	Polk County Sheriff	Sheriff Kay Williams
	Hickory County Public Health Department	
	Hickory County Emergency	

	Management	
	City of Hermitage	
	City of Wheatland	
	City of Weaubleau	
	City of Cross Timbers	
	City of Urbana	
	City of Bolivar	
	City of Buffalo	
	Pomme de Terre Chamber of Commerce	
	Hermitage Lions Club	
	U.S. Coast Guard Auxiliary	Doug Ives
	Hickory County R-1 School District	
	Hermitage R-IV School District	
	Wheatland R-II School District	
	Weaubleau R-III School District	
Marinas	Nemo Marina	Hugh Vaughan
	Harbor Marina	
	Highway 83 Marina	Jeff Brown
Resorts	Indian Hill Resort	Steve Capkovic
	Bell Harbor Resort	Robert Fennessey
	Hickory Grove Resort	Barry Smith
	Nemo Bridge Resort	Dale Husby
	Cooper Cove Resort	Frank Tuminello
	Goody's Resort	Arnie Shelton
	Sunflower Resort	Ruben Faigenblat
	Willow Winds Resort	Mary Johnston
	Stillwater Resort	Brian Finnigan
	Angler's Resort	Darrell Guinn
	Church of Foursquare Gospel	Daniel Horst

A copy of one of the scoping letters sent is found on the following page.

DEPARTMENT OF THE ARMY
POMME DE TERRE PROJECT OFFICE
U.S. ARMY CORPS OF ENGINEERS
RT. 2, BOX 2160
HERMITAGE, MO 65668

July 22, 2014

Laura Hendrickson
Missouri Dept. of Natural Resources
Laura.Hendrickson@dnr.mo.gov

Dear Madam,

The U.S. Army Corps of Engineers is in the process of revising the Pomme de Terre Lake Master Plan dated August 1988. The revision would bring the Master Plan up to date with current policy and regulations, as well as take into account current and projected visitation and recreation trends.

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 throughout the life of the project. The Master Plan guides 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 Corps is providing interested parties an opportunity to offer recommendations on issues to be considered during the Master Plan revision process. Please send any comment pertaining to the Pomme de Terre Lake Master Plan revision to Pomme de Terre Project Office, Rt. 2 Box 2160, Hermitage, MO 65668 or email to Pomme.De-Terre@usace.army.mil.

Sincerely,

Bradley R. Myers

BRADLEY R. MYERS
Operations Project Manager
Pomme de Terre Project Office

Replies to the initial scoping are found on the following pages.

Hoagland, Curtis R NWK

From: Locke, Glen E NWK
Sent: Wednesday, August 27, 2014 11:03 AM
To: Charles Meyer
Cc: Myers, Bradley R NWK; Hoagland, Curtis R NWK; Mueller, Julie A NWK
Subject: RE: [EXTERNAL] Pomme de Terre Lake Master Plan (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Clay, thank you for the written comments I will forward them on for consideration to our folks working on the master plan.

Glen Locke
Natural Resource Manager
Pomme de Terre Lake
417-745-6411
VOIP ext. 3865
Cell Phone [redacted]

-----Original Message-----
From: Charles Meyer [mailto[redacted]
Sent: Wednesday, August 27, 2014 9:32 AM
To: Pomme.De-Terre
Subject: [EXTERNAL] Pomme de Terre Lake Master Plan

Mr. Bradley Myers
Operations Project Manager
Pomme de Terre Project Office

Recently, I spoke with you at the Corps of Engineers project office at Pomme de Terre Lake. We discussed two items that may or may not be addressed in your revision of the Lake Master Plan. You did ask, for me to email the points of our discussion to this address for a written record.

The first item discussed was the possibility of restricting the size of vessels allowed to operate on the waters of Pomme de Terre Lake. This issue has come to our attention as we have been receiving numerous inquires about size limitations of vessels on the Lake. Also, I have been approached multiple times with concerns from local boating enthusiast about concerns of larger vessels coming to Pomme from The Lake of the Ozarks. Currently, the revised statutes of the State of Missouri divides vessels into four classes:
(1) Class A, less than sixteen feet in length;
(2) Class 1, at least sixteen feet and less than twenty-six feet in length;
(3) Class 2, at least twenty-six and less than forty feet in length;
(4) Class 3, forty feet and over.
If a size restriction were to be put into place, I believe it would have to be on the Class 3 category of vessels at a minimum. Consideration may also be given to disregard the vessel classification and simply establish a restriction of fifty feet or more.

The second item, discussion on regulatory buoys currently on Pomme de Terre Lake. I know the former Water Patrol did regulate these buoys. However, there seems to be some discussion concerning our ability to actually decide were regulatory buoys are placed and then us

actually enforcing them. We, as an agency, have often stated, we do not establish the laws, we simply enforce them.

I know there may be a lot of discussion on these issues and many others as you address the Master Plan. Please do not hesitate to contact me should you have any questions or if I can be of any assistance.

Thank you,

C.CLAY MEYER, Sergeant
Troop D, Zone 20

Classification: UNCLASSIFIED
Caveats: NONE

Locke, Glen E NWK

From: Dave Crager[redacted]
Sent: Friday, September 05, 2014 5:33 PM
To: Pomme.De-Terre
Subject: [EXTERNAL] Master Plan Revision

To Whom it May Concern:

It has come to my attention the USACE is in the process of revising the Pomme de Terre Lake master plan and I'd like to take this opportunity to respectfully offer recommendations to allow additional private boat docks.

We have owned a private home in the Heritage Hills subdivision in Pittsburg for the past six years. Keeping track of our nightly stays there, we average over 120 nights per year, with an average of 3 persons per night. We always try to patronize the local grocery, fuel, and other merchants in the Pittsburg area.

Our stays typically involve boating and fishing, utilizing the existing boat ramp found at Riveria North dock zone, located in Fishers Cove. We believe additional dock permits allowed near the mouth of Fishers Cove to the Pomme Arm, would provide additional private dock area, relieving congestion at the limited public boat ramps and docks. We also believe the increase in private dock permits in the area poses no use conflict with existing or future uses in the area such as swimming, fishing, camping, etc.

In our six years of boating and fishing in the area, we have seen a great increase in boat, and subsequent ramp and dock usage. I'm sure your research will bear this out. To this end, it would seem beneficial to provide additional private docks to relieve pressure on public areas, including swimming, ramps, and docks.

We appreciate the opportunity to provide recommendations to the master plan. We enjoy all facets of activity the area and lake provide, and would be happy to discuss further our recommendations.

Thanks for your consideration.

Sincerely,

HICKORY COUNTY COMMISSION

P.O. Box 3 - Hermitage, Missouri - 65668-0003

417-745-6450 1-888-745-0005 Fax: 417-745-6057 Jeanne Lindsey, Clerk

Robert Sawyer — Presiding Commissioner
Robert Breshears — Associate Commissioner
Rick Pearson — Associate Commissioner

August 21, 2014

Bradley R. Myer
Operations Project Manager
Pomme de Terre Project Office
Rt 2 Box 2160
Hermitage, MO. 65668

RE: Pomme de Terre Lake Master Plan

In response to your letter of July 22, 2014 concerning the revision of the Pomme de Terre Lake Master Plan. The Commission would like to recommend the river bank erosion be included in the revision process. The Commission believes the erosion, if left unchecked will become a major problem in the near future. The erosion has become a concern to the land owners along the river, one area specifically is the Enchanted Forest subdivision southwest of Hermitage off HWY 254 but this is not the only area being affected.

Sincerely,

Robert Sawyer
Presiding Commissioner

Robert Breshears
Associate Commissioner

Rick Pearson
Associate Commissioner

Hoagland, Curtis R NWK

From: Andy Foster - NOAA Federal [redacted]
Sent: Saturday, July 26, 2014 1:43 AM
To: Wright, Bradly S NWK
Cc: LaFontaine, Katie NWK; Pomme.De-Terre
Subject: Re: [EXTERNAL] Re: Pomme de Terre Lake Master Plan (UNCLASSIFIED)

Bradly,

Just taking a first look at the master plan there appears to be opportunity to address weather hazards monitoring, safety, response and mitigation whether it be high winds, tornadoes, floods, etc.

There are a couple of NWS initiatives to consider that would aid this effort.

First is the Weather Ready Nation Weather Ambassador <http://www.nws.noaa.gov/com/weatherreadynation/amb_faqs.html#.U9NMKLFCy-U> program

Second is potentially the Storm Supporter Program <http://www.nws.noaa.gov/stormready/supporter.htm> .

Would be glad to discuss these further and answer any questions.

Andy

On Wed, Jul 23, 2014 at 10:40 AM, LaFontaine, Katie NWK [redacted]> wrote:

Classification: UNCLASSIFIED
Caveats: NONE

Good morning
When I inquired I was told that we working toward getting it posted to the lake's webpage. It might take a couple days. You may want to check their website periodically for it. http://www.nwk.usace.army.mil/Locations/DistrictLakes/PommedeTerreLake.aspx

-----Original Message-----
From: Andy Foster - NOAA Federal [redacted]]
Sent: Tuesday, July 22, 2014 8:44 PM
To: LaFontaine, Katie NWK; Wright, Bradly S NWK
Subject: [EXTERNAL] Re: Pomme de Terre Lake Master Plan (UNCLASSIFIED)

Katie,

Is the existing plan available for viewing?

Thanks

Andy

On Tue, Jul 22, 2014 at 5:27 PM, LaFontaine, Katie NWK
[redacted]> wrote:

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

--

Meteorologist - Lead Forecaster
Decision Support Services Program Leader

National Weather Service
Springfield, Missouri

Classification: UNCLASSIFIED
Caveats: NONE

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Meteorologist - Lead Forecaster
Decision Support Services Program Leader

National Weather Service
Springfield, Missouri

Appendix C Flora and Fauna

Fish of Pomme de Terre Lake

Longnose gar	Lepisosteus osseus
Gizzard shad	Dorosoma cepedianum
Muskellunge	Esox masquinongy
Carp	Cyprinus carpio
Golden shiner	Notemigonus crysoleucas
Striped shiner	Notropis chrysocephalus
Bluntnose minnow	Pimephales notatus
Quillback	Carpiodes cyprinus
Highfin carpsucker	Carpiodes velifer
Northern hog sucker	Hypentelium nigricans
Golden redhorse	Moxostoma erythrurum
River redhorse	Moxostoma carinatum
Black bullhead	Ictalurus melas
Yellow bullhead	Ictalurus natalis
Channel catfish	Ictalurus punctatus
Blue catfish	Ictalurus furcatus
Flathead catfish	Pylodictis olivaris
Northern studfish	Fundulus catenatus
Mosquitofish	Gambusia affinis
Brook silverside	Labidesthes sicculus
White bass	Morone chrysops
Spotted bass	Micropterus punctulatus
Smallmouth bass	Micropterus dolomieui
Largemouth bass	Micropterus salmoides
Green sunfish	Lepomis cyanellus
Redear sunfish	Lepomis microlophus
Longear sunfish	Lepomis megalotis
Bluegill	Lepomis macrochirus
Black crappie	Pomoxis nigromaculatus
White crappie	Pomoxis annularis
Walleye	Stizostedion vitreum vitreum
Logperch	Percina caprodes
Freshwater drum	Aplodinotus grunniens
Shortnose gar	Lepisosteus platostomus
Smallmouth buffalo	Ictiobus bubalus

Bigmouth buffalo	Ictiobus cyprinellus
Orangethroat darter	Etheostoma spectabile
Fantail darter	Etheostoma flabellare
Blackstripe topminnow	Fundulus notatus
Slender madtom	Noturus exilis

Mammals of Pomme de Terre Lake

Opossum	Didelphis marsupialis
Least Shrew	Cryptotis parva
Short-tail Shrew	Blarina brevicauda
Eastern Mole	Scalopus Aquaticus
Keen Myotis	Myotis Kenni
Little Brown Myotis	Myotis lucifugus
Gray Myotis or Gray Bat	Myotis grisescens
Indiana Myotis	Myotis sodalis
Small-footed Myotis	Myotis subulatus
Silver-haired Bat	Lasionycteris noctivagans
Eastern Pipistrel	Pipistrellus subfcavus
Red Bat	Lasiurus borealis
Big Brown Bat	Eptesicus fuscus
Hoary Bat	Lasiurus cinereus
Evening Bat	Mycticeius Humeralis
Western Big-eared Bat	Plecotus townsendi
Raccoon	Procyon lotor
Mink	Mustela vision
Spotted Skunk	Spilogale putorius
Striped Skunk	Mephitis mephitis
Coyote	Canis latrans
Red Fox	Uulpes fulva
Gray Fox	Urocyon cinereoargenteus
Bobcat	Lynx rufus
Wood Chuck	Marmota monax
Thirteen-lined Ground Squirrel	Citellus tridencemlineatus
Eastern Chipmunk	Tamias striatus
Eastern Gray Squirrel	Sciurus Carolinensis
Eastern Fox Squirrel	Sciurus niger
Southern Flying Squirrel	Glaucomys volans
Beaver	Castor canadensis
Plains Harvest Mouse	Reithrodontomys montanus
Fulvous Harvest Mouse	Reithrodontomys fulvescens
White-footed Mouse	Peromyscus leucopus
Bush Mouse	Peromyscus boylei
Deer Mouse	Peromyscus maniculatus
Rice Rat	Oryzomys palustris
Eastern Woodrat	Neotoma floridana
Hispid Cotton Rat	Sigmodon hispidus

Pine Vole	Pitymys pinetorum
Muskrat	Ondatra zibethica
Norway Rat	Tarrus norvegicus
House Mouse	Mus musculus
Eastern Cottontail	Sylvilagus floridanus
Swamp Rabbit	Sylvilagus aquaticus
White-tailed Deer	Odocoileus virginanus
*River Otter	Lutra Canadensis

Birds of Pomme de Terre Lake Checklist

_____ Canada Goose	_____ Mourning Dove
_____ Wood Duck	_____ Yellow-billed Cuckoo
_____ Gadwall	_____ Eastern Screech-Owl
_____ Mallard	_____ Great Horned Owl
_____ Common Goldeneye	_____ Chuck-will's-widow
_____ Hooded Merganser	_____ Chimney Swift
_____ Northern Bobwhite	_____ Ruby-throated Hummingbird
_____ Wild Turkey	_____ Belted Kingfisher
_____ Common Loon	_____ Red-headed Woodpecker
_____ Pied-billed Grebe	_____ Red-bellied Woodpecker
_____ Horned Grebe	_____ Yellow-bellied Sapsucker
_____ American White Pelican	_____ Downy Woodpecker
_____ Great Blue Heron	_____ Hairy Woodpecker
_____ Green Heron	_____ Northern Flicker
_____ Black Vulture	_____ Pileated Woodpecker
_____ Turkey Vulture	_____ Eastern Wood-Pewee
_____ Osprey	_____ Acadian Flycatcher
_____ Bald Eagle	_____ Least Flycatcher
_____ Red-shouldered Hawk	_____ Eastern Phoebe
_____ Broad-winged Hawk	_____ Great Crested Flycatcher
_____ Red-tailed Hawk	_____ Eastern Kingbird
_____ American Coot	_____ Yellow-throated Vireo
_____ Killdeer	_____ Warbling Vireo
_____ Long-billed Dowitcher	_____ Red-eyed Vireo
_____ American Woodcock	_____ Blue Jay
_____ Bonaparte's Gull	_____ American Crow
_____ Ring-billed Gull	_____ Purple Martin
_____ Tree Swallow	_____ Magnolia Warbler
_____ Northern Rough-winged Swallow	_____ Blackpoll Warbler
_____ Cliff Swallow	_____ Yellow-rumped Warbler
_____ Barn Swallow	_____ Yellow-throated Warbler
_____ Carolina Chickadee	_____ Eastern Towhee
_____ Black-capped Chickadee	_____ Chipping Sparrow
_____ Tufted Titmouse	_____ Clay-colored Sparrow
_____ White-breasted Nuthatch	_____ Field Sparrow

_____ Brown Creeper	_____ Lark Sparrow
_____ Carolina Wren	_____ Song Sparrow
_____ Blue-gray Gnatcatcher	_____ Dark-eyed Junco
_____ Eastern Bluebird	_____ Summer Tanager
_____ Swainson's Thrush	_____ Scarlet Tanager
_____ American Robin	_____ Northern Cardinal
_____ Gray Catbird	_____ Rose-breasted Grosbeak
_____ Northern Mockingbird	_____ Blue Grosbeak
_____ Brown Thrasher	_____ Indigo Bunting
_____ European Starling	_____ Red-winged Blackbird
_____ Cedar Waxwing	_____ Common Grackle
_____ Black-and-white Warbler	_____ Brown-headed Cowbird
_____ Prothonotary Warbler	_____ Orchard Oriole
_____ Nashville Warbler	_____ Baltimore Oriole
_____ Kentucky Warbler	_____ House Finch
_____ Common Yellowthroat	_____ Purple Finch
_____ Hooded Warbler	_____ American Goldfinch
_____ Cape May Warbler	_____ House Sparrow
_____ Northern Parula	

Grasses, Forbs and Legumes of Pomme de Terre Lake

Grasses	Forbes	Legumes
Fescue	Purple Coneflower	Clover
Red Top	Yellow Coneflower	Red
Brome	Butterfly Weed	Ladino
Ireland Grass	Black-eyed Susan	Alsike
Broomsedge	Horsemint	Lespedeza
Poverty Grass	Beard Tongue	Korean
Purple Top	Daisy Fleabone	Roundhead
Indian Grass	Dayflower	Alfalfa
Little Bluestem	Wild Onion	Bundleflower
Blue Grass	Daylily	Illinois Vetch
Big Bluestem	Shooting Stars	Common partridgepea
Crabgrass	Thistles	Sweetclover
Orchard Grass	Smart Weed	Tick-trefoil
Switchgrass	Chicory	
Timothy	Sunflower	
Foxtail	Dandelions	
Johnsongrass	Goldenrods	
Wild Millet	Water Hemlock	
Sideoats	Mullein	
	Solomon-seal	
	Yarrow	
	Queen-Anne's-Lace	
	Mayapple	
	Pokeweed	
	Cocklebur	
	Ironweed	
	Ragweed	

Woody Species Common to Pomme de Terre Lake

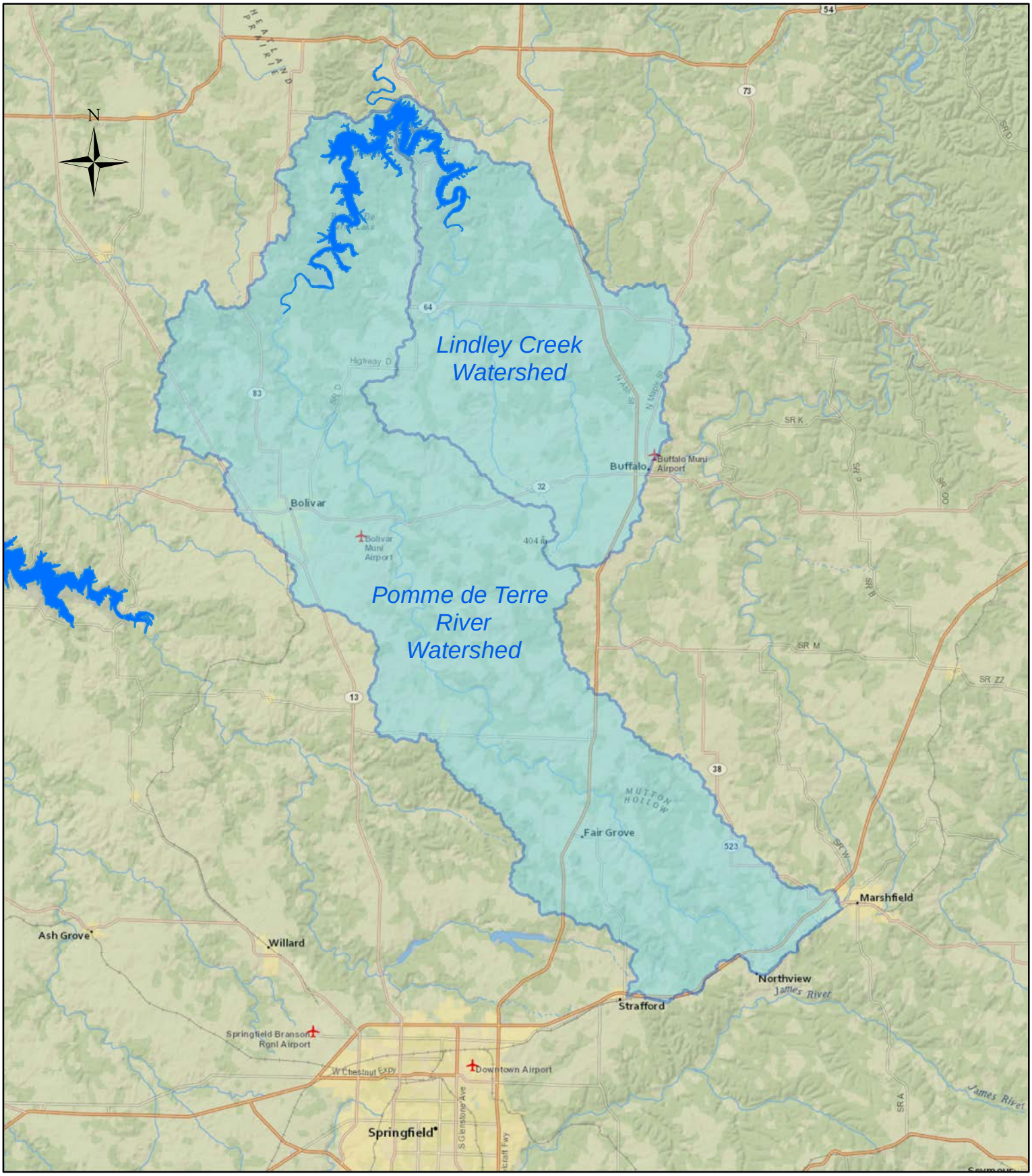
Ash, Green	Fraxinus pennsylvanica
Ash, White	Fraxinus americana
Cherry, Black	Prunus serotina
Cottonwood, Eastern	Populus deltoides
Dogwood, Flowering	Cornus florida
Dogwood, Roughleaf	Cornus drummondii
Elm, American	Ulmus americana
Elm, Slippery	Ulmus rubra
Hackberry	Cectis Genus
Hawthorn	Crataegus Genus
Hickory, Shagbrak	Carya ovata
Honey Locust	Gleditsia triacanthos
Hop Hornbeam, Eastern	Ostrya virginiana
Maple, Silver	Acer saccharinum
Maple, Sugar	Acer saccharum
Mulberrry, Red	Morus rubra
Oak, Black	Quercus velutina
Oak, Blackjack	Quercus marilandica
Oak, Bur	Quercus macrocarpa
Oak, Chinkapin	Quercus muehlenbergii
Oak, Northern Red	Quercus rubra
Oak, Post	Quercus stellata
Oak, Shingle	Quercus imbricaria
Oak, Southern Red	Quercus falcata
Oak, Swamp White	Quercus bicolor
Oak, White	Quercus alba
Ohio Buckeye	Aesculus glabra
Osage Orange	Maclura pomifera
Persimmon	Diospyros virginiana
Red Bud	Cercis canadensis
Sassafras	Sassafras albidum
Service Berry, Downy	Amelanchier arborea
Sycamore, American	Platanus occidentalis
Walnut, Black	Juglans nigra
Redcedar, Eastern	Juniperus virginiana

Common Shrubs of Pomme de Terre Lake

Buttonbush	Cephalanthus occidentalis

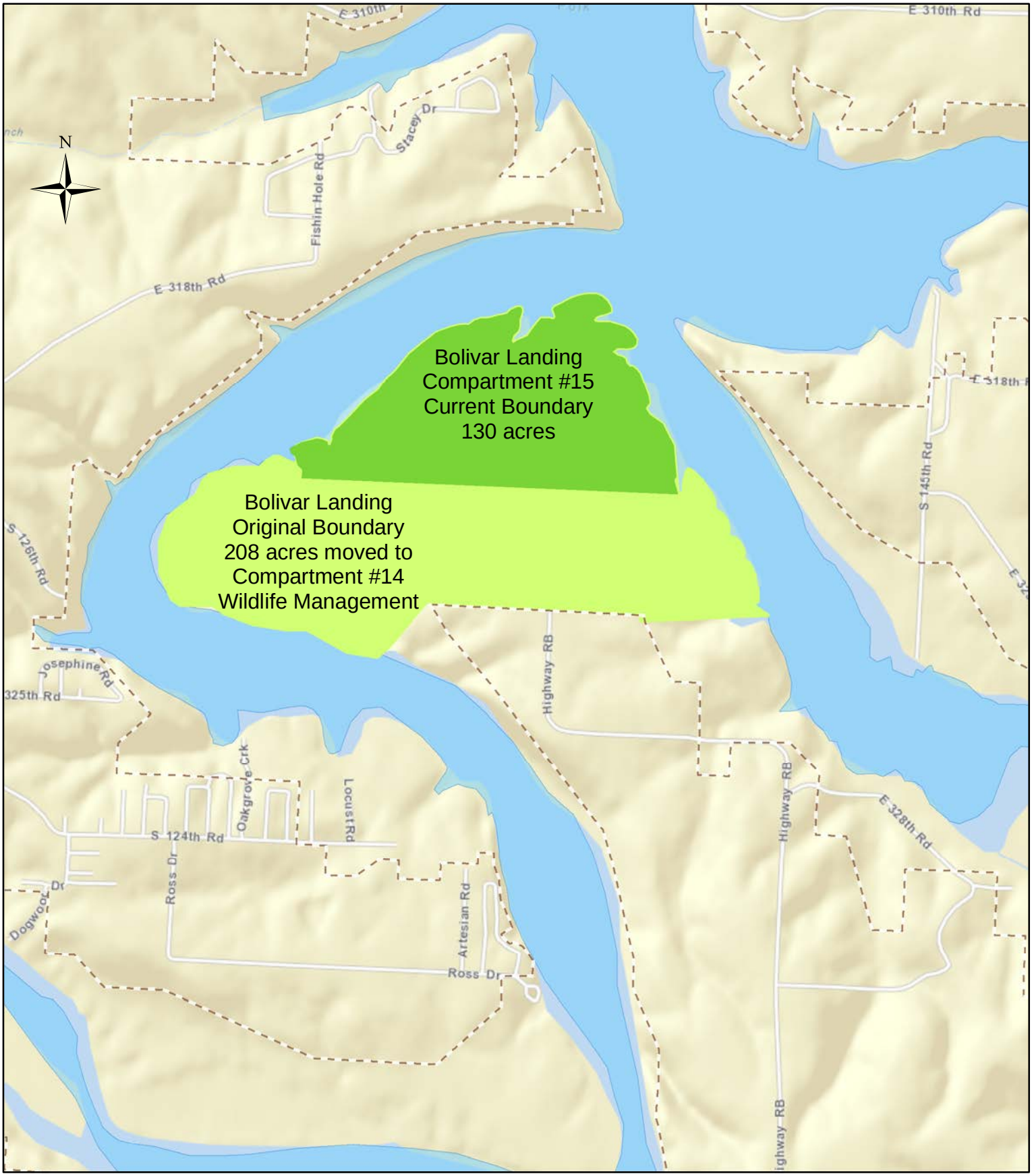
Coral, Berry	Symphoricarpus oriculatus
Elder, American	Sambucus canadensis
Gooseberry	Ribes missouriense
Hazel, American	Corylus americana
Spicebush	Benzoin aestivale
Sumac, Fragrant	Rhus candadensis
Sumac, Smooth	Rhus glabra

Appendix D Maps



0 5 10 Miles

Pomme de Terre Lake Watershed



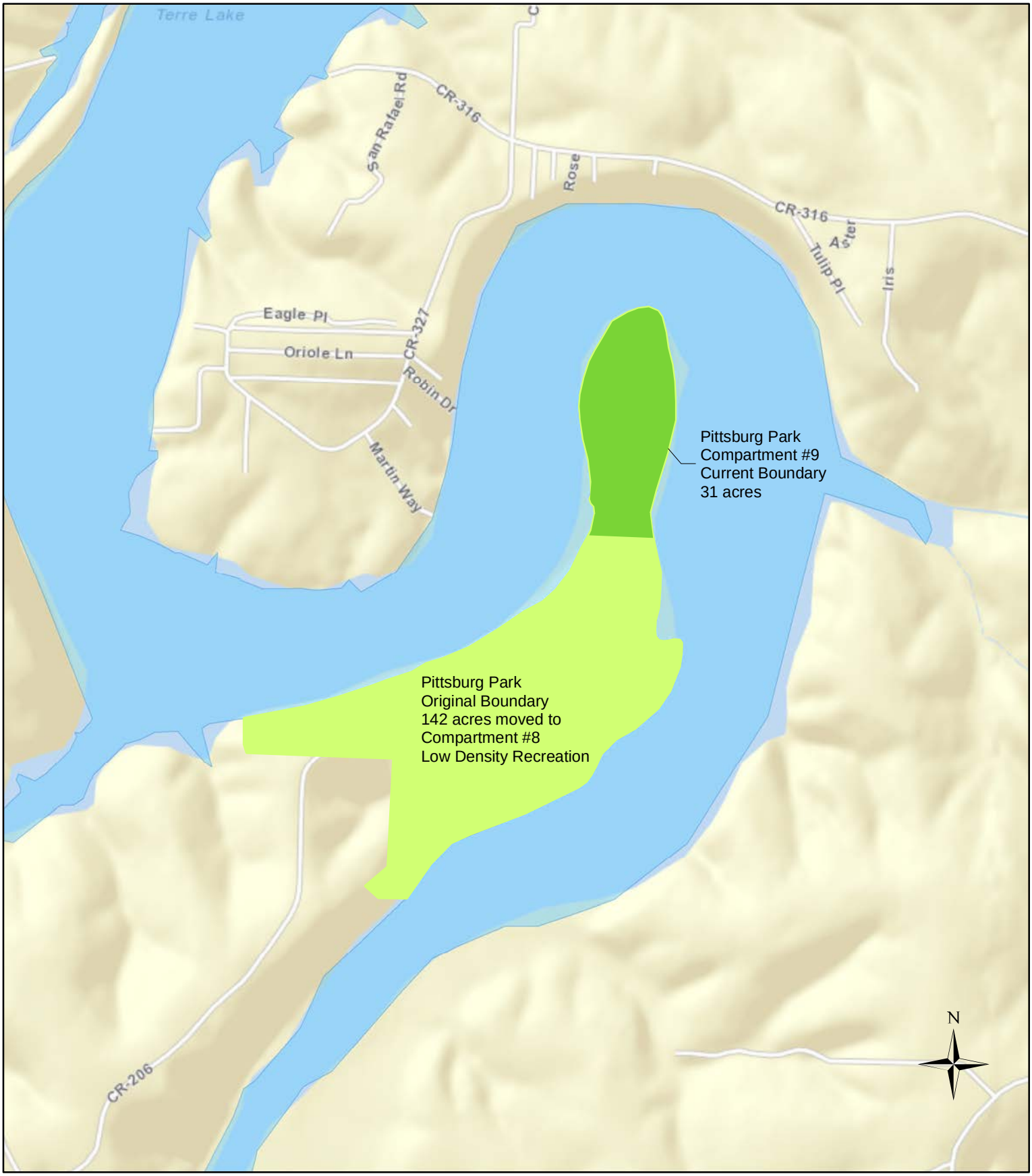
Corps Boundary

recreation_park_area

Original Bolivar Park Boundary

0 ¼ ½ Miles

Pomme de Terre Bolivar Landing Compartment #15 Partial Transfer to Wildlife Management

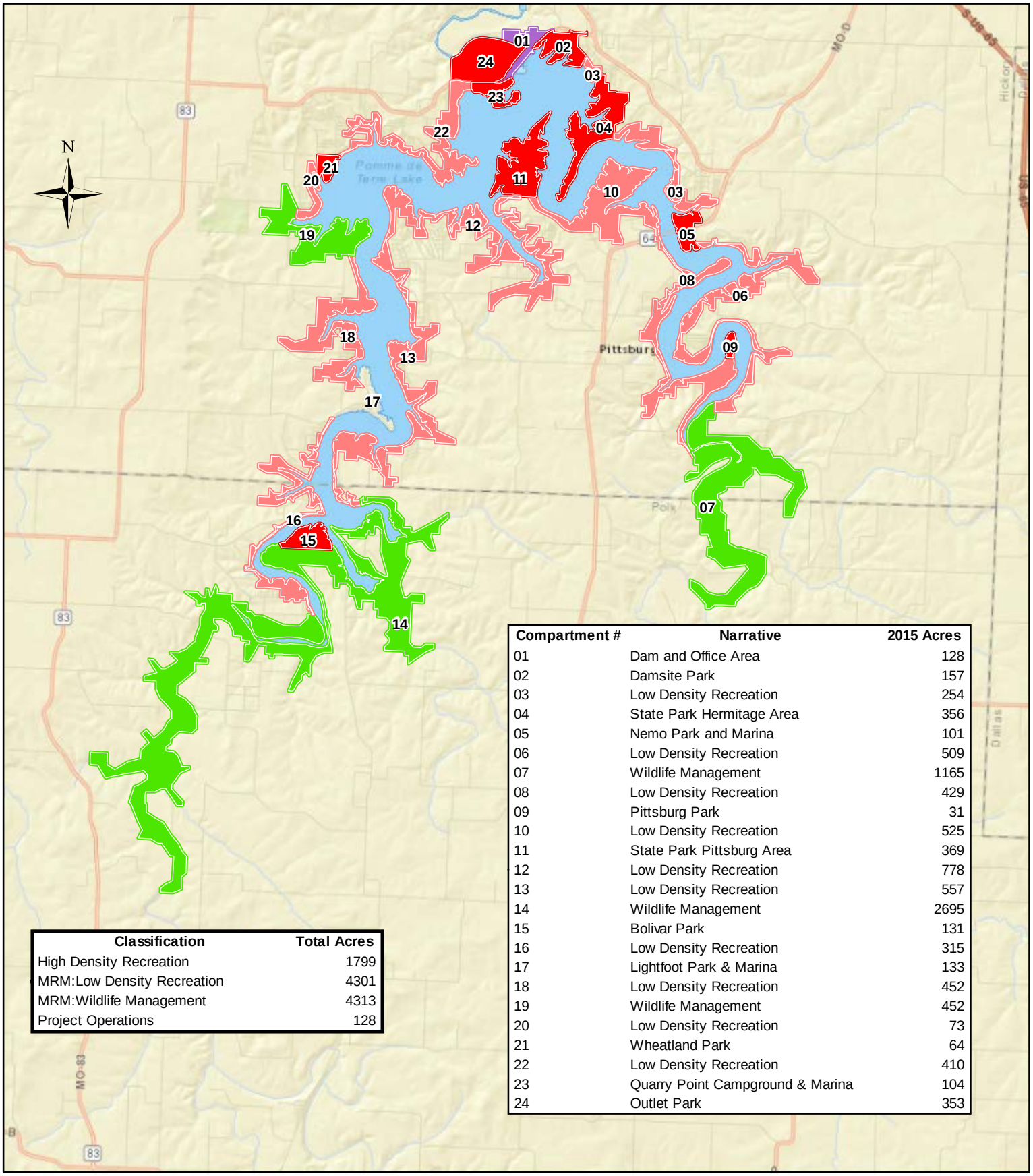


Current Pittsburg Park Boundary

Original Boundary Pittsburg Park

0 ¼ ½ Miles

Pomme de Terre
Pittsburg Park
Compartment #9
Partial Transfer to
Low Density Recreation



Classification	Total Acres
High Density Recreation	1799
MRM:Low Density Recreation	4301
MRM:Wildlife Management	4313
Project Operations	128

Compartment #	Narrative	2015 Acres
01	Dam and Office Area	128
02	Damsite Park	157
03	Low Density Recreation	254
04	State Park Hermitage Area	356
05	Nemo Park and Marina	101
06	Low Density Recreation	509
07	Wildlife Management	1165
08	Low Density Recreation	429
09	Pittsburg Park	31
10	Low Density Recreation	525
11	State Park Pittsburg Area	369
12	Low Density Recreation	778
13	Low Density Recreation	557
14	Wildlife Management	2695
15	Bolivar Park	131
16	Low Density Recreation	315
17	Lightfoot Park & Marina	133
18	Low Density Recreation	452
19	Wildlife Management	452
20	Low Density Recreation	73
21	Wheatland Park	64
22	Low Density Recreation	410
23	Quarry Point Campground & Marina	104
24	Outlet Park	353

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations

0 2 4 Miles

Pomme de Terre Compartments

Classification

- Project Operations
- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre Compartment #1 Project Operations Dam and Project Office

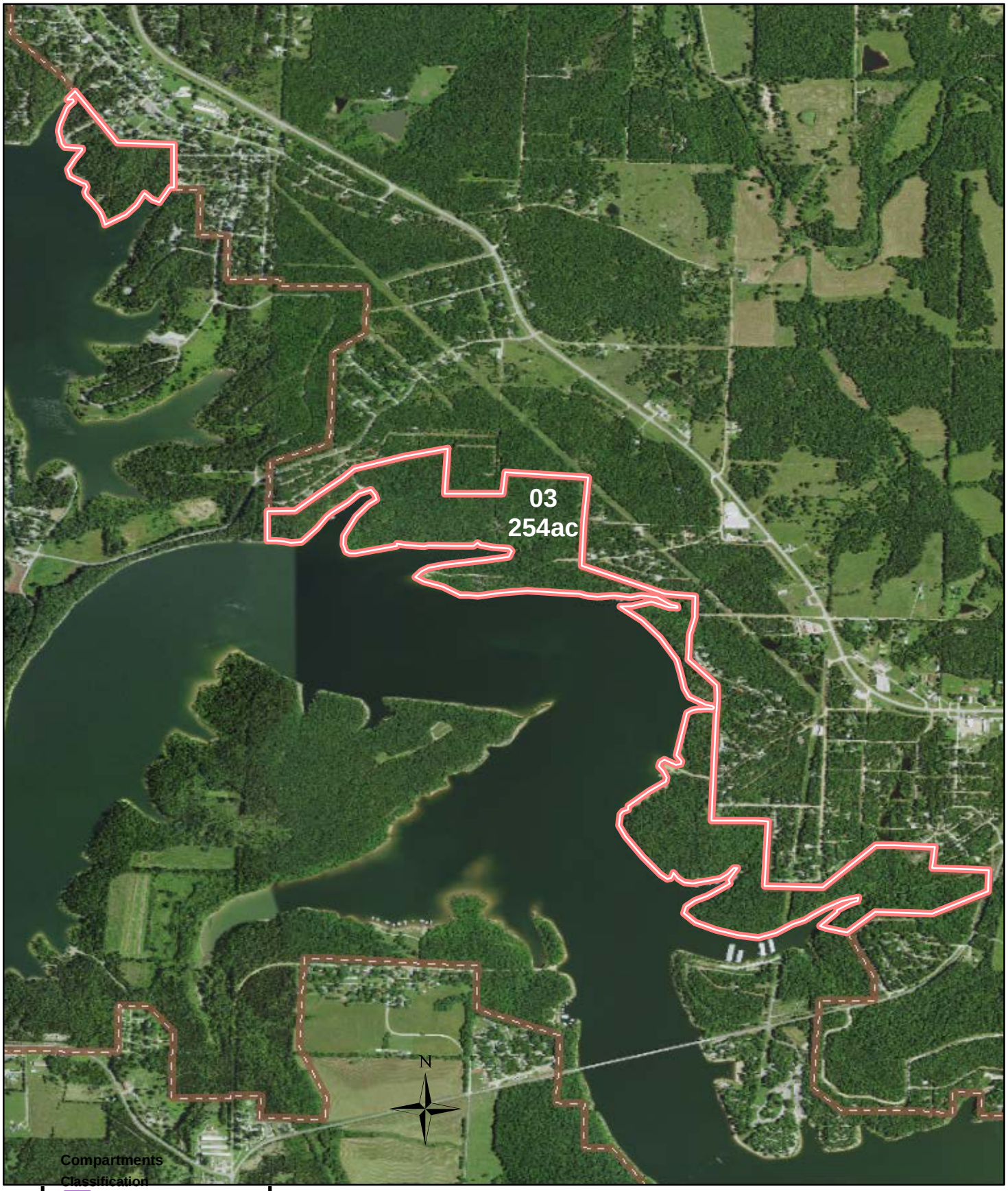
Compartments

Classification

- Project Operations
- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #2
High Density Recreation
Dam Site Park

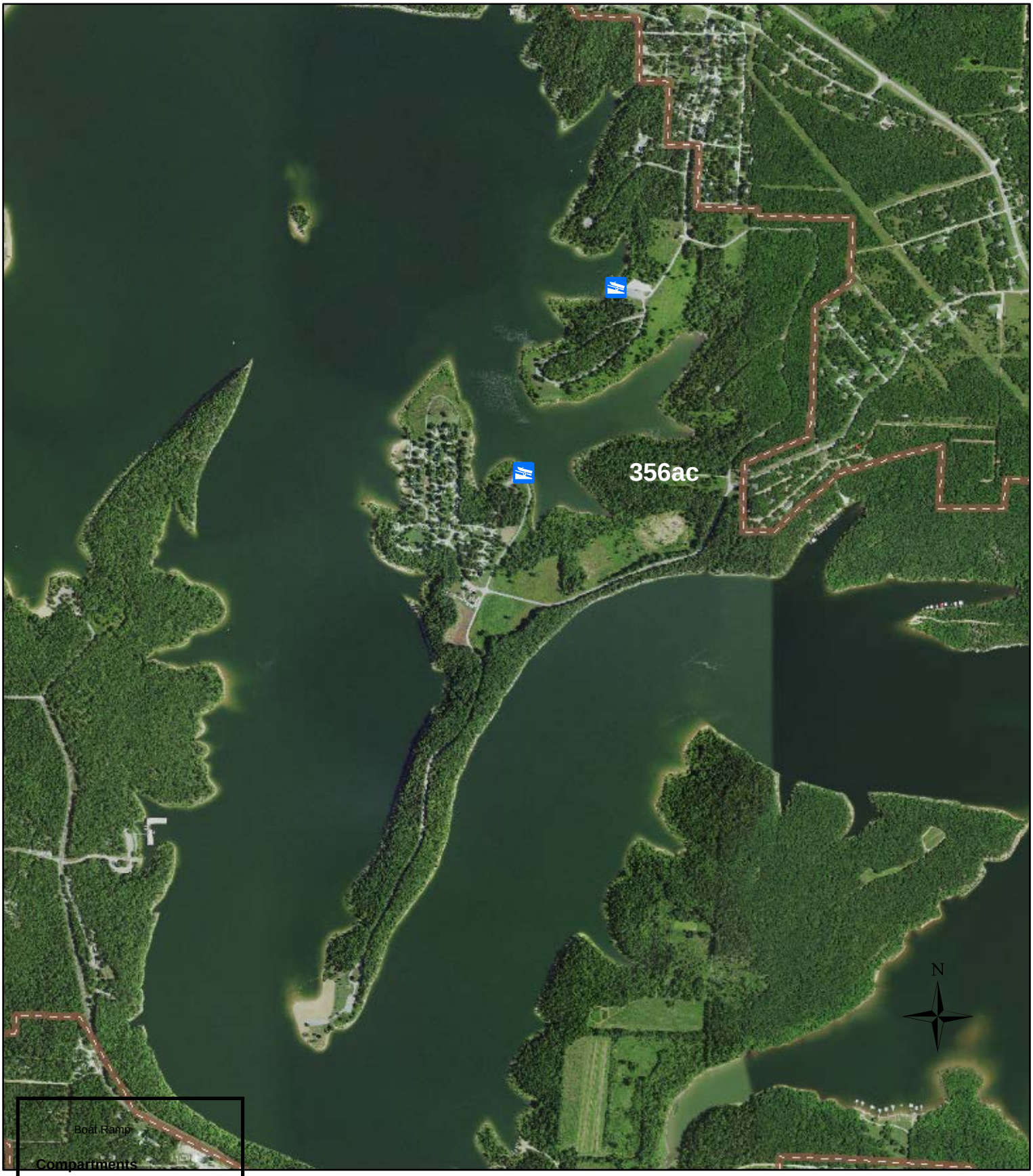


Compartments
Classification

- Project Operations
- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #3
MRML:Low Density Recreation



Boat Ramp

Compartments

Classification

Project Operations

High Denstiy Recreation

MRM:Low Density Recreation

MRM:Wildlife Management

Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #4
High Density Recreation
Pomme de Terre State Park
Hermitage Area

Marina

Boat Ramp

Compartments

Classification

Project Operations

High Denstiy Recreation

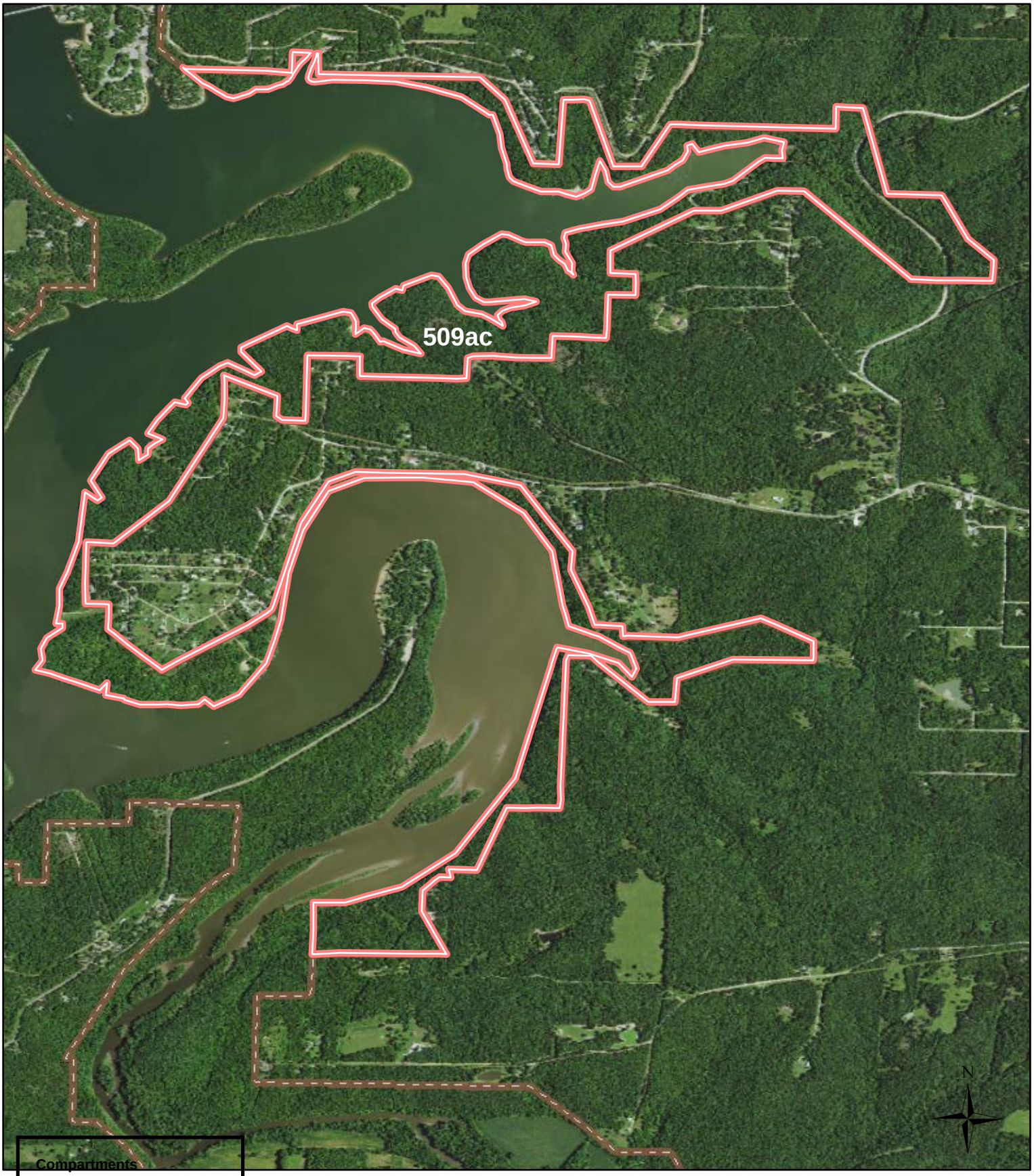
MRM:Low Density Recreation

MRM:Wildlife Management

Corps Boundary

¼ 0 ¼ Miles

Pomme de Terre
Compartment #5
High Density Recreation
Nemo Park & Marina



Compartments

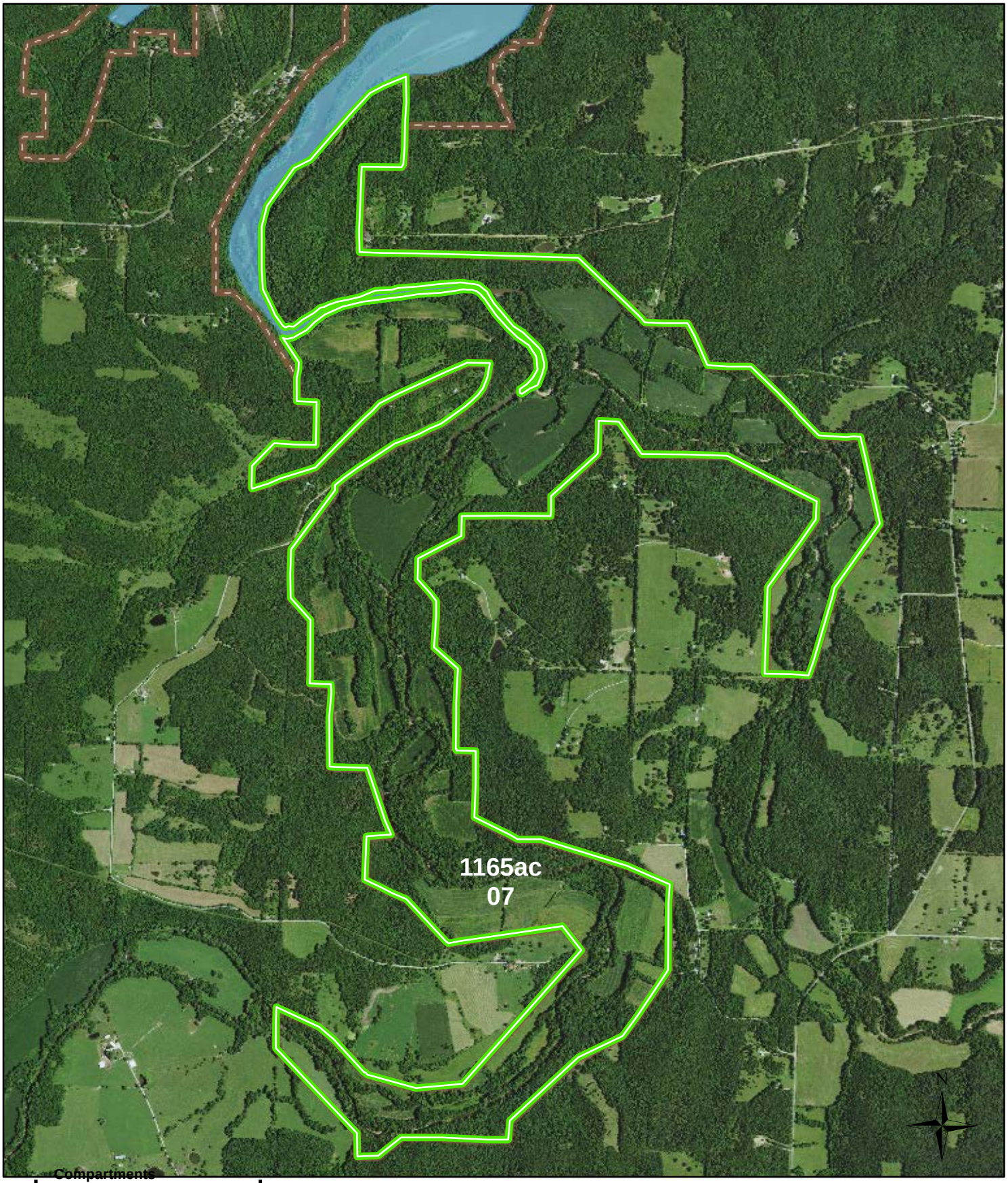
Classification

- Project Operations
- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Corps Boundary

Miles

0 ¼ ½

Pomme de Terre
Compartment #6
MRML; Low Density Recreation



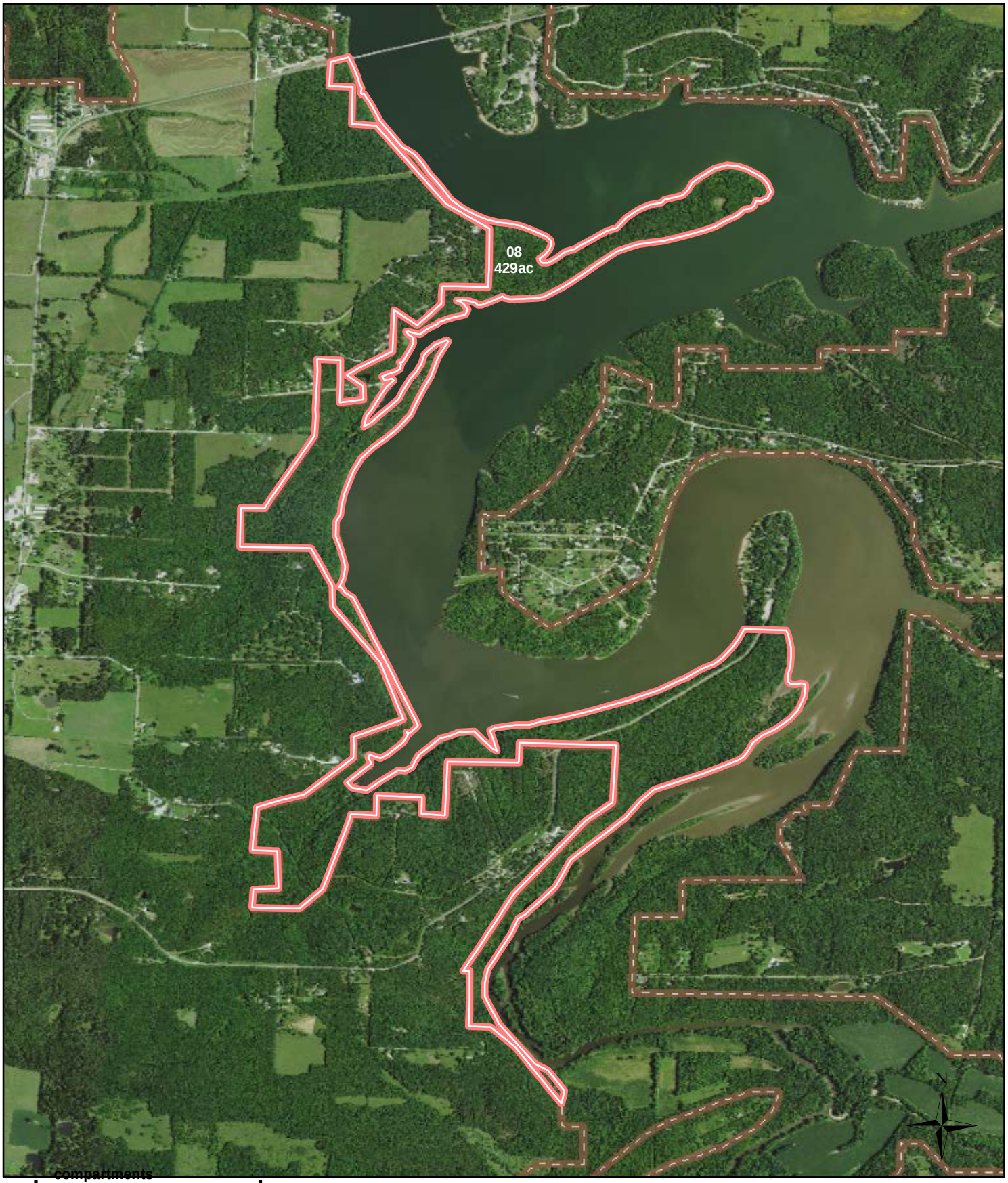
Compartments

Classification

- Project Operations
- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #7
MRML: Wildlife Management



compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #8
MRML;Low Density Recreation

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #9
High Density Recreation
Pittsburg Park

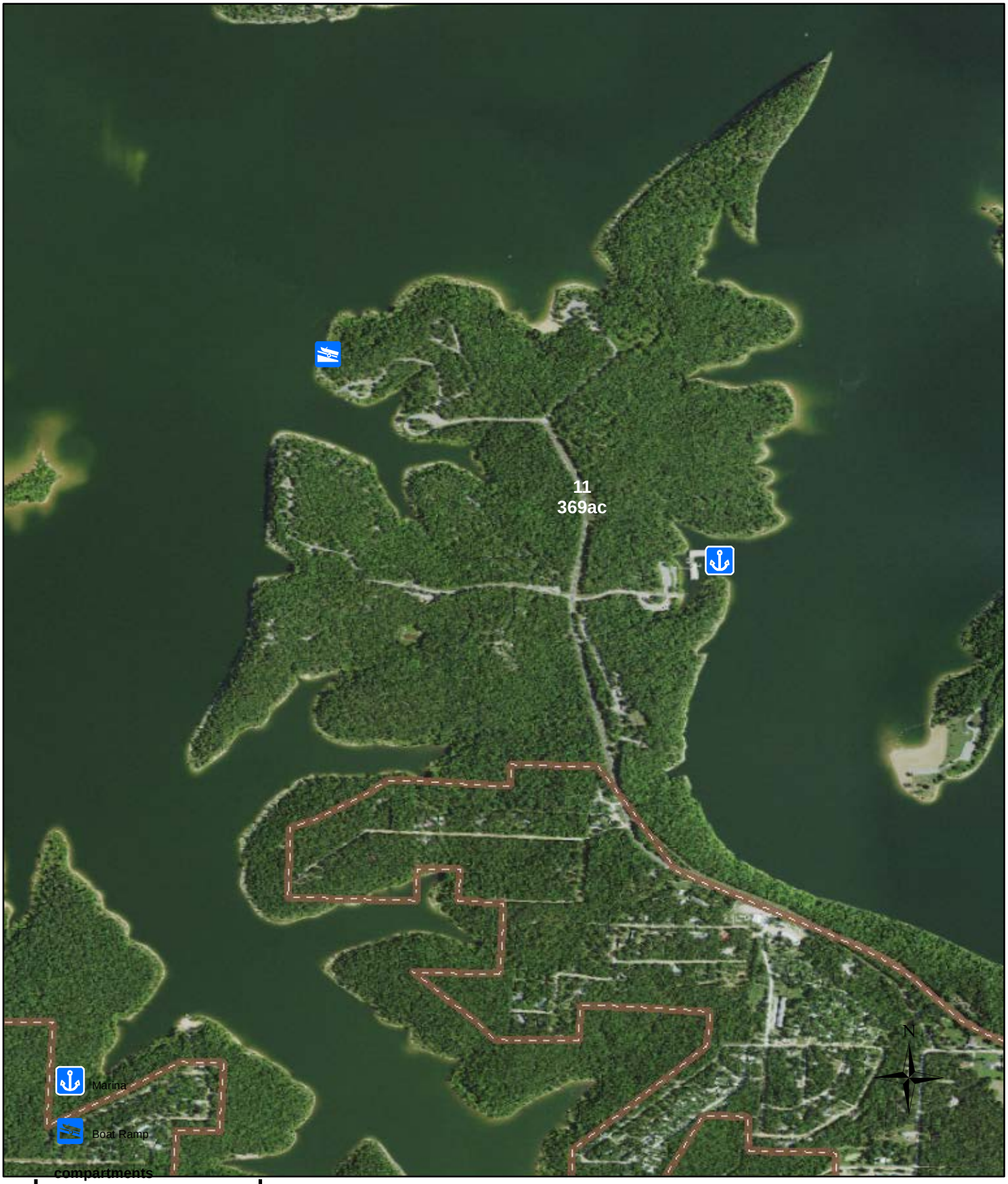
Compartments

Classification

- Project Operations
- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #10
MRML:Low Density Recreation



compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #11
High Density Recreation
Pomme de Terre State Park
Pittsburg Area

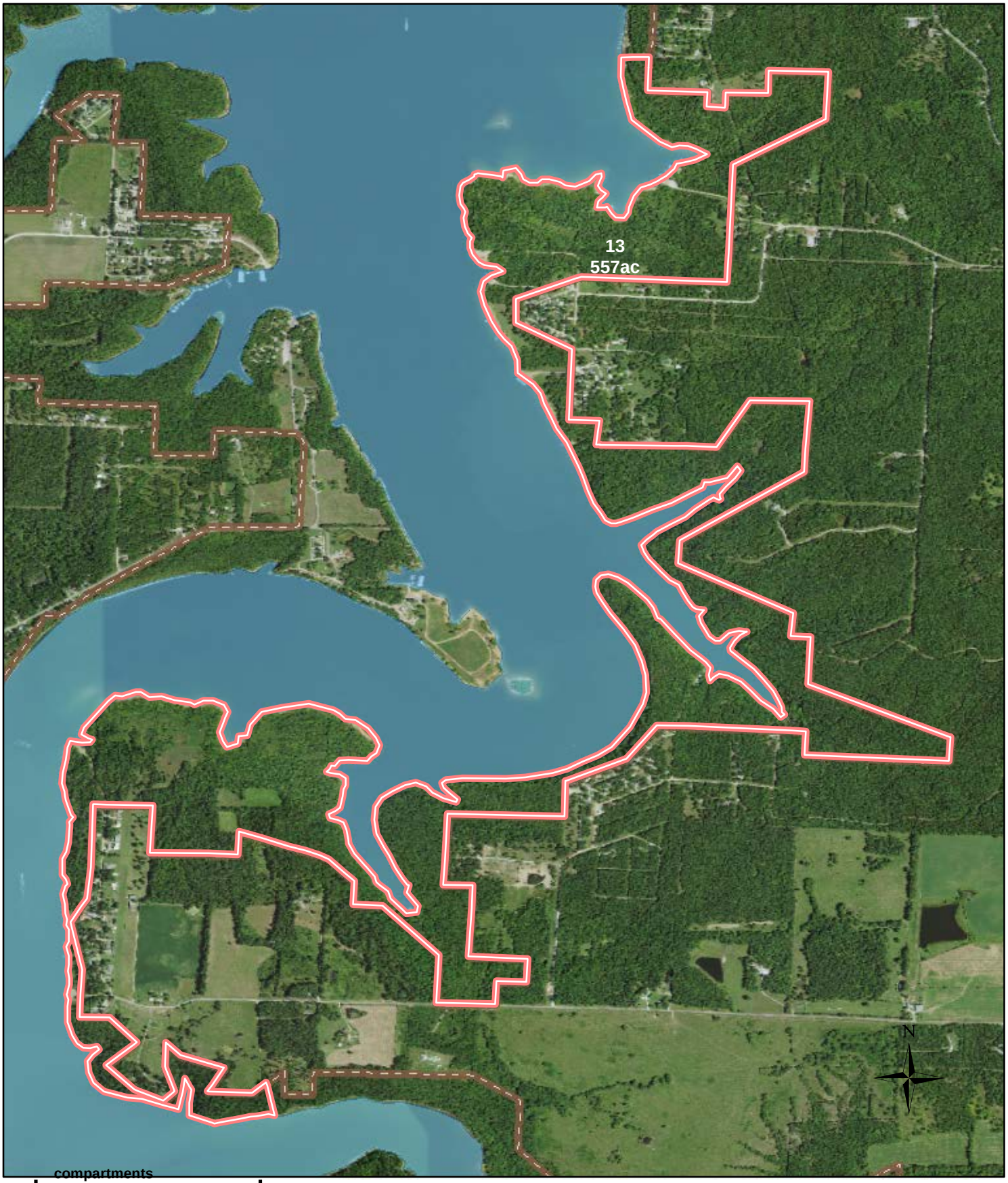
compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #12
MRML:Low Density Recreation



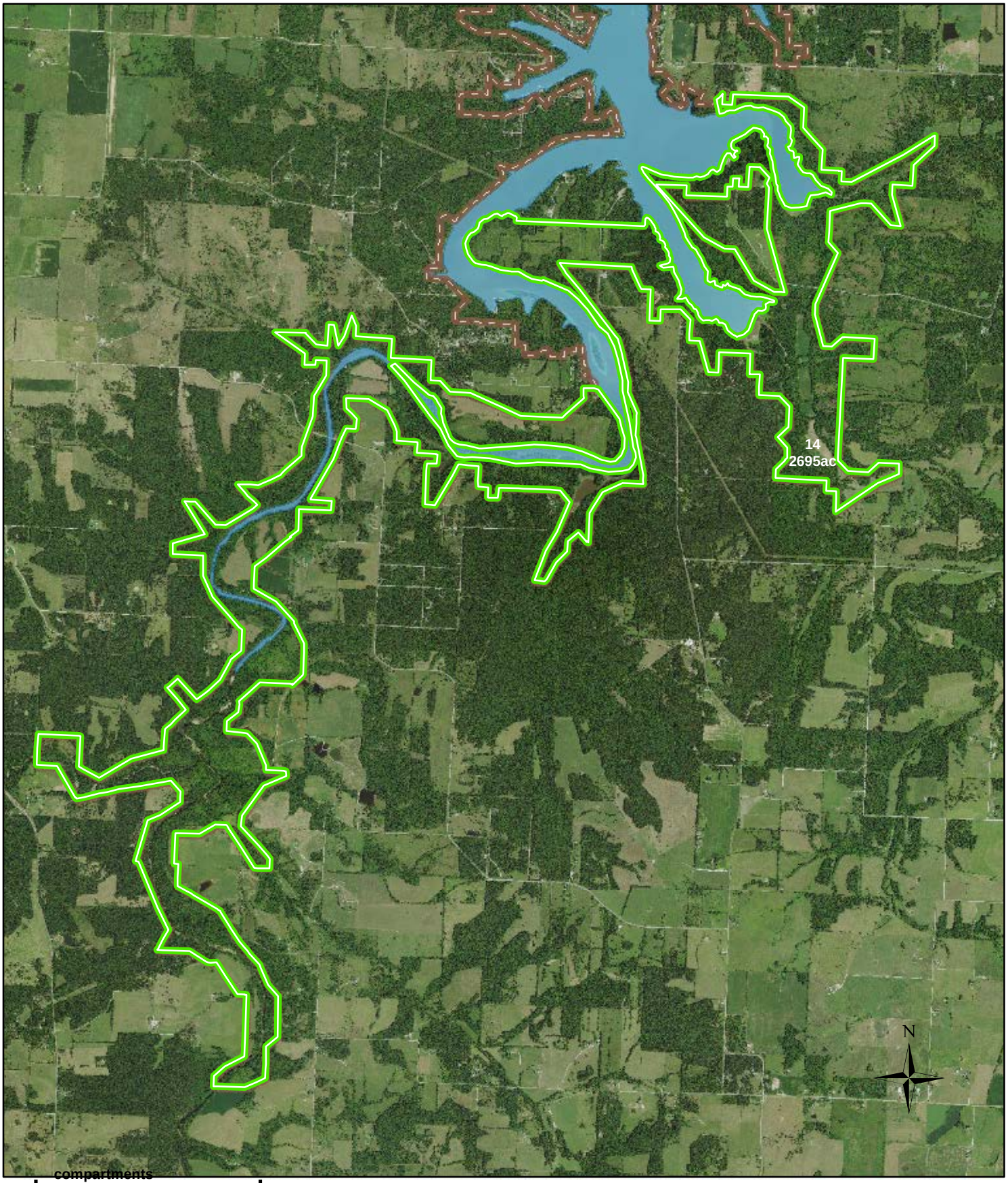
compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #13
MRML:Low Density Recreation



compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 1 2 Miles

Pomme de Terre
Compartment #14
MRML:Wildlife Management

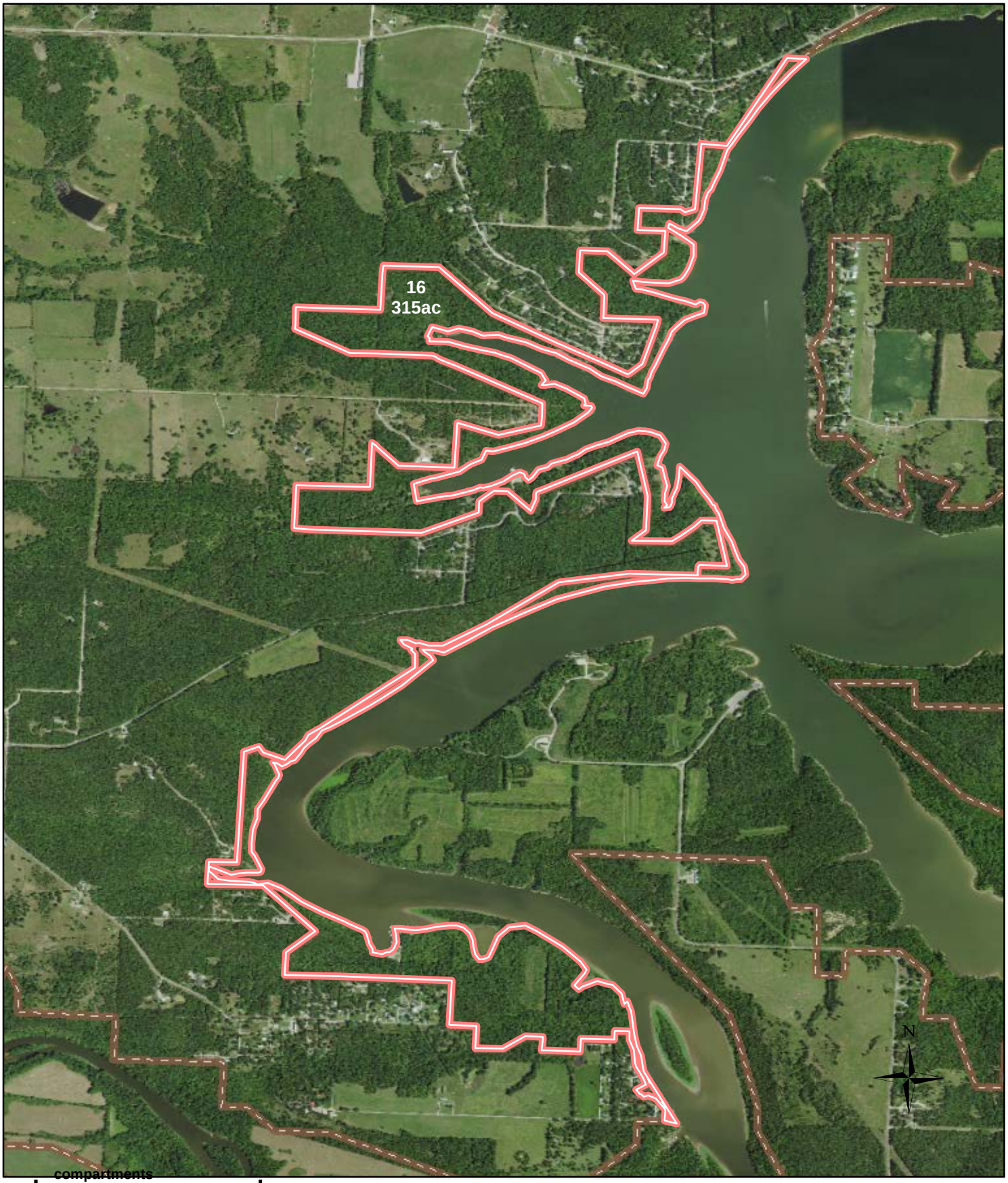
compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #15
High Density Recreation
Bolivar Park



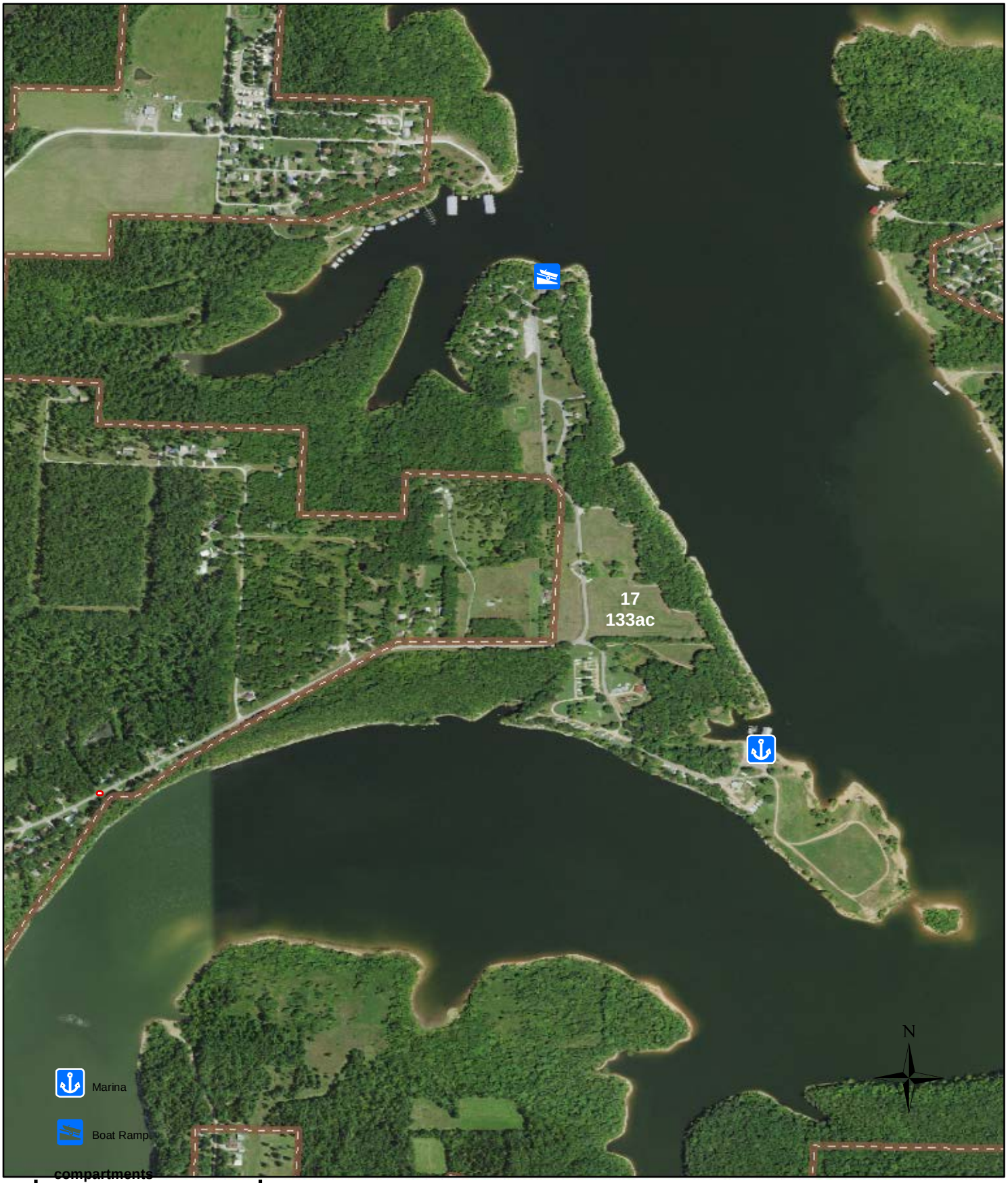
compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #16
MRML:Low Density Recreation



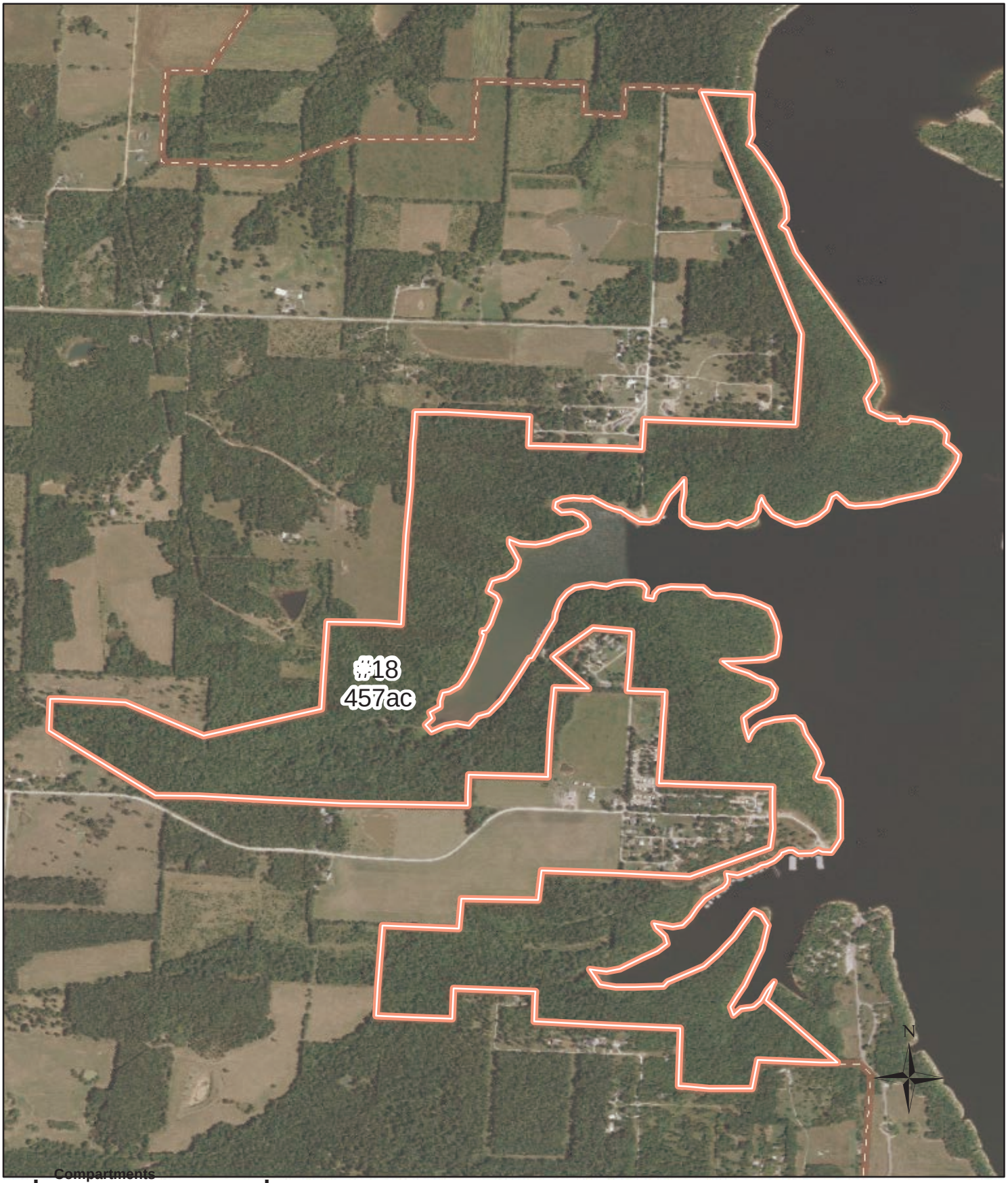
compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #17
High Density Recreation
Lightfoot Park & Marina



Compartments

Land Use Classification

- Project Operations
- High Density Recreation
- MRML:Low Density Recreation
- MRML:Wildlife Management
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #18
MRML:Low Density Recreation

compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #19
MRML:Wildlife Management

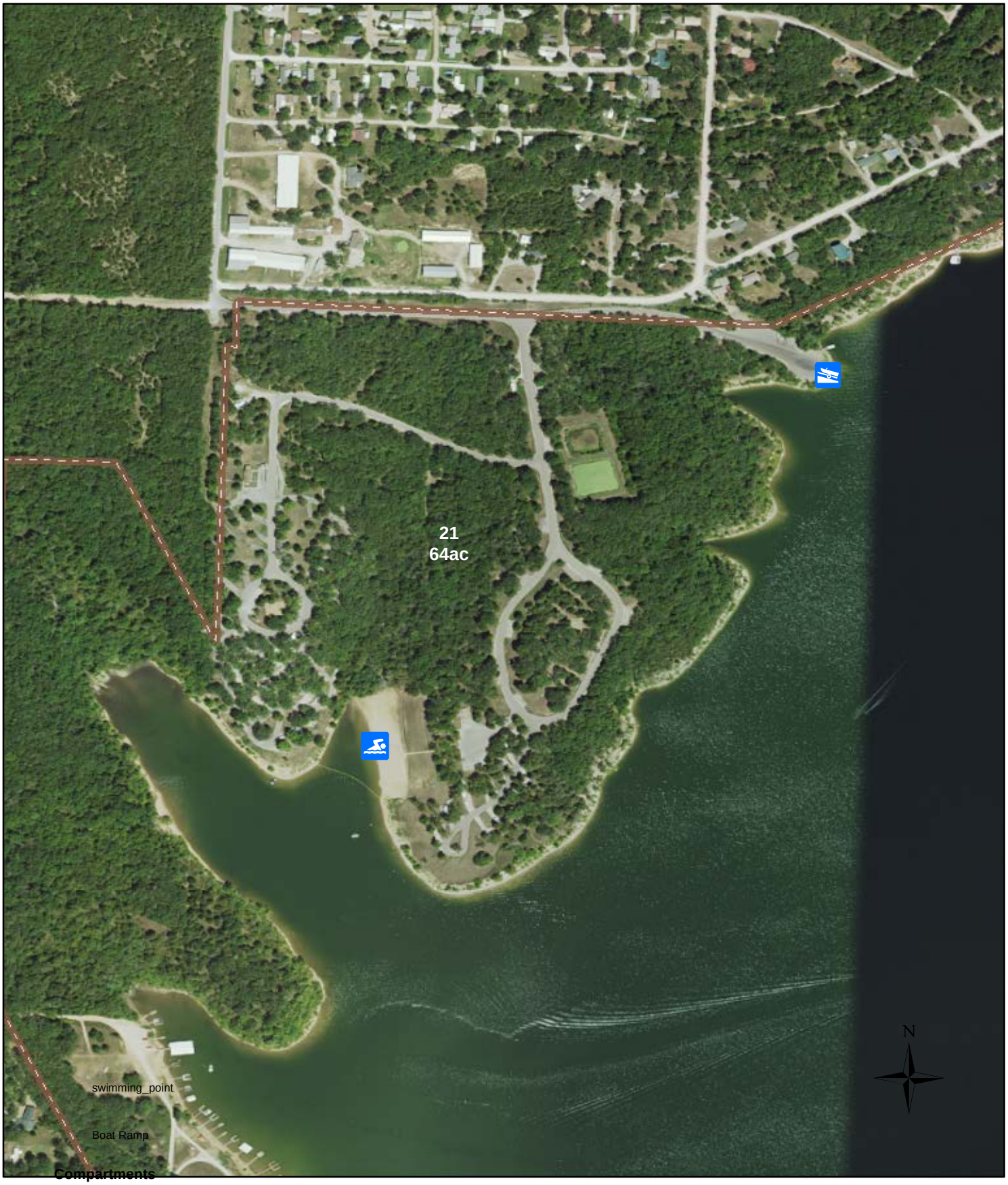
compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ Miles

Pomme de Terre
Compartment #20
MRML:Low Density Recreation



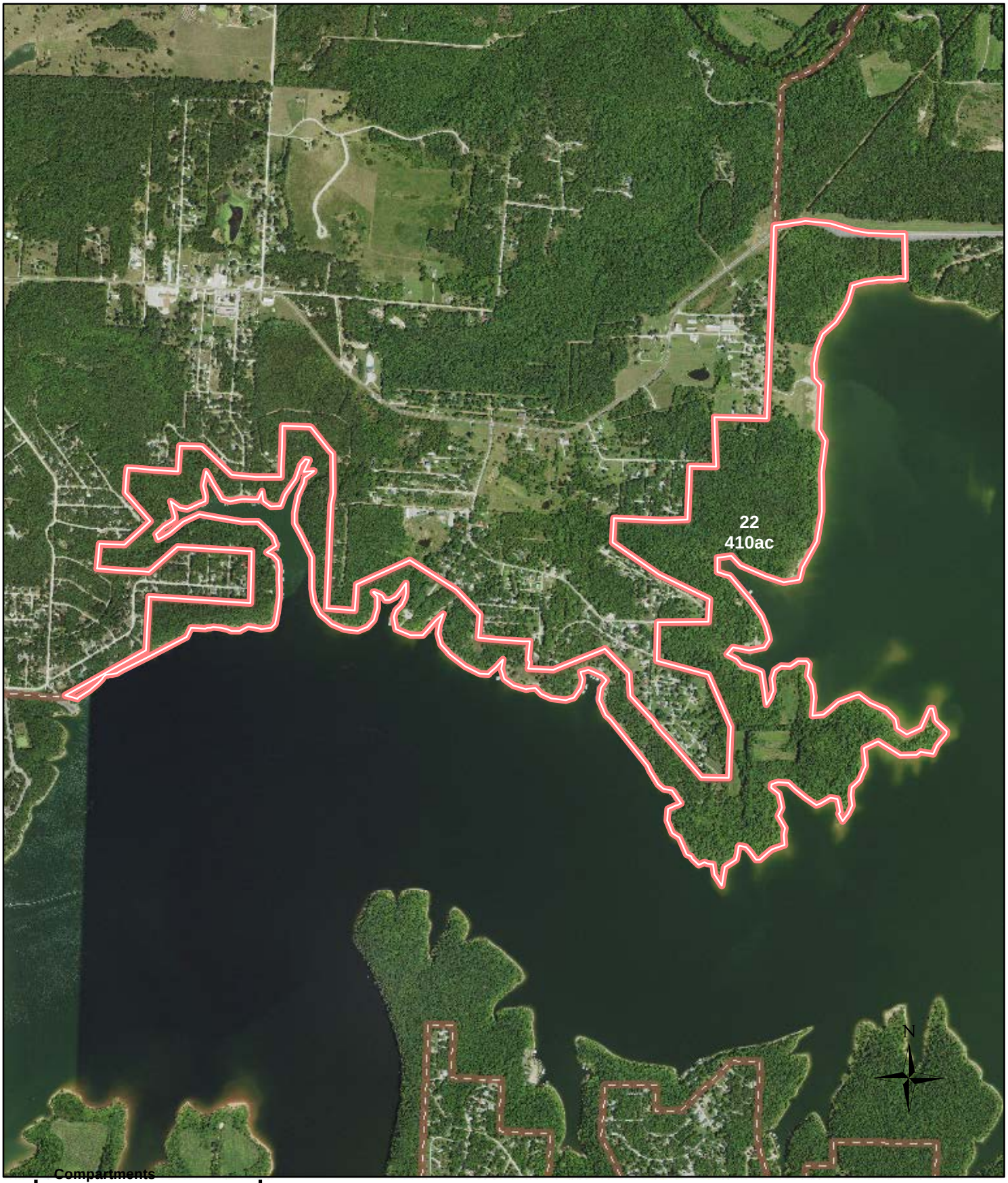
Compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ Miles

Pomme de Terre
Compartment #21
High Density Recreation
Wheatland Park



Compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ ½ ¾ 1 Miles

Pomme de Terre
Compartment #22
MRML:Low Density Recreation

compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ Miles

Pomme de Terre
Compartment #23
High Density Recreation
Quarry Point Park

compartments

Classification

- High Denstiy Recreation
- MRM:Low Density Recreation
- MRM:Wildlife Management
- Project Operations
- Corps Boundary

0 ¼ Miles

Pomme de Terre
Compartment #24
High Density Recreation
Outlet Park

Appendix E - Buoy Plan & Restricted Area Plan

Buoy placement on Pomme de Terre Lake is regulated by the Missouri State Highway Patrol, application must be made to their agency for placement and a permit received prior to placement of any buoy. Buoys are requested and maintained primarily by three different groups; 1. Public: such as dock owners or home owners associations may make a request to the MSHP. Such requests are closely inspected and are somewhat restrictive in that they must meet a very strict set of circumstances. 2. State Agencies such as the Missouri Department of Natural Resources, State Parks Division, which receives permits from MSHP for placement of buoys around their leased area (Hermitage and Pittsburg Areas of the Pomme de Terre State Park). 3. The U.S. Army Corps of Engineers has permits for approximately 32 “No Wake Idle Speed,” eight “Boats Keep Out,” and 14 “Danger” buoys. The exact number can change depending upon needs. Buoys are replaced or re-located on an “as needed” basis. Greater priority is given to “Danger” buoys due to the nature of the hazard to boaters. Conditions can make re-locating or replacing buoys difficult. Conditions such as ice, debris, high lake levels, wind, and weather may cause a delay in buoy replacement.

Restricted Area Plan

The area immediately upstream of the control tower and downstream of the outlet works is marked as “Restricted Keep Out”. The upstream area is marked with two "Boats: Keep Out" buoys set approximately 100-150 feet upstream of the control tower. The downstream/outlet area is marked with a sign on a cable that crosses the channel from rock bluff to rock bluff, giving notice of “No Wading, Swimming, or Boating Above this Point.” Buoys are not feasible in this location.

Additional Restrictions

At the swim beaches in Nemo Park & Wheatland Park there is a solid plastic pipe stretching completely across the cove at normal lake level that designates the limits of the swim beach. Approximately 60 feet to the lake side of each is a line of three “Boats: Keep Out” buoys and a land based sign on each side of the cove that reads “No Boats to the Left/Right of this Sign.”. The left/right designation depends on which side of the

cove the sign is placed. It is to prevent operation of motorized vessels close to the designated swim beaches.

Danger Buoys

Danger buoys are placed at known permanent hazards such as shallow areas that present a danger to boaters. Other hazards such as trees or hazards of a transient nature are not buoyed by the U.S. Army Corps of Engineers.

No Wake Idle Speed Buoys

In general buoys are placed around or near campgrounds where the shoreline is gentle to moderate in order to create a “No Wake” area to protect boats which are commonly moored on the shoreline. Depending upon the location and/or topography the area may be marked with a line of buoys or an entire cove may be designated as “No Wake Idle Speed.”