DRAFT
Fox Valley Lake Conservation Area

Ten-Year Management Plan
FY 2017-2026

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OVERVIEW

- **Official Area Name:** Fox Valley Lake Conservation Area, # 8004
- **Year of Initial Acquisition:** 1980
- **Acreage:** 2,159 acres
- **County:** Clark
- **Division with Administrative Responsibility:** Wildlife
- **Division with Maintenance Responsibility:** Forestry
- **Statement of Primary Purpose:**
  - **A. Strategic Direction**
    Fox Valley Lake Conservation Area (CA) has a 108-acre fishing lake and a diversity of natural communities that support an array of species. The management emphasis is to encourage healthy populations of turkey, deer, quail, and associated non-game species, while conserving and enhancing water quality, diverse natural communities (such as upland forests), and offer the public compatible outdoor recreational opportunities.
  - **B. Desired Future Condition**
    The desired future condition of Fox Valley Lake CA is reduced non-native and invasive species and improved quality of upland forests. Additional desired future conditions include enhanced forest and woodland communities, stable wooded stream corridors, and wetlands that improve water quality, while creating more public use opportunities.
  - **C. Federal Aid Statement**
    N/A

GENERAL INFORMATION AND CONDITIONS

I. <u>Special Considerations</u>

A. Priority Areas: None

B. Natural Areas: None

II. <u>Important Natural Features and Resources</u>

A. Species of Conservation Concern: Species of conservation concern are known from this area. Area managers should consult the Natural Heritage Database annually and review all management activities with the natural history biologist.

B. Caves: None

C. Springs: None

III. Existing Infrastructure

- Ten parking lots (Americans with Disabilities Act [ADA] accessible)
- Unmanned rifle and archery range
- Wetland unit with a concrete water control structure
- Concrete boat ramp
- Fishing dock (ADA accessible)
- Three pit toilets (two are ADA accessible)
- Picnic pavilion and campground with six gravel pads
- Four ponds with fish, including 108-acre Fox Valley Lake and 1-acre, 0.6-acre, and 0.5-acre ponds
- Six fishless ponds (total of 4 acres)

IV. Area Restrictions or Limitations

A. Deed Restrictions or Ownership Considerations: None

B. Federal Interest: Federal funds may be used in the management of this land. Fish and wildlife agencies may not allow recreational activities and related facilities that would interfere with the purpose for which the State is managing the land. Other uses may be acceptable and must be assessed in each specific situation.

C. Easements: Utility easements

D. Cultural Resources Findings: No known cultural resources.

E. Endangered Species: Endangered species are known from this area. Area managers should consult the Natural Heritage Database annually and review all management activities with the natural history biologist.

F. Boundary Issues: None

MANAGEMENT CONSIDERATIONS

V. Terrestrial Resource Management Considerations

Challenges and Opportunities:

1) The open land portions of Fox Valley Lake CA are fertile and some provide the opportunity to produce annual crops. Cropping on the area is used to supplement natural food supplies and to provide cover for wildlife to both sustain and, in some cases, attract wildlife, creating more hunting and viewing opportunities for area users. Cropping is also used to set back succession and make areas attractive for ground-nesting birds during idle years.
2) Eradicating invasive species continues to be a challenge in the open land areas. Fescue tends to invade on richer upland sites and reed canary grass

encroaches in the bottomland. Some teasel has been found along the roadside on the southern portion of the area.

3) Old fields contain an array of plant species, ranging from annual weeds to grassy fields heavily invaded by shrubs and young trees. Some fields have remnant stands of native grass and forbs, while others have been planted to warm-season grass. Old fields are managed to provide nesting, brood rearing, food, and escape cover for a variety of upland wildlife.
4) A 20-acre remnant prairie (Fox Valley Lake Prairie) is located on the north side of the area. Although the majority of this prairie was likely farmed in the past, it has been recolonized by a moderate diversity of prairie grasses and wildflowers. Management in recent years, including prescribed burns and overseeding with forbs, has been directed at improving the quality and diversity of the prairie. Additionally, there are opportunities to restore prairie vegetation in more visible locations on the area, improving aesthetics, wildlife habitat, and educational opportunities.
5) For management purposes, the woodland communities on Fox Valley Lake CA are split into two compartments. Compartment 1 is the wooded land on the Fox Valley Lake Tract. Compartment 2 is the wooded lands on the Shooting Range Tract and the Woodruff Tract. The forest and woodland resources were last inventoried on Compartment 1 in 2006; while Compartment 2 was last inventoried in 2014.
6) Compartment 1 received a combination of tree harvest and tree thinning applications along with prescribed burning in the woodlands along the north side of the lake. Approximately 600 acres of active forest and woodland management has been conducted between 2007 and 2010. This has included a combination of even-aged and uneven-aged woodland management. These actively managed areas responded with an increased growth of understory plants, increased early successional woodland habitat, and improved tree health and growth.
7) Compartment 2 has lacked the necessary management to sustain forest health. Improving these communities will present some challenges, but also offer opportunities to demonstrate sustainable forest and woodland management. A lack of light penetration through the dense tree canopy has had a significant negative impact on understory plant diversity. Current management plans will open much of the dense canopy and improve forest and woodland health.

Management Objective 1: Provide food and cover for wildlife, and maintain early successional vegetation.

> **Strategy 1:** Use permittee farmers and area staff to plant annual crops and of food plots annually. (Wildlife)

Strategy 2: Manage old fields by burning, disking, spraying, and mowing to combat invading woody plants and to encourage native grass and forbs. (Wildlife)
Strategy 3: Incorporate wildlife friendly cover crops into the permittee crop system. (Wildlife)
Strategy 4: Establish field borders by edge feathering, herbicide application, and/or planting grass/legume borders to create nesting and brood-rearing cover. (Wildlife)

Management Objective 2: Reduce invasive species.
Strategy 1: Reduce reed canary grass, fescue, teasel, and sericea lespedeza by increasing the frequency of herbicide treatments. Staff should take extra care to clean mower decks so invasive species are not moved around the area or to other conservation areas. (Wildlife)
Strategy 2: Monitor habitats for other invasive species and treat them if/when they appear. (Wildlife)

Management Objective 3: Increase and enhance prairie and savanna communities on the area where opportunities exist.
Strategy 1: Manage the existing prairie using fire, overseeding with native species, and herbicide treatments to increase species diversity and habitat value, while suppressing invasive species. (Wildlife)
Strategy 2: Evaluate opportunities to expand the prairie by restoring adjoining acreage and open lands currently used for cropping. (Wildlife)
Strategy 3: Establish approximately 6 acres of diverse prairie plantings along the primary entrance on the Fox Valley Lake Tract in FY 2018-2020. (Wildlife)

Management Objective 4: Implement management to provide habitat for species of conservation concern.
Strategy 1: Monitor for listed species every 10 years, or more often, as needed. (Wildlife)
Strategy 2: Implement woodland and riparian best management practices specifically to benefit species of conservation concern. (Wildlife)

Management Objective 5: Continue to improve the health of forest and woodland communities to benefit wildlife and increase diversity of natural communities.
Strategy 1: Prepare 332 acres of Compartment 2 for timber harvest according to the 2014 forest inventory. (Forestry)

Strategy 2: Perform 174 acres of forest thinning in Compartment 2 (FY2018). (Forestry)
Strategy 3: Conduct the Compartment 2 timber sale and conclude these harvests with post-harvest forest and woodland thinning (FY2016-2018). (Forestry)
Strategy 4: Conduct inventory on Compartment 1 (FY2020). (Forestry)
Strategy 5: Implement a prescribed burn regime on woodland stands with a target of applying fire every two to three years. (Wildlife, Forestry)

Management Objective 6: Educate area users about the benefits of healthy forest and woodland management.

Strategy 1: Offer educational opportunities to Missouri Department of Conservation (Department) staff that are unfamiliar with forest and woodland management so they can confidently address area user questions. (Forestry)
Strategy 2: Post "Healthy Woods" signs adjacent to actively managed forest and woodland areas. (Forestry)
Strategy 3: Post general information on the Atlas Database about when and where to expect active forest and woodland management. (Forestry)
Strategy 4: Post general information on bulletin boards about why active forest and woodland management benefits conservation areas. (Forestry)

VI. Aquatic Resource Management Considerations

Challenges and Opportunities:

1) There is one 15-acre, constructed wetland on Fox Valley Lake CA. Current area boundaries leave little room for additional wetland construction.
2) Fox Valley Lake provides the most important fishing resource on the area. Although dam construction and basin clearing began in 1983, the lake did not reach full pool until 1990 due to staged filling and persistent drought. To allow for staged filling and partial drawdowns, gate valves at depths of 4 and 8 feet below full pool were incorporated into the spillway. Fish stocking began in 1985 and the lake opened for fishing in January 1987. A creel survey conducted during the first three years of fishing indicated that 37 percent of the anglers were Missouri residents and 63 percent were nonresidents. Since the early 1990s, the lake has been dominated by a high density, slow-growing largemouth bass population. Efforts to reduce this population have included liberalized harvest regulations and summer drawdowns. However, these efforts have been unsuccessful in reducing

abundance or increasing growth rates of largemouth bass. Lack of harvest and fishing effort due to the remote location is believed to be the main cause of the high-density largemouth bass population. One positive result of the high-density bass population is robust populations of bluegill and redear sunfish. These species provide important angling opportunities. Water quality in the lake remains good. The lake is classified as mesotrophic, which indicates moderate concentrations of nutrients. Few nutrients and a mostly-forested watershed result in moderately clear water throughout most years. While picturesque, clear water and moderate concentrations of nutrients may also be hampering growth of largemouth bass.

3) There are 10 ponds on Fox Valley Lake CA, nine of which are on the Woodruff Tract. Only four of the ponds are known to contain fish. The remaining six provide fish-free habitat for reptiles and amphibians and serve as wildlife-watering holes.
4) The Fox Valley Lake Tract has approximately 1 mile of Fox River frontage. The Woodruff Tract borders or contains approximately 0.5 miles of frontage along Linn Creek, a tributary to the Little Fox River, and another 0.5 miles of frontage along two small tributaries to Linn Creek. The Shooting Range Tract contains 0.1 miles of frontage of another unnamed tributary to the Little Fox River. Fox Valley Lake also flows into the Fox River through a short tributary. The majority of streams within the Fox River basin, including Fox River, are degraded and characterized by shifting sand and silt beds, shallow water with occasional deep pools, and tall eroding banks.

Management Objective 1: Manage the existing wetland unit as a seasonally flooded herbaceous wetland.

Strategy 1: Provide habitat for migratory birds and resident wetland wildlife using management techniques including but not limited to burning, disking, mowing, cropping, and water level manipulations. (Wildlife)

Strategy 2: Explore feasibility of providing a dependable water source for wetland flooding by burying a waterline from the lake to the wetland unit allowing lake water to be used to fill the wetland. Water will not be withdrawn if the water elevation of the lake is 4 feet below full pool (FY2018). (Wildlife)

Management Objective 2: Maintain largemouth bass abundance and size structure with a moderate density of stock-size bass.

Strategy 1: Encourage harvest of small bass with the appropriate signing. (Fisheries)

Strategy 2: Control excessive aquatic plants chemically or biologically to promote efficient foraging by largemouth bass. (Fisheries)

Management Objective 3: Maintain bluegill abundance and size structure with a moderate density.

Strategy 1: Implement strategies under Management Objective 2 to maintain adequate predatory control on bluegill. (Fisheries)

Management Objective 4: Maintain black crappie population size structure.

Strategy 1: Maintain moderate density of largemouth bass to exert predatory control over small crappie to prevent overpopulation. (Fisheries)

Strategy 2: Encourage anglers to harvest crappie up to their daily limit of 30. (Fisheries)

Management Objective 5: Maintain a channel catfish size structure.

Strategy 1: Maintain annual fall channel catfish stocking rate of five per acre. (Fisheries)

Management Objective 6: Through both active and passive management, maintain the four pond fisheries that provide angling opportunities for area users.

Strategy 1: Reduce aquatic plant populations through chemical or biological treatment where necessary. (Fisheries)

Strategy 2: Maintain good water quality and clarity by protecting a 100-foot wooded or grassed corridor around each pond. (Fisheries)

Management Objective 7: Provide suitable habitat for amphibians and reptiles in ponds with no fisheries management potential.

Strategy 1: Do not stock ponds that provide no long-term fisheries management options. (Fisheries)

Strategy 2: Maintain good water quality and clarity by protecting a 100-foot wooded or grassed corridor around each pond. (Fisheries, Wildlife)

Management Objective 8: Establish or maintain a forested corridor along all streams on the area.

Strategy 1: Maintain a forested corridor through natural regeneration or planting. A minimum width of 200 feet from top of bank should be

maintained along the Fox River. A minimum width of 100 feet from top of bank along other streams on the area should be maintained, where not limited by area boundary, access road, parking lot, or utility easement. Where access roads or parking lots are in the stream corridor, they should be relocated outside of the corridor if feasible. (Forestry, Wildlife)

Strategy 2: Inspect riparian corridors along all agricultural fields, including old fields, every three years, to determine the need for field adjustments. (Wildlife)

Strategy 3: All management activities on Fox Valley Lake CA should follow the *Watershed and Stream Management Guidelines for Lands and Waters Managed by the Missouri Department of Conservation* (Missouri Department of Conservation, 2009). Any stream crossings or riparian corridors not meeting these standards will be corrected by as soon as budget restrictions allow. (Wildlife)

Management Objective 9: Release water from Fox Valley Lake to augment flows in Fox River.

Strategy 1: Release between 0.5 and 0.7 cubic feet per second from Fox Valley Lake between July 1 and Oct. 1, when the Fox River discharge is less than the median monthly discharge and lake levels are adequate for supporting flow augmentation. Lake water level should not be lowered below the 4-foot deep control valve. (Fisheries)

VII. <u>Public Use Management Considerations</u>

Challenges and Opportunities:

1) Fox Valley Lake CA offers numerous public use opportunities, including fishing, hunting, target shooting, camping, and picnicking. Hunting is one of the main reasons many people visit the area in the fall. The area attracts hunters from all over the Midwest during the archery and firearms deer seasons. Spring and fall turkey seasons also attract hunters to the area with good numbers of turkeys present. Waterfowl hunting is available on the wetland unit during wet years. Small game hunting opportunities exist for squirrels, quail, rabbits, and pheasants. Fox Valley Lake provides the area's most important fishing resource and will be managed to provide quality fishing for largemouth bass, bluegill, black crappie, and channel catfish.
2) Primitive camping is permitted on all graveled parking areas, except the rifle shooting range parking lot. The six-pad gravel campground provides additional camping opportunities that are in close proximity to the lake.

Pack-in camping is allowed anytime except during firearms deer and turkey seasons. Potable water is available along the area road near the campground.

3) A large pavilion with tables and a large grill is located adjacent to the lake dam, allowing a scenic view of the lake and offering picnic opportunities in a picturesque setting.

Management Objective 1: Provide quality hunting for squirrels, quail, pheasants, deer, and turkey. Manage for a variety of small game species and waterfowl, where appropriate habitat exists.

Strategy 1: Manage the area's diverse habitats for a variety of wildlife species. (Wildlife)

Management Objective 2: Provide target-shooting opportunities to area users.

Strategy 1: Maintain the firearms range at its current level with possible additions as appropriate. (Wildlife, Forestry)

Strategy 2: Maintain the archery range at its current level. (Wildlife)

Management Objective 3: Provide designated basic camping and picnic areas.

Strategy 1: Maintain parking lots and access points around the lake in an aesthetically pleasing level year-round and maintain the more remote parking lots that are used for hunting at a lower maintenance level. Prior to hunting seasons, mow these areas so they are user-friendly and aesthetically pleasing. (Forestry)

VIII. <u>Administrative Considerations</u>

Challenges and Opportunities:

1) The rifle range has been a popular site for public recreation since its construction in the 1980s. Maintaining safety for the public users and the surrounding community continues to be a priority.

Management Objective 1: Update range according to the *2013 Shooting Range Facility Program Manual* (Missouri Department of Conservation, 2013).

Strategy 1: Backstop height and side berms will be evaluated and recommendation forwarded through normal budget processes and upgrades will be completed as budget restrictions allow. (Outreach and Education, Design and Development)

Management Objective 2: Explore the opportunities for adding a trap range and possibly relocating the rifle range.

Strategy 1: If acquisition opportunity arises, consider purchasing adjacent land that would allow the range to be moved into a forested setting. The old site could potentially be converted to a trap range. (Wildlife)

MANAGEMENT TIMETABLE

All strategies are considered ongoing unless listed in the following table:

	FY17	**FY18**	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**
Terrestrial Resource Management Considerations										
Objective 3										
Strategy 3		X	X	X						
Objective 5										
Strategy 2		X								
Strategy 3	X	X								
Strategy 4				X						
Aquatic Resource Management Considerations										
Objective 1										
Strategy 2		X								
Objective 8										
Strategy 2	X			X			X			X

APPENDICES

Area Background:
The Fox Valley Lake CA consists of three separate tracts. The Lake Tract is 1,111 acres. A second tract has a firearms and archery range and is 137 acres in size. The southern tract, locally known as the Woodruff Tract, is 911 acres, bringing the total area size to 2,159 acres.

Historical land use patterns in northeast Missouri, including the area that is now Fox Valley Lake Conservation Area (CA), are those of intense land use with little regard for conservation. Clark County's rich soils were heavily exploited near the end of the 1800s and early 1900s, destroying or degrading expanses of forest, prairies, and many riparian areas. Much of the remaining forest was greatly overharvested to provide mine props for the coal mining industry and railroad ties for a widely expanding railroad system throughout Missouri. Many acres were cleared and converted to crop and then intensively farmed. Most of those productive prairie acres are considered the most valuable land in the county and are still in row crop production.

In the late 1970s and early 1980s the Missouri Department of Conservation was looking for suitable lake sites, with the goal of having one lake in every county. Another nearby conservation area, named Charlie Heath Memorial CA, was being considered as a site. The namesake's family had donated 120 acres of land after Mr. Heath's death and hoped that a lake would be built. Core samples were taken and the site was found to be unfit for a large lake.

A site was found in Clark County northwest of Kahoka, Missouri, about 6 miles from the unsuitable site on Charlie Heath Memorial CA. In 1977, the Department purchased all of Consolidated Packaging Corporation's (formerly known as Crandon's Pulp and Paper Company) holdings in Clark County. This land was spread over several tracts throughout Clark County, some of which is part of Fox Valley Lake CA. Additional land was needed for the lake and the conservation area. On March 6, 1981, the Department purchased an additional 710 acres in four tracts. In August 1983, construction of the dam began. On Nov. 9, 1984 the lake valve was closed and the lake began to fill. The lake was opened for fishing Jan. 1, 1987. On Nov. 23, 1990 another 590 acres were added providing access to a land-locked portion of the paper company purchase. This separate, but nearby, tract was considered part of Fox Valley Lake CA.

Current Land and Water Types:

Land/Water Type	Acres	Miles	% of Area
Forest and Woodland	1,295		60
Old Field	447		21
Open Land	200		9
Lakes/Ponds	110		5
Grassland	91		4
Wetland	13		<1
Infrastructure	3		<1
Total	**2,159**		**100**
Stream Frontage (Fox River and Linn Creek)		1.5	

References:

Missouri Department of Conservation. (2009). *Watershed and stream management guidelines for lands and waters managed by Missouri Department of Conservation*. Jefferson City, MO: Missouri Department of Conservation.

Missouri Department of Conservation. (2013). *Shooting range facility program manual*. Missouri Department of Conservation.

Maps:

Figure 1: Area Map
Figure 2: Compartment Map
Figure 3: Landcover Map
Figure 4: Prairie and Prairie Plantings Map
Figure 5: Presettlement Prairie Map
Figure 6: Easement Map

Figure 1: Area Map

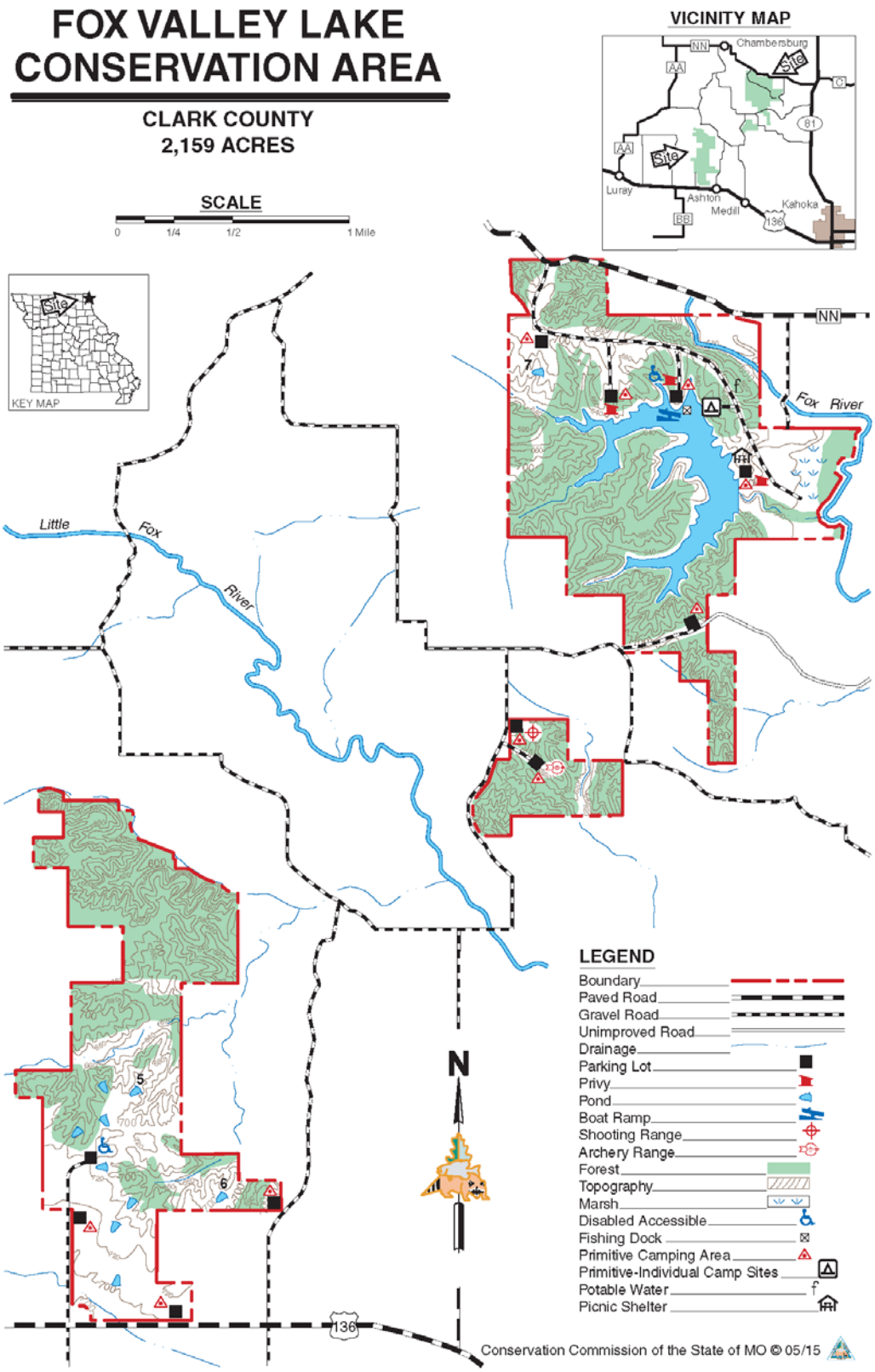


Figure 2: Compartment Map

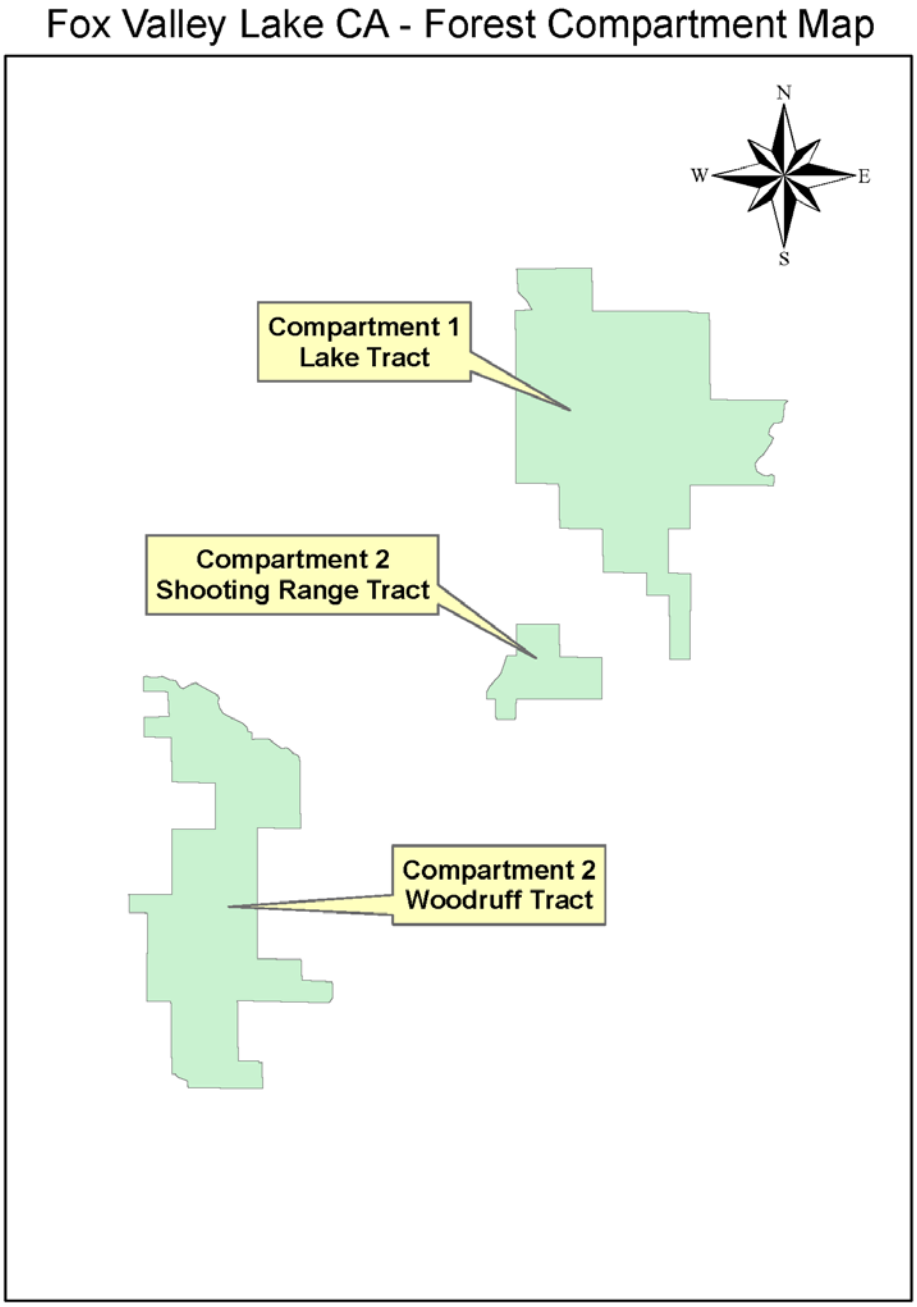


Figure 3: Landcover Map

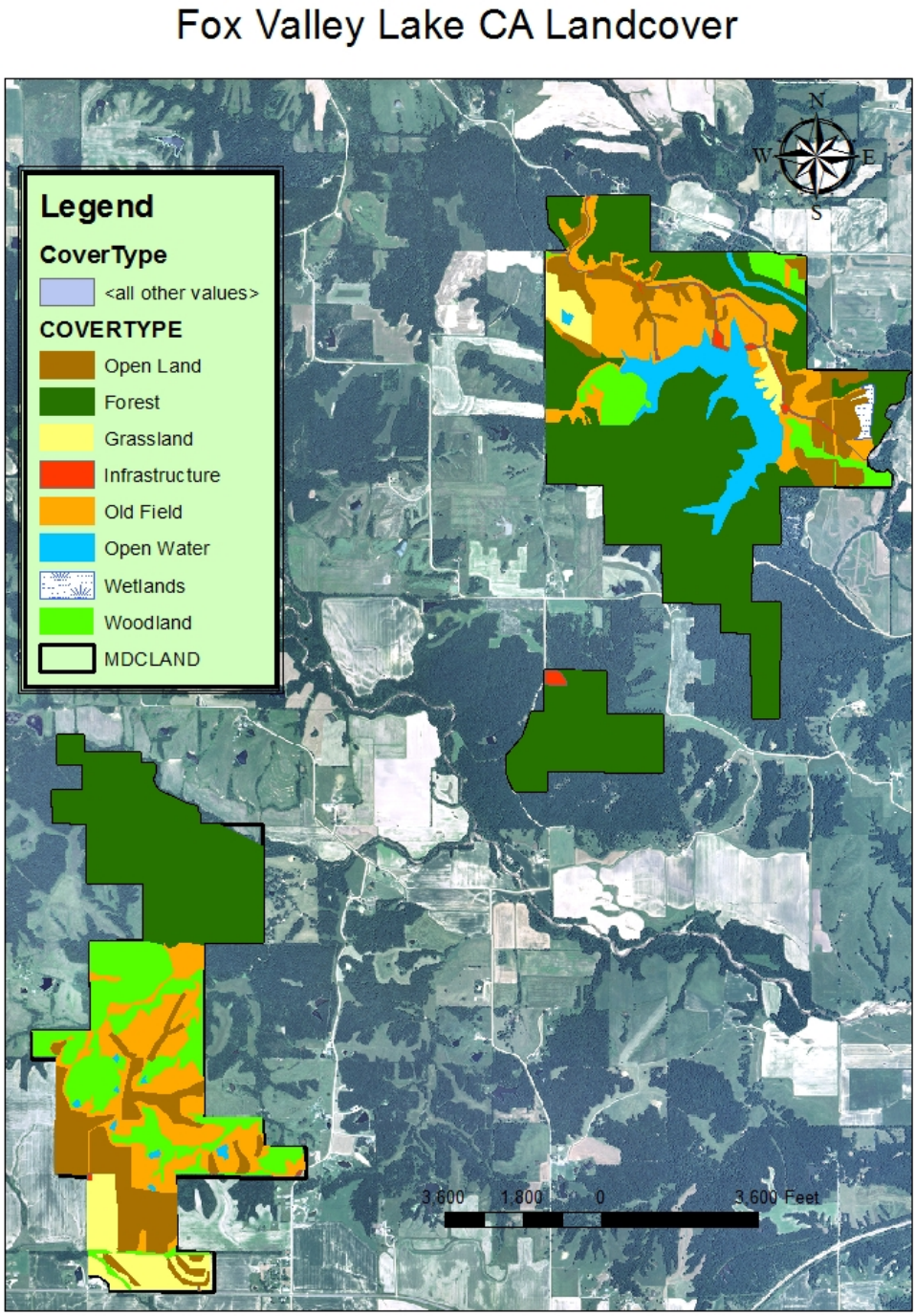


Figure 4: Prairie and Prairie Plantings Map

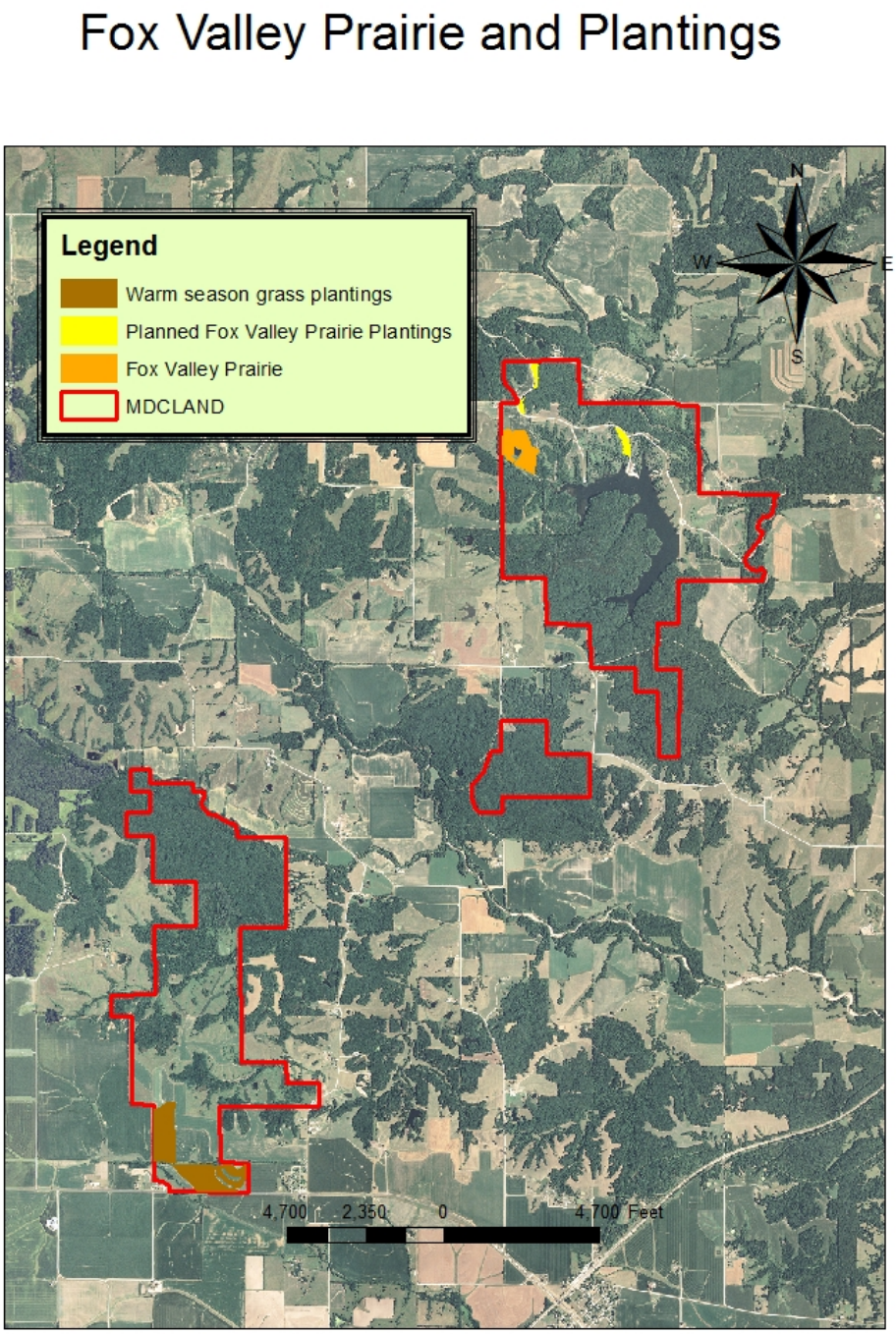


Figure 5: Presettlement Prairie Map

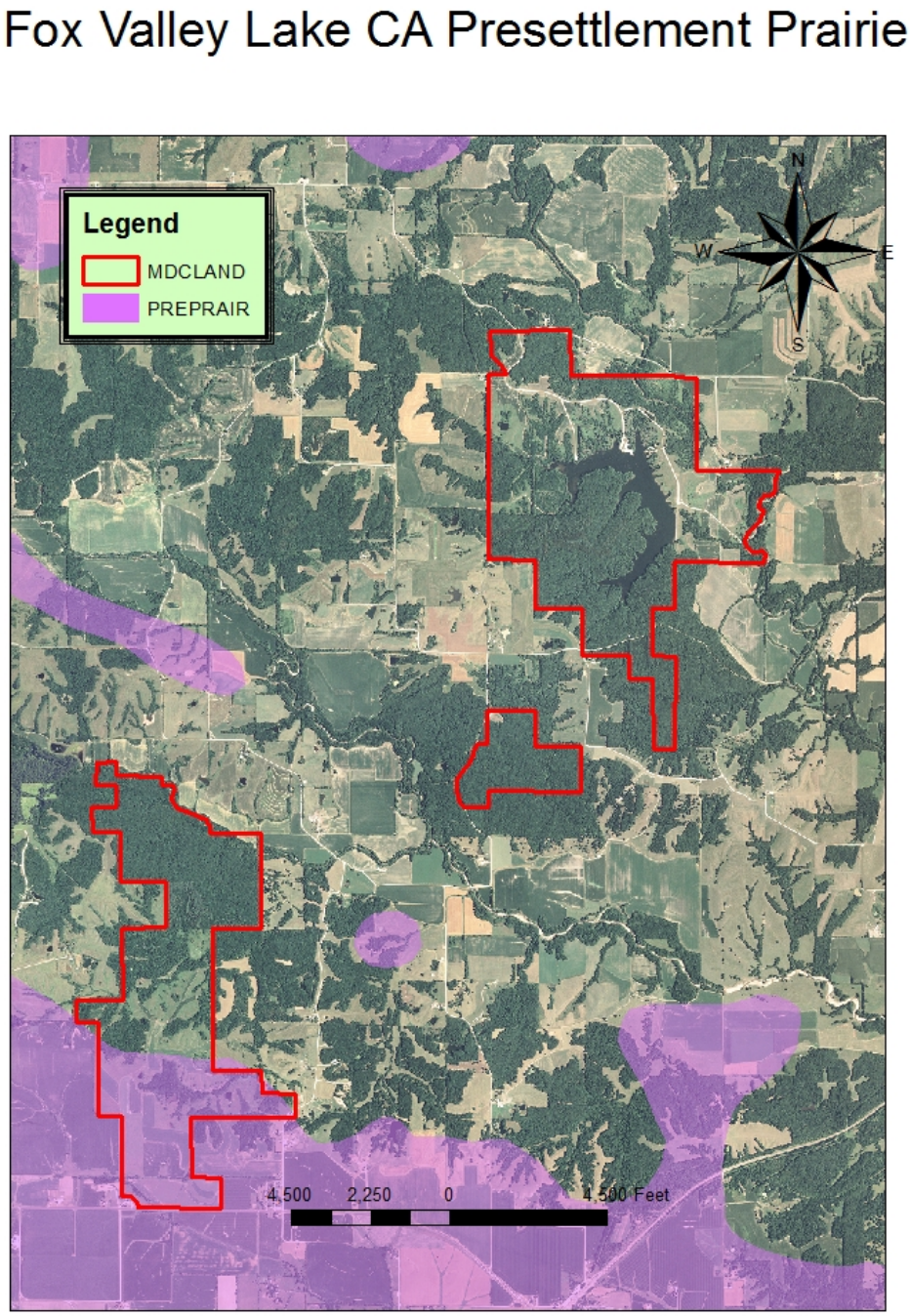
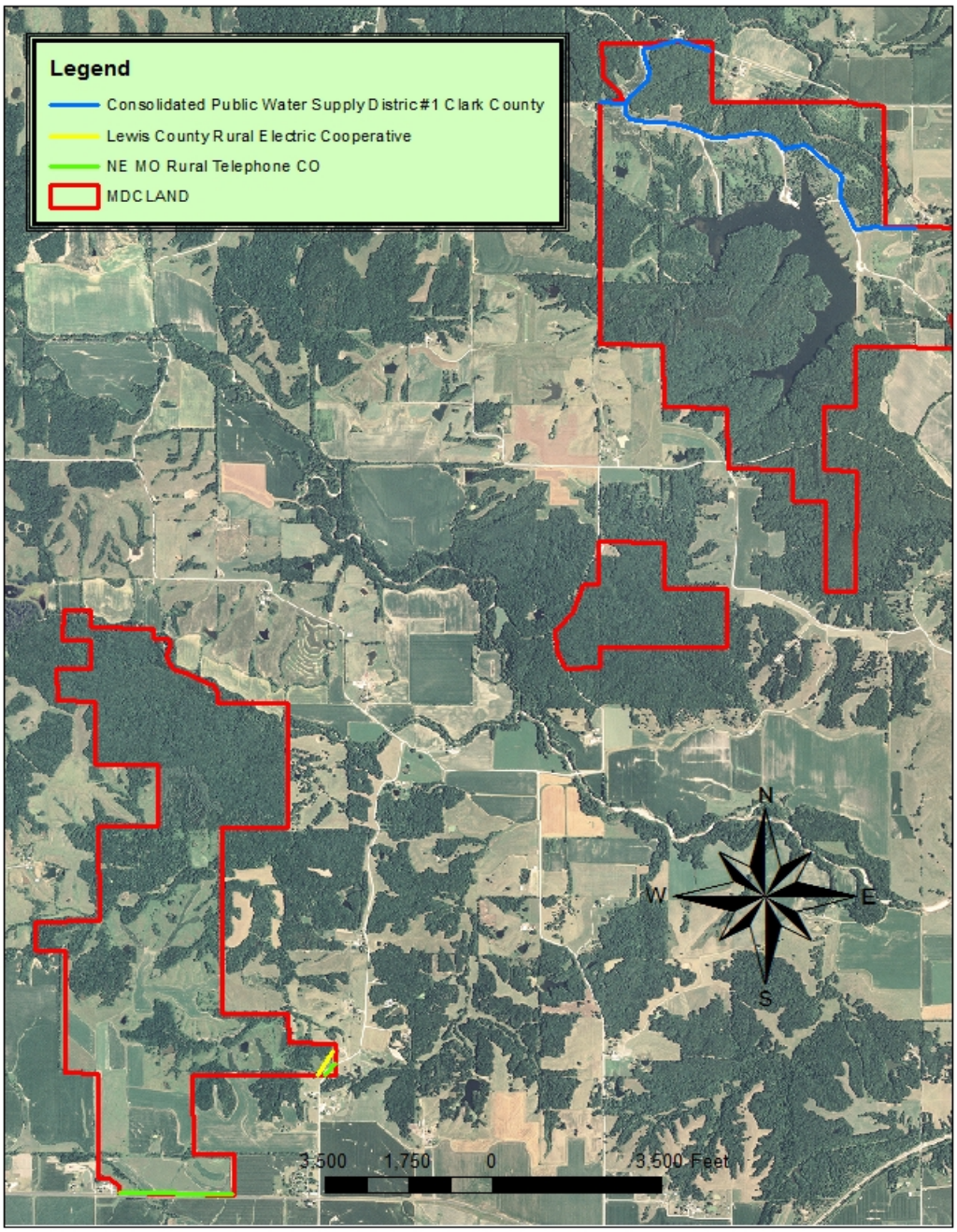


Figure 6: Easement Map

Fox Valley Lake CA Easements



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