Loess Hill Prairies

Brickyard Hill Conservation Area
Jamerson C. McCormack Conservation Area
Star School Hill Prairie Conservation Area

Ten Year Area Management Plan

FY 2014-2023

Wildlife Division Chief

12/5/14
Date

Loess Hill Prairies Area Management Plan Approval Page

PLANNING TEAM

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NORTHWEST REGION

RCT Chair — Roger E Welker — *Signature* — November 14, 2014 — *Date*

WILDLIFE DIVISION

Unit Chief — Michael D Schuze — *Signature* — 11/2/14 — *Date*

OVERVIEW

Area Name	Area Number	Year Acquired	Acreage	County	Administrative Responsibility	Maintenance Responsibility
Brickyard Hill CA	6301	1962	2,609	Atchison	Wildlife	Wildlife
Jamerson C. McCormack CA	7611	1966 [1]	225	Holt	Wildlife	Wildlife
Star School Hill Prairie CA	8928	1989	289	Atchison	Wildlife	Wildlife

[1] The Missouri Department of Conservation (the Department) leases 158 acres frm The Nature Conservancy (TNC). In 1977 Jamerson C. and Carson McCormack donated 67 acres to the Department, increasing the area to its present size.

Statements of Purpose:

A. Strategic Direction

The primary purpose is to protect and restore fish, forest and wildlife habitats (and their associated fauna) representative of the Deep Loess Hills Subsection of the Central Dissected Till Plains Physiographic Area. Management emphasis shall be placed on maintaining, protecting, and restoring habitat conditions that support loess hill prairie dependent species and species that depend upon adjacent forest/woodland communities while providing public access for hunting, fishing and wildlife viewing purposes. Historical data suggest upland communities located adjacent to the Missouri River flood plain in northwest Missouri were a diverse landscape containing steep loess hill prairies, savannas, woodlands and forested communities.

B. Desired Future Condition

The desired future condition of these areas is a vegetatively diverse mix of prairie community on remnant loess hills with associated savanna/woodland communities and adjacent woodland/forest communities.

C. Federal Aid Statement

Brickyard Hill Conservation Area (CA), or a portion thereof, was acquired with Pittman-Robertson Wildlife Restoration funds to restore and manage wildlife; conserve and restore suitable wildlife habitat; and provide public access for hunting or other wildlife-oriented recreation.

GENERAL INFORMATION AND CONDITIONS

I. Special Considerations

Area	Priority Area	Natural Area
Brickyard Hill CA	Loess Hill Prairies Complex Terrestrial Conservation Opportunity Area (COA)	Brickyard Hill Loess Mounds Natural Area (125 acres)
Jamerson C. McCormack CA	Squaw Creek Uplands Terrestrial COA	McCormack Loess Mounds Natural Area (112 acres)
Star School Hill Prairie CA	Loess Hill Prairie Complex Terrestrial COA	Star School Hill Prairie Natural Area (115 acres)

II. Important Natural Features and Resources

Area	Species of Conservation Concern	Caves	Springs
Brickyard Hill CA	Yes [1]	None	None
Jamerson C. McCormack CA	Yes [1]	None	None
Star School Hill Prairie CA	Yes [1]	None	None

[1] 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.

III. Existing Infrastructure

Area	Primitive Camping	Concrete Ramp	Hiking Trail	Parking Areas	Gravel Access Roads	Interior field access hiking roads	Privies	Other
Brickyard Hill CA	Yes	1	1 mile loop	6 [1]	Yes	4 miles	Yes [2]	No
Jamerson C. McCormack CA	Yes	No	No	1	No	1 mile	No	Radio tower
Star School Hill Prairie CA	Yes	No	No	2	No	1.25 miles	No	No

[1] Charity Lake has an ADA accessible parking area.
[2] Charity Lake has an ADA accessible privy.

IV. Area Restrictions or Limitations

Area	Deed Restrictions	Federal Interest	Easements	Cultural Resources	Hazards	Endangered Species	Boundary Issues
Brickyard Hill CA	None	Yes [2]	Yes [4, 5]	None known	None observed	Yes [7]	None
Jamerson C. McCormack CA	Yes [1]	Yes [3]	Yes [4, 6]	None known	None observed	Yes [7]	None
Star School Hill Prairie CA	None	Yes [3]	Yes [4]	None known	None observed	Yes [7]	None

[1] The Nature Conservancy owns 158 acres of this CA.

[2] Uses of land acquired with federal funds may not interfere with the purpose for which it is acquired. Federal funds may also 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.

[3] 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.

[4] This area has the normal public road rights of way and associated utility easements along its boundary.

[5] There are also public service warning towers located on the area as part of the Cooper Nuclear Power Plant warning system.

[6] An electric line cuts through the western edge of this area.

[7] Endangered Species – Yes, 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.

MANAGEMENT CONSIDERATIONS

V. Terrestrial Resource Management Considerations

Challenges and Opportunities:

1) Species of conservation concern
2) Natural area management and restoration
3) Invasive exotic species
4) Forest and woodland management
5) Early successional and old field management

Management Objective 1: Protect species of conservation concern.

Strategy 1: Consult with a Natural History Biologist prior to any new soil disturbance or vegetation management practices near the site of the species or communities of conservation concern occurrence.

Strategy 2: Coordinate with the Natural Heritage Biologist on the development of an annual plan for habitat restoration efforts, cropping-food plots, tree removal activities, burning, construction, and/or maintenance projects in the vicinity of the species or community of conservation concern occurrence.

Management Objective 2: Manage designated Natural Areas.

Strategy 1: Natural areas will be managed to maintain and enhance biological diversity and ecological integrity. Management will conform to the Missouri Natural Areas Committee (MONAC) Procedures Manual.

Strategy 2: Coordinate with Natural Heritage Biologist to develop annual work plan for habitat restoration and maintenance within Natural Area.

Strategy 3: Investigate and evaluate any potential sites that may meet the criteria for inclusion into the Natural Area program, including expansion of existing Natural Areas. Make official proposals to the MONAC according to their procedural protocol.

Management Objective 3: Control invasive exotic species.

Strategy 1: Annually treat sericea lespedeza, Johnsongrass, tree-of-heaven, Amur honeysuckle, and other invasive exotic species.

Management Objective 4: Manage forest and woodland communities.

Strategy 1: Complete forest inventory on Star School Hill Prairie CA (2030).

Strategy 2: Complete forest inventory on Brickyard Hill Compartment 2 (2025) and Compartment 1 (2028).

Strategy 3: Complete forest inventory on Jamerson C. McCormack CA (2029).

Strategy 4: Use existing and future forest inventories along with ecological site descriptions to identify overstocked woodlands. Manage these sites to maintain and enhance biological diversity and ecological integrity.

Management Objective 5: Manage early successional and old field habitats.

Strategy 1: Maintain old field habitats to provide nesting and brood-rearing habitat such as bare ground, annual forbs, warm and cool season grasses and shrubs.

Strategy 2: Utilize annual disturbance to promote desired early successional habitat and to provide a high-energy food source for wildlife in a manner that complies with the Natural Resources Conservation Service (NRCS) soil erosion plan and prepares fields for restoration of native vegetation.

Strategy 3: Provide annual food plots to minimize depredation to crops from deer on neighboring landowners.

VI. Aquatic Resource Management Considerations

Challenges and Opportunities:

1) Provide quality sport fish populations on Charity Lake (Brickyard Hill CA).
2) Manage for native aquatic vegetation on Charity Lake.
3) Prevent the infestation and spread of nuisance aquatic species.

Management Objective 1: Manage for quality angling opportunities on 13 acre Charity Lake.

Strategy 1: Conduct annual fish surveys to monitor for quality sport fish populations (largemouth bass proportional stock density (PSD, 12) values of 40-70, and bluegill PSD (6) values of 20-40).

Strategy 2: Conduct supplemental stocking of fish (channel catfish), when needed, to maintain quality angling opportunities.

Management Objective 2: Manage for native aquatic vegetation on area.

Strategy 1: Conduct native vegetation plantings.

Strategy 2: Treat aquatic nuisance species to minimize or eradicate them.

Management Objective 3: Install brush pile structure in Charity Lake.

Strategy 1: Install brush piles to enhance sport fish recruitment. Add fish-holding structure, as needed, in main lake. Manage fishing ponds as natural fish structure deteriorates.

VII. Public Use Management Considerations

Challenges and Opportunities:

1) Fishing
2) Deer and turkey hunting
3) Primitive camping
4) Designated areas for hunter method exemption special access

Management Objective 1: Provide fishing opportunities.

Strategy 1: Maintain quality fish populations on Charity Lake (Brickyard Hill CA) through semi-annual monitoring, supplemental stocking, and assessment of creel and length limits.

Strategy 2: Maintain access to angling opportunities on Charity Lake through maintenance of concrete boat ramp.

Management Objective 2: Manage deer and turkey populations.

Strategy 1: Provide quality high-energy food sources, where appropriate, for deer and turkey management (Brickyard Hill CA, Star School Hill Prairie CA).

Strategy 2: Provide food and cover plots to provide quality high-energy food sources for deer and turkey management (Jamerson C. McCormack CA).

Strategy 3: Participate in annual reviews of deer populations and deer hunting regulations that provide for a quality deer hunting experience.

Management Objective 3: Provide primitive camping opportunities.

Strategy 1: Maintain designated campgrounds in a condition that encourages camping by area users. Continue to provide picnic tables and fire rings for each individual camping pad (Brickyard Hill CA).

Strategy 2: Mow/maintain grass around parking lots designated for primitive camping.

Management Objective 4: Designate areas for hunter method exemption special access.

Strategy 1: Continue to include Brickyard Hill CA in the group of areas that have designated zones where special use permits are issued for vehicle access to qualifying individuals for hunting (Brickyard Hill CA).

VIII. Administrative Considerations

Challenges and Opportunities:

1) Existing infrastructure
2) Land acquisition

Management Objective 1: Maintain existing infrastructure.

Strategy 1: Maintain area buildings and grounds according to the current Area and Facility Maintenance Policy located in the Resource Policy Manual.

Management Objective 2: Evaluate potential land acquisition.

Strategy 1: When available, three-sided inholdings and any adjacent (or nearby) lands containing loess hill prairie remnants may be considered for acquisition from willing sellers. Tracts that improve area access, provide public-use opportunities, contain unique natural communities and/or species of conservation concern, or meet other Department priorities as identified in the annual Department land acquisition priorities may be considered.

MANAGEMENT TIMETABLE

All strategies for this management plan are considered ongoing.

APPENDICES

References:
Department sources include previous area plans, local staff knowledge, and historical files located at the Nodaway Valley CA, Northwest Regional Office, Department Office located in Atchison and Gentry County, USDA Offices, the Department's Atlas Database, and the Area and Facility Maintenance Policy located in the Resource Policy Manual. NRCS Soil Conservation Plan administered through the Atchison and Holt County USDA offices.

Public Input Summary:
The draft Loess Hill Prairies Area Management Plan was available for a public comment period July 1–31, 2014. The Missouri Department of Conservation received comments from one respondent (Appendix A). The Loess Hill Prairies Planning Team carefully reviewed and considered these ideas as they finalized this document. A brief summary of public input themes, including how they were incorporated or why they were not, can be found below.

<u>Department responses to themes and issues identified through the Loess Hill Prairies public comment period</u>

Suggests providing information on endangered species that occur on the area.

The Area Planning Team appreciates this comment. Because this plan is a public document, sensitive data (e.g., listing species of conservation concern or endangered species) is not included directly in these plans. In the past, we have observed that when we list sensitive data on area plans they become search areas for "collectors".

Appendices:
Appendix 1: Brickyard Hill CA Background
Appendix 2: Brickyard Hill CA Area Map
Appendix 3: Brickyard Hill CA Natural Area/Land Cover Map
Appendix 4: Brickyard Hill CA Charity Lake Facilities
Appendix 5: Jamerson C. McCormack CA Background
Appendix 6: Jamerson C. McCormack CA Area Map
Appendix 7: Jamerson C. McCormack CA Natural Area/Land Cover Map
Appendix 8: The Nature Conservancy Ownership at Jamerson C. McCormack CA
Appendix 9: Star School Hill CA Background
Appendix 10: Star School Hill CA Area Map
Appendix 11: Star School Hill CA Natural Area/Land Cover Map
Appendix 12: Draft Loess Hill Prairies Area Management Plan Public Comments

Appendix 1: Brickyard Hill CA Background

Brickyard Hill Conservation Area was created in 1962. Adjoining tracts were later acquired to comprise its current acres.

The soil of the area is a type known as "loess." It was formed primarily by deposits of silt and clay after the retreat of the glaciers. Soil depth varies from 10 to 90 feet. The loess soil was found to be ideal for making bricks, and the area was named after a brick factory that was established around 1900.

Because of its size and diversity, the area is managed for a wide range of game and non-game wildlife. Deer, turkey, and squirrels are abundant. Forested areas are diverse, containing lowland species like cottonwood and willow as well as upland hardwoods like hickory, American elm, red oak, and bur oak. A bur oak more than 300 years old occurs on a remote part of the area.

The Brickyard Hill Loess Mounds Natural Area is on the southwest side of the area. Dry loess hill prairies, found only in this corner of Missouri and the river bluffs in extreme western Iowa, are located on the blufftops. Nine uncommon state-listed plant species, better adapted to the more arid Great Plains to the west, are found in the loess hill prairies.

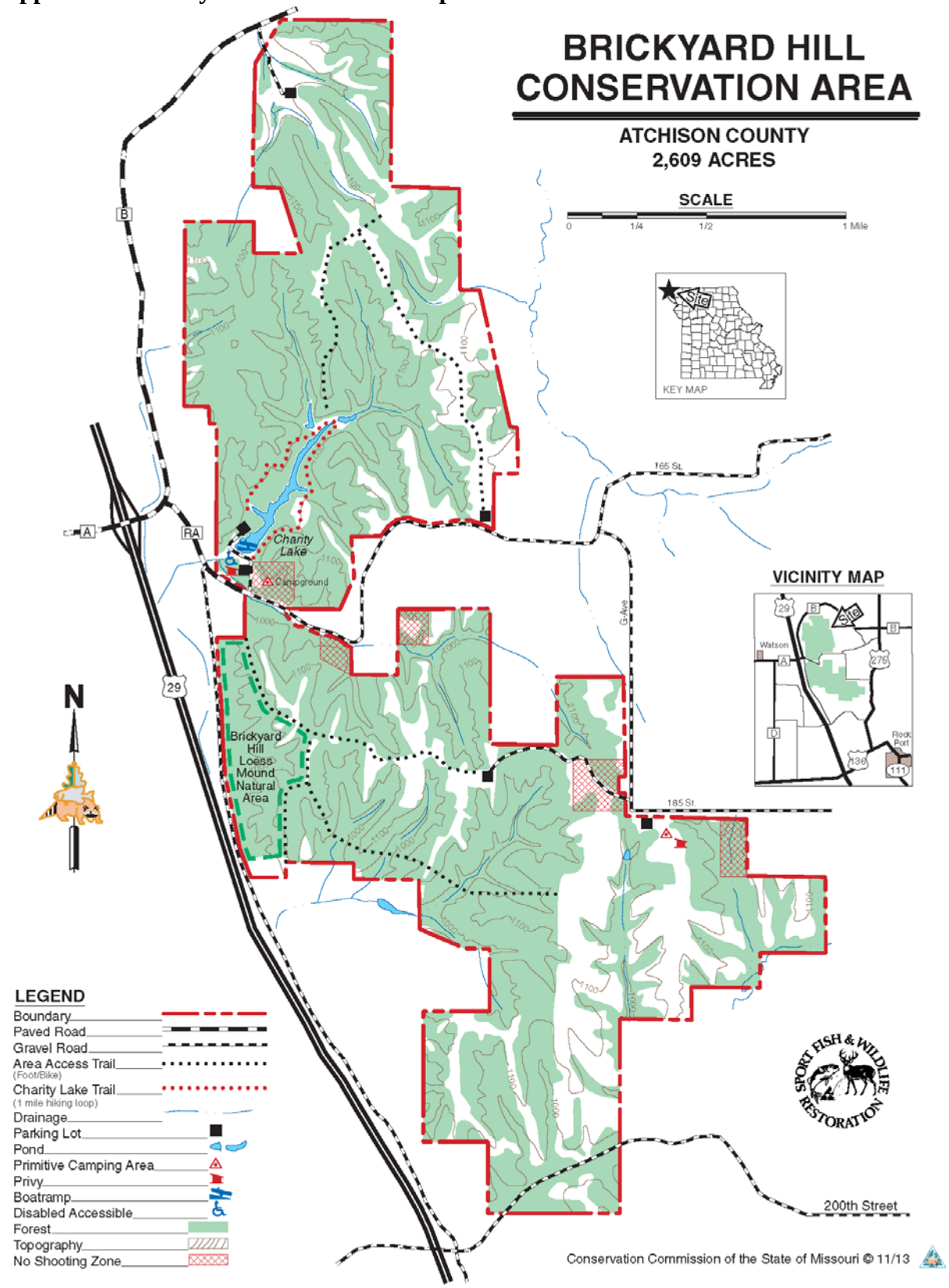
Management of this area includes periodic prescribed burns, herbicide application, and mechanical methods to maintain the loess hill prairie and savanna/woodland communities. Erosion of mounds of wind-blown loess soil well over 100 feet deep has created a steep and rugged landscape. Dry prairies on ridge tops with some plants more typically found in the Great Plains, 100 miles or more to the west, can be seen and accessed from a parking lot off of Route B on the north end of the area. These prairies contain over half a dozen plant species that are state listed species of conservation concern.

Anglers will find quality fishing for bass, bluegill, and channel catfish in 13-acre Charity Lake at Brickyard Hill CA.

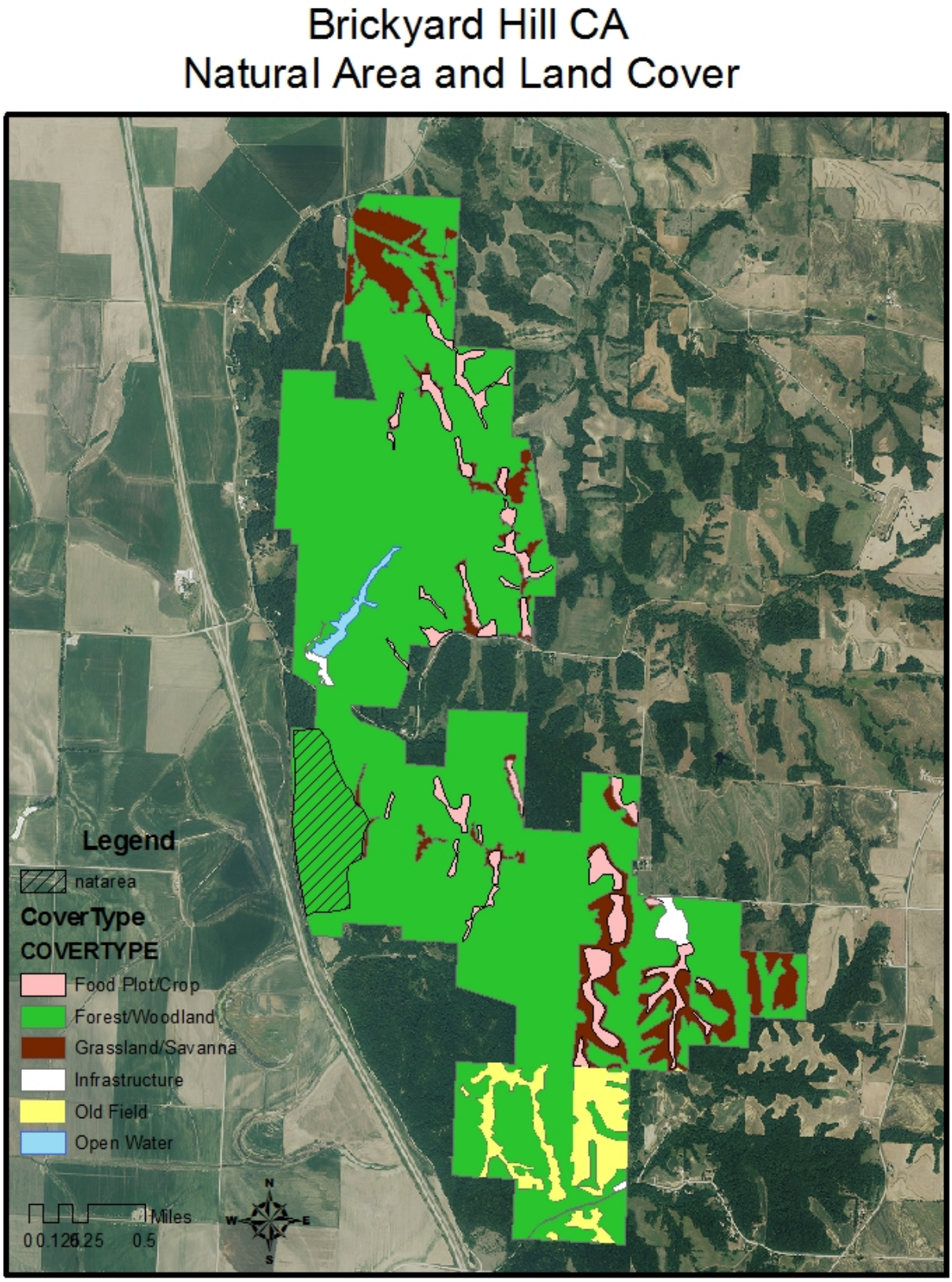
Current Land and Water Types

Land/Water Type	Acres	Miles	% of Area
Forest and woodland	1766		68
Grassland (nonnative prairie and managed warm-season grass and cool-season grass stands)	306		12
Old field	300		10
Cropland	120		5
Loess hill prairie/savanna	90		4
Other (roads, parking area, campground....)	14		<1
Lakes/ponds	13		<1
Total	**2609**		**100**
Stream frontage		0	

Appendix 2: Brickyard Hill CA Area Map



Appendix 3: Brickyard Hill CA Natural Area and Land Cover Map



Appendix 4: Brickyard Hill CA Charity Lake Facilities

Appendix 5: Jamerson McCormack CA Background

Jamerson C. McCormack Conservation Area was created in 1966 with a gift of 158 acres to The Nature Conservancy (TNC) from Jamerson C. McCormack. The land was later leased to the Department of Conservation. In 1977, Jamerson C. and Carson McCormack donated 67 acres to the Department, increasing the area to its present 225 acres.

Prevailing winds during the last glacial period deposited wind-blown soil into mounds nearly 100-feet thick on this area. Called "loess," this soil is characteristic of the Missouri River bluffs in this vicinity. Erosion of mounds of wind-blown loess soil, well over 100 feet deep, has created a steep and rugged landscape.

The western portion of the area is a designated Missouri Natural Area. Loess hill prairies, found on the ridge tops, support eight plants at the edge of their range. Listed in the Missouri Species of Conservation Concern Checklist, these plants are more common on the arid Great Plains 100 or more miles to the west. The main hill prairie on the area is upslope to the left of the field road through the area and contains over one-half dozen plant species that are state-listed species of conservation concern.

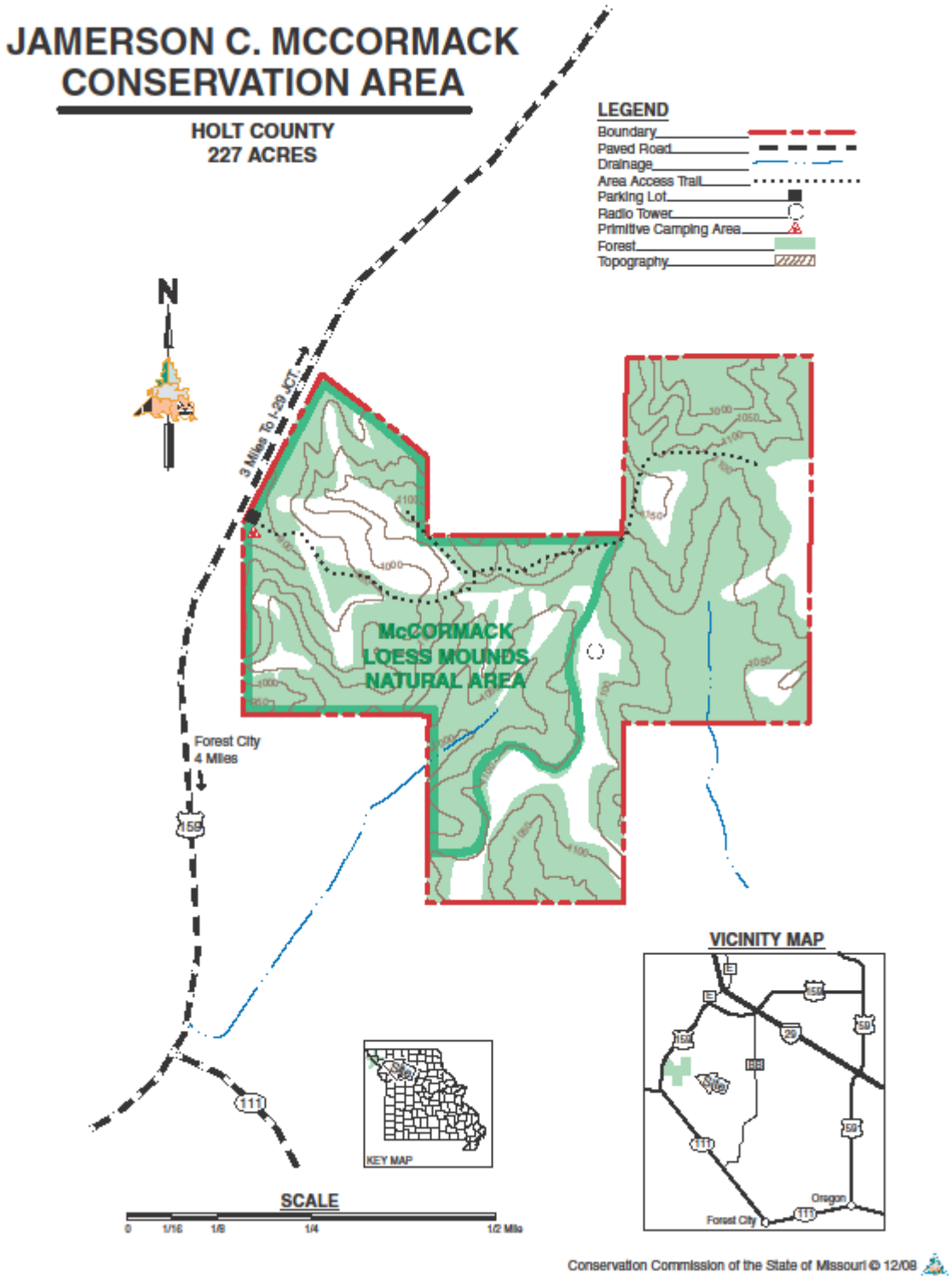
Controlled burning, herbicide application, and selective cutting are management techniques used to help control woody species invading these prairies and associated savanna/woodlands. The area is open to a wide variety of uses compatible with resource management.

The north end of this hill prairie provides a dramatic overlook of Squaw Creek National Wildlife Refuge and views are especially impressive as flocks of snow geese enter and leave the refuge in late November/early December and again in late February/early March.

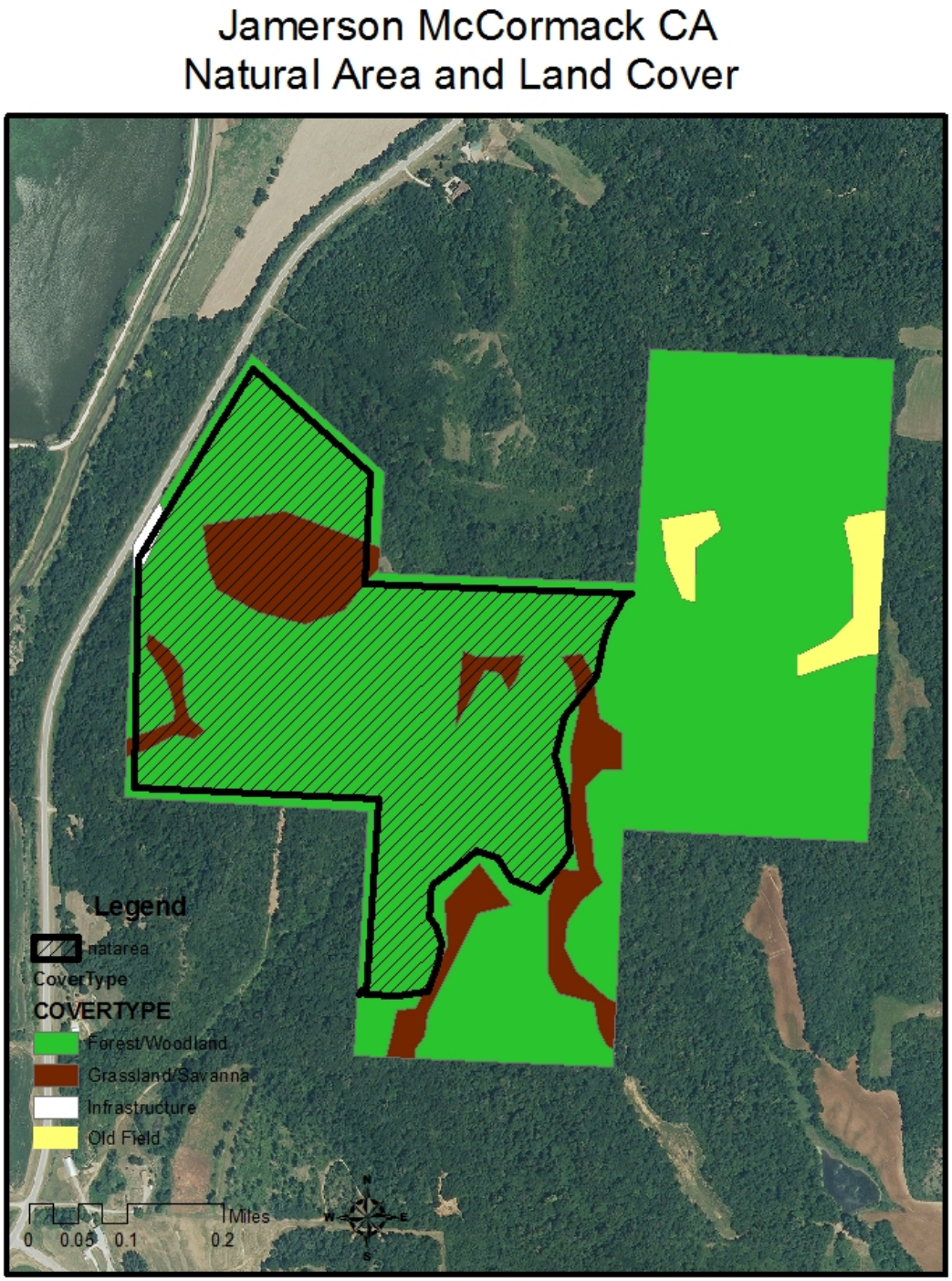
Current Land and Water Types

Land/Water Type	Acres	Miles	% of Area
Forest and woodland	130		57
Loess hill prairie/savanna	58		26
Grassland (nonnative prairie and managed warm-season grass and cool-season grass stands)	30		13
Cropland	6		3
Other (roads, parking area, campground…)	1		<1
Total	**225**		**100**
Stream frontage		0	

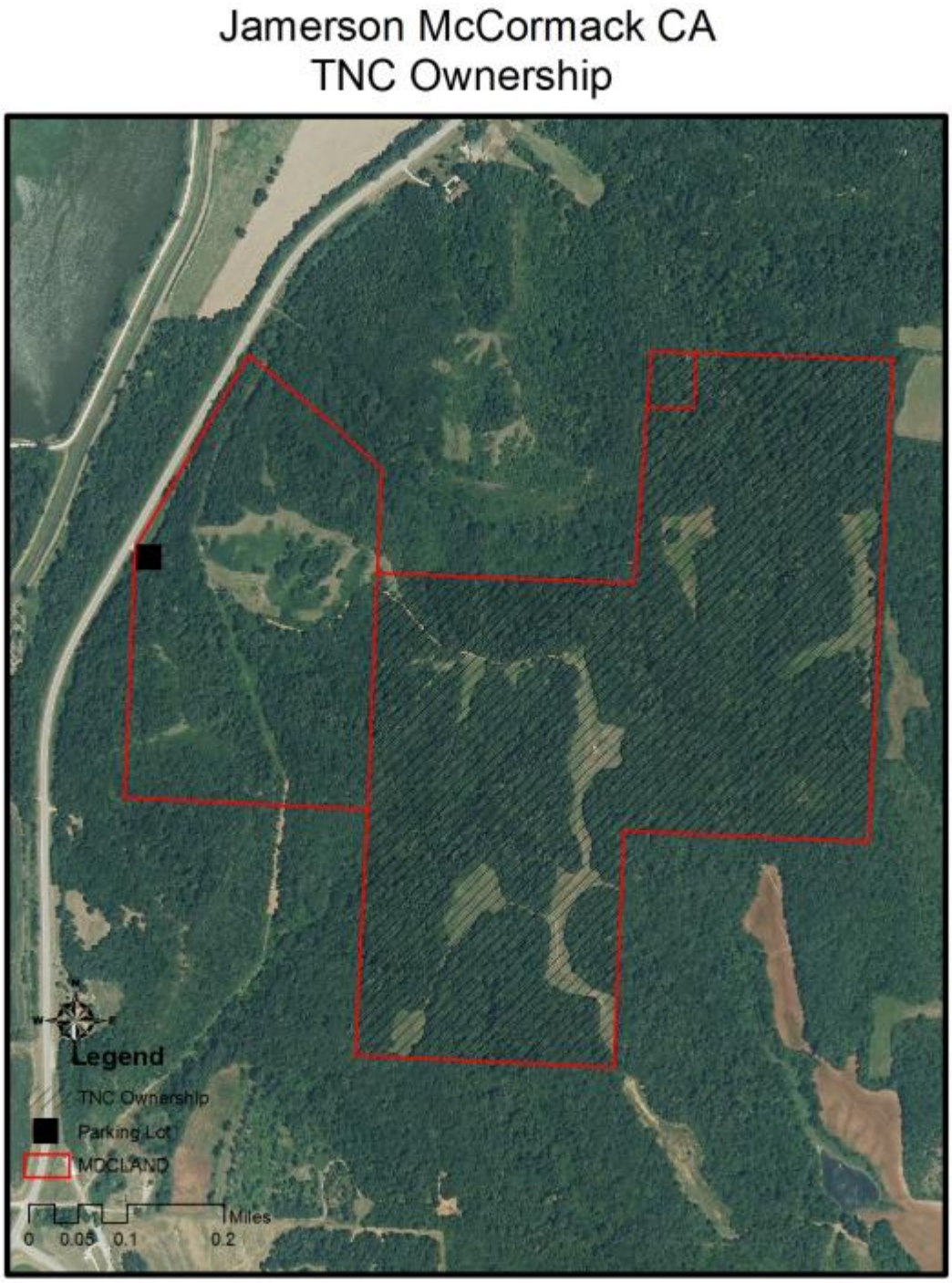
Appendix 6: Jamerson C. McCormack CA Area Map



Appendix 7: Jamerson C. McCormack CA Natural Area and Land Cover Map



Appendix 8: The Nature Conservancy Ownership at Jamerson C. McCormack CA



Appendix 9: Star School Hill CA Background

Star School Hill Prairie Conservation Area began with a purchase of 129 acres in 1989. In 1994, the Department added a 160-acre tract a short distance south of the original purchase.

This area is characterized by rugged loess hills adjacent to the Missouri River floodplain. These wind-blown hills were formed by prevailing westerly winds during the glacial period. Loess deposits over bedrock sometimes reach 150 to 200 feet in depth. Loess soil drains very rapidly, creating hot, dry prairie habitat that supports unique communities. Loess hill prairie communities are endangered in Missouri.The small remnants that still exist are threatened by overgrazing, woody invasion, erosion, and home site development.

The Loess Hill Prairies and associated savanna/woodlands are primarily managed by the use of controlled burning, herbicide application, and selective cutting to control the invading woody species. The prairie provides habitat for 12 plant species and two animal species on the Missouri Species of Conservation Concern Checklist. The remainder of the area is managed for a wide range of game and non-game wildlife species. The area is available to the public for a variety of outdoor activities compatible with resource management.

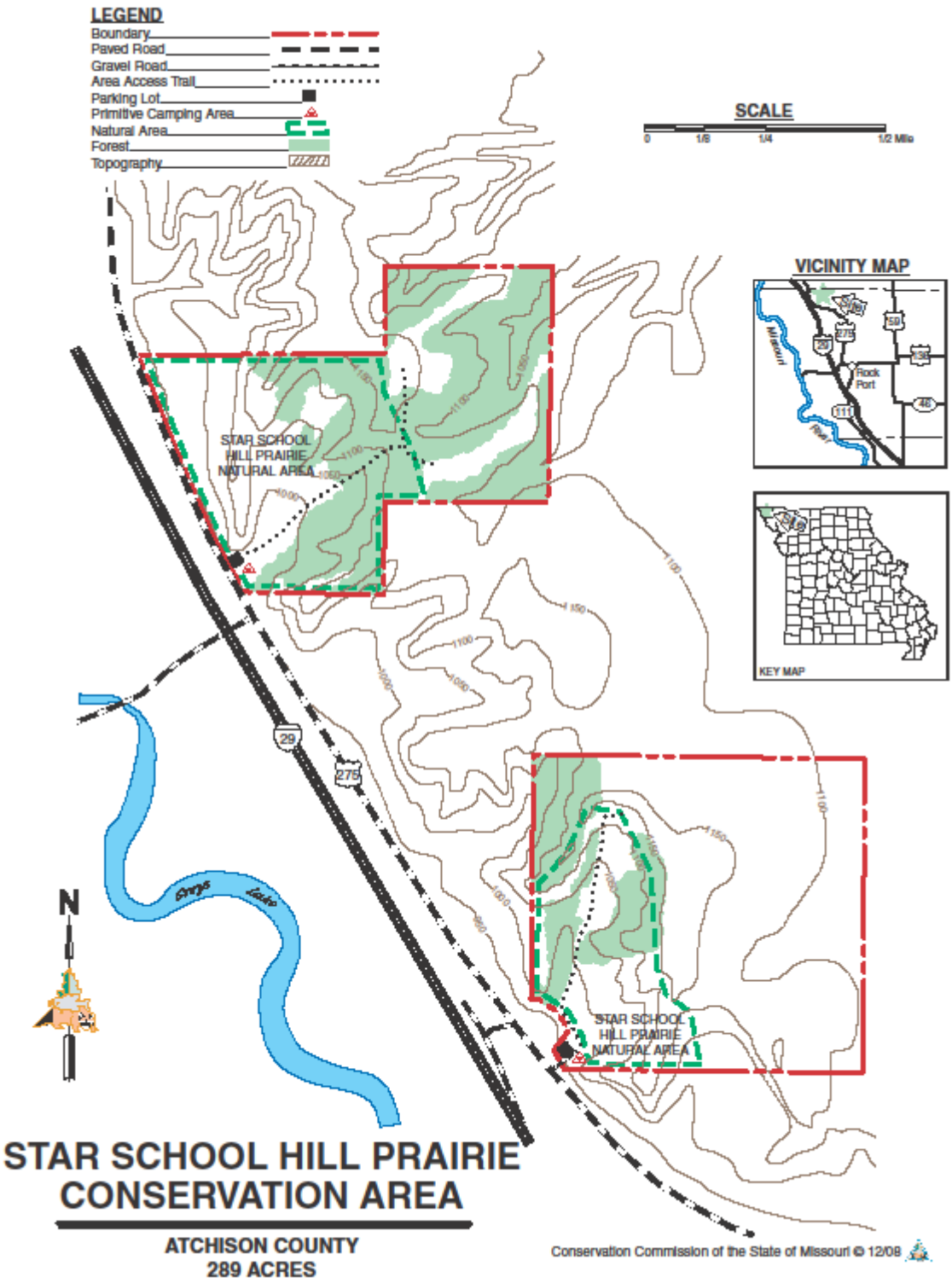
Star School Hill Prairie Natural Area features dry prairies on ridge tops which can be seen from the parking lots on both the north and the south tracts. These ridge tops offer expansive views of the Missouri River valley; on a clear day four states (Missouri, Iowa, Nebraska, and Kansas) are visible. Over a dozen prairie plants are Missouri species of conservation concern and are more typically found in the Great Plains, 100 miles or more to the west.

Lewis and Clark camped in this vicinity on their journey up the Missouri River.

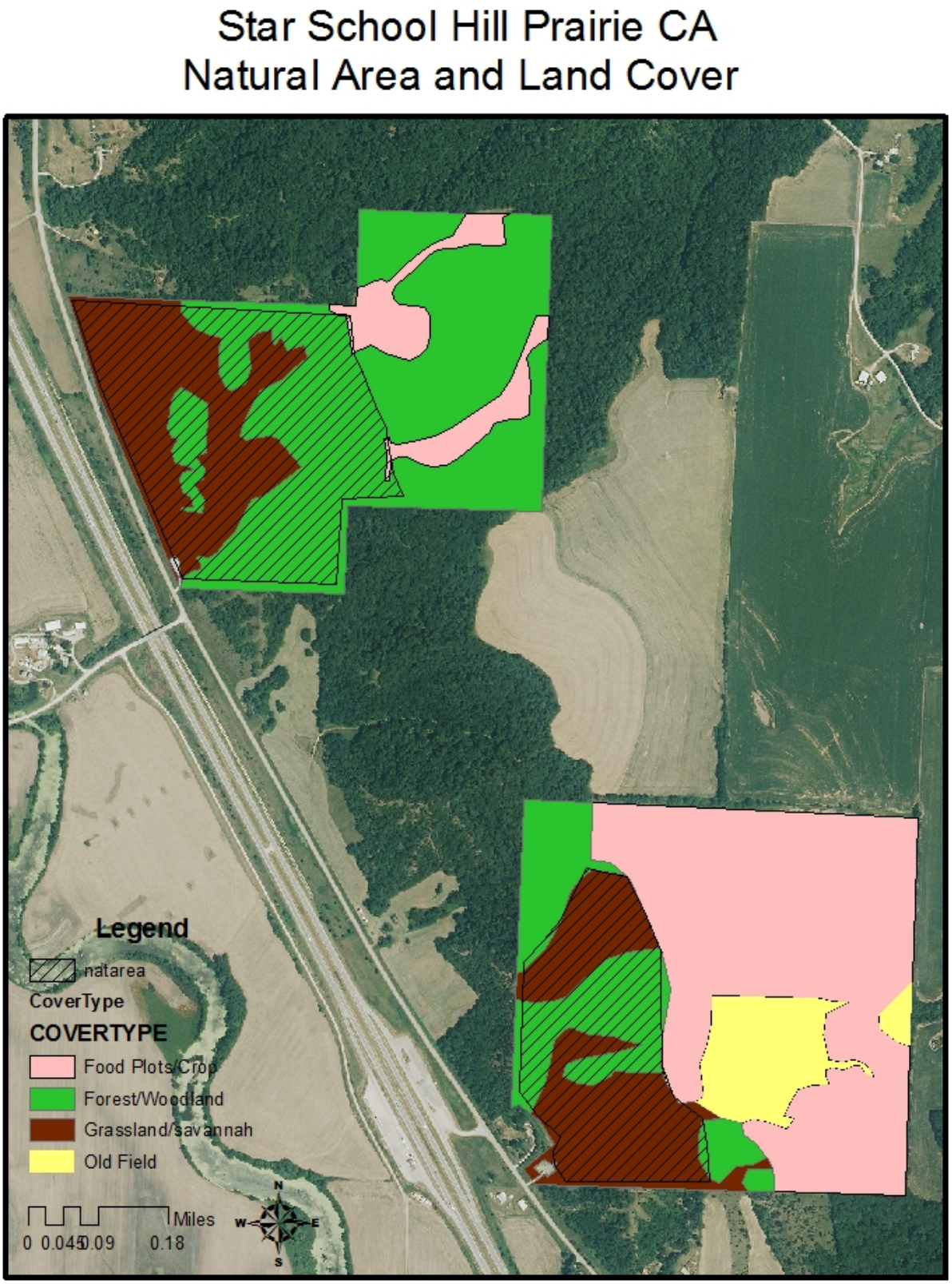
Current Land and Water Types

Land/Water Types	Acres	Miles	% of Area
Forest and woodland	116		42
Cropland	76		25
Loess hill prairie/savanna	52		18
Old field	43		15
Other (roads, parking area, campground…..)	2		<1
Total	**289**		**100**
Stream frontage		0	

Appendix 10: Star School Hill CA Area Map



Appendix 11: Star School Hill CA Natural Area and Land Cover Map



Appendix 12: Draft Loess Hill Prairies Area Management Plan Public Comments

Received during public comment period (July 1-31, 2014)

The update mentions protecting endangered species. What animal and plant species are in danger? The update gives no specifics. Thank you for your time and handwork in keeping our lands and waterways pristine.