

***Purpose of and Need for Action  
including Proposed Actions for the  
Crescent Project  
Mark Twain National Forest  
Houston/Rolla/Cedar Creek Ranger District  
Laclede and Pulaski Counties, Missouri***

***Project Area***

The Crescent project area is located between the Gasconade River and the western forest administrative boundary of the Houston/Rolla/Cedar Creek Ranger District on National Forest System lands. The project is for lands administered by the Houston/Rolla/Cedar Creek Ranger District in the Gasconade River Watershed, 18 miles southeast of Lebanon, Missouri. The legal description of the project area is: government ownership in; Township 32 North, Range 13 West, section 6; Township 33 North, Range 13 West, sections 5-8, 15-22, 30, 31; Township 34 North, Range 13 West, sections 3-22, 27-31, 33; Township 35 North, Range 13 West, section 31, Fifth Principal Meridian.

As described in the publication "Biodiversity of Missouri, Definition, Status, and Recommendations for its Conservation" published by Missouri Department of Conservation (Nigh, Timothy A. et al, 1992) the Crescent Project Area falls within the Ozark Highlands section of the Ozark Natural Division of Missouri. This report describes the great geologic age and physiographic diversity of the Ozarks which has made it by far the most biologically diverse region in the state.

The project area contains approximately 12,590 acres (19.7 sq. miles) of Forest Service ownership in the Upper Gasconade River Tributaries watershed (234.9 sq. miles or 150,400 ac.) and Lower Osage Fork watershed (170.9 sq. miles or 109,440 ac.). These two watershed and 9 others form the Gasconade River Watershed. The Entire Gasconade River watershed covers over 2,806 square miles. The area is characterized by steep topography, broad flat ridge tops, rolling hills and river lowlands. Because of these features, it is a popular recreation area for dispersed camping, hunting, fishing, gathering forest products, hiking, wildlife viewing, horseback riding, mountain biking and driving for pleasure.

***Background***

By the late 1800's and early 1900's, there were many areas in Missouri that had been badly abused and in need of protection and rehabilitation. The Ozarks Region was one such area.

The Weeks Law, an Act of March 1911, enabled the Federal Government to look at suitable forest areas in Missouri for establishing National Forests. Prior to this legislation, all National Forests had been created from the public domain. Only in cooperation with the State of Missouri could the Federal Government begin buying land. Missouri had to pass enabling legislation implementing the provisions of the Weeks law. It took another piece of Legislation – The Clark-McNary Act of June 7, 1924 – before Missouri would pass an enabling act. The Clark-McNary Act enabled the Secretary of

Agriculture to work cooperatively with State officials for better forest protection, chiefly in fire control and water resources. It also provided for continuous production of timber.

Missouri was added to Region 9 of the U.S. Forest Service in 1930. During 1934 and 1935, eight separate purchase units, embracing over 3 million acres was established. By the start of World War II, slightly more than 1.25 million acres had been approved for purchase by the National Forests Reservation Commission; and two National Forests, the Clark and the Mark Twain, had been established. The Mark Twain National Forest was combined with Clark National Forest as "The National Forests in Missouri" in 1973 and renamed "Mark Twain National Forest" headquartered in Rolla in 1976. Today, the Mark Twain National Forest is a direct result of the passage of time and active management and contains approximately 1.5 million acres under Federal Ownership. Over the past 70 plus years, the Mark Twain National Forest conducted numerous activities designed to encourage the growth and development of the forest and to create a mix of forest types and ages while providing for and maintaining unique habitats. A variety of management activities were conducted in the past two decades within the Crescent Project Area. These include creating wildlife habitat diversity through regeneration cuts, thinnings, oak savanna development, wildlife opening development and maintenance, prescribed burning, pond development and maintenance, grazing, hay cutting, tree planting; and road reconstruction. The monitoring done after these projects shows significant contributions to wildlife habitat diversity, and an increase in desirable tree species and tree health. Post activity monitoring has verified that the activities were compliant with the authorizing NEPA documents and the effects were as displayed. These different conditions are favorable to a variety of wildlife species.

## **Forest-wide Direction and Goals**

The Mark Twain Forest Land and Resource Management Plan (LRMP or Forest Plan), approved in 1986, made broad decisions regarding allocation of land and measures necessary to protect National Forest resources. It described how different areas of land should look and what resources could be provided from these lands now and in the future. The Forest Plan Final Environmental Impact Statement displayed the forest-wide effects of activities such as timber harvest, wildlife habitat management, recreation management and visual resource management. The site-specific effects of those practices were not a part of the Forest Plan FEIS.

In order to implement the decisions made in the Forest Plan, each district must determine how the present condition varies from the desired future condition. The proposed actions are designed to maintain or create the wildlife habitat described in the Forest Plan. The analysis of the Crescent Project will present the existing condition, site-specific effects of implementing the proposed action and alternatives to this proposed action, and is tiered to the Forest Plan FEIS. The Mark Twain Forest Plan allocated lands within the Crescent project area to Management Areas 3.4, 6.2, 6.3 and 8.1.

## **Desired Future Forest Conditions of Forest Plan Management Areas**

### **Management Area 3.4 (78% of the project area)**

Management Area 3.4 is described by the following excerpts of Desired Future Conditions (Forest Plan, page IV-115). "These forest areas will normally be 2,500 acres or larger and will provide a diverse natural appearing mosaic of stands. Various stages of vegetative communities development will be featured. Oaks will be the dominant species, however, a

variety of other hardwoods will also be present, as will shortleaf pine, eastern red cedar and grassland. Individual stands will have irregular shapes and varying sizes. The trees within each stand will be about the same age and size. Stands will range from seedlings to large trees. Openings of various sizes will be interspersed among the tree stands. There may often be evidence of human activities, but it will be in harmony with the natural appearing environment. Interspersion of age and size classes of trees and opening will satisfy the habitat needs of management indicator species."

**Management Area 6.2 (14% of the project area)**

Management Area 6.2 is described by the following excerpts of Desired Future Conditions (Forest Plan, page IV-175). "Management area will normally be 2,500 acres or larger in size and managed to emphasize a semi-primitive motorized environment. Controlled motorized vehicular access for recreational activities will be permitted. Stands of upland central hardwoods will dominate the landscape. Various species of oak will be the chief component, but a variety of other hardwood species will be present, as will mixed hardwood/shortleaf pine, eastern red cedar and grasslands. Stand composition will reflect natural vegetative communities for the sites and their successional stages. Stand age and size will vary across the landscape so that a natural-appearing environment dominates."

**Management Area 6.3 (7% of the project area)**

Management Area 6.3 is described by the following excerpts of Desired Future Conditions (Forest Plan, page IV-185). "Individual areas will vary in size but with the exception of candidates for National Rivers will normally be less than 100 acres. Plant and animal communities associated with these areas may be uncommon because of their limited occurrence on the total landscape. Vegetation management is directed by the need to retain the unique attributes of the candidate areas until a classification decision is made. Management opportunities will vary on a case-by-case basis, but will always be based on the needs for protection of the area's integrity."

**Management Area 8.1 (1% of the project area)**

Management Area 8.1 is described by the following excerpts of Desired Future Conditions (Forest Plan, page IV-193). "These management areas contain exceptional ecological, geological or other features of scientific, educational, scenic, or historical values other than Wilderness that have already been officially classified. Vegetation management will be directed by the specific management objective for each area. Unless compatible with area objectives, management activities, facility development or motorized use will not be permitted."

The Forest Plan allocated lands within the Crescent project area to Management Prescriptions 3.4-5, 6.2-1, 6.3-2 and 8.1-1. The allocations follow the Management Areas desired future conditions and give general management direction (Management Prescriptions) for each of the management areas found in the project area.

## **Forest Plan Management Area Prescriptions in the Crescent Project Area:**

### **Management Prescription (MP) 3.4-5**

Management Prescription (MP) 3.4 provides a managed forest which emphasizes wildlife habitat diversity to maintain and enhance populations of native and naturalized vertebrates. The Forest Plan defines the forest practices, standards, and guidelines for managing the MP 3.4 areas (LRMP, pp IV-115 to IV-124). The purpose of MP 3.4 includes:

- To emphasize wildlife habitat diversity by maintaining and enhancing populations of native and naturalized vertebrates.
- To emphasize recreational opportunities based on consumptive and nonconsumptive use of wildlife and fish and the habitat for Management Indicator Species.
- To provide dispersed recreation opportunities featuring a roaded natural recreation environment.
- To provide for moderate to high production of other resources such as timber products, recreation, forage, and minerals.
- To satisfy the management requirements of 36 CFR 219.27.

### **Management Prescription (MP) 6.2-1**

Management Prescription (MP) 6.2 features the management of natural vegetative communities and their successional stages under limited investments to provide motorized semi-primitive dispersed recreation. The Forest Plan defines the forest practices, standards, and guidelines for managing the MP 6.2 areas (LRMP, pp IV-175 to 184). The purpose of MP 6.2 includes:

- To manage natural vegetative communities and their successional stages under limited investment.
- To provide wildlife habitat diversity common to managed natural communities.
- To provide dispersed recreation opportunities emphasizing semi-primitive motorized ROS objectives.
- To provide for low to moderate production of other resources such as timber products, fish and wildlife, and forage, where they do not limit natural vegetative community management opportunities or dispersed semi-primitive recreation objectives.
- To satisfy the management requirements of 36 CFR 219.27.

### **Management Prescription (MP) 6.3-2**

Management Prescription (MP) 6.3 provides temporary management for a variety of areas that have potential for “special area” designation other than Wilderness. These areas reflect public issues or management concerns for the protection of unusual environmental, recreational, cultural, and historical resources and for areas valuable for scientific or educational studies. Candidate areas for national river status are also included. (LRMP, pp IV-185 to IV-192). The purpose of MP 6.3 includes:

- To provide temporary management direction for these areas until a designation or rejection decision is made.
- To identify opportunities for low levels of resource outputs where they do not jeopardize the “special area’s” potential for designation.
- To satisfy the management requirements of 36 CFR 219.27.

### **Management Prescription (MP) 8.1-1**

Management Prescription (MP) 8.1 describes a variety of designated “special areas” other than Wilderness. They exist for the protection of unusual environmental, recreational, cultural, or historical resources, and for scientific and educational studies. The Forest Plan defines the forest practices, standards, and guidelines for managing the MP 8.1 areas (LRMP, pp IV-193 to 215). The purpose of MP 8.1 includes:

- To protect areas of special scientific, biological, historical, geological, scenic, recreational, and educational significance.
- To provide low to moderate production of other resources such as timber products, fish and wildlife, recreation, and forage where there are compatible with “special area” objective.
- To satisfy the management requirements of 36 CFR 219.27.

### **Purpose and Need for Action**

The purpose of the Crescent Project is to implement land management activities that are consistent with direction in the Forest Plan and respond to the specific needs identified in the project area.

Preliminary analysis of the project area indicates that there are certain conditions that warrant action to accomplish the management direction and desired future conditions identified in the Forest Plan. The following needs and proposed actions were identified to meet minimum viability (LRMP, IV-61) and move the existing condition of the Crescent area towards the Desired Future Condition (DFC). The Forest Plan established eight (8) wildlife habitat condition objectives to maintain a wide variety of habitats (and the associated ecosystems with their ecosystem functions) that are commonly found in the Missouri Ozarks. The Oak-Hickory Hills and Oak-Hickory Plains Land Type Associations (LTA) wildlife habitat condition objectives are found in the Forest Plan on page IV-120 and IV-180 for the Crescent project. The wildlife habitat objectives could vary between Management Area. Currently the Crescent project area meets Minimum Viability in 4 categories and meets the Desired Future Condition (DFC) in 2 categories. The proposed action will change the habitat condition to meet Minimum Viability in all 8 categories and meet the DFC in 6 categories.

There are six emphasis areas in the Crescent Project Area. They include:

1. Recreation Management Needs
2. Wildlife Habitat Maintenance and Improvement Needs
3. Wildland/Urban Interface Fuel Reduction Needs
4. Protection and Improvement of the Mayfield Spring Wet Meadow Needs
5. Ecosystem Integrity and Watershed Rehabilitation Needs
6. Tree Mortality Salvage Needs

*Note: There are also some associated or connected actions needed to implement these six emphasis areas in the Crescent Project.*

The following needs for action were identified and the proposed actions (management activities) were designed to implement the Forest Plan. Activities in this analysis are similar in proportion to past projects except for a significant increase in acres to be treated with prescribed fire. Specifically the following needs for action have been identified with approximate values:

## 1. Recreation Management Needs.

- **Need 1: Provide Dispersed recreation opportunities.**

Currently the Crescent project area is a popular recreation area for dispersed camping, hunting, fishing, gathering forest products, hiking, wildlife viewing, horseback riding, mountain biking and driving for pleasure. With the increase in use of the area additional facilities and improved access sites are needed for public safety and watershed health.

**Proposed Action 1A: Maintain River Access Sites.** Maintain the 4 existing Gasconade river access sites of Mayfield Springs, Dry Branch, Wrinkle Springs and Brownfield. This would allow these areas to be used in the future and improve watershed health conditions.

**Proposed Action 1B: Upgrade River Access Parking.** Upgrade river access parking at Mayfield Springs and Brownfield. These areas are not maintained as developed sites but will be hardened to allow river access while protecting the resource, improving water quality, and improving public safety.

**Proposed Action 1C: Upgrade Trails.** Increase the Cole Creek Trail on to newly acquired Gasconade River ownership. Trail locations will be placed to limit erosion while providing increased access opportunities for horse, bike or foot travelers.

**Proposed Action 1D: Increase Public Access.** Increase the roaded recreation opportunities by extending Forest Road (FR)1655 to a new parking area within the open land above the river, and allow traffic to the end of FR 1657 when cattle are not present. Add the existing road in T33N R13W Sec.19 to the road system, which will require a right-of-way or relocation. These additions will increase the sightseeing, hunting and resource access to the area.

## 2. Wildlife Habitat Maintenance and Improvement Needs.

The Forest Plan established various habitat condition objectives to maintain a wide variety of habitats (and the associated ecosystems with their ecosystem functions) that are commonly found in the Missouri Ozarks. The following wildlife habitat and improvement needs for action were identified and the proposed actions (management activities) were designed to meet minimum viability and move the existing condition of the Crescent Project Area towards the Desired Future Condition for wildlife habitat in the Oak-Hickory Hills and Plains Land Type Association as outlined in the Forest Plan.

- **Need 2A. Provide Woodland Habitat in the 0-9 year age class.** *Currently the Crescent Project Area does not meet the Forest Plan for Minimum Viability and the DFC in this category.*

Species richness and species diversity in woodland habitats in the 0-9 year age class ranges from 40 to 49 animal species, but the edges of these habitats are used by 90 species that include 3 amphibians, 14 reptiles, 23 mammals, and 50 birds (including neotropical migrant birds). Currently there are 40 acres of 0-9 year age class habitat in the Crescent project area. In order to meet Forest Plan habitat objectives, this area needs at least 504 acres but should not exceed 1889 acres. Many of the black and scarlet oaks in the Crescent Project Area are nearing or past their life expectancy of 90 years, thus the majority of the 0-9 year age class would be created in these areas.

**Proposed Action 2A1: Shelterwood harvest**

Create 320 acres of woodland habitat in the 0-9 year age class through shelterwood harvests on 640 acres. *Proposed Action 2A1 is the same as Proposed Action 2D. It is listed here since the same activity provides woodland habitat in the 0-9 year age class and woodland habitat in oak type over 50 years with a dense understory. This proposal is identified in Crescent project map set as Proposed Action 2A1.*

**Proposed Action 2A2: Clearcut harvest**

Create 330 acres of woodland habitat in the 0-9 year age class through clearcut harvest on 330 acres.

**Proposed Action 2A3: Group Selection harvest**

Create 300 acres of woodland habitat in the 0-9 year age class through group selection harvests on 2020 acres

*Proposed Action 2A3 is the same as Proposed Action 2C1. It is listed here since the same activity provides woodland habitat in the 0-9 year age class and 40-50 percent of the sawtimber component of the woodland habitat in the Oak, Oak-Pine, and Pine exhibits a condition of 20-30 percent forbs, grass and shrub ground cover. This proposal is identified in Crescent project map set as Proposed Action 2A3 or 2C1.*

*Note: The above activities would allow the Crescent Project Area to meet the Forest Plan Minimum Viability and the DFC for this category.*

- **Need 2B. Provide Woodland Habitat in old growth condition.** *Currently the Crescent Project Area does not meet the Forest Plan for Minimum Viability and the DFC in this category.*

Old growth habitats are used by approximately 87 terrestrial species (9 amphibians, 11 reptiles, 11 mammals, and 56 birds (including neotropical migrant birds)). Currently there are 241 acres of old growth habitat in the Crescent Project Area. In order to meet Forest Plan habitat objectives, this area needs at least 630 acres but should not exceed 1889 acres.

**Proposed Action 2B: Maintain and enhance habitat for old growth wildlife species.**

Designate 1350 acres of woodland habitat in old growth condition in the Crescent project area. These 1350 acres include a variety of forest types, and block sizes to provide a diversity of old growth forest conditions now and in the future at sustainable levels. Many of the Black and scarlet oaks in the Crescent Project Area are nearing or past their life expectancy of 90 years, thus the majority of the proposed old growth consists of longer age species such as white oak and post oak.

*Note: The above activities would allow the Crescent Project Area to meet the Forest Plan for Minimum Viability and the DFC for this category.*

- **Need 2C. Provide a habitat condition where 40-50 percent of the sawtimber component of the Woodland Habitat in Oak, Oak-Pine, and Pine exhibits a condition of 20-30 percent forbs, grass and shrub ground cover.** *Currently the Crescent Project Area does not meet the Forest Plan for Minimum Viability and the DFC in this category.*

Woodland habitats in oak, oak-pine, and pine forest types with 20% to 30% forbs, grass, and shrub ground cover are important habitat types for wildlife. Over 60 animal species are associated with this habitat type including 4 amphibians, 4 reptiles, 30 birds (including neotropical migrant birds), and 25 mammals. Currently there are 1,343 acres of this habitat in the Crescent project area. In order to meet Forest Plan habitat objectives, this area needs at least 2,519 acres but should not exceed 6,023 acres.

**Proposed Action 2C1: Group Selection Harvest**

Create 2020 acres of woodland habitats in oak, oak-pine, and pine that exhibit a condition of 20% to 30% forbs, grass and shrub ground cover through group selection harvests on 2020 acres.

*Proposed Action 2A3 is the same as Proposed Action 2C1. It is listed here since the same activity provides woodland habitat in the 0-9 year age class and 40-50 percent of the sawtimber component of the woodland habitat in the Oak, Oak-Pine, and Pine exhibits a condition of 20-30 percent forbs, grass and shrub ground cover. This proposal is identified in Crescent project map set as Proposed Action 2A3 or 2C1.*

**Proposed Action 2C2: Removal of Overstory**

Create 225 acres of woodland habitats in oak, oak-pine, and pine that exhibit a condition of 20% to 30% forbs, grass and shrub ground cover through overstory removal harvests on 450 acres.

**Proposed Action 2C3: Cedar Thinning**

Create 110 acres of woodland habitats in oak, oak-pine, and pine that exhibit a condition of 20% to 30% forbs, grass and shrub ground cover through cedar thinning on 220 acres.

**Proposed Action 2C4: Pine and Oak/Pine Thinning**

Create 1050 acres of woodland habitats in oak, oak-pine, and pine that exhibit a condition of 20% to 30% forbs, grass and shrub ground cover through pine and oak/pine thinning on 1300 acres.

**Proposed Action 2C5: Oak Thinning**

Create 520 acres of woodland habitats in oak, oak-pine, and pine that exhibit a condition of 20% to 30% forbs, grass and shrub ground cover through pine and oak/pine thinning on 820 acres

**Proposed Action 2C6: Savanna Improvement and Firewood Removal**

Maintain 230 acres of unique post oak savanna habitat and thereby contributing to woodland habitats in oak, oak-pine, and pine that exhibit a condition of 20% to 30% forbs, grass and shrub ground cover. This would be accomplished thru personal use firewood collection and prescribed burning on 230 acres.

*Proposed Action 2C6 is the same as Proposed Action 2E3. It is listed here since the same activity provides 40-50 percent of the sawtimber component of the woodland habitat in the Oak, Oak-Pine, and Pine exhibits a condition of 20-30 percent forbs, grass and shrub ground cover and open and semi-open habitats. This proposal is identified in Crescent project map set as Proposed Action 2C6.*

**Proposed Action 2C7: Improve Forest Health –Tree Mortality Salvage**

Create 17 acres of woodland habitats in oak, oak-pine, and pine forest types with 20% to 30% ground cover by forbs, grasses, and shrubs through tree mortality salvage on 100 acres in the Crescent project area.

*Proposed Action 2C7 is the same as Proposed Action 6A. It is listed here since the same activity provides 40-50 percent of the sawtimber component of the woodland habitat in the Oak, Oak-Pine, and Pine exhibits a condition of 20-30 percent forbs, grass and shrub ground cover and tree mortality salvage. This proposal is identified in Crescent project map set as Proposed Action 2C7.*

*Note: The above activities would allow the Crescent Project Area to meet the Forest Plan for Minimum Viability and the DFC for this category.*

- **Need 2D. Provide Woodland Habitat in oak type over 50 years with a dense understory.** *Currently, the Crescent Project Area meets the Forest Plan for Minimum Viability, but it does not meet the DFC in this category.*

This mature forest with dense understory (greater than 60% trees and tall shrubs) is usually associated with mesic forest on north and east facing slopes and in bottomlands. Wood thrush and ruffed grouse are Management Indicator Species (MIS) associated with this habitat, which is used by about 74 species including salamanders, wood frog, ruby and golden-crowned kinglets, black bear and others. Currently there are 1,054 acres of this habitat in the Crescent Project Area. In order to meet Forest Plan habitat objectives, this area needs at least 486 acres but should not exceed 1,798 acres.

**Proposed Action 2D: Shelterwood harvest**

Create 320 acres woodland habitat in oak type over 50 years with a dense understory through shelterwood harvests on 640 acres.

*Proposed Action 2D is the same as Proposed Action 2A1. It is listed here since the same activity provides woodland habitat in the 0-9 year age class and woodland habitat in oak type over 50 years with a dense understory. This proposal is identified in Crescent project map set as Proposed Action 2A1.*

*Note: The above activities would allow the Crescent Project Area to meet the Forest Plan for Minimum Viability and the DFC for this category.*

- **Need 2E. Provide Open and semi-open habitats.** *Currently the Crescent Project Area meets the Forest Plan for Minimum Viability and the DFC in this category.*

Open and semi-open lands are important habitats for approximately 200 species. These areas provide a vegetative composition and structure that differs from predominately forested environments. These habitats are constantly declining due to plant succession (which is often the result of fire exclusion on the landscape). Therefore there is a need to maintain some of

these open and semi-open areas. Currently there are 2,180 acres of this habitat in the Crescent Project Area. In order to meet Forest Plan habitat objectives, this area needs at least 125 acres but should not exceed 2,337 acres.

**Proposed Action 2E1: Burn/Mechanical/Graze for Opening Maintenance**

Maintain existing open and semi open habitat by utilizing mechanical means, grazing and/or prescribed fire on 160 acres.

**Proposed Action 2E2: Mechanical Treatment for Opening Maintenance**

Maintain existing open and semi open habitat by utilizing mechanical means such as brush hogging and or prescribed fire on 570 acres.

**Proposed Action 2E3: Savanna Improvement with Firewood Removal**

Maintain 230 acres of unique post oak savanna habitat. This would be accomplished through personal use firewood collection and prescribed burning.

*Proposed Action 2E3 is the same as Proposed Action 2C6. It is listed here since the same activity provides 40-50 percent of the sawtimber component of the woodland habitat in the Oak, Oak-Pine, and Pine exhibits a condition of 20-30 percent forbs, grass and shrub ground cover and open and semi-open habitats. This proposal is identified in Crescent project map set as Proposed Action 2C6.*

**Proposed Action 2E4: Maintain Existing Glades**

Maintain 70 acres of glade habitat with mechanical means and/or by utilizing prescribed fire.

*Note: By maintaining some of the existing open and semi-open areas, the above activities would allow the Crescent Project Area to continue to meet the Forest Plan for Minimum Viability and the DFC in this category. If no activity occurred in these open and semi-open areas they would eventually grow shut, resulting in a loss of this type habitat.*

- **Need 2F. Provide Water Sources**

These water sources include natural and constructed waterholes, springs, seeps, fens, and permanent streams or rivers. Waterholes or ponds are generally very small (about 1/10 – 1/4 acre) and fairly shallow (usually less than 10 feet deep). A small opening may surround some, while others are constructed within a forested stand. Maintaining these waterholes can include removing woody vegetation from the dam so roots will not breach it, hinge-falling one or more trees into the water to provide habitat for aquatic wildlife, or dredging sediment from the bottom of the waterhole to deepen it. These constructed waterholes are important as drinking water for many wildlife species and may also be utilized by amphibians and reptiles and insects. Currently there are 40 water sources in the Crescent Project Area. In order to meet Forest Plan habitat objectives, this area needs at least 20 water sources, but should not exceed 71 water sources.

**Proposed Action 2F1: Build Waterholes**

Build 8 new small waterholes for wildlife. *Note: some of these may be deep enough to provide potential fish habitat.*

**Proposed Action 2F2: Build Waterholes for Amphibians**

Build 5 waterholes for amphibians. These shallow waterholes would be under 2 feet deep and may occasionally dry up during the dry summer months. *Note: these would not be suitable for fish habitat.*

**Proposed Action 2F3: Improve Existing Waterholes**

Improve and maintain 8 existing waterholes, some of which are no longer functional or there is a potential for future dam failure. Maintaining these waterholes can include removing woody vegetation from the dam so roots will not breach it, hinge-falling one or more trees into the water to provide habitat for aquatic species, or dredging sediment from the bottom of the waterhole to deepen it. *Note: some of these may be deep enough to provide potential fish habitat.*

**Proposed Action 2F4: Develop Waterhole with Drinking System for Livestock Use.**

Construct (and/or improve existing waterholes) 8 waterholes. These would have a drinker system installed. This would allow these waterholes to be fenced off from livestock use and would provide good water sources for various wildlife species. *Note: some of these may be deep enough to provide potential fish habitat.*

*Proposed Action 2F4 is the same as Proposed Action 5E. It is listed here since the same activity provides water sources and improves Ecosystem Integrity and/or Watershed Health. This proposal is identified in Crescent project map set as Proposed Action 5E.*

*Note: The above activities would allow the Crescent Project Area to meet the Forest Plan for Minimum Viability and the DFC for this category.*

**3. Wildland/Urban Interface Fuel Reduction Needs**

Reduce the risk of wildland fire to the urban interface as per the National Fire Plan. Primarily those communities identified in the National Register of Communities at risk. The re-introduction of prescribed fire to the ecosystem is needed to increase the vegetative diversity and improve the overall health of the forest and in this case to reduce the risk of wildland fire to the urban interface.

**Proposed Action 3A: Wildland/Urban interface fuel reduction burns.**

Introduce prescribed fire to 270 acres that are located near communities identified in the National Register of Communities at risk in order to reduce the risk (and fuels) of wildland fires.

**4. Protect and Improve the Mayfield Spring Wet Meadow Special Area Need**

Currently, the Mayfield Spring Wet Meadow Special Area does not include special area designation to the river access, openlands, bluff, and slough around Mayfield Spring Wet Meadow. Current activity around Mayfield Spring indicates additional protection of the natural features in the area are needed.

**Proposed Action 4A: Increase the Mayfield Springs Special Management Area**

Increase the Mayfield Spring Wet Meadow Special Area designation (through a non-significant amendment of the current Mark Twain Forest Plan), from the current 10 acres, to that of, approximately 90 acres. This will change the current Management Area 3.4 (providing a

managed forest which emphasizes wildlife habitat diversity) to Management Area 8.1 (protect areas of special scientific, biological, historical, geological, scenic, recreational, and educational significance).

## 5. Ecosystem Integrity and/or Watershed Health Needs

There are several portions of the ecosystem in the Crescent Project Area that have degraded over time and need to be improved. This includes the presence of noxious weeds and non-native invasive species such as fescue (both of which have replaced native species). The re-introduction of prescribed fire to the ecosystem is needed to increase the vegetative diversity and improve the overall health of the forest. There are also some items that involve watershed health and water quality which need to be corrected.

### **Proposed Action 5A: Ecosystem Restoration Burns**

Introduce prescribed fire to 2800 acres in the Crescent project area.

*Note: Many of these burns would help to maintain existing open and semi-open areas (Item 2E).*

### **Proposed Action 5B: Fescue Control utilizing mechanical/herbicide/repeated burns**

There are areas with non-native fescue. This fescue has replaced native species. The thick fescue mat does not provide good wildlife habitat. It also prevents the successful establishment of either warm season grasses and/or hardwoods. Therefore, the proposed action is to control 400 acres of fescue utilizing mechanical means and/or herbicide and/or repeated burns to help with the establishment of native hardwood species and native Warm Season Grasses. *Note: Any herbicide utilized would be applied following EPA and manufactures label directions.*

### **Proposed Action 5C: Plant Native Hardwoods in riparian areas**

Several abandoned fields are located immediately adjacent to the Gasconade River. The proposed action is to improve bottomland riparian habitat by planting native hardwoods on 100 acres. *Note: Please see Proposed Action 5B, which would help with the successful establishment of hardwoods in existing non-native fescue fields.*

### **Proposed Action 5D: Plant Native Warm Season Grasses**

The amount of existing native warm season grasses present in the Crescent Project Area has been greatly reduced due to plant succession and after being replaced by non-native fescue fields. The proposed action is to enhance the warm season grass component in existing open and semi open habitat by planting 500 acres with Eastern Gamma grass or other native warm season grasses. *Note: this will help improve the quality of the open, semi-open habitat. Please see Proposed Action 5B, which would help with the successful establishment of Warm Season grasses in non-native fescue fields.*

### **Proposed Action 5E: Develop waterhole with drinking system for livestock**

Construct (and/or improve existing waterholes) 8 waterholes with drinker systems. This would allow these ponds to be fenced off from livestock use and would provide good water sources for various wildlife species. *Note: some of these may be deep enough to provide potential fish habitat*

*Proposed Action 5E is the same as Proposed Action 2F4. It is listed here since the same activity provides water sources and improves Ecosystem Integrity and/or Watershed Health. This proposal is identified in Crescent project map set as Proposed Action 5E.*

**Proposed Action 5F: Control Noxious Weeds**

Noxious weeds are replacing desirable native species. Therefore, the proposed action is to control noxious weed species such as multi-flora rose throughout the Crescent project area utilizing herbicides. *Note: Any herbicide utilized would be applied following EPA and manufactures label directions.*

**Proposed Action 5G: Dump Clean-up**

There are scattered illegal dump sites in the Crescent project area. These present a potential concern to public health and safety and may also present a watershed concern. Therefore, the proposed action is clean-up of these and/or future illegal trash dumpsites where present.

**Proposed Action 5H: Improve Watershed health by closing and rehabilitating old road corridors.**

There are many old road corridors that are presenting a watershed concern. Therefore, the proposed action is to improve overall watershed health by closing and rehabilitating 20 miles of existing old road corridors.

**Proposed Action 5I: Watershed rehabilitation – Stream bank stabilization**

Stabilize the eroding stream bank in Compartment 110 stand 53 using existing cedars in the area and planting native riparian species. The proposed action is to also stabilize the eroding stream bank in Compartment 103 stand 45 along the Gasconade River.

**6. Dead/Dying Tree Salvage and create desirable conditions for tree growth to insure healthy, sustainable forests, and provide for production of timber products.**

**Proposed Action 6A: Improve Forest Health –Tree Mortality Salvage**

Improve forest health through tree mortality salvage on 100 acres in the Crescent project area. *Proposed Action 6A is the same as Proposed Action 2C7. It is listed here since the same activity provides 40-50 percent of the sawtimber component of the woodland habitat in the Oak, Oak-Pine, and Pine exhibits a condition of 20-30 percent forbs, grass and shrub ground cover and tree mortality salvage. This proposal is identified in Crescent project map set as Proposed Action 2C7.*

**Associated and Connected Actions**

**Proposed Action: Fire Line Construction**

Some prescribed burn areas may need fire line construction.

**Proposed Action: Access for Management Activities**

(Proposed road work) Construction and obliteration of approximately 40 miles of temporary roads may be needed to facilitate access to the treatment area. In addition, permanent system roads need maintenance and/or reconditioning.

**Proposed Action: Right of Way**

There are several areas that need right of way access through private lands to conduct business on Forest Service lands. We propose to obtain right of way access thru these properties on negotiated terms with willing owners.

**Proposed Action: Other road needs**

We propose to relocate the entrance to FR-1676 on to Forest Service land due to the relocation/corrected adjustment of the landline in the area.

***Decision Space***

The District Ranger of the Houston/Rolla/Cedar Creek Ranger District of the Mark Twain National Forest is the Responsible Official for making project-level decisions for the Crescent Project.

Decision-making for the Crescent Project is limited to National Forest System lands within the project area and associated areas of connected actions.

Decision-making will be based on information in the Crescent Environmental Assessment and supporting record, including consideration of all public comments.

Decision-making will be limited to specific activities relating to the 'Proposed Actions' as presented in the 'Purpose of and Need for Action'. No decisions will be made for actions that are not responsive to the expressed 'Purpose of and Need for Action'.

The primary decision to be made for the Crescent Project will be whether to implement the 'Proposed Actions', an action alternative that responds to the 'Purpose of and Need for Action', or, to select the no action alternative.

If the 'Proposed Actions' or an action alternative is selected for implementation, the decision may include minor modifications or additional measures as appropriate or necessary. Documentation and rationale of included modifications and additional measures would be made in a 'Decision Notice'. If no action is selected for implementation, the Responsible Official may either discontinue the planning effort or document the decision in a 'Decision Notice'.