



United States
Department of
Agriculture

Forest
Service

June
2004

Environmental Assessment

Middle River II

Houston/Rolla/Cedar Creek Ranger District, Mark Twain National Forest
Callaway County, Missouri



10/31

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Table of Contents

| | |
|---|-----------|
| Chapter 1. Purpose of and Need for Action..... | 1 |
| <u>Document Structure</u> | 1 |
| <u>Project Location, Setting and Background</u> | 1 |
| Forest-wide Direction and Goals | 2 |
| Desired Future Forest Condition of Management Area..... | 3 |
| Management Area Prescription..... | 3 |
| <u>Purpose and Need for Action:</u> | 3 |
| <u>Proposed Action:</u> | 6 |
| A. Wildlife Habitat Enhancement Actions:..... | 6 |
| B. Watershed Health Actions:..... | 7 |
| C. Recreation Management Actions:..... | 8 |
| D. Associated or Connected Actions:..... | 8 |
| <u>Decision Framework</u> | 8 |
| <u>Public Involvement</u> | 9 |
| <u>Issues</u> | 9 |
| Relationship to Other Documents (Table 1)..... | 11 |
| Chapter 2. Alternatives Considered..... | 15 |
| <u>Alternative Development</u> | 15 |
| <u>Introduction, Formulation of Alternatives</u> | 15 |
| <u>Alternatives to be Evaluated in Detail</u> | 15 |
| Alternative 1 (No Action) | 15 |
| Alternative 2 (Proposed Action) | 16 |
| Alternative 3 (Preferred Alternative) | 17 |
| <u>Comparison of Alternatives</u> | 17 |
| Table 2: Alternative Summary Table..... | 18 |
| <u>Alternatives Considered but Eliminated from Detailed Study</u> | 20 |
| <u>Mitigation Common to All Action Alternatives</u> | 21 |
| <u>Issue Comparison (Table 3)</u> | 27 |
| <u>Proposed Treatment Comparison</u> | 27 |
| Table 4: Compartment/Stand Treatment Table—No Action—ALT. 1 | 27 |
| Table 5: Compartment/Stand Treatment Table— Proposed Action—ALT. 2 | 28 |
| Table 6: Compartment/Stand Treatment Table—ALT. 3..... | 31 |
| Chapter 3. Affected Environment and Environmental Consequences..... | 35 |
| <u>Background</u> | 36 |
| <u>Ecological Patterns and Processes, (Table 7)</u> | 36 |
| <u>Landtype Associations, Ecological Landtypes, and Terrestrial Natural Communities</u> | 36 |
| <u>Forest Plan Desired Future Condition Objectives</u> | 38 |
| • Desired Future Condition Comparison: (Table 8) | 40 |
| • Environmental Effects: | 41 |
| <u>Physical Environment</u> | |
| <u>Soil</u> | 42 |
| • <u>Existing Condition</u> | 42 |
| • <u>Environmental Effects</u> | 44 |

| | |
|--|-----|
| <u>Watershed</u> | 56 |
| • <u>Existing Condition</u> | 56 |
| • <u>Environmental Effects</u> | 57 |
| <u>Air Quality</u> | 59 |
| • <u>Existing Condition</u> | 59 |
| • <u>Environmental Effects (Table 9)</u> | 60 |
| <u>Transportation System</u> | 64 |
| • <u>Existing Condition</u> | 64 |
| • <u>Environmental Effects (Table 10)</u> | 64 |
| <u>Biological Environment</u> | |
| <u>Vegetation</u> | 66 |
| • <u>Existing Condition (Table 11)</u> | 66 |
| • <u>Environmental Effects</u> | 67 |
| <u>Plants</u> | 72 |
| <u>Threatened, Endangered and Proposed Plant Species:</u> | 72 |
| • <u>Existing Condition of Threatened, Endangered and Proposed Plant Species</u> | 72 |
| • <u>Environmental Effects of Threatened, Endangered and Proposed Plant Species</u> | 72 |
| <u>Regional Forester Sensitive Plant Species:</u> | 73 |
| • <u>Existing Condition of Sensitive Plant Species</u> | 73 |
| • <u>Environmental Effects of Sensitive Plant Species</u> | 74 |
| <u>State of Missouri Endangered Plant Species:</u> | 76 |
| • <u>Existing Condition of State of Missouri Endangered Plant Species</u> | 77 |
| • <u>Environmental Effects of State of Missouri Endangered Plant Species</u> | 77 |
| <u>Old Growth</u> | 77 |
| • <u>Existing Condition</u> | 77 |
| • <u>Environmental Effects</u> | 78 |
| <u>Wildlife</u> | 79 |
| <u>Threatened, Endangered and Proposed Wildlife Species</u> | 81 |
| • <u>Existing Condition of Threatened, Endangered and Proposed Wildlife Species:</u> | 81 |
| • <u>Environmental Effects on Threatened, Endangered and Proposed Wildlife Species</u> | 81 |
| <u>Species</u> | 82 |
| <u>Regional Forester Sensitive Wildlife Species</u> | 85 |
| • <u>Existing Condition of Sensitive Wildlife Species</u> | 85 |
| • <u>Environmental Effects on Sensitive Wildlife Species</u> | 85 |
| <u>Management Indicator Species</u> | 86 |
| • <u>Existing Condition for Management Indicator Species</u> | 86 |
| • <u>Environmental Effects on Management Indicator Species</u> | 89 |
| <u>State of Missouri Endangered Species (also known as Species of Concern)</u> | 96 |
| • <u>Existing Condition of State of Missouri Endangered Species</u> | 96 |
| • <u>Environmental Effects on State of Missouri Endangered Species</u> | 97 |
| <u>Neotropical Migrant Birds</u> | 99 |
| • <u>Existing Condition of Neotropical Migrant Birds</u> | 99 |
| • <u>Environmental Effects on Neotropical Migrant Birds</u> | 100 |
| <u>Fisheries</u> | 101 |
| • <u>Existing Condition</u> | 101 |

| | |
|---|------------|
| • Environmental Effects on Fisheries | 102 |
| <u>Threatened, Endangered and Proposed Fish Species:</u> | 104 |
| • Existing Condition of Threatened, Endangered and Proposed Fish Species | 105 |
| • Environmental Effects of Threatened, Endangered and Proposed Fish Species | 105 |
| <u>Regional Forester Sensitive Fish Species:</u> | 106 |
| • Existing Condition of Regional Forester Sensitive Fish Species..... | 106 |
| • Environmental Effects of Regional Forester Sensitive Fish Species..... | 106 |
| <u>State of Missouri Endangered Fish Species:</u> | 106 |
| • Existing Condition of State of Missouri Endangered Fish Species | 107 |
| • Environmental Effects of State of Missouri Endangered Fish Species | 107 |
| <u>Specialized Habitats</u> | 108 |
| • Existing Conditions..... | 108 |
| • Environmental Effects | 109 |
| <u>Social and Economic Environments</u> | |
| <u>Recreation Resources</u> | 112 |
| • Existing Condition | 112 |
| • Environmental Effects | 113 |
| <u>Visual Quality</u> | 114 |
| • Existing Condition | 115 |
| • Environmental Effects | 115 |
| <u>Heritage Resources</u> | 117 |
| • Existing Conditions..... | 117 |
| • Environmental Effects | 119 |
| <u>Environmental Justice</u> | 120 |
| • Existing Conditions (Table 12)..... | 120 |
| • Environmental Effects..... | 122 |
| <u>Economics</u> | 122 |
| • Existing Condition | 122 |
| • Environmental Effects (Table 13)..... | 123 |
| <u>Chapter 4. Additional Management Tools used to Achieve DFC..</u> 127 | |
| <u>Range Management (Table 14)</u> | 127 |
| • Existing Condition | 127 |
| • Environmental Effects (Table 15)..... | 129 |
| <u>Fire Management</u> | 131 |
| • Existing Condition | 131 |
| • Environmental Effects | 132 |
| <u>Invasive Plant Management</u> | 134 |
| • Existing Condition | 135 |
| • Environmental Effects (Table 16,17, 18,19,20,21,22,23)..... | 136 |
| <u>Monitoring</u> | 149 |
| <u>Chapter 5. Project Coordination</u> | 151 |
| <u>Preparers, Contributors, and Ad-Hoc Members (Table 24, 25)</u> | 151 |
| <u>Agencies Consulted</u> | 152 |

Appendices

| | |
|---|------|
| <u>Appendix A: References</u> | A-1 |
| <u>Appendix B: Glossaries</u> | B-1 |
| <u>Glossary of Terms Used.....</u> | B-3 |
| <u>Glossary of Abbreviations and Acronyms.....</u> | B-13 |
| <u>Appendix C: Biodiversity</u> | C-1 |
| <u>Appendix D: Economic Analysis Tables</u> | D-1 |
| <u>Appendix E: Soil Characteristics Tables</u> | E-1 |
| <u>Appendix F: Project Maps</u> | F-1 |
| <u>Appendix G: Biological Assessment / Biological Evaluation</u> | G-1 |
| <u>Appendix H: Photographs of Invasive Plants, Herbicide Labels, and MSDS</u> | H-1 |