1 Purpose of and Need for Action

1.1 Summary of Proposed Action

The Redbird Crest Trail (RCT) is a component of the Forest Service trail system located on the Redbird Ranger District of the Daniel Boone National Forest. This trail, located in Clay and Leslie Counties, Kentucky, has been designated for use by off-highway vehicles (OHV) less than 50 inches wide. The United States Department of Agriculture, Forest Service is proposing to relocate Segment 1, 8 and 9 to more favorable locations and to perform the necessary construction, reconstruction or refurbishment to gain compliance with Forest Service trail design standards and insure resource protection and public safety. Approximately 5.0 miles of existing OHV trail will be rehabilitated and restored to a reasonable natural condition. In addition, the project would construct 0.21 miles of new trail and reconstruct 0.59 miles of old roads (See Maps, Appendix A).

1.2 Desired Future Condition

The RCT has traditionally been a multipurpose trail used by hikers, all terrain vehicle (ATV) enthusiasts and motorcyclists. Generally, the entire trail has been suitable for hiking and motorcycle use but only portions of it were wide enough to be suitable for ATV's. A decision, documented in the Record of Decision (ROD) for the *Final Environmental Impact Statement for Amending the Daniel Boone National Forest Off-Highway Vehicle Management Direction* (OHV-EIS) designated the Redbird Crest Trail as an OHV route for vehicles that are less than 50 inches wide (ROD-10 and Appendix E).

1.3 Current Conditions

Segment 1

Segment 1 is a single-track trail, approximately 2.7 miles in length, unsuitable for use by ATV's. It is located across the Red Bird River from the ranger station located near Big Creek, Kentucky. It is described in the OHV-EIS (Appendix E, pages E 4-5). It is located on steep side slopes and the required maintenance is frequent, difficult and labor intensive. The single-track is more often a single rut, forcing riders to use the outside berm. The rut channels water during precipitation.

Segments 8 and 9

Segments 8 and 9 are located near Stinnett Gap adjacent to State Highway 406 in Leslie County, Kentucky. Segment 8 is a single-track trail with a length of approximately 2.3 miles. It is in fairly good shape with a few local exceptions. Segment 9 is located on an old woods road and the affected portion is approximately 400 feet long. Of primary concern is an 800 foot section of Highway 406 that connects the two segments. Although the highway connector is currently legal for use by both licensed motorcycles and ATV's (being less than the two-tenths mile limit established by state law), it is not

optimal from a safety stand point. The highway contains curves and road cuts that restrict sight distance, particularly at the junction with Segment 8.

1.4 The Proposed Action

Segment 1

A portion of Segment 1 would be relocated. Beginning at the gas well across the river from the Redbird office, the new location would run southeast and parallel to the Red Bird River to the point where the trail leaves the river. This section would be moved to a more environmentally acceptable location and constructed to accommodate off highway vehicles (OHV's) up to 50 inches wide as specified in the OHV-EIS. The new route would require:

- Improve (spot gravel) and use 1.55 miles of the old county road (Forest Service Road 1822).
- Reconstructing 0.59 miles (clearing, surface improvement, drain) of an old woods road.
- Construction of 0.05 miles of new trail.
- This proposal includes a Forest Plan amendment.

The portion of the current trail to be replaced by the new segment would be closed to mechanized traffic and used for foot travel only. This would produce a loop trail for hiking of approximately 3.5 miles consisting of the existing ridge top trail and the wider relocated trail.

Segments 8 and 9

A combination of newly constructed trail, old logging roads and an existing Forest Service road would be used to form an OHV route to replace unsuitable portions of these segments. This action would require:

- Closure of approximately 3.0 miles of Forest Service Road 1790 to vehicles in excess of 50 inches wide.
- The designation and management of approximately 3.0 miles of road 1790 as an OHV trail.
- Opening approximately 1.8 miles of old logging roads for OHV use.
- Closure of approximately 2.3 miles of existing trail that is unsuitable for OHV's.
- Construction of approximately 0.16 miles of new OHV trail.
- Installing a Gate on FDR 1790 at the SR 406 junction.
- A Forest Plan amendment specific to this proposal.

1.5 Other Documents That Influence the Scope of this Analysis

The analysis documented in this environmental assessment tiers to the *Final Environmental Impact Statement for the Daniel Boone National Forest Land and*

Resource Management Plan. This includes the analysis completed for the *Final Environmental Impact Statement for Amending the Daniel Boone National Forest Off-Highway Vehicle Management Direction.*

The *Land and Resource Management Plan for the Daniel Boone National Forest* (Forest Plan) establishes long-term direction for managing the natural resources on the DBNF. Administrative activities, use and occupancy must be in conformance with the Forest Plan (page I-2).

The Forest Plan contains Forest Management Goals pertaining to this proposal (IV-1):

- Provide a broad spectrum of recreation opportunities.
- Protect, maintain and/or improve soil productivity and water quality.

1.6 Forest Plan Amendment

Appendix E-2 of the OHV-EIS contains two standards and guidelines pertaining to these projects that were amended into the Forest Plan.

- Design trails on side slopes of less than 40 percent and avoid sensitive soil types whenever possible.

- OHV routes should avoid 100-year flood plains next to perennial streams, except at designated crossings.

The proposed action would appear to exceed these two standards. When this occurs the Forest Plan must be amended prior to implementation. This proposal includes a site specific amendment that would authorize an exception to the two standards referenced previously.

Significance of the Amendment

This proposal would, for this project only, amend the Forest Plan for the Daniel Boone National Forest. The implementing regulations for the National Forest Management Act require that the Forest Supervisor determine whether any proposed amendment would result in a significant change to the Forest Plan (36 CFR 219.10 (e) & (f)). In evaluating the potential significance of the proposed amendment, the preliminary analysis considers its timing; location and size; its effect on goals, objectives, and outputs; and change to the management prescriptions.

Timing: The changes in management direction would take place before the next scheduled revision of the Forest Plan, which is currently underway.

Location and Size: The affected areas are located across from the Redbird District office and near the Stinnet Gap adjacent to State Highway 406. The size: approximately 7.5 miles of newly designated trail, consisting of old logging roads, an existing Forest

Service road to be improved, and new construction. This would replace the existing 5 miles of Redbird Crest Trail that cannot be made compatible with OHV use. There are 66 miles of the Redbird Crest Trail. Fifty-two miles are open to OHV's less than 50 inches in width (OHV-EIS). The amendment would apply to only this project.

Goals, Objectives, and Output: The proposed amendment provides improved means for achieving Forest Plan Goal 10: "Protect, maintain and/or improve soil productivity and water quality." The OHV-EIS states that the trail must be reconstructed or relocated to be compatible with all OHV's less that 50 inches in width. The proposed amendment would bring these portions of the trail into compliance with the OHV-EIS. This change would not alter the level of goods and services projected by the Forest Plan.

Management Prescription: There are no changes to management prescriptions

1.7 Scoping

These projects were scoped separately on previous occasions. The scoping notice for the Segment 1 Relocation Project was signed and mailed out on May 19, 1999. It was approved as a Categorical Exclusion and a Decision Memo was signed on December 6, 1999. The decision was withdrawn and documented in a letter by the Responsible Official dated January 11, 2000. It was decided that further analysis of the Forest Plan standards and guidelines was needed.

The scoping notice for the 406 Relocation project was signed and mailed out on July 12, 1999. No decision was reached concerning this project.

These two projects are combined and re-scoped as one. The scoping notice was mailed to all those listed on the Redbird Ranger District mailing list on March 4, 2002. Those on the Daniel Boone National Forest list who had indicated an interest in this type of project also received a copy. A public notice was also published in the Lexington Herald Leader on March 6, 2002.

1.8 Issue Identification

The interdisciplinary team reviewed all comment letters to identify concerns, or issues specific to the proposed action. The team also reviewed the issues identified during the initial scoping efforts. Issues are statements of unresolved conflict regarding specific environmental effects of the proposed action. All comments were analyzed for their significance to the proposed action. The responsible official reviewed and approved the team's recommended classification of the issues.

Issues that were determined to be significant to the proposed action are those issues that have wide geographic extent, have long-term effects, or are highly controversial and generate a high level of public interest. The significant issues were used to develop alternatives to the proposed action.

Issues which are outside the scope of the proposed action or which have already been addressed by existing laws or previous decisions are considered to be non-significant. Non-significant issues also include those, which are not relevant to the decision to be made, and those that are based on conjecture rather than scientific evidence.

1.8.1 Preliminary Issues:

The following issues concerning environmental effects were identified during the original scoping:

- Potential for soil and water problems

- Cultural resource protection

  A cultural resource survey, completed after the original scooping, has determined that Native American religious or cultural sites, archaeological sites, or historical properties or areas will not be affected by the proposed action.

- The potential effects on Federally listed species

  Biological evaluations were prepared after the original scoping for both projects with a finding of "not likely to adversely affect" for threatened and endangered species. The U.S. Fish and Wildlife Service has concurred with these findings.

- User safety when crossing roads
- Loss of a ridge top trail for foot travel

  Developing a loop trail is embraced in the current proposal

- Ineffective closure of the old routes causing extensive trail use

1.8.2 Non-significant issues identified by the ID Team

A complete listing of non-significant issues along with the accompanying discussion and rationale is found in Appendix B of this document.

1.8.3 Significant Issues

The following significant issue was identified by the ID Team and approved by the Responsible Offical for this project:

- Water quality, erosion, flood plains and steep slopes.

The proposal would relocate a portion of Segment 1 to the 100-year flood plain of the Redbird River. Portions of both Segment 1 and 8 and 9 would be moved to slopes exceeding 40%.

Indicators: Length of trail in Red Bird River flood plain.
Length of trail on slopes exceeding 40%.

1.9.0 Decision to be made

The decision to be made is whether to implement the action as proposed or to implement an alternative action or, to implement the No Action alternative. If the decision is to implement the no-action alternative, no amendment to the Forest Plan would be required. Implementation of the Record of Decision (OHV-EIS) concerning these sections of the RCT would be deferred.

2 Alternatives Including the Proposed Action

2.0 Introduction

The regulations at 40 CFR Part 1505.1(e) require that a range of alternatives be considered in the decision making process. This section describes the range of alternatives identified for this project by the Interdisciplinary Team. The range of alternatives includes both reasonable alternatives and those eliminated from detailed study. Reasonable alternatives, as defined for the purposes of this analysis, are those that (1) fulfill the purpose and need, and, (2) address the significant issues described in section 1.

The following actions **(Best Management Practices)** are common to all action alternatives and would be applied as mitigation to construction and reconstruction.

1. Trail construction will be accomplished during the summer through the fall period of the year when soil conditions and stream flows are the most favorable. Indiana bat guidelines as per *Special Habitat Needs and Silviculture Amendment* –Appendix A, page 245 will be observed regarding the removal of mid-story trees necessitated by the construction.

2. Temporary erosion control structures will be utilized when trail construction/reconstruction is occurring in close proximity to streams and within 100 year floodplains. These may include such Best Management Practices as geotextile fabric silt fencing, straw bale filter fencing/sediment traps, brush barriers, etc.

3. Divert water runoff from trails to reduce erosion. Provide drainage either by rolling the trail grade, outsloping the tread, or constructing cross drains.

4. Armour or harden stream crossings to reduce erosion and sediment delivery directly into the stream channel. Stream crossings and approaches will be rocked as needed, but as a minimum 25 feet from the stream channel. All trail sections within 100 year flood plain of the Red Bird River will be hardened where needed for resource protection and support of OHV traffic. Materials that may be used include gravel, native stone, cinder blocks, concrete planks, a geotextile fabric, and other materials that will result in the long term stabilization of the trail tread and reduction of stream sedimentation.

5. Design turns to minimize excavation and cutbank exposure. This may be accomplished by using climbing turns and avoiding switchbacks whenever possible.

6. Harden climbing turns, switchbacks and grades above 15 percent.

7. Rock or otherwise harden soft sections of trail not capable of supporting traffic without causing ponding or ruts in the trail tread.

8. Restrict traffic on trails to meet trail management objectives and reduce resource damage. This may include seasonal closures.

9. Revegetate disturbed soils either side of the trail tread after construction/reconstruction is completed.

10. Once the trail system is in place and being used, and then if it is discovered through monitoring that sections are experiencing damage or areas of trail expansion (disturbed areas) are occurring, such as from diverging trails and trail intersections due to natural obstacles (e.g. loose rock, wet spots, downed trees, roots or short cuts, etc.), consideration will be given to a higher level of maintenance, closure and restoration, and relocation/realignment or change in grade.

Following are descriptions of all the alternatives including the proposed action, the no action alternative, alternatives not examined in detail and a discussion of the search for reasonable alternatives that respond to the significant issues and meet the purpose and need. The section also describes how each alternative would meet project objectives (purpose and need) and includes a summarization of the environmental consequences for comparison purposes.

2.1 Alternative 1 - The No Action alternative The No Action Alternative is required by regulations found at 40 CFR §1502.14(d).

The No Action alternative would be to continue using the Red Bird Crest Trail (RCT), Segments 1, 8 and 9 as they presently exist, in their current locations and to maintain them according to the present schedule of maintenance. The present use is primarily by motorcyclists.

Currently Segment 1 of the RCT is a single-tract trail 2.7 miles in length. Segment 8 is a single-track trail 2.3 miles in length.

Segment 9 (that portion within the scope of this analysis) is approximately 400 feet in length and is suitable for ATVs up to 50 inches in width.

The Forest Plan, as amended, describes the desired future condition for the RCT as being suitable for ATV's 50 inches or less in width along its entire length. Presently, these segments are not suitable for this described use. The selection of this alternative would not alter the original decision documented in the ROD (OHV-EIS) although implementation of those portions specific to the RCT would be deferred for an unspecified time.

2.2 Alternative 2 - Relocation Above the Flood Plain.

This alternative is nearly the same as the proposed action. It has been developed in response to the significant issue described at Section 1.8.3. The pertaining Forest Plan Standard is as follows:

OHV routes should avoid 100 year flood plains next to perennial streams, except at designated crossings (OHV-EIS (Appendix E, page E-2)),

As originally proposed, Segment 1 would be partially relocated to Forest Development Road (FDR) 1822 which undulates in and out of the Redbird River flood plain. In this alternative only those portions of the road lying above the flood plain would be used as trail. The utilizable sections would be connected by new trail in such a manner that the entire stretch would be above the flood plain. From the point where the trail leaves the river, the alternative would be identical to the proposed action.

Following is a synopsis of required actions for this alternative:

2.2.1 - Segment 1

- Improve (spot gravel) and use 6,440 feet of the old county road (Forest Service Road 1822).
- 3100 feet of reconstruction (clearing, surface improvement, drain) of an old woods road.
- 2,030 feet of new construction.
- This proposal includes a Forest Plan amendment.

The portion of the current trail to be replaced by the new segment would be closed to mechanized traffic and used for foot travel only. This would produce a loop trail for hiking of approximately 3.5 miles consisting of the existing ridge top trail and the wider relocated trail.

2.2.2 - Segments 8 and 9

A combination of newly constructed trail, old logging roads and an existing Forest Service road would be used to form an OHV route to replace unsuitable portions of these segments. This action would require:

- Eliminate vehicles in excess of 50 inches width on approximately 3.0 miles of Forest Service Road 1790.
- The management and use of approximately 3.0 miles of the above road as an OHV trail.
- Opening approximately 1.8 miles of old logging roads for OHV use.
- Closure of approximately 2.3 miles of existing trail that is unsuitable for OHV's.
- Construction of approximately 850 feet of new OHV trail.
- Gate FDR 1790 at the SR 406 junction.
- This proposal includes a Forest Plan amendment.

2.3 Alternative 3 - The proposed Action

The Best management Practices detailed above under Alternative 2 would also apply to this alternative.

2.3.1 - Segment 1

Segment 1 would be moved to a more environmentally acceptable location and constructed to accommodate off highway vehicles (OHV's) up to 50 inches wide as specified in the OHV-EIS. The new route would require:

- Improve (spot gravel) and use 8200 feet of the old county road (Forest Service Road 1822).
- 3100 feet of reconstruction (clearing, surface improvement, drain) of an old woods road.
- 270 feet of new construction.
- This proposal includes a Forest Plan amendment.

The portion of the current trail to be replaced by the new segment would be closed to mechanized traffic and used for foot travel only. This would produce a loop trail for hiking of approximately 3.5 miles consisting of the existing ridge top trail and the wider relocated trail.

2.3.2 Segments 8 and 9

A combination of newly constructed trail, old logging roads and an existing Forest Service road would be used to form an OHV route to replace unsuitable portions of segments 8 and 9. This action would require:

- Eliminate vehicles in excess of 50 inches width on approximately 3.0 miles of Forest Service Road 1790.
- The management and use of approximately 3.0 miles of the above road as an OHV trail.
- Open approximately 1.8 miles of old logging roads for OHV use.
- Closure of approximately 2.3 miles of existing trail that is unsuitable for OHV's.
- Construction of approximately 850 feet of new OHV trail.
- Gate FDR 1790 at the SR 406 junction.
- This proposal includes a Forest Plan amendment.

2.4 ***The following alternatives were considered but will not be examined in detail in the analysis.***

2.4.1 Eliminate the use of all motorized recreational vehicles on the Daniel Boone National Forest.

Several letters received from the public during project scoping contained comments expressing a general desire that motorized recreational vehicles be banned or made unauthorized on the forest. A number of reasons were cited for this ranging from noise pollution to negative effects caused to a variety of natural resources. Although this was identified as an issue during the scoping process it was considered to be non-significant for purposes of the analysis.

The rationale for this determination is found in the following:

Executive Order
The general authority for the use of off road vehicles is established with Executive Order 116-44 as amended by Executive Order 119-89, Use of Off-Road Vehicles.

Policy
Provide a diversity of off-road vehicle recreational opportunities when:

a. The use is compatible with established land and resource management objectives. (FSM 2355.03 - Policy)

Forest Plan (As amended)
As this policy applies to the Daniel Boone National Forest, the record establishes ATVs as a compatible use of National Forest System lands (OHV-EIS):

Current Forest Plan management direction permits off-highway Vehicle (OHV) use Forest-wide except where prohibited to protect resource management values...(ROD-1)

Alternative D permits recreational OHV use on the forest only on routes designated for their use (ROD-2).

Prior Environmental Analysis
The Forest Service considered this a non-significant issue in the analysis documented in the OHV-EIS (See Record of Decision, non-significant issue #1, page ROD-5).

In view of the fact that the use of ATVs is established as a legitimate form of recreation by Executive Order and Forest Service policy, and that this same use has been examined and authorized during the forest planning process for the Daniel Boone National Forest, this alternative will not be examined in detail in the analysis.

2.4.2 Maintain Segments 1, 8 and 9 as motorcycle loop trails; create new novice or ATV trails as per the proposed action.

Several letters received during scoping indicated a concern that the proposed action would eliminate existing "challenging" motorcycle trails which are regionally in short

supply. This is an issue because the proposed action would cause this effect on the human environment.

It is acknowledged that there may be a need for the more challenging motorcycle trails on the Redbird District. From a planning perspective, additions to the OHV trail system must be preceded by a hard look at the total district OHV trail package. This comprehensive analysis would be beyond the scope of this project.

As a practical matter, this alternative would not alleviate the objections or problems associated with the existing segments. Certain sections of trail that are expensive and nearly impossible to maintain would remain in use. One objective is to eliminate an 800 foot section where vehicles are required to ride on a state highway containing blind curves.

For the above stated reasons this alternative will not be carried forward in the analysis.

2.4.3 Data Summary

The following table contains data pertaining to each alternative and provides the basis for comparisons in terms of Purpose and Need, Issues, and engineering data.

Table 1 Summary Comparison of Alternatives

Purpose and Need	**Alternative 1**	**Alternative 2**	**Alternative 3**
Trails Compatible with OHV's less than 50 inches wide	0.08 Miles	7.16 Miles	7.15 Miles
Highway Trail	0.15 Miles	0.0 Miles	0.0 Miles
Trail With Extreme Maintenance Problems	0.32 Miles	0.05 Miles	0.05 Miles
Issues			
Trail located on slopes exceeding 40%	0.42 Miles	0.27 Miles	0.27 Miles
Trails Located in the 100 Year Flood Plain	0.0 Miles	0.0 Miles	0.38 Miles
Engineering Data			
System Road Improvement	0.0 Miles	1.22 Miles	1.55 Miles
Primitive Road Reconstruction	0.0 Miles	0.59 Miles	0.59 Miles
New Trail Construction	0.0 Miles	0.55 Miles	0.21 Miles
Resource Indicators			
PET Species	Not Likely to Affect	Not Likely to Affect	Not Likely to Affect
Sensitive	Not likely to cause federal listing trend/loss of viability	Not likely to cause federal listing trend/loss of viability	Not likely to cause federal listing trend/loss of viability
Management Indicator Species	No Impact	No Impact	No Impact

3.0 Effects Analysis

This Section describes the expected direct, indirect and cumulative effects of each alternative. The analysis focuses on topics derived from the significant issues, the Forest Plan EIS, and findings required of the decision maker by law in the Decision Notice /Finding of No Significant Impacts.

3.1 Social Component

3.1.1 Recreation (Dispersed and Developed) and Visual Resource

Affected Environment

The Redbird Ranger District has two developed recreation sites. Both are day use only picnic areas, one located on Big Creek in Clay County, Kentucky and the other on Beech Fork in Leslie County, Kentucky. Neither of these areas are influenced by users of the RCT and this is not likely to change in the forseeable future. Developed recreation will not be discussed further.

Dispersed recreation occurs across the district, primarily in the form of hunting, horseback riding, and gathering of forest products such as roots and moss. Hiking, viewing, swimming and fishing are also done but these types of usage are considered minor. The most prevalent form of dispersed recreation is the riding of OHV's which occurs both legally and illegally across the district. The RCT is considered one of the leading ATV trails in Kentucky and it is used by both local and out-of-state riders. The RCT runs through the Redbird Wildlife Management Area.

The Scenery Management System used by the Forest Service classifies the land surrounding segments 1,8 and 9 of the RCT as a scenic attractiveness of 2 (from a scale of 1 to 5), with 1 representing the most attractive.

Alternative 1 (No Action)

There would be no change in the RCT and its usage would remain the same. Approximately 0.15 miles of the trail would fall on State Route 406 and approximately 0.32 miles of the trail would remain in a state with extreme maintenance problems. Attainment of the desired future condition of the trail would be deferred until a later, unspecified time. There would be no **direct, indirect, or cumulative** effects expected concerning dispersed recreation or the visual resource.

Alternative 2

This alternative would make segments 1, 8, and 9 (approximately 7.16 miles) of the RCT fully compatible with OHV's up to 50 inches in width. The desired future condition of the trail as specified in the Forest Plan would be partially attained. The current location for Segment 1 would be converted to a hiking trail loop.

Direct effect. Those who use OHV's for transportation (as opposed to riding for riding's sake) will find expanded access to areas formerly only accessed by motorcycles. For those who just like to ride (OHV's), the longer segments available for OHV riding will be an improvement. The only highway use would be a 25 foot right angle crossing of State Route 406.

The relocation would result in the loss of five miles of single track trail presently only accessible to motorcycles. The relocation would not eliminate motorcycle use because they would be authorized to use the new sections but motorcyclists would lose some trail they find challenging and desirable. These would either be converted to a foot trail or restored to near-natural conditions.

A 2.7 mile hiking trail would be added to the district system. Use is not expected to be heavy but occasionally visitors inquire about taking a short family walk near the district office.

Cumulative effect. The cumulative effect would be to move the RCT toward its stated desired future condition.

There would be no **direct, indirect, or cumulative effects** on the visual resource.

Alternative 3

This alternative would make segments 1, 8, and 9 (approximately 7.15 miles) of the RCT fully compatible with OHV's up to 50 inches in width. The desired future condition of the trail as specified in the Forest Plan would be partially attained.

Direct effect. Those who use OHV's for transportation (as opposed to riding for riding's sake) will find expanded access to areas formerly only accessed by motorcycles. For those who just like to ride (OHV's), the longer segments available for OHV riding will be an improvement. The only highway use would be a 25 foot right angle crossing of State Route 406.

The relocation would result in the loss of five miles of single tract trail physically restricted to the use of motorcycles. The relocation would not eliminate motorcycle use because they would be authorized to use the new sections but motorcyclists would lose some trail they find challenging and desirable. These would either be converted to a foot trail or restored to the pre-white man ecosystem.

Cumulative effect. The cumulative effect would be to move the RCT toward its stated desired future condition.

There would be no **direct, indirect, or cumulative effects** on the visual resource.

3.1.2 Cultural Resources

Affected Environment

A cultural resource field survey was conducted on the proposed relocation site. No cultural resource sites were identified. The State Heritage Preservation Officer concurred with this finding. If any of the action alternatives are selected and cultural resources are discovered during any phase of the work, progress will be stopped pending further survey work and additional consultation.

There will be no **direct, indirect or cumulative** effects as a result of either Alternative 1, Alternative 2, or Alternative 3 on the cultural resource.

3.1.3 Rights-of-Way/Special Uses

Affected Environment

There are no rights-of way or special uses identified on any of the proposed sites. None of the alternatives would cause an effect.

3.1.4 Transportation

Affected Environment

Forest Service Road 1822 is one mile long and located across the Red Bird River from the District office. It is a general purpose road used primarily for access to a gas well and from time to time, during periods of high water, provides access to a house located near its end. Usage past the gas well is very limited. The RCT traverses this road for a short stretch beginning at the low water bridge crossing the Red Bird River and ending at the ramp accessing the gas well.

Forest Service Road 1790 is a general purpose, high clearance road that begins at State Route 406 and continues for 2.1 miles. From this point the system road stops but an old, un-maintained, road prism continues on for approximately another mile. This road would be used for a portion of Segment 8 of the RCT.

State Route 406 is a two lane state highway that currently serves also as 800 feet of the RCT.

Alternative 1

There would be no **direct, indirect or cumulative** effects on the transportation system as a result of this alternative. Current usage would remain the same.

Alternatives 2 and 3

Direct effects. Forest Service Road 1822 would become part of the RCT although it would still be available for occasional access by service trucks to the gas well ¼ mile from the Redbird River bridge or other administrative use by the Agency.

Forest Service Road 1790 would be gated and blocked to all but authorized RCT traffic. This road may be returned to normal service from time to time for fire control, timber management actions and other administrative uses.

An **indirect effect** would be the elimination of OHV traffic on 800 feet of State Route 406.

Beyond this there would be no other **direct, indirect, or cumulative** effects on the transportation resource.

3.1.5 Socio – economic Considerations

Affected Environment

The counties within which the RCT falls are among the poorest in the nation. OHV's are used extensively by a wide range of the public for both transportation and recreational purposes. There is little support for restrictions on OHV usage as evidenced by comments made over time by the people, the local authorities and the lack of law enforcement regarding illegal highway use. There are no significant minorities identified in the area.

The only known effect of the proposed action on the socio-economic condition would be the potential for a slight increase in local commerce. There may be a small influx of out-of-state or other non-local users.

No other effects, either **direct, indirect or cumulative** are expected on the socio-economic environment.

3.1.6 Special Areas

Affected Environment

Information concerning Special Areas or Areas of Significant Public Interest on the Daniel Boone can be found in the *Environmental Impact Statement - Daniel Boone National Forest, Record of Decision* (Section VII and VIII) and the *Land and Resource Management Plan- Daniel Boone National Forest* at pages III-2/3, IV-1, 3a, 3b, 5, 6a, and D-3. Additional information pertaining to NEPA may be found at 40 CFR 1508.27.

There are no designated wilderness, geologic, scenic, botanical areas near the proposed action. There are no wild and scenic rivers near the proposed work.

The Elisha Creek Research Natural Area located to the east of segment 8 is proposed but not formally established.

Segment 1 runs through the Red Bird River Corridor, a potential special area nominated by the Kentucky State Nature Preserves Commission (KSNPC).

Relocating Section 8 would reduce noise levels reaching the proposed Elisha Creek Research Natural area. Segment 1, located primarily on the boundary of the Red Bird River Corridor, would be moved into the interior of this Potential Special Area. The new location would be immediately across the river from the highway on Forest Service 1822 and would have little to no effect on the characteristics of the area that make it attractive to the KSNPC.

No other **direct, indirect, or cumulative** effects are expected beyond those mentioned above.

3.1.7 Health and Human Safety

Affected Environment

Two health/safety issues are pertinent to this analysis. First, the local population of motorcyclists and OHV users rarely use any safety equipment, for example riding helmets. Second, the RCT uses approximately 850 feet of State Route 406. While this is legal by state law it is less than optimum from a safety standpoint.

Alternative 1 would have no **direct** affect on human safety. The safety consciousness of the local user would remain the same and the RCT would remain located on Highway 406 for an undetermined length of time. There would be no **indirect or cumulative** effects on safety as a result of selecting this alternative.

Alternatives 1 and 2 would have a **direct** effect of relocating the trail from the highway to a designed setting. It is anticipated that an **indirect** beneficial effect may result by turning the RCT into a top class recreation facility with the expected influx of organized, better trained riders who have and use better safety equipment. While it is supposition, the over all effect may be to improve the attitudes and equipment use of at least some of the less disciplined riders.

3.2 Biological Component

3.2.1 Vegetation

Alternative 1 would result in no **direct, indirect or cumulative** effects on vegetation.

Alternatives 2 and 3 would have a **direct** effect of the limited disturbance of vegetation, where new construction is required. This would be primarily to the weed and shrub layer but the removal of a few mid-story trees would also be expected. No **indirect or cumulative** effects on vegetation would be expected.

3.2.2 Management Indicator Species (MIS)

Affected Environment

Management indicator species are selected because their population changes are believed to indicate the effects of management activities. The DBNF lists 6 terrestrial species and 7 aquatic species to represent the various kinds of habitat. Information about each of these species including that concerning viability is found in *Management Indicator Species Population and Habitat Trends Report 1985-2000*. Of those listed for the DBNF, only 5 terrestrial and 6 aquatic species have the potential to be found in or around the project area. These are listed below:

Terrestrial

Representatives of Early Successional Stages

- White tailed deer
- Rufous Sided Towhee
- Eastern Bluebird

Representative of Late Successional Species

- Eastern Gray Squirrel
- Pileated Woodpecker

Aquatic

- Smallmouth Bass
- Arrow Darter
- Fantail Darter
- Rainbow Darter
- Stoneroller
- Brindled Madtom

The above mentioned report indicates that there are no apparent viability concerns for any of the above species except the brindled madtom. In the case of the brindled madtom there is not enough base line data to support a conclusion.

There would be no **direct, indirect, or cumulative** effects in response to Alternative 1 concerning MIS.

The **direct, indirect, and cumulative** effects (Alternatives 2 and 3) on terrestrial species would be primarily in the form of temporary disturbance along the new location. This

would be balanced out by eliminating motorized traffic along the abandoned sections. There would be no effects expected on any of the aquatic species.

3.2.3 Forest Service Region 8 Sensitive Species

Affected Environment

A biological assessment and evaluation for the proposed action documents the analysis performed to study the effects on all Sensitive species identified for the DBNF. Potentially, three species were found to be in the project area: Eastern small-footed bat *Myotis leibii*, Glossy supercoil snail *Paravitrea placentula*, and Diana fritillary *Speyeria diana*.

Direct, Indirect and Cumulative Effects (All Alternatives)

The BAE contained a finding regarding these three species of "May impact individuals, but not likely to cause federal listing trend/loss of viability". A finding of "No Impact" was reached for the remaining sensitive species. The supporting rationale cited that the species are mobile, none of the species were found on the site, and there would be little to no loss or modification of habitat.

3.2.4 Federal Proposed, Threatened and Endangered Species

Affected Environment

The entire list of 36 federal listed threatened and endangered (T&E) species that occur on or near the Daniel Boone National Forest, including those that have occurred until relatively recent times, but now considered extirpated or extinct, are considered in this analysis. This list was approved by the U.S. Fish and Wildlife Service.

Common Name	***Scientific Name***	***Status***
MAMMALS		
Eastern cougar	*Felis concolor couguar*	Endangered
Gray bat	*Myotis grisescens*	Endangered
Indiana bat	*Myotis sodalis*	Endangered
Virginia big-eared bat	*Corynorhinus townsendii virginianus*	Endangered
BIRDS		
Bald eagle	**Haliaeetus leucocephalus**	Threatened
Red-cockaded woodpecker	*Picoides borealis*	Endangered
FISHES		
Duskytail darter	*Etheostoma percunurum*	Endangered
Palezone shiner	*Notropis albizonatus*	Endangered
Blackside dace	*Phoxinus cumberlandensis*	Threatened
BIVALVES		
Cumberland elktoe	*Alasmidonta atropurpurea*	Endangered

Fanshell	*Cyprogenia stegaria*	Endangered
Dromedary pearlymussel	*Dromus dromas*	Endangered
Cumberlandian combshell	*Epioblasma brevidens*	Endangered
Oyster mussel	*Epioblasma capsaeformis*	Endangered
Yellow blossom	*Epioblasma florentina florentina*	Endangered
Tan riffleshell	*Epioblasma florentina walkeri*	Endangered
Catspaw	*Epioblasma obliquata obliquata*	Endangered
Northern riffleshell	*Epioblasma torulosa rangiana*	Endangered
Tubercled blossom	*Epioblasma torulosa torulosa*	Endangered
Cracking pearly mussel	*Hemistena lata*	Endangered
Pink mucket	*Lampsilis obrupta*	Endangered
Ring pink	*Obovaria retusa*	Endangered
Little-Wing pearly mussel	*Pegias fibula*	Endangered
White warty back	*Plethobasus cicatricosus*	Endangered
Orange foot pimpleback	*Plethobasus cooperianus*	Endangered
Clubshell	*Pleurobema clava*	Endangered
Rough pigtoe	*Pleurobema plenum*	Endangered
Appalachian monkeyface	*Quadrula sparsa*	Endangered
Cumberland bean	*Villosa trabilis*	Endangered
PLANTS		
Cumberland sandwort	*Arenaria (Minuartia) cumberlandensis*	Endangered
Cumberland rosemary	*Conradina verticillata*	Threatened
Eggert's sunflower	*Helianthus eggertii*	Threatened
American chaffseed	*Schwalbea Americana*	Endangered
White haired goldenrod	*Solidago albopilosa*	Threatened
Virginia spiraea	*Spiraea virginiana*	Threatened
Running buffalo clover	*Trifolium stoloniferum*	Endangered

Of the thirty six species only the Indiana bat *Myotis sodalis* has any probability of occurring in the project area. Although none have ever been captured from National Forest land on the Red Bird Ranger District it is assumed that they may exist here because suitable summer roosting habitat exists in abundance.

Direct, Indirect and Cumulative Effects Alternative 1 would have no effect on the Indiana bat. A determination of "Not Likely to Adversely Affect" the Indiana bat is documented in the Biological Assessment and Evaluation (page 15) for Alternatives 2 and 3. The U.S. Fish and Wildlife has concurred with this finding.

3.3 Physical Component

3.3.1 Air Quality

The **direct, indirect and cumulative** effect of all the alternatives on the air resource would be negligible.

3.3.2 Soils

Affected Environment

Soils in the project area have various properties influencing soil behavior and performance. These include permeability, strength, compaction characteristics, soil drainage condition, shrink-swell potential, grain size/texture, plasticity, and frost action. Also important are depth to bedrock and water table and slope steepness. These properties and qualities, in various degrees and combinations, affect location, design, construction and maintenance of a trail system.

Three dominant soils have been mapped on the current trail location for **Segment 1**, namely, Gilpin, Shelocta and Sequoia. While two dominant soils, namely Shelocta and Highsplint soils, have been mapped along the proposed trail relocation to be designated for OHV use. All are forming in either residuum and or colluvial materials of mixed mineralogy, derived from interbedded siltstone, sandstone and shale of the Breathitt Formation. These moderately deep, deep and very deep, well drained soils are on the warm slopes of the mountain. The Shelocta soils are found throughout this mapping complex through which the existing and the proposed trail is located. Highsplint soils though are found generally on the lower side slopes and toe slopes in cove positions were only mapped along the proposed trail. The Gilpin and Sequoia soils were mapped along the current trail location on the upper side slopes and the ridge tops. All of these soils though are so intricately mixed, or small in size, that it is not practical to separate them in mapping at the scale used (1:24,000). Erosion and slope stability are the greater management concerns with these soils. Particularly, where associated with the Magoffin Shale and coal seam outcrops; specifically the Fire Clay coal seam which has been mapped between 1,150 feet and 1,200 feet elevation in this area. Highsplint soils have a significant increase in bulk density about 48 inches in depth. This can reduce permeability by as much as two-thirds, thereby increasing the potential for a rapid rise in groundwater/pore-water pressure and loss of shear strength which can lead to a slope failure; particularly where influenced by disturbances such as excavation for a trail prizm, tree removal, and alteration of surface drainage.

Six dominant soils have been mapped on the current trail location of **segments 8 and 9**, namely, Gilpin, Shelocta, Sequoia, Kimper, Cloverlick, and Highsplint. All are forming in either residuum and or colluvial materials of mixed mineralogy, derived from interbedded siltstone, sandstone and shale of the Breathitt Formation. These moderately deep, deep and very deep, well drained soils are more generally on the warm slopes of the mountain. The exception being with the Highsplint soils which are more generally on north or cool exposures. The Shelocta soils are found throughout this mapping complex through which the existing and the proposed trails are located. Highsplint soils though are found generally on the lower side slopes and toe slopes in cove positions, and were only mapped along the proposed relocation of the existing '406' trail; segments 8 and 9 of the Red Bird Crest Trail. The Gilpin and Sequoia soils were mapped along the current trail location on the upper side slopes and the ridge tops of Segments 8 and 9 as

well. All of these soils though, along each existing trail segment and proposed locations, are so intricately mixed, or areas small in size, that it is not practical to separate them in mapping at the scale used (1:24,000). Erosion and slope stability are the greater management concerns with these soils; particularly, where associated with the Magoffin shale. Highsplint soils have a significant increase in bulk density about 48 inches in depth which can reduce permeability by as much as two-thirds, thereby increasing the potential for a rapid rise in groundwater/pore-water pressure and loss of shear strength which can lead to a slope failure. This is particularly evident where influenced by disturbances such as excavation for a trail prizm, tree removal, and alteration of surface drainage.

General Effects - Based on soil limitations for use and management specific to OHV trail construction and use, a "*Soil Effects Rating Table*" (Reference Appendix A) was developed to assist in evaluating the proposed new route against OHV use on the existing trail. Five criteria were rated; erosion, trafficiability, aquatic effects, slope stability and runoff. A rating in the "*Soil Effects Rating Table*" of moderate or severe for the soil factors shown doesn't mean that a proposed activity can't occur without serious impairment of soil and water resource values. The ratings do offer a basis for evaluating this proposed route while indicating need for precautionary measures or treatments to manage environmental risks to safeguard soil and water resources. The information in this table therefore was used in assessing potential effects of this proposed route on soil and water resources.

Construction and use of OHV trails will increase erosion potential due to increases in soil compaction, loss of organic matter from the soil surface, expansion of bare soil area; and the fact that OHV trails generally follow straight alignments that provide less dissipation of runoff energy than a undisturbed forest floor. Through OHV use, acceleration, turning, braking, etc., trails tend to become entrenched and available for channelization of overland flow over time. Increased velocities and energies of overland flow can accelerate erosion, resulting in sediment deposits below the trail. Construction of trails can potentially destabilize slopes due excavation or change in the hydrologic balance; potentially impacting soil productivity..

Soil properties that most affect design and construction of the trail as proposed indicate traffic-supporting capacity as well (i.e. slope, depth to bedrock, texture, gravel and stone content, drainage). The traffic-supporting capacity or trafficability of the soils on the proposed route, is with few exceptions, very suitable for OHV use since they are well drained, have low shrink-swell, moderate frost action and a plasticity index generally below 10. Where the proposed route crosses unmapped soil inclusions, which may have lower bearing strength, higher compressibility, and fair to poor compaction characterisitcs, management measures will need to be implemented to provide the needed traffic-supporting capacity (e.g. geotextile, gravel, improved drainage, seasonal use restrictions or closures).

Segment 1

Alternative 1 - No action Alternative. There will be increasing amounts of soil displacement due to erosion from the existing 2.7 mile segment one section of the Red Bird Crest Trail, proposed for closure to motorized use, as well as natural erosion occuring from sensitive slopes and stream channels. The beginning of this trail has excessively steep grades and a narrow tread not conducive to current use by OHV'ers, nor long term maintenance. There is approximately 0.4 miles of trail greater than 15 percent.

Alternative 2 - The potential effects of this alternative on future soil productivity in the effected watersheds is expected to be very limited and within the range of natural processes. In this alternative, about 1.8 miles of trail is to be created through reconstruction of either an existing, unsurfaced road or an old abandoned road; leaving only the need to actually fully construct about 0.38 miles of trail.

Approximately 1.22 miles of this trail relocation occurs on Forest Service Road 1822 that generally follows the contour and is parallel to the Red Bird River. Where the road drops into the floodplain the route follows new trail above the floodplain (0.33 miles). Then the trail climbs upslope on an old abandoned road to near the ridge top. Only about a 0.05 miles section of this route near the ridge top will require full construction. This old abandoned road will require some clearing and grubbing, and regrading to provide favorable drainage and a smooth tread. Also, in two locations, old slumps that are influencing the roadway will need to be dealt with. This may involve unloading each slide area and rolling the grade of the trail, constructing interceptor surface drains, installation of perforated pipe to capture and divert groundwater, graveling the tread and revegetating the disturbed area. These slope failures are likely associated with the Fire Clay coal seam that occurs at about 1,200 ft. elevation.

Along this climbing section there is approximately 0.3 miles of trail that is greater than 15 percent. A recent University of Kentucky study by Stringer and Taylor (1998; Appendix A) showed that erosion is substantially less when trail and road grades are less than 15 percent. This alternative will reduce impacts to streams from erosion by hardening trail grades greater than 15 percent, graveling stream approaches, and minimizing excavation on sensitive geologic types.

The trail location in this alternative will involve crossing one intermittent stream and numerous ephemeral streams. Stream crossings will be armored with crushed stone, disturbed soils revegetated, trail grades manipulated to provide improved drainage and to minimize excavation for stability purposes, and rocked to control erosion and sustain traffic without damage to the tread, etc. Implementation of these Best Management Practices will effectively control erosion, delivery of sediment to streams and reduce the risk of triggering a slope failure while sustaining planned use.

The closing of 2.7 miles of the Red Bird Crest Trail to motorized use, and shifting this use to the proposed location, will remove a steep climbing section of trail not practical to upgrade to motorized trail standards. Even though this alternative proposes a few steep sections of trail (>15%), these areas will be much easier to maintain. Therefore, by removing OHV traffic from the existing trail, maintenance costs and soil resource impacts can be reduced overall.

Alternative 3 - The potential effects of this alternative on future soil productivity in the effected watersheds is expected to be very limited and within the range of natural processes. In this alternative, about 2.1 miles of trail is to be created through reconstruction of either an existing, unsurfaced road or an old abandoned road; leaving only the need to actually fully construct about 0.05 miles of trail.

Approximately 1.55 miles or about 70 percent of this trail relocation occurs on an existing road that generally follows the contour and is parallel to the Red Bird River. Then the trail climbs upslope on an old abandoned road to near the ridge top. Only about a 0.05 miles section of this route near the ridge top will require full construction. This old abandoned road will require some clearing and grubbing, and regrading to provide favorable drainage and a smooth tread. Also, in two locations, old slumps that are influencing the roadway will need to be dealt with. This may involve unloading each slide area and rolling the grade of the trail , constructing interceptor surface drains, installation of perforated pipe to capture and divert groundwater, graveling the tread and revegetating the disturbed area. These slope failures are likely associated with the Fire Clay coal seam that occurs at about 1,200 ft. elevation.

Along this climbing section there is approximately 0.3 miles of trail that is greater than 15 percent. This is less than Alternative 1 and in an area that is easier to maintain. A recent University of Kentucky study by Stringer and Taylor (1998; Appendix A) showed that erosion is substantially less when trail and road grades are less than 15 percent. The trail location in this alternative will involve crossing one intermitent stream and numerous ephemeral streams. Stream crossings will be armored with crushed stone, disturbed soils revegetated, trail grades manipulated to provide improved drainage and to minimize excavation for stability purposes, and rocked to control erosion and sustain traffic without damage to the tread, etc. Implementation of these Best Management Practices will effectively control erosion, delivery of sediment to streams and reduce the risk of triggering a slope failure while sustaining planned use.

The closing of 2.7 miles of the Red Bird Crest Trail to motorized use, and shifting this use to the proposed location, will improve rider safety and remove a steep climbing section of trail not practical to upgrade to motorized trail standards. Even though this alternative proposes a few steep sections of trail (>15%), these areas will be much easier maintain. Therefore, by removing OHV traffic from the existing trail, maintenance costs and soil impacts can be reduced overall.

Segments 8 and 9

Alternative 1 - The "no action alternative". There will be increasing amounts of soil displacement and greater potential stream sedimentation due erosion from the existing 2.2 miles of Segments 8 and 9 of the Red Bird Crest Trail, proposed for closure to motorized use, as well as natural erosion occurring from sensitive slopes and stream channels. Portions of these trail segments have grades and a narrow tread not conducive to safety for OHV riders, nor long term maintenance and requires OHV riders to travel on State Route 406 for approximately 800 feet. Currently, other existing sediment source areas within the watersheds influenced by this trail, associated with past management activities, are of limited size, revegetated or stabilized, and have little influence on water quality, aquatic habitats and the hydrologic functions of the watersheds affected by this decision.

Alternative 2 and 3- The potential effects of this alternative on future soil productivity and water quality in the effected watersheds is expected to be very limited and within the range of natural processes. In this alternative, about 0.17 miles of trail is to be created by new construction and 3 miles will be co-located on Forest Development Road 1790.

The trail location in this alternative will involve crossing one intermittent stream and numerous ephemeral streams.

Stream crossings will be armored with crushed stone, disturbed soils revegetated, trail grades manipulated to provide improved drainage and to minimize excavation for stability purposes, and rocked to control erosion and sustain traffic without damage to the tread, etc. Implementation of these Best Management Practices will effectively control erosion and reduce the risk of triggering a slope failure while sustaining planned use.

The closing of 2.2 miles of the Red Bird Crest Trail to motorized use, and shifting this use to the proposed location, will remove sections of trail either not practical to upgrade to motorized trail standards or to close to an occupied private residence. Therefore, by removing OHV traffic from the existing trail, maintenance costs and soil impacts can be reduced overall.

3.3.3 Water

Affected Environment

The run-off from Segment 1 drains directly into the Red Bird River. The run-off from Segments 8 and 9 drain into Upper Jacks Creek, a tributary of the Redbird River. Based on the Kentucky Division of Water 1996 305b report and Forest water quality monitoring, this portion of the watershed is in good condition and supports designated uses (ie, swimming and aquatic life). Since the most important impact to water quality is

from sediment, the analysis will evaluate the Alternatives based on the potential for soil movement and the extent of soil disturbance.

A portion of the route proposed in the Segment 1 Relocation has been identified by Federal Emergency Management Agency (FEMA) as being in the 100-year flood plain. The assumption is that the United States Geological Survey (USGS) used the June 28, 1947 flood elevation of 860.3 feet as the predicted 100-year flood level since it is this elevation mapped on their 1975 Flood Prone Area maps for regulatory purposes. Therefore, the old county road is largely on the margin of the predicted 100 year flood elevation. About 1/3 mile of the 1.3-mile section nearest the river is below the 100-year base flood elevation. Prior to construction of the State Route 66 this road was the only access along the river; possibly built as early as the 1930's. Approximately 1,800 feet of the Segment 1 Relocation lies on side slopes that are equal to or greater than 40 percent. Approximately 7,000 feet of the route proposed for Segments 8 and 9 would lie on side slopes that are equal to or greater than 40 percent. Approximately 850 feet of the route will be new construction with the remainder using a 50-year-old logging road that lies on a full bench.

Action Alternatives – Common Direct, Indirect and Cumulative Effects

The discussion found under "Soils - General Effects" also applies to the discussion on water quality.

Segment 1

Alternative 1 - No Action Alternative-Direct, Indirect and Cumulative Effects. There will be an increasing amount of soil displacement and greater potential stream sedimentation due to erosion from Segment 1 of the Red Bird Crest Trail, proposed for closure to motorized use, as well as natural erosion occurring from sensitive slopes and stream channels. Portions of this trail segment has grades and a narrow tread not conducive to long term maintenance. Currently, other existing sediment source areas within the watersheds influenced by this trail, associated with past management activities, are of limited size, revegetated or stabilized, and have little influence on water quality, aquatic habitats and the hydrologic functions of the watersheds affected by this decision.

Alternative 2 -Direct and Indirect Effects. The potential effects of this alternative on water quality in the effected Segment 1 watershed is expected to be very limited and within the range of natural processes. In this alternative, about 0.55 miles of trail is to be created by new construction, 1.22 miles will be co-located on Forest Development Road 1822 and 0.59 miles of an old woods road would be reconstructed.

The trail location in this alternative will involve crossing one intermittent stream and numerous ephemeral streams.

None of the trail would be located within the floodplain of the Redbird River.

Stream crossings will be armored with crushed stone, disturbed soils revegetated, trail grades manipulated to provide improved drainage and to minimize excavation for stability purposes, and rocked to control erosion and sustain traffic without damage to the tread, etc. Implementation of these Best Management Practices will effectively control erosion, delivery of sediment to streams and reduce the risk of triggering a slope failure while sustaining planned use.

The closing of 2.7 miles of the Red Bird Crest Trail to motorized use, and shifting this use to the proposed location, will remove sections of trail either not practical to upgrade to motorized trail standards or to close to an occupied private residence. Therefore, by removing OHV traffic from the existing trail water resource impacts can be reduced overall.

This alternative will reduce impacts to streams from erosion by hardening trail grades greater than 15 percent, graveling stream approaches, and minimizing excavation on sensitive geologic types.

Cumulative Effects

With implementation of prescribed management measures, during and after construction, long-term cumulative effects from erosion, compaction and soil displacement on water quality should be insignificant with respect to the proposed trail addition. Much of the new trail to be provided is co-located with 1.81 miles of existing unsurfaced roads and an abandoned road. The lower existing road has been basically allocated or otherwise designated for future use in support of other management objectives, therefore, co-location of the trail on this road will increase the utilization of existing facilities, improve some sections in need of maintenance/reconstruction, thus reducing cumulative effects on the Red Bird River. However, increased public use may occur off this route onto previously undisturbed soils (i.e. user-developed OHV trails). This may increase adverse effects to soils and detrimental effects to water quality as well. Therefore, where this occurs, effects will incrementally become cumulative unless damaged sites are restored in a timely manner.

Alternative 3 - Direct and Indirect Effects. The potential effects of this alternative on water quality in the effected Segment 1 watershed is expected to be very limited and within the range of natural processes. In this alternative, about 0.21 miles of trail is to be created by new construction, 1.55 miles will be co-located on Forest Development Road 1822 and 0.59 miles of an old woods road would be reconstructed.

The trail location in this alternative will involve crossing one intermittent stream and numerous ephemeral streams.

Approximately 0.38 miles of the trail would be located within the Redbird River floodplain.

Stream crossings will be armored with crushed stone, disturbed soils revegetated, trail grades manipulated to provide improved drainage and to minimize excavation for stability purposes, and rocked to control erosion and sustain traffic without damage to the tread, etc. Implementation of these Best Management Practices will effectively control erosion, delivery of sediment to streams and reduce the risk of triggering a slope failure while sustaining planned use.

The closing of 2.7 miles of the Red Bird Crest Trail to motorized use, and shifting this use to the proposed location, will remove sections of trail either not practical to upgrade to motorized trail standards or to close to an occupied private residence. Therefore, by removing OHV traffic from the existing trail water resource impacts can be reduced overall.

This alternative will reduce impacts to streams from erosion by hardening trail grades greater than 15 percent, graveling stream approaches, and minimizing excavation on sensitive geologic types.

Cumulative Effects

Much of the new trail would be co-located with 2.14 miles of existing unsurfaced roads and an abandoned road. The environmental effects would be similar to Alternative 2.

Segments 8 and 9

Alternative 1 - No Action Alternative-Direct, Indirect and Cumulative Effects.

See Segment 1 above.

Alternative 2 and 3-Direct and Indirect Effects. The potential effects of this alternative on water quality in the effected Segments 8 and 9 watersheds is expected to be very limited and within the range of natural processes. In this alternative, about 0.21 miles of trail is to be created by new construction, 3.0 miles will be co-located on Forest Development Road 1790 and 1.8 miles of an old woods road would be utilized.

The trail location in this alternative will involve crossing one intermittent stream.

None of the trail would be located within the floodplain of the Redbird River.

Stream crossings will be armored with crushed stone, disturbed soils revegetated, trail grades manipulated to provide improved drainage and to minimize excavation for stability purposes, and rocked to control erosion and sustain traffic without damage to the tread, etc. Implementation of these Best Management Practices will effectively control erosion, delivery of sediment to streams and reduce the risk of triggering a slope failure while sustaining planned use.

The closing of 2.3 miles of the Red Bird Crest Trail to motorized use, and shifting this use to the proposed location, will remove sections of trail either not practical to upgrade to motorized trail standards or to close to an occupied private residence. Therefore, by removing OHV traffic from the existing trail water resource impacts can be reduced overall.

This alternative will reduce impacts to streams from erosion by hardening trail grades greater than 15 percent, graveling stream approaches, and minimizing excavation on sensitive geologic types.

Cumulative Effects

With implementation of prescribed management measures, during and after construction, long-term cumulative effects from erosion, compaction and soil displacement on water quality should be insignificant with respect to the proposed trail addition. Much of the new trail to be provided is co-located with 1.81 miles of existing unsurfaced roads and an abandoned road. The lower existing road has been basically allocated or otherwise designated for future use in support of other management objectives, therefore, co-location of the trail on this road will increase the utilization of existing facilities, improve some sections in need of maintenance/reconstruction, thus reducing cumulative effects on the Red Bird River. However, increased public use may occur off this route onto previously undisturbed soils (i.e. user-developed OHV trails). This may increase adverse effects to soils and detrimental effects to water quality as well. Therefore, where this occurs, effects will incrementally become cumulative unless damaged sites aren't restored in a timely manner.

Alternative 3 - Direct and Indirect Effects. The potential effects of this alternative on water quality in the effected Segment 1 watershed is expected to be very limited and within the range of natural processes. In this alternative, about 0.21 miles of trail is to be created by new construction, 1.55 miles will be co-located on Forest Development Road 1822 and 0.59 miles of an old woods road would be reconstructed.

The trail location in this alternative will involve crossing one intermittent stream and numerous ephemeral streams.

Approximately 0.38 miles of the trail would be located within the Redbird River floodplain.

Implementation of Best Management Practices will effectively control erosion, delivery of sediment to streams and reduce the risk of triggering a slope failure while sustaining planned use.

The closing of 2.7 miles of the Red Bird Crest Trail to motorized use, and shifting this use to the proposed location, will remove sections of trail either not practical to upgrade to motorized trail standards or to close to an occupied private residence. Therefore, by

removing OHV traffic from the existing trail water resource impacts can be reduced overall.

This alternative will reduce impacts to streams from erosion by hardening trail grades greater than 15 percent, graveling stream approaches, and minimizing excavation on sensitive geologic types.

Cumulative Effects

Much of the new trail to be provided is co-located with 2.14 miles of existing unsurfaced roads and an abandoned road. Other effects would be the same as Alternative 2.

3.3.4 Minerals

Affected Environment

There are two primary mineral commodities on the Red Bird Ranger District: natural gas and coal. Oil is available but the market price for it is not enough to encourage new development. Rights to the natural gas are outstanding which means that the rights to the surface have been purchased by the Forest Service from one party while the rights to the natural gas is vested to a third party. One gas well is currently being operated in the vicinity of Segment 1. There are no gas wells, applications or known plans for natural gas extraction near the vicinity of Segments 8 and 9. The rights to the coal are in federal ownership. Segment 1 lies primarily below a vein of coal known as the fire clay coal seam coal seam at approximately 1200 feet of elevation. There are no coal seams in the vicinity of Segments 8 and 9.

There would be little to no **direct** affect on any current or prospective mineral operations. The main gas line serving B and B Resources follows the Redbird River along Forest Service 1822 with a connecting line from the one active well. These lines are buried and generally are not a matter of concern. Although the status of future exploration or extraction is unknown at this time, because of the nature of both mineral management and OHV usage, few problems associated with coordination are anticipated. No **cumulative** effects are anticipated regarding minerals.

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5 GLOSSARY

(Supplements pages VII-1 through VII-26 of the Forest Plan)

All terrain Vehicle (ATV) – See Off-highway Vehicle.

Biological evaluation and assessment (BAE) – A report that documents the analysis performed to determine the potential effects of an action on rare plants or animals.

Developed recreation areas – More or less permanent sites, where recreation is concentrated such as a permanent campground with facilities.

Dispersed recreation – Non-concentrated recreation such as hiking, viewing or hunting.

Flood plain – The lowland and relatively flat area adjacent to a river including that area subject to a 1% or greater chance of flooding in any given year.

Forest development road – A road considered to be part of the transportation network designed to serve the needs of a National Forest, particularly those areas not served by public roads.

Issues – Statements of discussion, dispute or debate representing points of unresolved conflict regarding specific environmental effects of the proposed action.

Off-highway Vehicle (OHV) – Motorized, recreational vehicles designed for or capable of cross country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (an expansion of the term Off-road Vehicle, as defined in Executive Order No. 11644, as amended in Executive Order No. 11989).

Potential special area – National Forest System land nominated by the public for special management.

Run-off – Water and associated sediment washing from the surface of an area, usually in response to rain.

Scenery management system – A method used by the Forest Service to describe, categorize or rank the scenic attributes of the landscape.

Scoping – Public involvement and analysis used to determine the significant issues, range of alternatives and environmental impacts to be considered in an analysis.

Single-track trail – A trail that is too narrow for any use other than foot or motorcycle traffic.

Spot gravel – The local placement of gravel on a road to armor the surface, fill up mud holes, etc. to improve trafficability.

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