

# Appendix P: Comprehensive Travel and Transportation Management

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## Introduction

Comprehensive Travel and Transportation Management (CTTM) is the proactive management of public access, natural resources, and regulatory needs in order to ensure that all aspects of road and trail system planning and management are considered. This includes route planning, inventory and evaluation, innovative partnerships, user education, mapping, monitoring, signing, field presence, and law enforcement (BLM IM CO-2007-020; BLM 2007i). CTTM planning should address all resource use aspects (such as recreational, traditional, casual, agricultural, commercial, and educational), and the accompanying modes and conditions of travel on public lands; not just motorized or off-highway vehicle (OHV) activities (BLM Land Use Planning Handbook 1601-1, Appendix C; BLM 2005a).

Public scoping has consistently demonstrated CTTM as a major issue to be addressed in Resource Management Plans (RMPs). Increased demand for access to public lands, combined with the research on the impacts of roads on resources and resource uses, has increased the need for a well-designed and well managed transportation system.

Historically focused on motor vehicle use, CTTM encompasses all forms of transportation, including travel by foot, by horse, and by mechanical vehicles (such as bicycles); as well as the numerous forms of motorized vehicles [from 2-wheeled (motorcycles) to 4-wheeled all-terrain vehicles (ATVs)], to cars and trucks. The National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands (BLM2001b) was the first step in developing a proactive approach to managing OHV use and recreational opportunities while managing for multiple resources. This was also defined in BLM's M-1626 Travel and Transportation Manual (BLM 2011d) and H-8342 Travel and Transportation Handbook (BLM 2012e).

[*Note:* The term off-road vehicle (ORV) is defined as “any motorized vehicle capable of or designated for, travel on or immediately over land, water, or other natural terrain” [43 Code of Federal Regulation (CFR) 8340.0-4(a)]. This definition has been updated using the term “OHV” in the National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands (BLM 2001b). The intent of the National Strategy was to update and revitalize management of OHV use on BLM-managed public lands. The National Strategy provides guidance and recommendations designed to accomplish that purpose.]

## How to Read/Use this Document

The BLM has three principal levels of land use planning decisions: 1) the RMP level; 2) the activity level; and 3) the site-specific level. The RMP establishes guidance, objectives, policies, and management actions; and addresses issues within the Planning Area identified through interagency, intergovernmental, and public scoping efforts. RMPs focus on establishing broad resource objectives and direction while, at the same time, providing some activity-level guidance and site-specific decisions. RMPs build upon the history of land and resource management with the Planning Area. RMPs also evaluate and, if necessary, update existing management plans related to the Planning Area (including, but not limited to: Fire Management Plans, Allotment Management Plans, Habitat Management Plans, Cultural Resource Management Plans, and plans covering recreational designations and uses).

Specifically, RMPs (including RMP Revisions and RMP Amendments) contain two types of land management decision: Land Use Decisions and Implementation Decisions:

- **Land Use Decisions** -- These broad-scale decisions guide future land management actions and subsequent activity-level and site-specific implementation decisions. Land use decisions fall into two categories: Desired Outcomes (Goals and Objectives) and Allowable Uses (Management Actions) designed to achieve the Desired Outcomes:
  - **Desired Outcomes (Goals and Objectives)** -- RMPs must identify desired outcomes expressed in terms of specific goals and objectives. Goals and objectives direct the BLM's actions in most effectively meeting legal mandates; numerous regulatory responsibilities; national policy (including the DOI Strategic Plan goals); State Director guidance [see 43 CFR 1610.0-4(b)]; and other resource or social needs. Desired Outcomes should be identified for, and pertain to, resources (such as natural, biological, and cultural), resource uses, (such as energy and livestock grazing), and other factors (such as social and economic conditions). Definitions of goals and objectives are:
    - **Goals.** - Goals are broad statements of Desired Outcomes (such as to maintain ecosystem health and productivity, promote community stability, and ensure sustainable development) that, usually, are not quantifiable.
    - **Objectives.** - Objectives identify specific Desired Outcomes for resources. Generally, objectives are quantifiable and measurable, and may have established timeframes for achievement (as appropriate).
- **Allowable Uses and Management Actions** -- After establishing Desired Outcomes (Goals and Objectives), the BLM identifies Allowable Uses (land use allocations) and management actions for different alternatives that are considered necessary in order to achieve the Goals and Objectives. Definitions of allowable uses and management actions are:
  - **Allowable Uses.** - RMPs must identify uses, or allocations (for surface lands and/or in relation to subsurface mineral interests), that are allowed, restricted, or prohibited (such as mineral leasing, locatable mineral development, recreation, timber harvesting, utility corridor development, and livestock grazing) set in place in order to meet goals and objectives. RMPs also identify lands where specific uses are excluded in order to protect resource values. Certain lands may be designated as Open or

- Closed to specific uses based upon legislative, regulatory, or policy requirements or criteria designed to protect sensitive resource values. An RMP must set the stage for identifying site-specific resource use levels. (Normally, site-specific use levels are identified during subsequent implementation planning or during the permit authorization process.) The RMP must identify reasonable development scenarios for allowable uses in order to enable the orderly implementation of future actions.
- **Management Actions.** - RMPs must identify the actions considered necessary in order to achieve Desired Outcomes, including actions designed to maintain, restore, or improve land health. These actions include proactive measures or criteria that will be applied in order to guide day-to-day activities occurring on public lands. RMPs must also establish administrative designations (such as ACECs); recommend proposed withdrawals and land tenure zones; and recommend or make findings of suitability for congressional designations [such as components of the National Wild and Scenic River (WSR) System].
  - **Implementation Decisions** -- Generally, implementation decisions constitute the BLM’s final approval allowing on-the-ground actions to proceed. These types of decisions require site-specific planning and environmental analysis in accordance with the NEPA. They may be incorporated into Implementation Plans (Activity Level or Site Specific Plans) or they may exist as stand-alone decisions.

This document addresses the planning criteria, data collection, and alternative development process by which the KFO Interdisciplinary (ID) Team developed the Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS) alternatives for motorized, mechanized, and non-motorized uses for the Planning Area, including those related to the following management decisions:

- **Land Use Planning Decisions** -- The land use planning decisions of the CTTM Plan define the areas within the KFO that are designated as “Open,” “Limited,” or “Closed” to OHV use; as well as the number of miles of designated routes under the Limited category.
- **Implementation Decisions** -- Implementation decisions of the CTTM Plan that are included in this document include the designations of routes within areas delineated as Limited to Designated Roads and Trails. Other implementation actions include signage, maps, public information, kiosks, monitoring, and working with partners; however, these types of actions have not been addressed in this CTTM Plan designation process. Such decisions will be addressed as the site-specific implementation process continues.

The specific decisions, and designations, as well as the analysis of the environmental impacts associated with the implementation of the CTTM Plan under the 5 alternatives, are presented in Chapter 4 of the PRMP/FEIS.

## Summary

### Land Use Planning Decisions

The CFR (43 CFR Part 8340) requires the BLM to designate all public lands as Open, Closed, or Limited for OHV use. These designations are made in RMPs or in RMP Amendments. In addition, the criteria for route designation are established in RMPs. (Table P-1 lists the lands designated as Open, Limited, and Closed within the Planning Area, as determined by the ID Team.)

**Table P-1: OHV Categories (rounded acreage) by Alternative for KFO**

Category	Proposed	Alternative A	Alternative B	Alternative C	Alternative D
Open	200	307,300	200	50	200
Limited to Existing	0	7,300	0	0	0
Limited to Designated	369,300	54,500	369,300	353,800	369,300
Closed	8,400	8,700	8,400	24,100	8,400

Source: BLM GIS data 2011

### Implementation Decisions

The designation of routes within the Planning Area specified as "Limited to Designated" is an implementation decision. Designation involves the selection and identification of roads and trails to be included in a CTTM System, as well as the allowable types of use on each of these routes. (Table P-2 provides a summary of the miles of routes designated for public use by alternative.)

**Table P-2: Designated Routes (miles) by Alternative**

Type of Route*	Proposed	Alternative A	Alternative B	Alternative C	Alternative D
Full Size Vehicle	862	1,739	872	754	971
ATV (50 inches or less)	12	73	14	11	27
Motorcycle	15	53	21	14	62
Mechanized	18	0	12	6	7
Foot Horse Only	85	60	72	86	60

**Table P-2: Designated Routes (miles) by Alternative**

Type of Route*	Proposed	Alternative A	Alternative B	Alternative C	Alternative D
Foot Only	6	33	6	6	6
Administrative Use Only	645	22	626	692	590
Decommission	427	0	433	507	353
Other	0	89	0	0	0

Source: BLM GIS data 2011

\*The routes in each row are also open to all types of uses in the rows beneath.

Administrative routes are designated for valid existing rights or management requirements when limitations and restrictions for public use are placed on roads and trails (and associated modes of travel) due to: the location of sensitive or high-value resources; the potential for environmental impacts to those resources; special designations and identifications; as well as to where RMP goals and objectives may be adversely impacted. Administrative routes may also be designated in areas where motorized use is restricted (in areas where there is no legal motorized access for the general public), but where there is a requirement for motorized use for valid existing rights or management requirements. Administrative routes are authorized on a case-by-case basis, and do not grant use for motorized travel for any reason other than the specific management requirements (such as for accessing a range development or accessing a Monitoring Station). Management actions common to all of the proposed alternatives include the following, as developed by the ID Team in preliminary alternative-development meetings:

- in areas identified as “Limited to Designated Routes,” only designated routes are open to motorized use;
- areas and trails shall be located in a manner designed to minimize damage to soil, watershed, vegetation, and/or to other resources;
- areas and trails shall be located in a manner designed to minimize harassment of wildlife or significant disruption of wildlife habitats;
- areas and trails shall be located in a manner designed to minimize conflicts between OHV use and other existing, or proposed, recreational uses of the same, or neighboring, public lands; and in a manner designed to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors;
- any fire, military, emergency or law enforcement vehicle being used for emergency purposes is exempted from OHV decisions;
- Wilderness Study Areas (WSAs) are to be either designated as Limited or Closed to OHV use, and must be managed and monitored in order to comply with the BLM Manual regarding Wilderness Study Areas; and

- as required in 43 CFR Sec. 8342.3 (Designation Changes): "The Authorized Officer shall monitor effects of the use of off-road vehicles. On the basis of information so obtained, and whenever the Authorized Officer deems it necessary to carry out the objectives of this part, designations may be amended, revised, revoked, or other actions taken pursuant to the regulations in this part."

## Authority and Guidance for Travel Management

Alternatives for the PRMP/FEIS have been developed based upon the rules, regulations, policies, standards, and guidelines specifically related to Travel Management for the BLM:

- **Executive Order (EO) 11644 (February 8, 1972)** -- This EO establishes criteria by which Federal agencies are to develop regulations for the management of OHVs on public lands under their management. Agencies are to "monitor the effects" of OHV use on their public lands and, "on the basis of the information gathered, they shall from time to time, amend or rescind designation of areas for OHV use as necessary to further its policy."
- **EO 1989 (May 25, 1977)** -- This EO amended EO 11644, and authorizes agencies to adopt a policy that specific public lands can be considered Closed to OHVs once it is determined that OHV use "will cause, or is causing, considerable adverse effects" to particular resources.
- **43 CFR Part 8340** -- These regulations establish criteria for designating BLM-managed public lands as Open, Limited, or Closed to OHV use.
- **National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands** -- This describes the current strategy for managing OHV use on BLM-managed public lands (BLM 2001b).
- **Information Bulletin (IB) 200COIB2003-020.DOC3-020** -- This IB describes the Travel Management Guidelines for BLM Colorado.
- **Instruction Memorandum (IM) 2004-005** -- This IM provides clarification of OHV designations and travel management in the BLM land use planning process (BLM 2003d).
- **IM CO-2007-020** -- This IM states that CTTM and OHV designations, decisions, and management actions for all CTTM Plans (whether they are part of an RMP, or are completed in a separate Activity Plan) shall be consistent with, incorporate, and implement policy contained in the BLM's Land Use Planning Handbook (H-1601-1), Appendix C, Section I: Natural, Biological, and Cultural Resources; Section II: Resource Uses; Section III: Special Designations; and Section IV (BLM 2005a; BLM 2008p).
- **Washington Office (WO) IM 2008-014** -- This IM states that CTTM planning and implementation shall be supported by all programs, and use the full range of funding and technical assistance sources (based on the fact that all programs benefit from effective CTTM (BLM 2008p)).

- **BLM's M-1626 Travel and Transportation Manual** (BLM 2011d) – This manual provides detailed policy, direction, and guidance to establish a comprehensive program for travel and transportation planning within the BLM land use planning process.
- **BLM's H-8342 Travel and Transportation Handbook** (BLM 2012e) -- This Handbook provides specific guidance for preparing, amending, revising, maintaining, implementing, monitoring, and evaluating BLM land use and travel management plans. It provides further guidance related to the objectives, authorities, responsibilities, and policy considerations outlined in Manual Section 1626, Travel and Transportation Management. The material in this Handbook will replace the previous guidance issued in Appendix C, section II. D of the Land Use Planning Handbook (H-1601-1).

## CTTM Designation Process

A goal of the planning process for the PRMP/FEIS is for the KFO to develop, along with public and Cooperating Agency input, a Comprehensive Travel and Transportation Management Plan. The CTTM Plan allows the BLM to provide access to BLM-managed public lands while, at the same time, protecting resource values. The Goals and Objectives (Desired Outcomes) of the CTTM Plan apply to all areas of travel management, including providing and managing access to resources; and providing and managing appropriate recreational opportunities that protect resources, ensure public safety, minimize conflicts among the various public land uses (and users), and provide support of the local economy.

## Background

In the early 1980s, in response to Presidential EO 11644 and EO 11989, the BLM began designating all public lands into 1 of 3 OHV designation categories. As a result, the BLM-managed public lands within the Planning Area were designated as Open, Limited to Existing Roads and Trails, Limited to Designated Roads and Trails, and Closed to OHV use. The designations are as follows:

- **Open** -- The BLM designates areas as "Open" for intensive OHV use where there are no compelling resource protection needs, user conflicts, or public safety issues that warrant limiting cross-country travel. However, motor vehicles may not be operated in a manner that causes, or is likely to cause, significant undue damage to, or disturbance of, soils, wildlife, wildlife habitat improvements, vegetation, cultural/paleontological resources, or other authorized uses of the public lands (43 CFR 8341).
- **Limited** -- The "Limited" designation is used where OHV use must be restricted in order to meet specific resource management objectives. In the current guidance context, this means Limited to Designated Roads and Trails (a route network designated by the BLM in its Approved RMP). These routes may also be limited to: a time or season of use, depending upon the resources in the area (such as Threatened and Endangered Species' habitat or nesting areas, crucial winter ranges, etc.), and/or to a type of vehicle use (such as ATV, motorcycle, 4-wheel vehicle, etc.)

- Closed** -- The BLM designates areas as "Closed" if closure to all vehicular use is necessary in order to protect resources, ensure visitor safety, and/or to reduce resource or use conflicts. Generally, access by means other than by motor vehicle access is allowed. The Field Office Manager may allow motor vehicle access on a case-by-case basis or for emergencies.

In the current planning process for the PRMP/FEIS, State and national guidance for the OHV Limited category designation has changed. Designating Open, Closed, and Limited areas for OHV use continues to be mandated; however, under the Limited category only the "Limited to Designated Roads and Trails" category is recommended. The designation of "Limited to Existing Roads and Trails" is no longer a recommended option (BLM 2003d). (Eliminating the "Limited to Existing Roads and Trails" category prevents confusion and enforcement problems concerning new unauthorized routes being created; routes which are then used by the public because they are then "existing".)

In the 1984 Kremmling Resource Area RMP (BLM 1984b), and subsequent 1988 Off-Road Vehicle Implementation Plan (BLM 1988d), the BLM designated all public lands within the Planning Area as Open, Closed, or Limited to Existing and Designated Roads and Trails. In 2005, the Wolford Travel Management Plan (BLM 2005b) was completed with implementation beginning the same year. Other RMP Amendments listed in the *Federal Register* amended travel management within the Planning Area by implementing seasonal and year-long restrictions on OHVs.

CTTM Plan area designations are made in accordance with the criteria set forth in 43 CFR 8340. Within the Planning Area, approximately 12 percent of BLM-managed public lands are subject to restrictions, with the remaining 88 percent being open (not subject to restrictions).

## Interdisciplinary Team Process

The KFO ID Team Resource Specialists who participated in the completion of the CTTM Plan are listed in Table P-3.

**Table P-3: KFO ID Team Members**

Name	Resource	Organization
Joe Stout	DRMP/DEIS Lead	KFO – BLM (former)
John Monkouski	Recreation Lead	KFO – BLM
Andy Windsor	Recreation Lead	KFO – BLM (former)
Bernice Sterin	Recreation Lead	KFO – BLM (former)
Justin Koppa	GIS Specialist	KFO – BLM (former)
Sue Valente	GIS Specialist	KFO - BLM
Kelly Elliott	Natural Resource Specialist	KFO - BLM
Zach Hughes	Natural Resource Specialist	KFO - BLM

**Table P-3: KFO ID Team Members**

<b>Name</b>	<b>Resource</b>	<b>Organization</b>
Paula Belcher	Hydrology	KFO – BLM
Megan McGuire	Biological Resources	KFO – BLM
Susan Cassel	Realty Specialist	KFO – BLM
Ken Belcher	Forestry Specialist	KFO – BLM
Pete Torma	Range Management	KFO – BLM (former)
Richard Johnson	Range Management	KFO – BLM (former)
Karl Waller	Range Conservationist	KFO – BLM (former)
Frank Rupp	Archaeology/Paleontology	KFO – BLM (former)
Bill Wyatt	Archeologist	KFO – BLM
Darren Entrican	Law Enforcement	KFO – BLM

Between March and June of 2008, the KFO ID Team held several day-long meetings in order to identify initial designation alternatives for the CTTM Plan. Alternatives were then refined, as DRMP/DEIS alternatives evolved; as new BLM policies and guidance became available; and/or as comments were received from the public, Cooperating Agencies, and sub-RAC representatives identifying where adjustments were needed in order to ensure that a reasonable range of alternatives was being developed. In 2007, the KFO conducted three Trails and Routes Workshops (as described below).

### **Trails and Routes Data-collection Workshops**

In 2007, the BLM hosted three Trails and Routes Data-collection Workshops. The workshops were held in order to allow the public to: 1) review the BLM’s inventory for accuracy and completeness; 2) provide information on routes missing from the BLM’s inventory; and 3) offer suggestions for what routes could be designated, and why they should be designated. Table P-4 shows the date, location, and number of attendees for each workshop. (All meetings were held from 4 p.m. to 7 p.m.) .

**Table P-3: Trails and Routes Data-collection Workshop Attendance**

<b>Location</b>	<b>Date</b>	<b>Number of Attendees</b>
Granby Recreation Center 125 North 3 <sup>rd</sup> , Granby	June 26, 2007	19
Wattenburg Center 686 County Road 42, Walden	June 27, 2007	19
Chamber Building 203 Park Avenue, Kremmling	June 28, 2007	21
<b>Total</b>		<b>59</b>

Each workshop was similarly structured: attendees were asked to sign in, and were then briefed on the room layout and goals and objectives of the workshop. Information Sheets (2-pages in length) summarizing the BLM’s planning effort and CTTM process; RMP Newsletter Volume 1, Number 1; and Comment Forms to document attendees’ comments on new or existing routes were made available.

An overview map was displayed at the entrance of the room showing the respective Field Office boundary, as well as the different Travel Management Zones within the Field Office. The KFO was divided into 10 Travel Management Zones, which were labeled A through O. (Dividing the Field Office into a number of Travel Management Zones enabled the public to focus on a specific area of interest.)

Work Stations were set up around the room with topographic and aerial photograph-based maps displaying the inventoried trails and routes for each Zone. Attendees were asked to complete a Comment Form, and were encouraged to draw on the maps in order to document any missing existing trails and routes. Proposed new routes were also drawn on the maps. (Pencils and markers were made available to attendees so that they could edit the maps.)

The comment period for routes and trails data collection was open until July 20, 2007. The public could submit comments by completing the Comment Form and sending it (via email, U.S. mail, facsimile, or by hand delivery) to the Field Office. All Travel Management Zone maps and Comment Forms were available at the 3 workshops, at the KFO, and on the project website ([www.blm.gov/rmp/co/kfo-gsfo](http://www.blm.gov/rmp/co/kfo-gsfo)).

A total of 192 submissions were received by the deadline of July 20, 2007, which included all Comment Forms and letters. The BLM Comment Form was the format most commonly used in order to submit comments, totaling 182 Comment Forms. Ten (10) letters, 3 CD-ROMs, and 31 maps were also submitted by July 20, 2007. Some written submissions included numerous comments, overlapping comments, and incomplete comments. As such, the 192 submissions contained 210 types of comments.

## Identification of Issues

CTTM Plan issues were identified by BLM Resource Specialists in the DRMP/DEIS Preparation Plan, through the public scoping process for the DRMP/DEIS, and during the public scoping process specific to travel management planning.

BLM staff identified the following factors describing the condition of travel management within the Planning Area, thereby identifying the need for developing a CTTM Plan:

- a lack of comprehensive travel management that considers the relationship between various resources, access for authorized permittees, and recreation uses;
- the lack of planning for recreational experiences that preceded the construction of historic routes;
- unauthorized uses, emanating from designated routes, resulting in impacts to other resources;
- subdivision of private property, creating new access points to public lands;
- routes open to motorized use being accessible only to adjacent landowners; and
- conflicts between recreational uses (and users).

Based upon the comments received, the following planning issue statement was developed:

- **Travel Management and Transportation --** How will transportation be managed so that natural and cultural resources are protected; so that motorized and non-motorized recreational opportunities are provided; so that user conflicts are reduced; so that route designations and closures are enforced; and so that public access is improved?

## Developing Planning Criteria

Considerations of both social and physical elements help define the criteria for a CTTM Plan. The social aspects include public demands; historical uses; existing rights-of-way (ROWs); permitted uses; public access; resource development; law enforcement and safety; conflicts between existing, or potential, uses and users; recreational opportunities; local uses; and cultural and economic issues. Physical aspects include those associated with terrain, soils, water, vegetation, and watersheds; the connectedness of routes; special management area designations; demands for specific types of vehicle use; and manageability considerations.

The CTTM Plan for the KFO will manage access on public lands in accordance with existing law, rules, regulations, policies, standards, and guidelines.

General planning criteria for the PRMP/FEIS planning process includes:

- **Decisions --** All decisions made in the Approved RMP will only apply to BLM-managed public lands.
- **Valid Existing Rights --** The CTTM Plan recognizes current, valid existing rights.

Planning criteria specific to the CTTM Plan include:

- **National OHV Policy** -- Decisions regarding OHV travel will be consistent with the National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands. (BLM 2001b).
- **Addendum 1 to the Colorado Protocol: Section 106 Requirements for Comprehensive Travel Management Planning (BLM. 2006i)** – The BLM will phase any required identification, evaluation, treatment, mitigation, and reporting of existing routes following route designation.
- **Revised Statute 2477 (Rights-of-Way)** -- ROWs may exist across the Planning Area; however, adjudication is beyond the scope of this PRMP/FEIS.

## Designation Criteria

Vehicle-use restrictions will be established where known high-resource values would otherwise be damaged or destroyed. BLM's designation of OHV use areas is guided by 43 CFR 8342.1, which states that designations shall be based on the protection of resources, the promotion of the safety of all users of public lands, and the minimization of land use conflicts. Minimization criteria are defined in 43 CFR 8342.1:

- [Designated] areas and [designated] trails shall be located to minimize damage to soil, watershed, vegetation, air, and other resources of the public lands, and to prevent impairment of wilderness suitability.
- [Designated] areas and [designated] trails shall be located in a manner designed to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect Endangered or Threatened Species and their habitats.
- [Designated] areas and [designated] trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreation uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.
- [Designated] areas and [designated] trails shall not be located in officially designated Wilderness Areas or primitive areas. Areas and trails shall be located in Natural Areas only if the Authorized Officer determines that off-road vehicle use in such locations will not adversely affect the natural, esthetic, scenic, or other values for which such areas were established.

## Criteria for the CTTM Plan

In addition to the criteria defined in 43 CFR 8342.1, preliminary screening criteria considered during the route designation process, and that would be considered during future route modifications, are outlined below:

### 1. Environmental Conditions --

- a. **General** -- Does access on the route promote resource damage/concerns? Is the route causing resource damage?

- b. **Soil stability** -- Is the route within a highly erosive soils area? Does the route cross slopes of 50 percent or greater?
  - c. **Wildlife habitat (winter range, nesting/brooding and rearing habitat, calving/fawning areas)** -- Is the route a known issue within big game winter range?
  - d. **Special Status Species habitat** -- Is the route a known issue within Special Status Species habitat?
  - e. **Proximity to riparian areas and/or 303(d) (list of impaired) streams** -- Is the route causing damage to water quality? Does the route negatively impact wetlands/riparian/fens/mires?
  - f. **Visual resources** -- Does the route conflict with Visual Resource Management (VRM) Class objectives?
  - g. **Cultural/paleontological resources** -- Is the route creating an issue for any historic properties? Is the route creating an issue for any areas of Native American concern? Does the route cross significant paleontological areas?
  - h. **Special Management Areas** -- Is the route within a WSA? Is the route within an area determined to contain wilderness characteristics? Does the route conflict with Special Recreation Management Area (SRMA) objectives? Does the route conflict with Area of Critical Environmental Concern (ACEC) objectives?
2. **Route conditions --**
- a. **General** -- Is the route a BLM-maintained route? Is the road condition poor and/or unsustainable? Is the route unsafe (is it steep; have no turn-around)?
  - b. **Parallel routes** -- Does the route run parallel to another existing route?
  - c. **Spurs** -- Are there spurs?
  - d. **Dead end** -- Is it a dead-end route (0.5-mile or less)? Does the route end at private property?
  - e. **Access** -- Is there legal public access? Is there an existing ROW?
3. **User conflicts --**
- a. Motorized versus non-motorized?
  - b. Motorized/mechanized versus non-mechanized?
4. **Administrative purposes --**
- a. Is the route necessary for rangeland activities?
  - b. Is the route necessary for wildland fire suppression activities?
  - c. Is the route necessary for safety?
  - d. Is the route necessary for resource management and permitted activities?
5. **Public purposes --**
- a. Does the route access public or private land?
  - b. Is the route used as a destination route for specific activities?
  - c. Does the route have recreational value (no special destination)?
  - d. Does the route involve types of desired use (motorized, mechanized, non-motorized/non-mechanized)?

- 6. Route, vehicle type, and size limitations --**
  - a. 50-inch wheel base (full-size vehicles)?
  - b. Less than 50-inch wheel base (ATVs)?
  - c. single-track (motorcycles/mountain bikes)?

## **Route Designations in Wilderness Study Areas**

Information Bulletin (IB) 99-181 directs the BLM to comply with the wilderness non-impairment mandate [FLPMA, Section 603(c); BLM 1995]. WSAs are managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review (H-8550-1; BLM 1995). In accordance with this policy, the BLM must monitor and regulate the activities of OHVs in WSAs in order to ensure that their use does not compromise these areas by impairing their suitability for designation as Wilderness. BLM OHV regulations (43 CFR 8342.1) require that the BLM establish OHV designations of areas and routes that meet the non-impairment mandate. It is the BLM's policy that cross-country vehicle use in the WSAs does cause the impairment of wilderness suitability; therefore, the BLM must establish OHV designations in WSAs that limit vehicular access to boundary roads, or to existing ways (inside the WSA) that were identified during the inventory phase of the wilderness review.

## **Administrative Access and Use**

Routes considered for Administrative Use Only were discussed by the ID Team. These administrative categories include routes to stock ponds, as well as to other range improvements, guzzlers (plastic tanks), and BLM facilities. The KFO reserves the right to allow travel on these routes to permittees, BLM employees, or whomever the BLM deems appropriate, on a case-by-case basis.

## **Emergency Uses**

By regulation, any fire, military, emergency or law enforcement vehicle being used for emergency purposes is exempted from OHV decisions. (Emergency uses in WSAs are covered under the BLM's Interim Management Policy, Section I.B.11 and 12; BLM 1995.)

## **Emergency Limitations or Closures**

Whenever the Authorized Officer determines that OHV use will cause, or is causing, considerable adverse impacts to resources (such as to soil, vegetation, wildlife, wildlife habitat, cultural, historic, scenic, recreation, or other resources), the area must be immediately closed to the type of use causing the adverse impacts (43 CFR 8341.2). Such limitations or closures are not OHV designations.

## Alternative Development

As part of the planning process for the PRMP/FEIS, the BLM is developing a CTTM Plan for all BLM-managed public lands within the Planning Area. The CTTM Plan will cover all types of travel (recreational, casual, agricultural, industrial, administrative, etc.) and accompanying modes and conditions of travel, including motorized, mechanized, and non-mechanized (muscle-powered) uses. It is Colorado BLM policy (CO-IM-2007-20) to restrict all OHV use to Limited Areas to Designated Routes.

## Goal and Objective

The Goal and Objective of the CTTM Plan is for the BLM to provide opportunities for a full range of motorized and non-motorized access and recreational experiences on BLM-managed public lands while, at the same time, protecting sensitive resources and minimizing conflicts among various uses and users. This process includes preparing a reasonable range of alternatives for inclusion in the PRMP/FEIS. The BLM will provide a range of alternatives with regard to which areas will be Open to OHV travel, which areas will be Closed to OHV travel, and which areas will be Limited to Designated Routes. Within the Limited areas, the BLM will provide a range of alternatives by varying miles of designated routes.

## Route Designations and ID Team Meetings

The KFO held several ID Team meetings in order to address route/resource conflicts and route designations. These meetings were held from March through June of 2008. The KFO Field Office Manager conducted the meeting, and every route proposed for designation within the KFO boundaries was evaluated.

The purpose of the route designation ID Team meetings was three-fold:

1. to gather input from the ID Team in relation to conflicts identified, and mitigation measures proposed, by each Resource Specialist; identify (where known) the purpose and need for the route in question; identify where conflicts with resources existed (these conflicts were discussed, and resolved, during the meeting); and to establish final proposals for the various alternatives;
2. to formulate 3 “action” alternatives (not including the “No Action Alternative”) for the CTTM Plan (the range of alternatives includes an alternative that emphasizes resource conflicts over the purpose and need for the route; an alternative that emphasizes the purpose and need for the route over resource conflicts; and an alternative that weighs both resource conflicts and the purpose and need); and
3. to develop a system of designated routes that fulfills the Goals and Objectives (Desired Outcome) for the Planning Area.

The PRMP/FEIS Administrative Record (AR) contains details of the conflicts identified for each route (or route segment), and the BLM's conclusions as to designation (by alternative). All travel and transportation recommendations were examined on an area-by-area and route-by-route basis (usually, by employing GIS and other digital and physical mapping to overlay physical constraints, public comments, and background topography and/or aerial photography, with existing routes and their public and administrative uses).

As discussed above, Resource Specialists identified potential conflicts with proposed routes, and characterized the severity of the conflict. In general, routes with serious resource conflicts (or less severe, but multiple conflicts), and no obvious purpose and need, were recommended for decommissioning or to be limited to administrative use. There were many routes where resource concerns conflicted with established purpose and need. Typically, these routes were recommended for decommissioning, or to be limited to administrative use, under Alternative C; however, they may have been designated for public use under Alternative D. The decision as to whether or not designate a route under Alternative B was decided by a weighing of the route's importance against the severity of the identified resource conflicts. In many cases, the potential conflict was resolved by reducing the number of parallel and redundant routes.

During the travel management route designation process, existing cultural resource inventory and assessment information, including completed Class II and III inventories as well as a comprehensive Class I Cultural Resource overview (Reed et al. 2008a) was considered by the IDT as they reviewed each route within the range of alternatives. Designations were made based on public need and known natural and cultural resource concerns. On routes where sensitive cultural resources are known but these resources are too sensitive to be identified to the public, cultural resources may not have been noted in the GIS spatial data base by the IDT. This is to help protect these resources from being identified as occurring on specific routes under the authority to withhold information per Section 106 pursuant to 36 CFR 800.11 (C).

## **Resource Conflict Descriptions**

### **Cultural Resources**

Existing routes may go through identified cultural and/or paleontological sites. Use of these routes may hasten erosion, exposing more of the site to natural or human-caused damage. Cross-country travel, in particular, can exacerbate this problem. Site densities may be such that any access to the area could put such resources at risk.

### **Recreation**

Public scoping has shown a desire on the part of some people for more areas to be managed for non-motorized recreation. In response to this, the BLM may decide to manage certain areas for more primitive forms of recreation, or to reduce user conflicts between motorized and non-motorized users. In such areas, and under different PRMP/FEIS alternatives, the

existence of certain roads (or a redundancy of such) may pose a conflict with underlying recreation management Goals and Objectives.

## Riparian

There are numerous streams, rivers, and other waterways that run through the Open or Limited OHV use category area. Routes are often located in riparian areas in canyons and drainage bottoms (so that people can avoid the more difficult uplands). Use of these routes can contribute to the loss of riparian vegetation, degrade stream banks, and lead to erosion problems. In addition, there are numerous washes within the Limited OHV use category area that do not support riparian vegetation, and merely provide a channel for water during storm events. Compaction of soils in these washes can lead to accelerated flood velocity, further contributing to erosion and sedimentary transfer.

## Soils

Any surface-disturbing activity, including routes, on sensitive soils will result in increases in salinity and sedimentation levels. Roads and OHV travel can result in impacts to watersheds, by impacting soil health and water quality. Impacts can include soil compaction, decreased soil stability, loss of vegetation and biotic soil crusts, loss of functioning floodplains, accelerated erosion, water quality degradation, and increased salinity contributions.

## Wilderness Study Areas

WSA are managed under the BLM's Interim Management Policy and Guidelines for Lands under Wilderness Review (IMP) (BLM 1995) so as not to impair their suitability for preservation as Wilderness. Each of these WSAs has wilderness characteristics. (They are greater than 5,000 acres in size, natural in appearance, and provide outstanding opportunities for solitude and/or for primitive recreation.) Many also possess supplemental wilderness values, including cultural resources and wildlife values.

The IMP specifies that, at a minimum, motorized vehicles and mechanical transport are only allowed on pre-existing inventoried ways in WSAs. Use of vehicles off boundary routes and on these ways is only permitted for emergencies; Search and Rescue operations; official purposes for the protection of human life, safety, and property; protection of lands and their resources, and to build and maintain structures and installations permitted under the IMP.

Today's OHVs are more varied and increasingly powerful machines capable of accessing steeper and rougher terrain than was possible 20 years ago (when the WSAs were designated). Motorized use in, and around, certain WSAs has increased dramatically, and now involves Sports Utility Vehicles (SUVs), trucks, ATVs, and motorcycles. As discussed earlier, designating motorized routes within WSAs can lead to the impairment of wilderness character, whether through increased risks associated with off-road travel or through intrusions upon the solitude that users seek in WSAs.

## **Lands with Wilderness Characteristics outside of WSAs**

The BLM is required to keep an updated inventory of lands that possess wilderness characteristics outside of WSAs. The KFO conducted an assessment of lands outside of WSAs for wilderness characteristics as required by FLPMA sec. 201 as part of the planning process for the DRMP/DEIS. Wilderness values considered in this analysis include naturalness, opportunities for solitude or opportunities for primitive and unconfined recreation. Areas that possess these values may be managed in a manner designed to protect those values and characteristics. The use of motorized vehicles or mechanical transport on existing routes within these areas (if they were to be managed for such values), may be allowed; however, this use could lead to impacts to those values through the increased risks associated with off route travel.

## **Wildlife**

In general, roads can produce threats to wildlife populations due to habitat fragmentation, stress caused by human activities at critical times (such as lambing), and impacts to resources (such as to water and vegetation resources) upon which wildlife depend. OHV travel can exacerbate these impacts. Several species found within the Planning Area may be especially susceptible to human disturbance (such as sage-grouse).

## **Big Game (bighorn sheep, deer, elk, pronghorn)**

Disturbance associated with human activity can result in increased stress for big game, making animals more susceptible to disease and parasites, and leading to habitat abandonment and fragmentation of habitat. Within bighorn sheep habitat, the Range-wide Plan for Managing Habitat for Desert Bighorn Sheep on Public Lands (BLM undated) recommends that new road construction be minimized, and that roads no longer serving a definite purpose be closed. In addition, the Plan recommends that OHVs be limited to existing roads and trails. (Birthing grounds are, by far, the most crucial habitat.) Additional stress and pressure resulting from human activities can deplete energy reserves, as well as increase disease and parasite resistance in pregnant and lactating animals with young at their sides. (This reduces the survival rate of newborns.) White-tailed and Gunnison prairie dog populations have been decimated by the sylvan plague, and restoration of habitat is required for re-colonization. Limiting new roadways, decommissioning unnecessary roads, and reclaiming illegal trails, will help to lessen the impacts to prairie dog habitat.

Within the Planning Area, reduction of human disturbance and fragmentation is needed in order to protect the remaining sage-grouse habitat. Limiting new roadways, decommissioning unnecessary roads, and reclaiming illegal trails, will help reduce habitat fragmentation and protect the birds and their habitat from human disturbance.

## **Mechanical Routes**

Mechanized use includes mechanical devices (such as bicycles) that are not motorized. The KFO concluded that areas not designated as Open or routes not designated for public

motorized or mechanical travel will be, generally, limited to foot and equestrian travel. As with all designations in the CTTM Plan, the BLM reserves the right to change designations in the future, should resource issues warrant such action. In general, routes not designated for motorized use will not be available for mechanical use in areas identified for hiking, or in other non-mechanical focus areas.

## Foot and Equestrian Travel

Within the Planning Area, foot and equestrian travel will continue to be allowed in all areas, except as specifically prohibited.

## Plan Maintenance and Changes to Route Designations

The Approved RMP must include indicators to guide future plan maintenance, amendments, and/or revisions related to OHV area designations, or to the approved Transportation System within Limited areas. Indicators could include results of monitoring data, new information, and/or changed circumstances (IM 2004-005, Attachment 2; BLM 2003d).

Actual route designations within the Limited category can be modified without completing an RMP Amendment; however, compliance with the National Environmental Policy Act (NEPA) is still required. The regulations at 43 CFR 8342.3 state: “The Authorized Officer shall monitor effect of the use of off-road vehicles. On the basis of information so obtained, and whenever the Authorized Officer deems it necessary to carry out the objectives of this part, designations may be amended, revised, revoked, or other action taken pursuant to the regulation in this part.”

Field Offices must establish procedures for making modifications to their designated route networks in the planning process. Future conditions may require the designation or construction of new routes, or closure of routes, in order to better address resources and resource use conflicts; therefore, a Field Office must expressly state how modification will be evaluated.

As noted in IM 2004-061 (BLM 2004e), Plan maintenance can be accomplished through additional analysis and land use planning (such as through activity level planning). The BLM will collaborate with affected and interested parties in evaluating the designated Transportation System for suitability for active OHV management, and for envisioning potential changes in the existing system or adding new roads, primitive roads or trails; and to specify limitations that will help the BLM meet current and future demands. In conducting such evaluations, the following factors will be considered:

- routes within areas suitable for different categories of OHVs, including dirt bikes, ATVs, dune buggies, and 4-wheel drive touring vehicles, mechanical transport including mountain bikes as well as opportunities for joint trail use;
- needs for parking, trailheads, informational and directional signs, mapping and profiling, and development of brochures or other materials for public dissemination;
- opportunities to tie into existing or planned route networks;

- measures needed in order to avoid onsite and offsite impacts to current and future land uses and important natural resources (among others, issues include noise and air pollution, erodible soils, stream sedimentation, non-point source water pollutions, Listed and Sensitive Species' habitats, historic and archaeological sites, wildlife, special management areas, grazing operations, fence and gate security, needs of non-motorized recreationists, and recognition of property rights for adjacent landowners);

BLM-managed roads or trails determined to cause considerable adverse impacts, or to constitute a nuisance or threat to public safety, will be considered for relocation or closure and rehabilitation after appropriate coordination with applicable agencies and partners.

Areas managed as Closed will not be available for new motorized or mechanized route designation or construction.

Regulations at 43 CFR 8342.2 require the BLM to monitor the impacts associated with OHV use. Changes made to the CTTM Plan should be based upon the information obtained through monitoring. Procedures for making changes to route designations after the Record of Decision (ROD) is signed are established in the Approved RMP. Site-specific environmental analysis documentation, in accordance with the NEPA, is required in order to change the route designations in the CTTM Plan.

## **Cooperating Agencies and other Coordination**

### **Cooperating Agencies**

The primary role of Cooperating Agencies is to provide special expertise and/or assistance to the BLM throughout the planning process. Cooperating Agencies provide staff, information, and assistance to the BLM; perform (or assist with) independent preparation of analysis (where their staff has special expertise); review draft information; and provide input and advice. Cooperating Agencies meet with the BLM throughout the analysis process in order to discuss issues, solutions, and ideas for developing the PRMP/FEIS. (The Cooperating Agencies involved with the PRMP/FEIS planning effort are discussed in Chapter 1, Section 1.11.3.)

### **Other Coordination**

Throughout the planning process, the KFO has developed several partnerships with local groups, including the Mountain Metal Mashers – Sidewinder Trail; the Colorado Division of Wildlife (CDOW), for monitoring and enforcement; the Kremmling Chamber of Commerce; the North Park Chamber of Commerce; the USFS, Special Recreation Permit (SRP) Permitting; Colorado State Parks; the Colorado Off-highway Vehicle Coalition; Stay the Trail Colorado; and the North Sand Hills Working Group. A sub-Resource Advisory Council with representatives for different interest groups was also assembled in order to review, and ensure, that there was a reasonable range of alternatives for recreational designations and opportunities.

## Implementation Process

Generally, implementation decisions constitute the BLM's final approval allowing on-the-ground actions to proceed. These types of decisions are based upon site-specific planning and environmental analyses (in accordance with the NEPA), and are subject to the administrative remedies set forth in the regulations that apply to each resource management program of the BLM. Implementation decisions are not subject to protest under the planning regulations.

Instead, implementation decisions are subject to various administrative remedies. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process, or to other forms of administrative review (as prescribed by specific resource program regulations) after the BLM resolves the protests to RMP decisions, and makes a decision to adopt or amend the RMP.

The travel planning and implementation process includes the following:

- a map of roads and trails for all travel modes;
- definitions and additional limitations for specific roads and trails;
- criteria developed in order to set parameters and to specify limitations;
- guidelines for managing, monitoring, and maintaining the system;
- indicators to guide future plan maintenance, amendments, or revisions related to OHV area designations, or to the approved road and trail system within Limited areas.

The Travel Management Network should be reviewed periodically in order to ensure that current resource and travel management objectives are being met (43 CFR 8342.3).

In the Approved Plan, designated OHV routes will be portrayed by a map entitled "Field Office Travel Plan and Map." This map will be the basis for signing, as well as for enforcement. The Field Office will prioritize actions, resources, and geographic areas for implementation. The implementation goals include completing signage, maps, public information, kiosks, and working with partners.

## Criteria for the Placement of Trails

The following criteria are used in order to determine suitable locations for new trails and trail reroutes within the Kremmling Field Office (KFO). [NOTE: This document uses terminology from the "Recommended Standardized Trail Terminology for Use in Colorado" (COTI 2005).]

These criteria are to be followed as guidelines. Not all of the criteria can be met on every segment of every trail. Their purpose is to help create sustainable, low-maintenance trails that provide quality recreational experiences based upon predetermined trail management objectives (TMOs). Specialty trails requiring higher maintenance may be allowed in appropriate locations.

1. **Know and understand trail management objectives** -- TMOs provide the framework for what the trail will look like, who will be using the trail, and how the trail will be managed. Different TMOs may allow different applications of the criteria described below.

2. **Create loops and avoid dead end trails** -- All trails should begin and end at a trailhead or another trail. A well-planned stacked loop trail system offers a variety of trail options. Easier, shorter loops are arranged close to the trailhead, with longer, more challenging loops extending further beyond the trailhead. Occasionally, destination trails to a point of interest will require an out-and-back trail, but only if they cannot be reasonably incorporated into a loop.
  
3. **Identify control points and use them to guide trail design and layout** -- Control points are specific places or features that influence where the trail goes. Basic control points include the beginning and end of the trail, property boundaries, intersections, drainage crossings, locations for turns, and other trails:
  - **Positive Control Points** -- Positive control points are places where resource managers want users to visit, including scenic overlooks, historic sites, waterfalls, rock outcroppings, lakes, rivers, and other natural features or points of interest. (If the trail does not incorporate these features, users will likely create unsustainable social trails to get to them.)
  - **Negative Control Points** -- Negative control points are places resource managers want users to avoid (such as low-lying wet areas, flat ground, extremely steep cross slopes or cliffs, unstable soils, environmentally sensitive areas, sensitive archaeological sites, safety hazards, and private property).
  - **Sensitive Areas** -- Sensitive areas include environmentally sensitive areas, sensitive archaeological sites, safety hazards, and private property.

Knowing these control points provides a design framework. Resource Managers should try to connect the positive control points while, at the same time, avoiding the negative control points.

4. **Use cross-slopes and avoid flat ground, whenever possible** -- Generally, the trail tread should run perpendicular to the cross-slope, and should utilize frequent grade reversals. (This is the best way to keep water off of the trail.) Resource managers should use curvilinear design principles in order to create a trail that follows the natural contours of the topography, sheds water, blends with the surrounding terrain, and provides fun recreational opportunities.

The following grade guidelines will help determine appropriate tread locations:

- **The Half Rule** -- “A trail’s grade shouldn’t exceed half the grade of the hillside or sideslope (cross-slope) that the trail traverses. If the grade does exceed half the sideslope, it’s considered a fall-line trail. Water will flow down a fall-line trail rather than run across it. For example, if you’re building across a hillside with a (cross slope) of 20 percent, the trail-tread grade should not exceed 10 percent” (IMBA 2004). Steeper cross-slopes allow more flexibility for sustainable tread grades, while flat or low angle cross-slopes can be problematic. (There is an upper limit to this rule. Sustaining a 24 percent tread grade, even on a 50 percent cross-slope is unlikely. In

addition, trail segments may break this rule on durable tread surfaces, such as on solid rock.)

- **The Ten Percent Average Guideline** -- The average trail grade over the length of the trail should be 10 percent or less, for greatest sustainability. Short sections of the trail may exceed this; however, the overall grade should remain at 10 percent or less.
  - **Maximum Sustainable Grade** -- This is the upper grade limit for short trail segments that push the limits of the previous two guidelines. It is determined by a site-specific analysis based upon TMOs, environmental conditions, and observations of existing trails (such as, what's working, and what's not?).
  - **Grade Reversals** -- Frequent changes in the direction of tread grade (gentle up-and-down undulations) will ensure that water is forced off of the trail at frequent intervals.
5. **Locate trails in stable soils** -- Avoid clays, deep loam, and soils that do not drain rapidly. Consider season of use and type of use. The capabilities of motorized vehicles to function in wet/muddy conditions make it imperative to avoid unstable or poorly drained soils. Trails that are less likely to be used when wet may be located in less-desirable soils, if necessary. (In western Colorado's arid environment, the best soil conditions for trails are those with high rock content.)
  6. **Drainage crossings are key control points and should be selected carefully** -- Resource managers should consider both the trail's impact on the drainage (erosion and sedimentation), and the drainage's impact on the trail (changing tread surface, water channeling onto trail). The trail should descend into, and climb out of, the drainage in order to prevent water from flowing down the trail. Trails should avoid long or steep entries into drainages. Resource managers should design grade reversals into the trail on each side of the approach in order to minimize water and sediment entering from the trail. Resource managers should look for drainage crossings on rock.
  7. **Dry washes can be excellent travel ways** -- Dry washes are well defined, contain noise, and are periodically resurfaced by flowing water. As long as the wash does not support riparian vegetation, and has no major safety problems (such as water falls), they are well suited to be part of a recreational trail system.
  8. **Avoid switchbacks** -- Switchbacks are difficult, time-consuming, and expensive to construct, and require regular maintenance. (Users often cut them, causing avoidable impacts.) Using curvilinear design principles eliminates the need for most switchbacks. Climbing turns are easier to construct and maintain, and utilize natural terrain features (benches, knolls, rock outcrops) in order to change the direction of a trail.
  9. **Avoid ridge tops** -- Ridge tops are often primary transportation corridors for wildlife, and were often used by Native Americans as travel routes. Noise from ridge-top trails is broadcast over a wide area. In order to isolate noise, resource managers should locate trails on side hills, off of ridge tops, using ridges and watersheds as natural sound barriers.
  10. **Use vegetation and other natural features to conceal the trail and absorb noise** -- This can be difficult in a desert environment. Resource managers should try to minimize the visual impact of the trail by following natural transitions in vegetation or soil type. Usually,

a trail near the base of a sideslope, or on rimrock, is less visible than a mid-slope trail.

Denser vegetation will hide a trail, lessen noise transmission, and can dissipate the energy of falling raindrops on the bare soil of the trail tread.

11. **Carefully design intersections to avoid safety problems --** When locating a bicycle or motorized vehicle trail, resource managers should be aware of sighting distance and sight lines. (Collisions can be avoided if riders can see each other.) Trails should avoid 4-way intersections. Offsetting the cross-traffic helps to reduce speeds, and reduces the risk of collisions.

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