U.S. Department of the Interior
Bureau of Land Management
Kremmling Field Office
P.O. Box 68
Kremmling, CO 80459

ENVIRONMENTAL ASSESSMENT

NUMBER: CO-120-2008-55-EA

PROJECT NAME: National Public Lands Day (Gore Canyon Trail Reroute & Maintenance)

LEGAL DESCRIPTION: T. 1 N., R. 81 W., Sec 32; T. 1 S., R. 81 W., Secs 5 & 6

APPLICANT: BLM

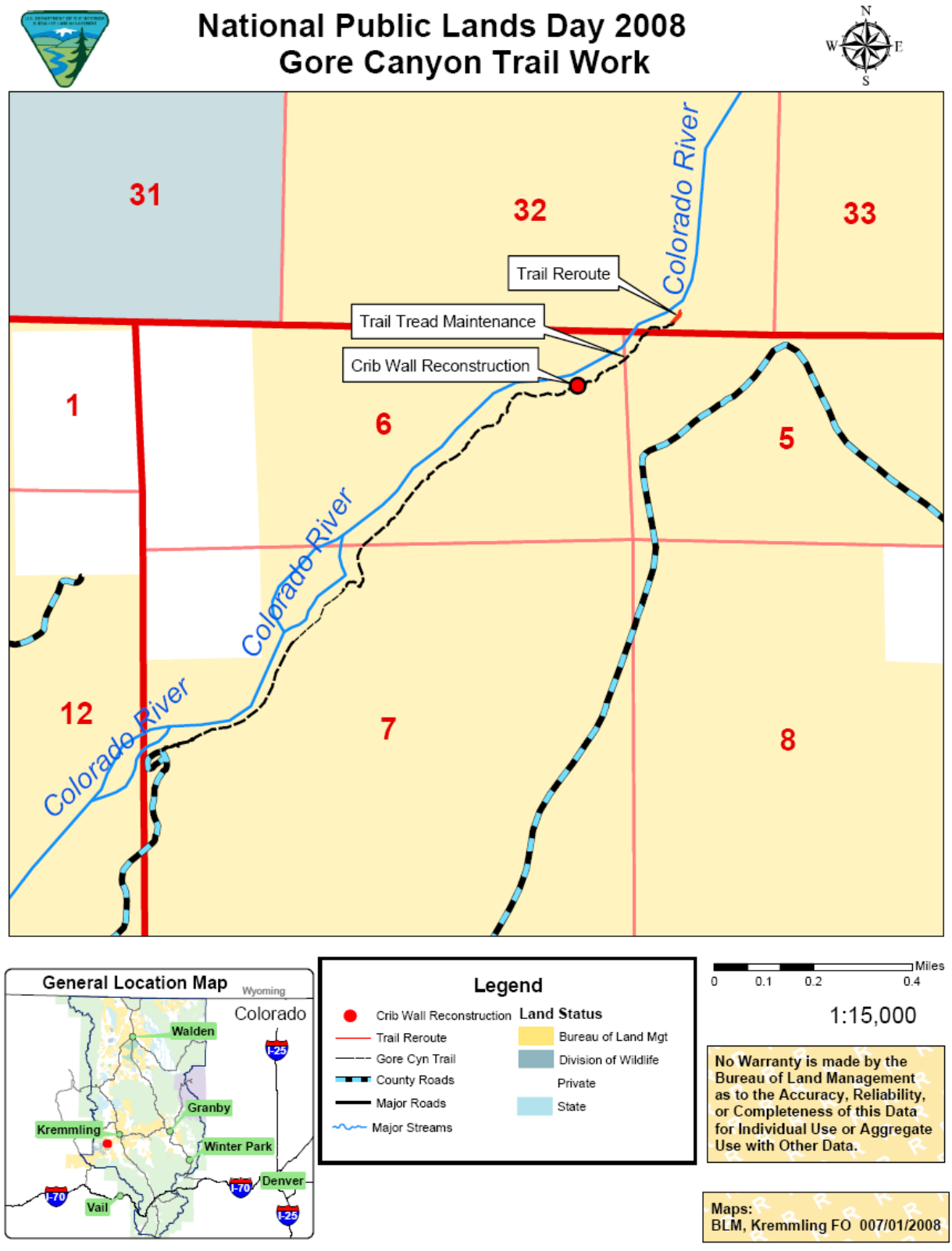
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Background: The Gore Canyon Trail provides hiking access from the Pumphouse Recreation Site upstream approximately 1.5 miles. The trail ends on the bank of the Colorado River where hikers and anglers can walk the bank upstream for another mile before cliffs along the river stop their progress. In recent years, debris slides have destroyed one of the crib walls in a side drainage that supports the trail tread, leaving a steep side slope with little or no trail tread. This section of the trail is not safe to cross in wet or frozen conditions. At the end of the trail where it drops down to the bank of the river, there is no defined route. As a result, there are multiple user-created trails. The user-created trails do not have a sustainable grade, are subject to erosion, and are difficult for visitors to maintain their footing due to their steepness.

Proposed Action: The BLM is proposing the following improvements on the Gore Canyon trail: rebuild the crib wall that was destroyed by the debris slide, reroute the user-created trails at the end of the trail, and perform general maintenance on the trail tread between the crib wall and the end of the trail. The work would be done using volunteer labor as part of National Public Lands Day (NPLD) on September 27, 2008 (see map below).

The work on the crib wall would entail constructing a new crib wall using material adjacent to the trail. The new trail tread would be lower than the old tread due to the loss of material from the debris slide. The reroute at the end of the trail would be new construction including a single pitch trail with no turns, a rock structure with steps, and a short rock retaining wall. The user-created trails would be rehabilitated and naturalized. The trail maintenance would include de-berming the outer edge of the tread and reducing the angle of the tread outslope, making it less steep and easier to walk on. All trail work would be consistent with the attached "Criteria for Placement of Trails" (Appendix #2).

Project Map:


National Public Lands Day 2008
Gore Canyon Trail Work
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32
33
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12
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8
Colorado River
Colorado River
Colorado River
Trail Reroute
Trail Tread Maintenance
Crib Wall Reconstruction
General Location Map
Wyoming
Colorado
Walden
Granby
Kremmling
Winter Park
Denver
Vail
I-25
I-70
I-70
I-25
Legend
Crib Wall Reconstruction
Trail Reroute
Gore Cyn Trail
County Roads
Major Roads
Major Streams
Land Status
Bureau of Land Mgt
Division of Wildlife
Private
State
Miles
0
0.1
0.2
0.4
1:15,000
No Warranty is made by the Bureau of Land Management as to the Accuracy, Reliability, or Completeness of this Data for Individual Use or Aggregate Use with Other Data.
Maps:
BLM, Kremmling FO 007/01/2008

No Action Alternative: If implemented, BLM would not conduct any trail improvements, re-routes, or maintenance.

PURPOSE AND NEED FOR THE ACTION: The purpose of the project would be to address improvements to the Gore Canyon Trail.

There is a need to consider the project to ensure safe access and continued opportunities for hikers and anglers using the trail. There is also a need to address the soil erosion that is occurring from user-created fall line trails.

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

> Name of Plan: Kremmling Resource Management Plan (RMP), Record of Decision (ROD)
>
> Date Approved: December 19, 1984; Updated February 1999
>
> Decision Number/Page: Resource Decision #7, Page #11
>
> Decision Language:
> *Objective*: "To ensure the continued availability of outdoor recreational opportunities which the public seeks and which are not readily available from other sources, to reduce the impact of the recreational use on fragile and unique resource values, and to provide for visitor safety, and resource interpretation."
>
> *Implementation*: "Manage and fund the Upper Colorado River Special Recreation Management Area to provide river recreational opportunities and to reduce resource damage, solve visitor health and safety problems and mitigate conflicts."
>
> *Monitoring/Schedule*: "…the Upper Colorado River…SRMA will have regularly scheduled maintenance and management of…developed sites and facilities. Hazards to public health and safety will be mitigated whether by regular preventative maintenance or immediate corrective actions."

Standards for Public Land Health: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The following are the approved standards:

Standard	Definition/Statement
#1 Upland Soils	Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.
#2 Riparian Systems	Riparian systems associated with both running and standing water, function properly and have the ability to recover from major surface disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.
#3 Plant and	Healthy, productive plant and animal communities of native and other desirable species are

Animal Communities	maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.
#4 Threatened and Endangered Species	Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.
#5 Water Quality	The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303(c) of the Clean Water Act.

Because a standard exists for these five categories, a finding must be made for each of them in the environmental analysis. These findings are located in specific elements below or in the Interdisciplinary Team Analysis Review Record and Checklist (IDT-RRC) (Appendix 1).

AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES / MITIGATION MEASURES:

CRITICAL ELEMENTS: The following critical elements: Air Quality, Areas of Critical Environmental Concern, Cultural Resources, Environmental Justice, Invasive/Non-native species, Native American Religious Concerns, Farmland- Prime and Unique, Floodplains, Wastes- Hazardous or Solid, Wetlands and Riparian Zones, Wild and Scenic Rivers, and Wilderness were evaluated and determined that they were not present or that there would be no impact to them from the Proposed Action or No Action Alternative. See IDT-RRC in Appendix 1 for further information. The following critical elements were determined to be potentially impacted and were carried forward for analysis from the IDT-RRC in Appendix 1.

WATER QUALITY, SURFACE AND GROUND (includes a finding on Standard 5)

Affected Environment: The proposed maintenance and construction occurs along the Upper Colorado River below Kremmling. This segment of river is classified for coldwater aquatic life-class 1, water supply, primary contact recreation, and agriculture. This segment of the river is not identified in the state's 303(d) List or the Monitoring and Evaluation List for any known or suspected water quality impairments. In the 2008, "Status of Water Quality in Colorado" (the 305(b) Report), the segment is listed as "fully supporting" the designated use of primary contact recreation. The other uses were not assessed.

The United States Geologic Survey (USGS) monitors water quality parameters at the upstream entrance to Gore Canyon. The BLM monitors stream temperatures below the Pumphouse Recreation Site. There are no known water quality concerns. Ground water quality would not be affected by this action.

Environmental Consequences: The existing trail is relatively stable and does not channelize or concentrate runoff. The proposed maintenance work would occur in trail sections where the upslope area has eroded down across the trail and deposited on the trail path. During maintenance, some disturbed soil and existing loose material could be pushed to the downhill side of the path and eventually reach the Colorado River. Project plans include removing excess material, where possible, to stable upland areas away from runoff paths. The trail itself is located in the uplands, and during the 2008 high flows of 4,000 cubic-feet-per-seconds (cfs), the trail was upslope of the high waterline.

The proposed trail sections for repairs are fairly short (less than 60-feet) and would not result in major sediment loads to the river. The areas upslope of these segments have been reviewed and the erosion is natural and stabilization measures did not appear to be feasible. The proposed cribbing and benching of the path would create a more stable trail than the current trail which has continual sloughing as people try to cross the debris fan. By creating a sustainable trail segment accessing the river and closing user-created routes, the project would help reduce erosion from steep, user-created trails, many of which erode the main trail's outward edge.

Under the No Action Alternative, there would be continued use of the poor trail sections resulting in loose material continuing to erode downhill and increasing the probability of new user created trails to access the river.

Finding on the Public Land Health Standard for water quality: This segment of river appears to be meeting the Standard for water quality. The proposed maintenance and construction will help maintain the area's ability to meet the standard.

NON-CRITICAL ELEMENTS: The following non-critical elements were determined to be potentially impacted and were carried forward for analysis from the IDT-RRC in Appendix 1.

SOILS (includes a finding on Standard 1)

Affected Environment: Most of the proposed trail work is located along the steep sideslope of Gore Canyon overlooking the Colorado River. The narrow footpath primarily runs along the contour, with runoff crossing the trail and not travelling along the path. The sideslopes are west to north aspects and have good vegetative cover. The trail sections identified for improvement have less upslope vegetation and are eroding, with colluvial deposits filling the trail. The proposed route to the river is a diagonal route down to the river through alders and chokecherries. The trail segments to be improved cross steep terrain among rock outcrops. Continued trail repair would be needed to maintain the trail.

Environmental Consequences: The proposed new portion of trail is short and designed to be sustainable with a moderate grade. The footpath itself is narrow and does not represent a major soil disturbance. Building this trail and closing user created trails would help manage soil erosion, especially closer to the river corridor. The areas of maintenance are in previously disturbed areas and in eroded debris. Stabilizing the trail's path in these segments would help reduce the current soil loss.

Under the No Action Alternative, users would continue to cross the debris flow which destabilizes the slope and continues the soil sloughing. If the trail becomes impassable, users would create alternate routes, increasing the amount of exposed soil in the area. User-created trails often have more erodible slopes and locations than the surveyed route.

Finding on the Public Land Health Standard for upland soils: The trail is a very small (<1 acre) of soil disturbance across more than a mile of terrain. The proposed work would help reduce erosion on small areas of the trail and would not affect the area's overall ability to meet the Standard. The area has not been assessed for standards, but the overall area has good soil cover, no accelerated erosion, or other soil concerns on a landscape scale.

RECREATION

Affected Environment: The Gore Canyon Trail is located with the Upper Colorado River Special Recreation Management Area (SRMA). The SRMA is managed for floatboating and associated activities such as fishing and hiking in a roaded-natural setting. The trail provides hiking access from the Pumphouse Recreation Site upstream approximately 1.5 miles. The trail ends on the bank of the Colorado River where hikers and anglers can walk the bank upstream for another mile before cliffs along the river stop their progress.

Environmental Consequences: The trail work would increase visitor safety and provide improved hiking opportunities. Since the trail work is proposed within the corridor of the existing trail, the physical setting would not change. No additional use is anticipated as a result

of the trail work, so no change is anticipated in the social setting. Thus, no impacts are anticipated to the recreation setting.

CUMULATIVE IMPACTS SUMMARY: All resource values have been evaluated for cumulative impacts. It has been determined that there would be no cumulative impacts.

PERSONS / AGENCIES CONSULTED: The project was listed on the Field Office NEPA and Internet NEPA register.

INTERDISCIPLINARY REVIEW: See IDT-RRC in Appendix 1.

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Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the Proposed Action will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

DECISION RECORD

DECISION: It is my decision to authorize the Proposed Action as described in the attached EA.

RATIONALE: The Proposed Action will help ensure safe access and continued opportunities for hikers and anglers using the trail while also addressing erosion concerns.

NAME OF PREPARER: Andrew Windsor

NAME OF ENVIRONMENTAL COORDINATOR: Joe Stout

DATE: 9/17/08

SIGNATURE OF AUTHORIZED OFFICIAL: /s/ David Stout

DATE SIGNED: 9/24/08

APPENDICES:

Appendix 1 – Interdisciplinary Team Analysis Review Record and Checklist
Appendix 2 - Criteria for Placement of Trails

Appendix 1

INTERDISCIPLINARY TEAM ANALYSIS REVIEW RECORD AND CHECKLIST:

Project Title: Gore Canyon Trail Reroute & Maintenance
Project Leader: Andrew Windsor

Consultation/Permit Requirements:

Consultation	Date Initiated	Date Completed	Responsible Specialist/ Contractor	Comments
Cultural/Archeological Clearance/SHPO	8/8/08	9/8/08	BBW	No effect, no historic properties would be affected.
Native American	5/9/08	6/10/08	BBW	To date, no Native American Tribe has identified any areas of traditional concern.
T&E Species/FWS	N/A	N/A	M.McGuire	
Permits Needed (i.e. Air or Water)	N/A	N/A	P. Belcher	No fill material is being placed in a wetland or below the high water line. The entire trail is less than one acre of surface disturbance.

(NP) = Not Present
(NI) = Resource/Use Present but Not Impacted
(PI) = Potentially Impacted and Brought Forward for Analysis.

NP NI PI	Discipline/Name	Date Review Comp.	Initials	Review Comments (required for Critical Element NIs, and for elements that require a finding but are not carried forward for analysis.)
	CRITICAL ELEMENTS			
NI	Air Quality **Belcher**	9/04/08	PB	The Proposed maintenance and new construction would not affect air quality.
NP	Areas of Critical Environmental Concern **J. Stout**	9/17/08	JS	There are no Areas of Critical Environmental Concern in the proximity of the proposed project area.
NP	Cultural Resources **Wyatt**	9/8/08	BBW	A cultural resource inventory report #CR-08-49 was completed for trail rebuild and maintenance. No new or previously known cultural resource sites lie within the project areas. Thus, there would be no impacts to historic properties.
NP	Environmental Justice **J. Stout**	9/17/08	JS	According to the most recent Census Bureau statistics (2000), there are no minority or low income communities within the Kremmling Planning Area.
NP	Farmlands, Prime and Unique **Belcher**	09/04/08	PB	There are no farmlands, prime or unique, in the proximity of the proposed project area.
NI	Floodplains **Belcher**	09/04/08	PB	Although the new construction extends into the floodplain, it would not affect the functionality of the floodplain, nor does it increase flood hazards.
NI	Invasive, Non-native Species **Scott**	7/2/08	MS	There would be no impacts.
NI	Migratory Birds **McGuire**	8/15/08	MM	The Proposed Action would not impact migratory birds within the project area.

NP	Native American Religious Concerns **Wyatt**	9/8/08	BBW	To date, no Native American Tribe has identified any areas of traditional concern.
NP	T/E, and Sensitive Species (Finding on Standard 4) **McGuire**	8/15/08	MM	There are no T/E, or sensitive species recorded in the area or expected to occur in the habitat surrounding the project area.
NP	Wastes, Hazardous and Solid **Hodgson**	9/05/08	KH	There are no quantities of wastes, hazardous or solid, located on BLM-administered lands in the proposed project area, and there would be no wastes generated as a result of the Proposed Action or No Action alternative.
PI	Water Quality, Surface and Ground (Finding on Standard 5) **Belcher**	09?04/08	PB	See analysis in EA.
NI	Wetlands & Riparian Zones (Finding on Standard 2) **Belcher**	09/04/08	PB	The proposed trail maintenance and new construction occur outside of the narrow riparian zone along the river. Thus, there would be no impacts.
NP	Wild and Scenic Rivers **Sterin**	9/12/08	BGS	The Colorado River through this segment is eligible for wild and scenic river status. The proposed classification is recreational. This project would not impact this classification, the free flowing character of the river, or the Outstanding Remarkable Values.
NP	Wilderness **Sterin**	9/12/08	BGS	There is no designated Wilderness or Wilderness Study Areas in the proximity of the proposed project area.
NON-CRITICAL ELEMENTS (A finding must be made for these elements)				
PI	Soils (Finding on Standard 1) **Belcher**	09/04/08	PB	See analysis in EA.
NI	Vegetation **Johnson** (Finding on Standard 3)	7/25/08	RJ	The Proposed Action would not impact the vegetation within the project area.
NI	Wildlife, Aquatic (Finding on Standard 3) **McGuire**	8/15/08	MM	The Proposed Action would not impact aquatic wildlife within the project area.
NI	Wildlife, Terrestrial (Finding on Standard 3) **McGuire**	8/15/08	MM	The Proposed Action would not impact terrestrial wildlife within the project area.
OTHER NON-CRITICAL ELEMENTS				
NI	Access/Transportation **Windsor**	7/18/08	AW	Visitors using the trail to access upstream would have to walk through the trail work sites. Their ability to access the river above the end of the trail would not be impacted.
NI	Fire **Wyatt**	9/8/08	BBW	No effect.
NP	Forest Management **K. Belcher**	9/04/08	KWB	No forest resources present.
NI	Geology and Minerals **Hodgson**	9/05/08	KH	No impacts.
NI	Hydrology/Water Rights **Belcher**	9/04/08	PB	The proposed work would not affect any water rights. See Water Quality section for hydrology concerns.
NP	Paleontology **Rupp**	7/21/08	FGR	Geologically mapped as biotitic gneiss,, schist and migmatite. No fossil potential.
NI	Noise **Windsor**	7/18/08	AW	There would be no impacts from noise.
NP	Range Management **Johnson**	7/25/08	RJ	There is no authorized livestock grazing within the project area.
NP	Lands/ Realty Authorizations **Cassel**	7/8/08	SC	There are no leases, permits or ROW's in the location of the proposed action.
PI	Recreation **Windsor**	7/18/08	AW	See analysis in EA.
NI	Socio-Economics **J. Stout**	9/17/08	JS	There would be no impacts.
NI	Visual Resources **Windsor**	7/18/08	AW	The proposed trail work is in VRM Class II. The Gore Canyon Trail is an existing trail, and no additional visual impacts would be anticipated as a result of the proposed action.

				The trail work would not contrast with the existing landscape nor attract any additional attention.
NI	Cumulative Impact Summary **J. Stout**	9/17/08	JS	There would be no cumulative impacts.
FINAL REVIEW				
	P&E Coordinator **J. Stout**	9/17/08	JS	

Appendix 2

CRITERIA FOR THE PLACEMENT OF TRAILS

The following criteria are used to determine suitable locations for new trails and trail reroutes within the Kremmling Field Office. This document utilizes 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 recreation experiences based on predetermined trail management objectives (TMOs). Specialty trails requiring higher maintenance may be allowed in appropriate locations.

1. Know and understand trail management objectives. TMO's provide the framework for what the trail will look like, who will be using the trail, and how the trail will be managed. Different TMO's may allow different applications of the criteria 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 are places where you 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 are places you 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.

Knowing these control points provides a design framework. Try to connect the positive control points while avoiding the negative control points.

4. Use cross slope and avoid flat ground whenever possible. The trail tread should generally run perpendicular to the cross slope and should utilize frequent grade reversals. This is the best way to keep water off the trail. Use curvilinear design principles to create a trail that follows the natural contours of the topography, sheds water, blends with the surrounding terrain, and provides fun recreation 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. Additionally, trail segments may break this rule on durable tread surfaces such as 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, but the overall grade should remain at 10 percent or less.

- Maximum Sustainable Grade: This is the upper grade limit for those short trail segments that push the limits of the previous two guidelines. It is determined by a site-specific analysis based on TMO's, environmental conditions, and observations of existing trails – 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 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. 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 to prevent water from flowing down the trail. Avoid long or steep entries into drainages. Design grade reversals into the trail on each side of the approach to minimize water and sediment entering from the trail. Look for drainage crossings on rock.

7. Dry washes can be excellent travel ways. They 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, like 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. Utilizing 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) 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. Locate trails on side hills, off ridge tops, using ridges and watersheds as natural sound barriers to isolate noise.

10. Use vegetation and other natural features to conceal the trail and absorb noise. This can be difficult in a desert environment. Try to minimize the visual impact of the trail by following natural transitions in vegetation or soil type. A trail near the base of a sideslope or on rimrock is usually 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 be aware of sighting distance and sight lines. Collisions can be avoided if riders can see each other. Avoid four way intersections. Offsetting the cross traffic helps reduce speeds and reduces the risk of collisions.

Sources:

Off Highway Motorcycle and ATV Trails: Wernex,2nd edition, American Motorcycle Assoc. 1994

Off Highway Vehicle Trail and Road Grading Equipment, Vachowski, Maier, USDA Forest Service Missoula 9Technology and development Center 1998 Doc# 7E72A49

Mountain Bike Trails: Techniques for design, construction and Maintenance, McCoy Stoner, USDA Forest Service, Missoula Technology and Development Center

Recommended Standardized Trail Terminology for Use in Colorado, Colorado Outdoor Training Initiative (COTI). 2005

Tractor Techniques for Trailbed restoration, Hamilton, USDA Forest Service 1994

Trails 2000, Lockwood USDA Forest Service 1994

Trail Construction and Maintenance Handbook, Hesselbarth, Vachowski, USDA Forest Service (4E42A25-Trail Notebook) 2004

Trail Solutions, IMBA's Guide to Building Sweet Singletrack, International Mountain Bicycling Association (IMBA) 2004.

USDA Forest Service Travel Management Handbook, FS 2309.18