
APPENDIX J
MONITORING AND EVALUATION

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INTRODUCTION

This appendix provides an overview of the CRVFO monitoring and evaluation protocols.

RELATIONSHIP OF IMPLEMENTATION AND MONITORING TO ADAPTIVE MANAGEMENT

Adaptive management is a structured, iterative process for continually improving implementation practices based on achieving goals and objectives established in the resource management plan (RMP). Adaptive management is not possible without effective monitoring and evaluation because monitoring data shows if progress is being made toward achieving RMP objectives. If not, implementation practices are adjusted and improved.

Since accrued monitoring data is used to improve future implementation actions, monitoring is continual and never completed. The cyclic process includes four phases: planning/designing, implementation, monitoring, and evaluation.

PHASE 1 - PLANNING

The RMP is a set of decisions that establish management direction for BLM land and Federal mineral estate within an administrative area of a Field Office.

RMP Amendments. RMP decisions are subsequently changed through either a plan amendment or another RMP revision. The process for conducting plan amendments is basically the same as the land use planning process used in developing RMPs. The primary difference is that circumstances may allow for completing a plan amendment through the environmental assessment (EA) process, rather than through an EIS. Plan amendments (43 CFR 1610.5-5) change one or more of the terms, conditions, or decisions of an approved land use plan. Plan amendments are most often prompted by the need to consider a proposal or action that does not conform to the plan; implement new or revised policy that changes land use plan decisions; respond to new, intensified, or changed uses on BLM land; and consider significant new information from resource assessments, monitoring, or scientific studies that change land use plan decisions.

RMP Maintenance. During the life of the RMP, the BLM expects that new information gathered from field inventories and assessments, other agency studies, and other sources will update geographic information system data, best management practices, and scientific principles. To the extent that such new information or actions address issues covered in the plan, the BLM will integrate the data through plan maintenance. BLM regulations in 43 CFR 1610.5-4 provide that RMP decisions and supporting actions can be maintained to reflect minor changes in data. Maintenance is limited to further refining, documenting, or clarifying a previously approved decision incorporated in the plan. Maintenance must not expand the scope of resource uses or restrictions or change the terms, conditions, and decisions of the approved RMP.

PHASE 2 - PLAN IMPLEMENTATION

Implementation of the RMP begins once the Record of Decision for the approved RMP is signed. Decisions made through the RMP planning process are implemented over the life of the plan. Some of the decisions are immediate and go into effect with the Record of Decision. Certain decisions would be implemented after site-specific environmental review or NEPA process is completed such as development of recreation sites, vegetation management treatments, or approval of an application for permit to drill a natural gas well. In addition, specific programs have requirements that must be taken in order to make certain decisions effective. An example of a land use plan decision that requires an additional action for implementation would be a recommendation to withdraw lands from entry under the mining laws. Formal action requiring Secretarial-level review and decision making would follow if the BLM planning process results in a withdrawal recommendation and the applicable regulations in 43 CFR 2300 are followed.

Any future proposals or management actions will be reviewed against the RMP to determine if the proposal is in conformance with the RMP. While the Final EIS for the CRVFO RMP provides the compliance with NEPA for the broad-scale decisions that are made in the Record of Decision, it does not replace the requirement to comply with NEPA for most implementation actions.

PHASE 3 - IMPLEMENTATION AND EFFECTIVENESS MONITORING

RMP monitoring is a continuous process occurring over the life of the land use plan. The goal is to maintain a dynamic RMP that is adapted or amended as necessary. Monitoring data is collected, examined and used to draw conclusions on: 1) whether RMP decisions and planned activities have been implemented in the manner prescribed by the RMP (Implementation monitoring); 2) whether plan decisions and implementation-level actions are effective in achieving stated objectives or desired outcomes (Effectiveness monitoring); and 3) calculating the cost of delivering a service or product (i.e., BLM program elements). Conclusions are then used to make recommendations on whether to continue current management or what changes need to be made to implementation practices to better achieve resource management plan goals and objectives.

Indicators, methods, locations, units of measures, frequency and action triggers can be established by national policy guidance, in resource management plans, or by technical specialists in order to address specific issues. Table 1 (below) displays implementation monitoring protocols by program anticipated to be performed by the CRVFO. Due to staffing and funding levels monitoring is annually prioritized consistent with the goals and objectives of the RMP. BLM may work in cooperation with local, state, and other federal agencies or use data collected by other agencies/ sources when appropriate and available.

PHASE 4 - RESOURCE MANAGEMENT PLAN EVALUATION

RMP evaluation is the process of periodically reviewing the RMP to determine whether the land use plan decisions and NEPA analysis are still valid and whether the RMP is being implemented as planned. RMPs are evaluated to determine if: (1) decisions remain relevant to current issues, (2) decisions are effective in achieving (or making progress toward achieving) desired outcomes, (3) any decisions need to be revised, (4) any decisions need to be dropped from further consideration, and (5) any areas require new decisions. The RMP is evaluated in accordance with Colorado BLM schedules. Plan evaluations are also completed prior to any plan revisions and for major plan amendments. Evaluations will follow the protocols established by the BLM Land Use Planning Handbook H-1601-1 in effect at the time the evaluation is initiated.

Table 1. Implementation-level Monitoring Protocols by Program

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
I. Resources						
Air Resources						
Monitor air quality and climatic conditions (Program Element 1010-MI).	Mechanized rain gauge.	Sweetwater, CO. In the future sites will be Field Office-wide.	Inches of precipitation.	Continuous recording of precipitation. Data is compiled monthly.	Climatic trends and drought conditions.	Directs grazing related changes due to drought conditions.
In accordance with the CARPP, conduct reviews of air quality monitoring data and BLM approved activities which could impact air quality. Cooperate with federal, state and local environmental agencies to implement a comprehensive ambient air quality monitoring network. The trigger for action is approaching or an exceedances of the National or Colorado Ambient Air Quality Standards (NAAQS or CAAQS).						
Water						
Monitor water resources (Program Element 1010-MU).	Physically collected through direct field measurements.	Field Office-wide.	Numerous water quality parameters – field collected or laboratory analyzed.	As needed in conjunction with LHA follow-up work or site specific project needs.	Changes in water quality or impairments.	
Monitor stream /riparian habitat (Program Element 1010-MO).	Physically collected through direct field measurement.	Field Office-wide.	Miles of stream monitored for physical stream habitat and riparian vegetation parameters.	As needed in conjunction with LHA follow-up work or site specific project needs.	Changes in physical stream habitat condition and riparian functionality.	
Surface and ground water monitoring related to natural gas development – Conduct baseline and post-project surface water quality monitoring in sensitive streams such as drinking water sources or habitat for endangered species.						
Conduct baseline and post-project groundwater quality monitoring for drinking water wells within ¼ mile of a well bore or in areas determined to be sensitive or at risk of contamination.						
Cooperate with COGCC in the protection of water resources including water sampling and monitoring protocols for ground and surface water sampling and public water system protection.						
Vegetation						
Trend (Program Element - ML).	BLM approved monitoring methods (e.g.,	Field Office-wide – key areas.	Variables: cover, frequency,	Every 6 to 10 years.	Vegetation change from the baseline or	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
	Daubenmire, Line-intercept, Assessment, Inventory, and Monitoring Strategy).		species composition and density.		moving away from desired ecological status.	
Vegetation Change.	Photo plots/points.	Area-wide - key areas.	Representative sample of vegetation type.	Every 3 to 10 years.	Used in conjunction with other methods to detect both desirable and undesirable changes occurring to vegetation as a result of land uses.	
Vegetation Treatments (Program Elements - MQ, MX).	BLM approved monitoring methods (Daubenmire, Line-intercept, Nested Frequency, Photo plots, etc).	All Vegetation Treatments.	Species composition, shrub canopy cover, or other applicable measure.	Annually for 3-5 years post-treatment.	Vegetation objectives not being met (e.g. increase in noxious weeds, shrub regeneration below desired levels).	If vegetation objectives are not being met, adaptive management will be used to design future vegetation treatments.
Precipitation.	Weather stations.	Upper Colorado River site and others to be determined to provide representative sample of local precipitation patterns.	Inches and timing of precipitation.	Monthly and annually.	Insufficient precipitation for meeting desired vegetation conditions.	
Significant Plant Communities.	Site visits or remote sensing.	At mapped significant plant communities throughout Field Office.	Evidence of surface disturbance; evidence of invasive species.	Every 2-4 years.	Detection of noxious weeds; loss of species or habitat due to surface disturbance.	
Noxious Weed Inventory (Program	Site visits or remote sensing.	Priority areas as described in Chapter 2,	Acres and species of noxious weeds.	Continuously.	Detection of Colorado Weed List A species	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
Element - BS).		Table 2-2.			and spreading or establishment of List B or C weed species in new areas.	
Evaluate Weed Treatments (Program Element - MK).	Treatment Area Visits – Ocular assessment.	Field Office-wide.	Acres.	Annually.	Treatment Effectiveness, Follow-up Needs.	
Wetland/riparian Condition (Program Elements - BU, BV, MN, MO).	Proper Functioning Condition (PFC).	Area-wide.	Stream miles rated PFC, FAR or NF.	At permit renewal or as concerns arise with periodic site visits.	Downward trend or not meeting Colorado Land Health Standards.	
Riparian Area Condition (Program Element - MO).	Multiple Indicator Monitoring (MIM), Vegetation Cross-section Composition (Winward).	Priority stream reaches.	Indicators applicable to riparian area being monitored.	Frequency depends on site-specific objectives.	Change in Greenline composition, Percent streambank alteration, or other trigger depending on site-specific objectives.	
Fisheries and Other Aquatic Wildlife						
Monitor Stream Habitat (Program Element 1120-MO).	Physically collected through direct field measurement.	Field Office-wide.	Miles of stream monitored to determine and document habitat condition for stream and river aquatic species given management decisions in place and to determine if objectives are being met.	Some is done each year but frequency by stream varies depending on site specific actions or projects.	Aquatic habitat conditions for desired biological communities not meeting Colorado Land Health Standards, or below potential.	
Species	Physically	Field Office-	Populations	This type of	Populations are	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
Populations (Program Element 1120-MR).	collected through direct field measurement (BLM or other agency data).	wide.	monitored to determine if population trends are stable, declining or increasing.	monitoring is done yearly in select locations but varies in frequency by stream depending on site specific actions or projects.	declining or are below determined carrying capacity.	
BMP and other mitigation or minimization measures monitoring effectiveness.	Visual inspection of project sites through field verification.	Field Office-wide.	Mitigation or minimization measures to determine effectiveness.	Yearly on a case-by-case basis.	Mitigation or minimization measures are not working as intended.	Use Adaptive Management by identifying other BMP's to use should initial efforts be found ineffective.
Terrestrial Wildlife						
Terrestrial Habitat (Program Element 1110-MQ).	Collected through field measurements.	Field Office-wide.	Acres monitored to determine if terrestrial habitat treatments have been implemented and implementation objectives are being met.	Yearly.	Terrestrial habitat conditions for desired biological communities not meeting Colorado Land Health Standards.	
Species Populations (Program Element 1110-MR).	Collected through surveys or estimated from BLM or other agency data.	Field Office-wide.	Populations monitored to determine if population trends are stable, declining or increasing.	Yearly.	Populations are declining.	
Special Status Species - Fish and Other Aquatic Wildlife						
Monitor Stream Habitat (Program Element 1120-	Physically collected through direct field measurement.	Field Office-wide.	Miles of stream monitored to determine and	Some is done each year but frequency by stream varies	Aquatic habitat conditions for desired biological	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
MO).			document habitat condition for stream and river aquatic species given management decisions in place and to determine if objectives are being met.	depending on site specific actions or projects.	communities not meeting Colorado Land Health Standards, or below potential.	
Species Populations (Program Element 1120-MR).	Physically collected through direct field measurement (BLM or other agency data).	Field Office-wide.	Populations monitored to determine if population trends are stable, declining or increasing.	This type of monitoring is done yearly in select locations but varies in frequency by stream depending on site specific actions or projects.	Populations are declining or are below determined carrying capacity.	
BMP and other mitigation or minimization measures monitoring effectiveness .	Visual inspection of project sites through field verification.	Field Office-wide.	Mitigation or minimization measures to determine effectiveness.	Yearly on a case-by-case basis.	Mitigation or minimization measures are not working as intended.	Use Adaptive Management by identifying other BMP's to use should initial efforts be found ineffective.
Special Status Species - Plants						
Monitor Terrestrial Habitat (Program Element - MQ).	Ocular assessment of species' habitat parameters.	Special Status plant habitats.	Acres monitored meeting desired condition.	Annually for priority species and habitats; every 3-5 years for other special status species.	Presence/ increase in noxious weeds or other invasive species; evidence of human or livestock-caused physical disturbance to habitat; decline in vigor of plant	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
					community.	
Monitor Species Populations – Colorado hookless cactus (Program Element - MR).	Physically collected measurements on permanently marked individuals .	All known locations for Colorado hookless cactus.	Multiple: # live/dead individuals(evidence of recruitment or mortality); plant dimensions; phenology; form (age class).	Annually (as funding allows).	Long-term declining trend in populations accompanied by loss or degradation of habitat.	
Monitor Species Populations – Parachute penstemon (Program Element - MR)	Statistically valid sample of quadrats within macroplot.	Anvil Points population (Roan Plateau Planning Area).	Number of live stems; phenology.	Annually.	Long-term declining trend in populations accompanied by loss or degradation of habitat.	
Monitor Species Populations – DeBeque phacelia (Program Element - MR)	Actual count of number of individuals.	Known sites within CRVFO.	Number of individuals.	Annually in years when germination is evident.	Long-term declining trend in populations accompanied by loss or degradation of habitat.	
Monitor Species Populations – Ute ladies’-tresses (Program Element - MR)	Actual count of individuals.	Known sites within CRVFO.	Number of individuals.	Annually.	Long-term declining trend in populations accompanied by loss or degradation of habitat.	
Monitor Species Populations – BLM sensitive species (Program Element - MR)	Statistically valid sample of quadrats within macroplot.	Representative sample of populations.	Number of individuals; phenology.	Every 1-5 years.	Long-term declining trend in populations accompanied by loss or degradation of habitat.	
Special Status Species - Terrestrial Wildlife						
Terrestrial Habitat (Program	Collected through field measurements.	Field Office-wide.	Acres monitored to determine if	Yearly.	Terrestrial habitat conditions for	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
Element 1150-MQ)			terrestrial habitat treatments have been implemented and implementation objectives are being met.		desired biological communities not meeting Colorado Land Health Standards.	
Species Populations (Program Element 1150-MR)	Collected through surveys or estimated from BLM or other agency data.	Field Office-wide.	Populations monitored to determine if population trends are stable, declining or increasing.	Yearly.	Populations are declining.	
Cultural Resources						
Monitor Non-Sec 106 Cultural Properties (Program Element 1050-MY).	Visually examined through an on-the-ground visit.	Previously recorded significant sites within the CRVFO.	Number of individual cultural properties visited.	Prioritize sensitive sites and monitor periodically every 1-5 years based on perceived threats/impacts.	When site conditions change based on previously documented conditions or perceived threats/impacts.	
Paleontology						
Significant paleontological resources.	Inspection or remote sensing.	Field Office-wide.	Change over time.	Prioritize areas and monitor higher priority areas every 1-3 years and lower priority areas every 2-4 years.	When change is causing undue or unnecessary degradation of the site or area.	
Monitor Paleontological Localities (Program Element 1050-MY).	Visually examined through an on-the-ground visit.	Previously recorded paleontological localities within the CRVFO.	Number of individual paleontological localities visited.	Prioritize sensitive localities and monitor periodically every 1-5 years based on	When site conditions change based on previously documented conditions or perceived	This program element will be used along with a four-digit "PALE" project code to denote paleontological

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
				perceived threats/impacts.	threats/impacts.	localities monitored.
Visual Resource Management						
Intrusions.	Remote sensing or site visit.	Class I and II areas.	Impacts of an individual intrusion.	Ongoing.	Intrusion that exceeds the definition of the classification.	
Wildland Fire Management						
Fuel Loading.	Visual or fixed photo plot.	Field Office-wide.	Tons/acre.	Set Number of Years Post Treatment Usually Year 1, 3, 5 and 10.	Follow up or maintenance treatment to reduce hazard of wildfire.	
Fire Danger Indices.	Use of System of Remote Automated Weather Stations(RAWS).	Rifle, Storm King, Crown, Gypsum, Hangman.	Temperture Relative Humdtity Precipitation Wind.	Daily.	Fire.	These are used to derive fire danger indices such as Energy Release Component and Burning Index. Part of the fire danger operating plan.
Live Fuels Moisture.	Clip, Weigh, Dry in oven.	Field Office-wide.	% live fuel moisture.	Twice a month from Oct through October.	Fire danger.	Use for making fire management decision such as fire restrictions and requests for severity resources.
Lands Managed for the Protection of Wilderness Characteristics						
Resource Condition.	Site visit or remote sensing.	Lands with wilderness characteristics area.	Amount of degradation or loss of resources.	Every 1-5 years.	Undue or unnecessary degradation or loss of resources as a result of human or natural causes.	Degradation usually occurs through motorized or mechanized use off of designated routes or through litter and dumping in the area.

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
Cave and Karst Resources						
Resource Condition.	Monitoring Reports associated with permit; site visits or remote sensing.	Cave or karst area.	Damage to cave formations, trash, disturbances seen off trail, amount of degradation or loss of resources.	LaSunder Cave monitored every permitted trip (at least once per year if trips occur that year); other cave and karst resources monitored as resources allow.	Undue or unnecessary degradation or loss of resources as a result of human or natural causes, or not meeting LaSunder Cave Management Plan goals and objectives.	
Bat Monitoring.	Site visits or remote sensing.	Cave or karst area.	Populations monitored to determine if population trends are stable, declining or increasing; and what kind of bat use is occurring in the area.	As resources allow with cooperation with Colorado Parks and Wildlife. Goal is to monitor each known cave every 5 years.	Populations are declining or evidence of White Nose Syndrome occurs within a cave or karst area.	

II. Resource Uses

Forestry						
<ul style="list-style-type: none"> - Conduct periodic regeneration surveys to monitor for adequacy of regeneration of all reproduction-method-treatment areas. If adequate regeneration is not present or anticipated within 15 years, then artificially regenerate the area. - Conduct periodic stand examinations and forest inventories to monitor forest stand conditions. Thinning or other timber stand improvement projects may be monitored by periodic re-measurement of permanently marked plots that compare treated plots with untreated control plots. If inadequate stand health is indicated through monitoring or objectives are not being met, then other silvicultural prescriptions will be considered. 						
Livestock Grazing						
Monitor Grazing Allotments (Program Element - ML).	Various- See Glenwood Springs Resource Monitoring plan, March 2003 (as updated).	Field Office-wide.	Grazing Allotment.	Various- Between 1-10 years depending on allotment categorization.	Permit terms and conditions or Allotment Management Plan (AMP) objectives.	
Evaluate	Interdisciplinary	Field Office-	Grazing	Various-	Land Health	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
Rangeland Health (Program Element - MJ).	Evaluation of existing data.	wide.	Allotment.	Between 1-10 years depending on allotment categorization.	Standards.	
Inspect Grazing Allotments for Compliance (Program Element - NA).	Allotment Visits.	Field Office-wide.	Grazing Authorization.	Various- Between 1-10 years depending on allotment categorization.	Non-compliance.	
Evaluate Weed Treatments (Program Element - MK).	Treatment Area Visits.	Field Office-wide.	Acres.	Annually.	Treatment Effectiveness, Follow-up needs.	
Complete Ecological Site Inventory (Program Element - BQ).	Inventory and Monitoring Technical Reference 1734-7.	Field Office-wide.	Acres.	As Needed.	Permit terms and conditions or Allotment Management Plan (AMP) objectives.	
Recreation and Visitor Services						
Undesignated areas.	Field visits for on-site monitoring.	Field Office-wide.	Acres.	Ongoing.	Visitor use, visitor health and safety, use and user conflicts, and resource conditions.	
Recreation opportunities.	Customer assessments (e.g., focus group interviews or visitor studies). Field visits for on-site monitoring.	ERMAs.	RMP objectives and other decision guidance.	Every 5 years or as funding allows for customer assessments.	Not meeting recreation objectives or not in compliance with other management decisions.	Monitor activity participation , the qualities and conditions of the landscape, visitor health and safety, use and user conflicts, resource conditions; during the primary use season with the help of recreation-

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
						tourism partnerships.
Recreation opportunities.	Customer assessments (e.g., focus group interviews or visitor studies). Field visits for on-site monitoring.	SRMAs.	RMP objectives and other decision guidance.	Every 5 years or as funding allows monitor recreation objectives, recreation setting characteristics, and management decisions through customer assessments.	1) Not meeting recreation objectives, 2) desired recreation setting characteristics do not exist, and 3) not in compliance with other management decisions.	Monitor activity participation , visitor health and safety, use and user conflicts, resource conditions; during the primary use season with the help of recreation-tourism partnerships.
Comprehensive Trails and Travel Management						
Routes.	Route inspection through on-site field visits.	Field Office-wide.	Miles.	Ongoing.	Conditions represent a hazard to visitor safety, resource damage, or causes use and user conflicts.	
Lands and Realty						
Rights-of-way compliance (Program Element - NH).	Site inspections.	Field Office-wide.	Site.	Annually.	Non-compliance or non-use.	
Fluid Minerals (Oil and Gas, Oil Shale, and Geothermal Resources)						
Reclamation Implementation.	Site inspections and operator annual reports.	Field Office-wide.	Site.	Within first year following end of site disturbance.	Ground disturbing activities.	
Reclamation Effectiveness.	Site inspections and operator annual reports	Field Office-wide	Ocular Estimate of % of cover of native species	Every 2 years, or as needed.	Ground disturbing activities.	
Noxious Weed Treatment Implement-	Site inspections and operator annual reports.	Field Office-wide.	Site.	Annually or as Needed.	Ground disturbing activities.	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
ation.						
Solid Minerals (Locatable Minerals, Salable Minerals/Mineral Materials, and Non-Energy Leasable Minerals)						
Monitor and maintain AML physical safety closures (Program Element 1990-LB).	Visual observation.	Field Office-wide.	Adequacy of closure.	Annually or as needed.	Maintenance of closures for public safety.	

III. Special Designations

Areas of Critical Environmental Concern						
Resource Condition: (i.e. scenic, cultural, geological, paleontological, ecological, special status plants, caves, bats (as applicable)).	Site Inspections or remote sensing.	All ACECs.	Evidence of surface disturbance; evidence of invasive species; numbers and species of bats.	Every 1 to 5 years.	Evidence of human-caused surface disturbance above and beyond baseline; Evidence of illegal collection of paleo or T&E plants; Detection of noxious weeds; Loss of special status plant species or habitat due to disturbance. Bat populations are declining or evidence of white nose syndrome.	
Wilderness Study Areas						
Ensure continued suitability for designation as wilderness.	Site visit or remote sensing.	WSAs.	Compliance with non-impairment standard per Manual 6330.	Once per month during the months the area is accessible by the public.	Violation of the regulations applicable to the use of WSAs, unauthorized	Unauthorized impacts usually include motorized or mechanized use in the WSA, or

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
					impacts.	litter and dumping.
Wild and Scenic Rivers						
<i>Water quality and quantity.</i> Alteration of water quality or river/stream conditions inconsistent with objectives.	Physically collected through direct field measurement.	Colorado River Segment 6 and 7; Deep Creek 2b and 3.	Water quality parameters, flow measurements, or habitat condition.	Ongoing.	Changes in water quality and quantity.	
<i>Scenic Values.</i> Alteration of landform, vegetation, or river condition inconsistent with visual quality objectives within the viewshed as seen from the river and high-use areas.	Maintain viewshed consistent with VRM objectives.	Colorado River Segment 6 and 7; Deep Creek 2b and 3.	Impacts of an individual intrusion.	Ongoing.	Intrusion that exceeds the definition of the classification.	
<i>Recreational Values.</i> Management Framework for SRMA.	Customer assessments (e.g., focus group interviews or visitor studies). Field visits for on-site monitoring.	Colorado River Segment 6 and 7.	RMP objectives and other decision guidance.	Every 5 years or as funding allows monitor recreation objectives, recreation setting characteristics, and management decisions through customer assessments.	1) Not meeting recreation objectives, 2) desired recreation setting characteristics do not exist, and 3) not in compliance with other management decisions.	Monitor activity participation , visitor health and safety, use and user conflicts, resource conditions; during the primary use season with the help of recreation-tourism partnerships.
<i>Geologic Values.</i> Alteration of landform or river condition	Review of proposed projects; site visits and remote sensing.	Colorado River Segment 7; Deep Creek Segments 2b and 3.	Impacts to geologic formations or natural processes that	LaSunder Cave monitored every permitted trip (at least once per year if	Undue or unnecessary degradation or loss of resources or	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
inconsistent with the geologic integrity of Glenwood Canyon and Deep Creek Canyon.			form geologic formations (see cave and karst monitoring section for Deep Creek Canyon).	trips occur that year); other cave and karst resources monitored as resources allow; Glenwood Canyon monitored as needed with new information.	ORVs as a result of human or natural causes, or not meeting LaSunder Cave Management Plan goals and objectives.	
<i>Botanical and Ecological Values.</i> Physical disturbance or changes in plant community composition.	Periodic site inspections or remote sensing.	Colorado River Segment 6; Deep Creek Segments 2b and 3.	Evidence of surface disturbance; evidence of invasive species.	Every 2-4 years.	Detection of noxious weeds; loss of species or habitat due to surface disturbance.	
<i>Ecological Values.</i> Bat monitoring.	Site visits or remote sensing.	Cave or karst area within Deep Creek Segments 2b and 3.	Populations monitored to determine if population trends are stable, declining or increasing; and what kind of bat use is occurring in the area.	As resources allow with cooperation with Colorado Parks and Wildlife. Goal is to monitor each known cave every 5 years.	Populations are declining or evidence of White Nose Syndrome occurs within a cave or karst area.	
<i>Wildlife Values.</i> River otter monitoring.	Surveys and observation forms.	Colorado River Segment 6.	Populations and utilized range of river otters monitored.	Cooperation with Colorado Parks and Wildlife.	Populations status, trends, and recovery criteria.	

IV. Support

Transportation Facilities						
Routes.	Route inspection through on-site inspection.	Field Office-wide.	Miles.	Ongoing by all resources.	Conditions represent a hazard to visitor	

Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers	Other Information
					safety, resource damage, use and user conflicts.	
Health and Safety						
Monitor and maintain AML, Hazmat & NRDAR sites (Program Element 1640-MG).	Visual observation or soil/water sampling.	Field Office - wide.	Site safety.	Annually or as needed.	Maintenance of sites for public health and safety.	