

Colorado River Corridor Monitoring Plan

Bureau of Land Management
Grand Junction Field Office
McInnis Canyons National Conservation Area



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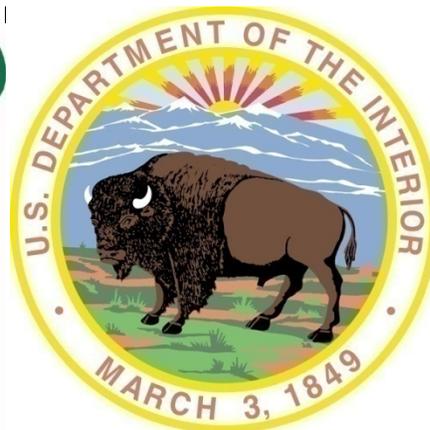


Table of Contents

Introduction.....	1
Background and McInnis Canyons NCA.....	1
The Need for Establishing a Carrying Capacity.....	1
Objectives of the Plan.....	2
Goals and Desired Conditions, Indicators, Standards, and Implementation Options.....	3
Goals and Desired Conditions.....	3
Indicators.....	4
Standards.....	4
Monitoring Protocol.....	5
Campsite and Day Use Area Monitoring.....	6
Visitor Satisfaction.....	12
Visitor Contacts.....	13
Camping Signup.....	14
References.....	14
Appendix A: Indicators Matrix for the River Corridor.....	16
Appendix B: Recreation Site Monitoring Forms.....	21
Appendix C: Visitor Survey to Assess Social Carrying Capacity.....	26
Appendix D: River Ranger Reporting Format.....	28
Appendix E: Campsite Impact Rating Calculation Description.....	30

I. Introduction

Background and McInnis Canyons NCA

The McInnis Canyons National Conservation Area is a 123,430 acre combination of naturally sculpted sandstone features including arches, canyons, spires, and alcoves. It was initially designated on October 24, 2000, when the Colorado Canyons National Conservation Area and Black Ridge Canyons Wilderness Act of 2000 was signed. The act recognizes that the “unique and valuable” opportunities (including, scenic, recreational, paleontological, and others) “are worthy of additional protection.” The NCA was renamed on Jan. 1, 2005, to the McInnis Canyons National Conservation Area (NCA) in honor of former U.S. Representative Scott McInnis (Legislation P.L. 108-400). A 24 mile stretch of the Colorado River with class 1 and 2 rapids runs through the NCA and is bordered on the south side by the Black Ridge Canyons Wilderness. This stretch of the river provides opportunity for overnight flat-water boating appealing to families and long time river runners alike. The river and shoreline up to the 100 year high water mark are not part of the wilderness but much of this land is public, and remains under the management of the BLM.

The Need for Establishing a Carrying Capacity

Overnight river trips through the Ruby-Horsethief Canyon are one of the most popular activities in the Grand Junction Field Office and McInnis Canyons NCA. With increased growth in the surrounding areas and an increased popularity of outdoor activities, usage of the river corridor has increased. As the usage increases the balance between recreation and environmental protection needs to be closely monitored. The struggles and problems associated with increased use are recognized in the NCA’s Resource Management Plan (RMP). This plan calls for a determination of the river’s carrying capacity to help guide commercial and public usage of the river. In addition the management objectives call for “Increase stewardship and protection of the river corridor.” Furthermore, dispersed camping and voluntary registration for developed sites will continue as long as practical and there are no unacceptable impacts (without further explanation). Anecdotal evidence gathered by the BLM from river users indicates declining environmental and social conditions along the river corridor. Vegetation loss from foot traffic and human caused fires has impacted the banks of the river, and invasive species continue to be widespread. In addition, a growing minority of river users are becoming frustrated with various aspects of the camping system, and this is detracting from their experience. In order to maintain desired ecological and social conditions for the river corridor this Monitoring Plan and Protocol has been developed. The purpose is to maintain usage within the recreation zone at or below the carrying capacity based off of indicators of recreation usage.

The “carrying capacity” concept comes from the biological sciences and has been modified in its use in recreation. The concept must be expanded from just an ecological one to encompass three main factors (reviewed in Stankey and Manning, 1986): 1) natural resources (with some environments more “fragile” than others), 2) social conditions (quality of the recreational experience), and 3) managerial considerations (legislative and agency mission). Carrying capacity is more complicated than just a simple count of the number of visitors an area can handle without adverse impacts. Types and locations of

interactions between visitors and between visitors and the environment can have a considerable effect on the quality of the experience and the impact on the environment (Stankey and Manning 1986). Therefore, management actions to combat adverse impacts must look beyond reducing numbers and carefully examine the nature of the problem. Due to the difficulty in setting a number for “carrying capacity” more recent methods to combat this problem have looked at the conditions deemed acceptable, such as the Limits of Acceptable Change (Stankey et al. 1985), thereby focusing on the impacts (actual issues and compromise between recreation and the environment) rather than solely on the amount of use.

Objectives of the Plan

This plan outlines the goals/desired conditions for the river corridor which provide the framework to develop appropriate indicators of the social and environmental conditions along the river corridor. Indicators are conditions/measurements used to monitor the impacts on an area. For each indicator a standard (or limit to the amount of acceptable change) was developed as a trigger for corrective action to be taken, because the social or environmental condition of the river corridor has degraded beyond and acceptable limit. These indicators are then monitored, through the protocols defined in this plan, for compliance with the standard and if standards are exceeded management actions are initiated to mitigate the problem. Overall this process is to maintain the river corridor at or below its “carrying capacity.” The goal was to develop a rigorous and adaptable framework to allow for defensible decisions to be made by managers and to maintain a balance between recreation and environmental concerns.

The indicators developed herein stem from previous management efforts and keep in mind the criteria of good indicators from Watson and Cole (1992; Table 1). The development of indicators is critical, as they are the link to resource conditions. These conditions need to be accurately assessed in order to maintain a balance between the amount of recreation and the condition of the environment.

Characteristic	Description
Measurable	Quantitative rather the qualitative. Something that can be measured.
Reliable	Measurements are precise and accurate (i.e. repeatable)
Cost-Effective	Evaluated by field going personnel with limited/simple equipment, in a timely manner.
Significant	Linked to a change that is important to the resource base. A change in the indicator should signal a serious problem.
Relevant	Related to the goals in conflict. Therefore, indicative of human caused disturbance.
Sensitive	Change early enough to signal deteriorating conditions so that there is still time to correct the problem.
Efficient	Reflect large suite of conditions, not just themselves, to help reduce the overall number of measurements monitored.
Responsive	Should be affected by management controls to indicate a successful mitigation of a recreation use problem.

II. Goals and Desired Conditions, Indicators, Standards, and Implementation Options

The Colorado River corridor through the McInnis Canyons provides an excellent opportunity for recreation but this use must be balanced with the ecological condition the corridor. This section identifies the Goals and Desired Conditions, and the indicators developed to maintain or work towards these. In addition, the associated standards, and potential management techniques to address problem areas are defined.

Goals and Desired Conditions

The goals and desired conditions are taken from the RMP and supplemented by comments from the NCA staff and RAC to ensure the most up to date objectives are addressed in this plan. The goals and desired conditions for the river corridor are:

Protect and enhance, for the benefit and enjoyment of present and future generations the unique and nationally important values of the public lands in the NCA, including geological, cultural, paleontological, natural, scientific, recreational, environmental, biological, wilderness, wildlife education, and scenic resources.

The river corridor will provide for overnight flat-water boating for social group and family affiliation in a naturally appearing red-walled river canyon.

North of the river is middle country - The landscape is natural in appearance with some modifications not highly noticeable. Visitors will encounter other groups utilizing the area, but agency presence is random. Information and signing are present.

South of the river is backcountry - The landscape is more natural and the limited improvements tend to blend with the environment. Access does not include motorized vehicles and signing and agency presence is scarce.

Corridor is presently unimproved w/ potential for low key improvements.

The Desired Plant Communities along the riparian corridor will follow three goals: 1) The Colorado River Corridor will be managed to provide a mosaic of healthy diverse community types, 2) Reduce the current levels of exotic species or weeds where present, and 3) Preserve mature cottonwood stands and promote cottonwood regeneration.

Maintain the permit free, voluntary campsite system while practical to keep the possibility of spontaneous overnight family river trips possible on this stretch of the Colorado.

Maintain a conflict free high quality wildland experience appealing to a broad range of boating experiences and age classes.

Maintain high quality wildlife habitat and avoid adverse human recreation impacts on sensitive and/or threatened and endangered species.

Indicators and Standards

The developed indicators for assessing the impact of recreation on social and environmental conditions along the river corridor are listed in Appendix A with their associated standard, monitoring type and management option for exceeding the standards. Monitoring protocols are covered later in this plan.

Standards were developed to determine the level appropriate for each indicator. Some of these are prescribed in the RMP and others were developed with the help of the NCA staff and ID team for the Field Office. The idea behind developing standards is to maintain and move towards an environment prescribed by the Goals and Desired Conditions. So in this case appropriate levels of social interactions and environmental stress were developed to maintain a positive experience for boaters and maintain the naturally appearing environment.

Although the indicators and associated standards stem from the desired conditions, they are limited to measures that are part of the balance between recreation and environmental conditions. Indicators chosen for this monitoring program are the most recreation orientated and responsive to changes in usage. Other restoration and actions along the river corridor stem from the desired conditions and goals reported herein and these are monitored through their own separate implementation plans and project work. Relevant findings from these studies should also be included in recreation management decisions for the river corridor through coordination of the NCA staff. For example, notable changes in planted and naturally occurring cottonwoods and exotic species proliferation will play a role in managing camping and lunch sites along the river corridor. In addition, any noteworthy changes to protected cottonwoods or exotic species proliferation will be noted during the campsite inventory and reported. Goals for cottonwoods include 1) preserving potential recruitment areas; 2) preserving mixed aged stands; and 3) managing exotic species.

Implementation Options

Management decisions targeted at specific indicators and problems along the river corridor must be carefully assessed to ensure they will achieve the desired result. Changing river user behavior can be accomplished through indirect (modify decisions) and direct (enforcement and regulations) attacks on behavior, or by attacking the consequences (Peterson and Lime 1979). Four options have been identified for management in order to combat conflicts between recreation and the environmental condition of an area: 1) Reduce use (permitting), 2) accommodate more use (additional opportunities), 3) modify use, 4) harden resource base (Manning 1979). Choosing the proper course of action is problem dependent but generally indirect actions are preferred (Lucas 1983). Indirect actions maintain the feeling of choice in recreation users (fees, education, resource hardening, etc.) while direct actions are easier to perceive as management and restrictions by users (permits and regulations). In addition, management options must be consistent with the RMP, but perhaps even more important, the desired recreation opportunities and goals for the area must be kept in mind. Too much oversight and regulation may deprive visitors of their purpose for pursuing the recreational opportunity and change the nature of the recreation resource (Peterson and Lime 1979).

Appendix A gives suggestions for actions in order to combat indicators exceeding their defined standards and more detailed methods and techniques can be found in the recreation management literature (see Cole et al. 1987). Cole et al. (1987) defines 8 strategies for wilderness management and 37 tactics that can be used towards these strategies. This report provides a good reference for ideas and options for many of the problems found in and anticipated for the Colorado River corridor through the McInnis Canyons NCA.

III. Monitoring Protocol

The monitoring program is composed of four sources of gathering information: 1) rec site monitoring conducted every year (site monitoring); 2) user information collected at the Westwater takeout (visitor satisfaction); 3) trip reports and observations from river rangers and other NCA staff (visitor contacts); and 4) camping numbers/inventory from campsite signup sheets (camping signup). Some indicators may be collected by both public input and observations/data collection by NCA staff while in the field. All collected monitoring information will be entered into a river corridor database which will produce reports and help NCA management evaluate trends in river usage and recreation over time.

Monitoring Type	Indicator
Campsite Monitoring	Dog/human waste occurrences/campsite
	Campsite size/condition
	Bare ground/core area/tent pads per site
	Number of damaged trees
	Degradation of bank at campsite
	Non-designated social trails leading from each campsite
	Detrimental impacts to wildlife
Visitor Satisfaction	Number and size of groups encountered while on river
	Number and size of groups encountered while at campsite
	Visitor conflicts (launch, river, campsites)
	Level of satisfaction visitors achieve, quality of visit
	Amount of litter
	Crowding at Loma Boat Launch
Visitor Contacts	Evidence of fire (wood, fire ring, scorched earth, ashes)
	Dog/human waste occurrences/campsite
	Number of parties in non-designated sites
	Amount of litter
Camping Signup	Number of sites occupied (by number and capacity)
	Weekend/holiday days with more than 300 campers
	Weekdays with more than 100 campers
	Number of days/season site occupied
	Number of groups with size above 12

Recreation Site Monitoring

Whether the amount of recreation usage is above the ecological carrying capacity is assessed primarily through an inventory of resource damage near highly used sites on the river corridor. The data collected in this section will help determine how much area is being directly affected by camping and how the impact changes over time. Campsites along the river corridor have been designated by NCA staff and will be the focus of this study. In addition, a handful of heavily used day use areas will be monitored as well. Campsites that develop in non-designated spots will be surveyed yearly with designated campsites but at a different level of detail. Campsites in non-designated areas and high use day areas that are rated above a certain impact rating and are more likely to have a longer term impact will be added to the more detailed inventory.

An inventory of all sites along the river corridor should be conducted every year. The timing of this inventory (expected to take 3-4 days) is in the late summer/fall of the year (post Labor Day) to maintain consistency in data measurements and also to capture conditions at the end of the primary season of use. Vegetation in and around campsites will recover over the winter and spring as use drops. Therefore, conducting a fall inventory will most closely reflect the amount of impact from a given primary use season and allow a comparison between seasons and changes in the level of impact over time.

Materials needed for inventory:

- 1) 50m measuring tape
- 2) Compass (set to true north)
- 3) Field notebook with previous campsite inventory forms and pictures
- 4) Digital camera
- 5) GPS (w/ core area center points and known non-designated sites loaded as waypoints)
- 6) Clipboard w/ this manual, datasheets, and center point and photo point descriptions
- 7) Calculator
- 8) Ruler
- 9) Nails and/or rebar to mark center points of site core areas
- 10) 40 pin flags
- 11) Metal detector (optional, help find buried nails)

Non-designated Site Monitoring Procedures

Camps at non-designated sites and additional day use areas identified during the river patrols will be catalogued and assessed at the end of the season with the more heavily used areas. During the high use season, these types of sites should be recorded, GPS locations taken, and added to the non-designated site list (maintained on the survey form from Appendix B). These sites will be monitored until two consecutive years of no impact are recorded. Repeated use of the site may reach a point where the site should be added to the designated sites monitoring list. The inventory for all sites on the list is recorded on the form in Appendix B.

1) Photographs

Take at least two photos of the impacted area including one of the landing and another illustrating the vegetation trampling/damage of the core area. The landing picture should be taken from approximately 5m from shore. Photos should be downloaded and stored in:

S:\blm share\NCA\04 - River Corridor\Monitoring\Photos

Navigate to the appropriate year and then select the “non-designated sites” folder. Place pictures in this folder and name them according to their order on the ‘Non-Designated Site Inventory’ datasheet. The naming convention is [site number]_[type]_[picture number]. Type refers to what part of the site was photographed (landing, core, trail, etc). Therefore, the first picture of the landing at the fifth site inventoried would be “5_landing_1.jpg”

2) Size

Estimate the size of the impacted area by assessing areas of bare ground and trampled vegetation (as compared to a similar neighboring area). The best way to approximate the area is to measure and calculate the area of the geometric figure (triangle, circle, rectangle, etc.) that most closely resembles the affected area. Circle the approximate class of the impacted area on the data sheet (0ft², 0-75ft², 75-400ft², >400ft²).

3) Impact Rating

A quick assessment of the site can be conducted to determine if an area has enough use to qualify it as a heavily used area or if the use is very limited and the impact minimal. Record the following Condition Class for each site (adapted from Marion 1991):

Class 0 - Site no longer recognizable.

Class 1 -The recreation site is barely recognizable. There is only a slight loss of vegetation and minimal disturbance of organic litter.

Class 2 - The site is obvious; vegetation is lost, and organic litter is pulverized on primary use areas.

Class 3 - Vegetation cover is lost, and organic litter is pulverized on most of the site. There is some exposed mineral soil in the primary use area.

Class 4 - There is nearly a complete loss of vegetation cover on the recreation site. No organic litter and exposed mineral soil is widespread.

Class 5 - Soil erosion is obvious. Tree roots are exposed because of severe erosion.

4) Wildlife Impacts

Determine the distance of the site from a known eagle's nest. If it is within ½ mile then the site needs to be closely monitored for activity during the nesting season. Also note any other potential obvious detrimental impacts to wildlife.

Heavily Used Area Monitoring Procedures

Each high-use/designated site will be monitored through multiple means: 1) photographs taken from designated points; 2) core/bare ground and total area measurements; 3) counts and measurements against impact indicators. The counts and measurements for each indicator will be used to determine a campsite impact score for each site (as detailed in Appendix E).

1) Photographs

For each site a series of photographs will be taken each year. These allow for a visual comparison between years and supplements the measurements and counts detailed below. The following photographs should be taken (on sites with an “a” and “b” designation and two separate core areas each sites core area and tent pads should be treated separately).

- 1 picture 5-10m from the landing
- 1 picture of the core area from established photo point (see database list for location or create and describe location of the point for new sites)
- 1 picture of each satellite site (measure and note location from the core area center point on the campsite inventory form)

The photo point for core areas has been established. Descriptions for each point are stored in the monitoring databases and a report can be printed providing a description of the point. If measuring a site for the first time, establish a photo point for the core area. To help relocate this point during future surveys record the bearing and distance from two or three different fixed objects and record these in the notes. Update the photo point reference list in this document when returning to the office. Photos are recorded by their ID number on the digital camera and then named appropriately when downloaded upon returning to the office. Pictures are stored in:

S:\blm share\NCA\04 - River Corridor\Monitoring\Photos

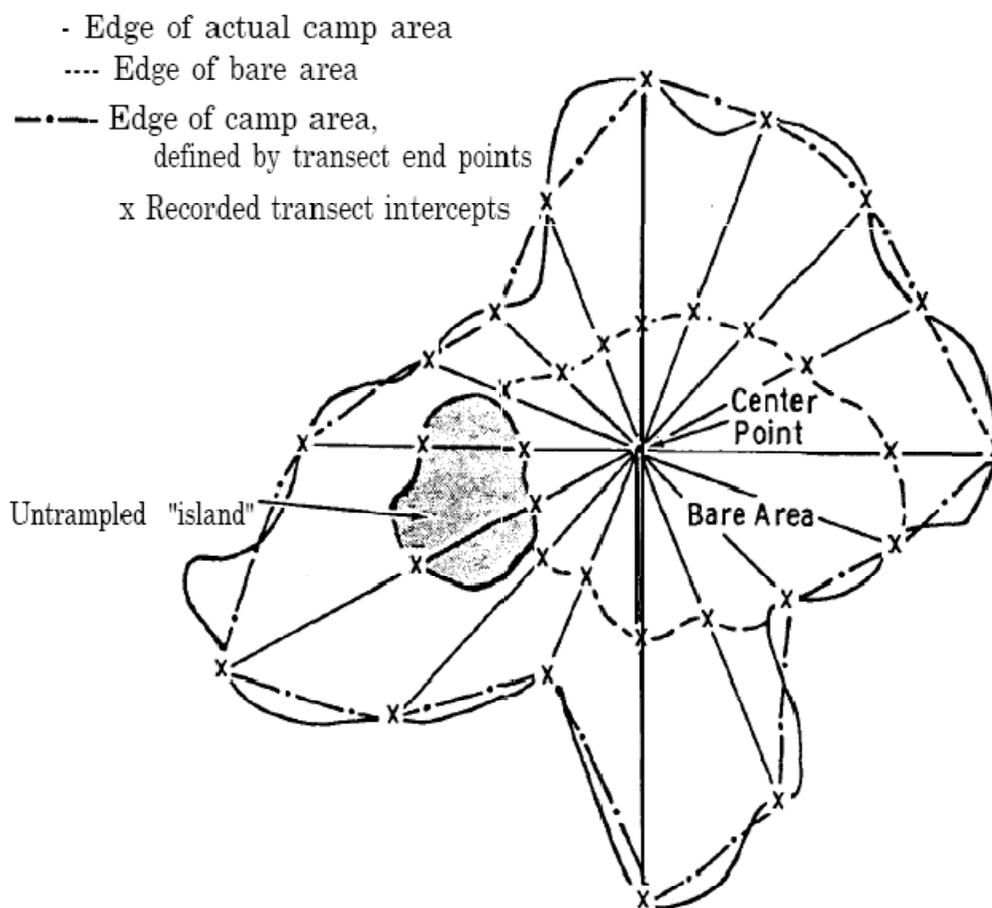
Navigate to the appropriate year and then select the “designated sites” folder. Then navigate (or produce if necessary) the folder for the appropriate site (i.e Blackrock 9 B). Pictures for the respective sites should be placed into these folders and named as [type]_[picture number]. Type refers to the photo point, the core area, or the satellite site as designated on the campsite inventory form. Examples of pictures names are therefore: “photopoint_1.jpg”, “core_3.jpg”, “satellite_3.jpg” etc.

2) Size and condition

At each site (with an “a” and “b” campsite treated separately if there are two core areas) a monitoring form (Appendix B) will be filled out consisting of measurements and counts for the site. Instructions for collecting each item follow:

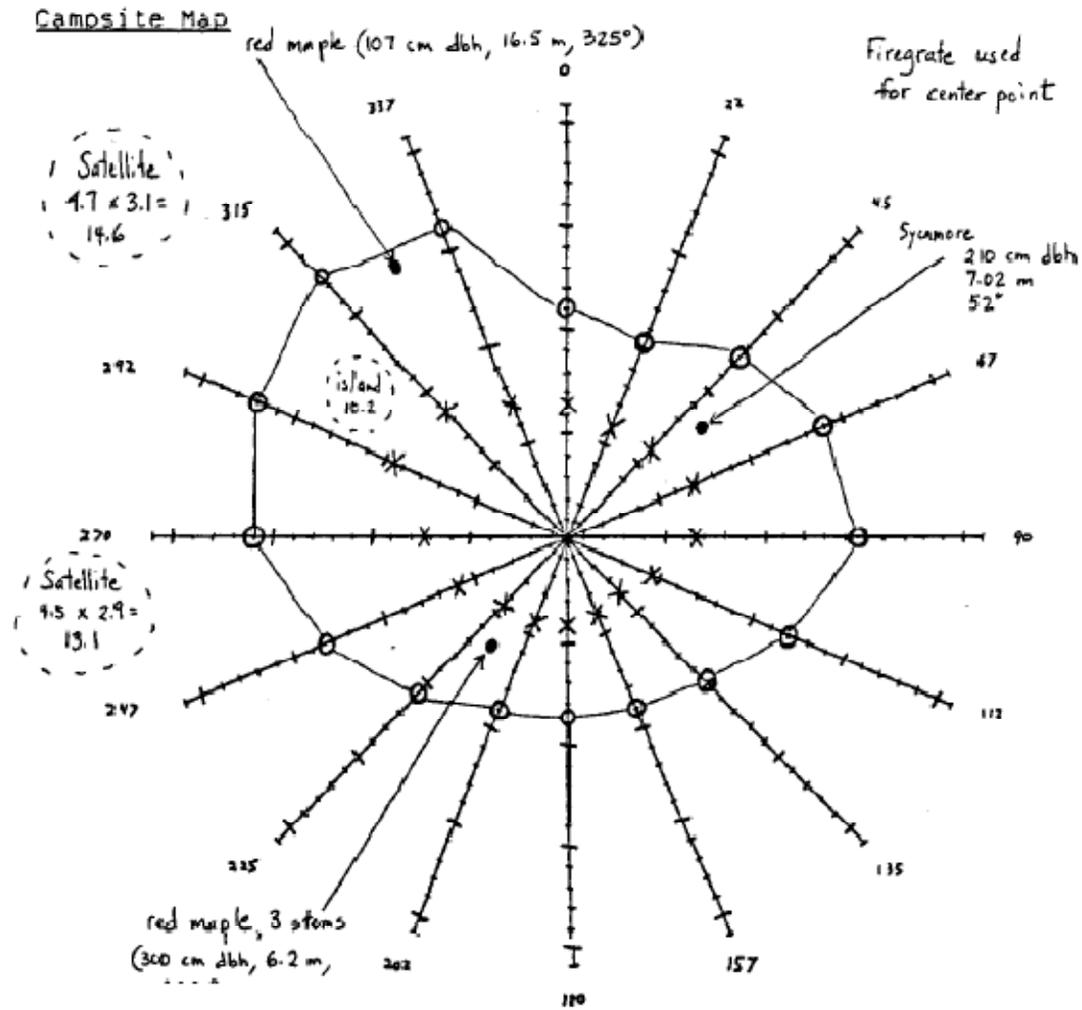
- i. Campsite size - Both the core area (most impacted area, bare dirt) and total campsite size (total use area as evidenced by vegetation trampling) will be measured by hand. For new sites a center point for the core area should be established and recorded by measuring the distance and direction from

two or three permanent fixed features so it can be relocated for future measurement. Record this location on the datasheet and update the core area center point list in this document upon returning to the office. Mark this point by burying a large nail or piece of rebar (and remark if necessary on old sites). For repeat measurements relocate the center point marker using the distance and direction from previous measurements and mark with a pin flag. To determine campsite size a measurement will be taken for 16 azimuths radiating from the center point. For each set direction (every 22.5°) place a flag at the edge of the core area (bare ground up to 15% cover per 1m²) and the edge of the impacted site (trampled vegetation). Core areas in their natural condition (e.g. beach) should have a center point and photo point established ,but are not measured unless there is obvious human impact. After placing all flags, measurements can be taken and a sketch map produced. These data will be entered into the river recreation monitoring database where trigonometry will be used to calculate the impacted area of the recreation site. On repeat visits the site is measured as above after relocating the center point. Following measurements and marking the site (and area estimate) will look as illustrated in this figure (from Cole 1989):



For each direction record the distance to the edge of the core area (bare ground) and to the edge of the impacted site (trampled vegetation) by placing flags on each appropriate direction. After placing

all flags measurements can be taken and a sketch map produced. On repeat measurements the past distances should be flagged for each azimuth and then the sight examined for changes as to maintain consistency between years. Satellite tent pads (record distance and direction from the center point, note condition, and estimate area using a geometric figure [circle, square, rectangle] on the data sheet and map) and areas within the site without vegetation damage, including boulders should also be recorded (estimate area using the most appropriate geometric figure, i.e. circle, square, rectangle) to create a map of the campsite as illustrated below (from Cole 1989):



The overall vegetation type and % cover of the area surrounding the core area is also recorded in the appropriate data sheet questions to provide a comparison to what the site would likely look like without any human impact.

ii. Campsite condition - In addition to measuring the size of the campsite, the condition, or the amount of damage to other resources, will be measured as well. These measurements will be recorded on the appropriate section of the data sheet and are defined below:

Degradation of bank at campsite - This is a measure of the impact of the access trail leading from the landing area to the core area of a campsite. The impact is measured on an increasing scale as detailed on the monitoring datasheet. When determining the level of impact, the rater should assess trampled vegetation and the bare dirt tread of the trail and landing relative to a similar site immediately up or downstream. Sites where the landings remain in their natural condition (beaches and cobbled landings) should be rated as a 1. It is useful to bring pictures of the landings from the previous year to determine the change relative to the prior year's rating.

Number of damaged trees - On the datasheet circle the appropriate measure of tree damage including all trees within the campsite area (the area and vegetation within the boundary defined by the core area and satellite sites). Trees should only be counted once even if they fall within the boundary of two sites.

Non-designated social trails leading from each campsite - Record the number of social trails (including all with at least light vegetation trampling to those with defined tread) connecting the core area to satellite sites defined trails and other areas. It is also useful to sketch these on the campsite map with dashed outlines to compare their locations in given years. Do not include the trail leading from the landing in your count, but do include trails branching off this trail that go to satellite areas.

Dog/human waste occurrences/campsite - Circle the appropriate description of human and dog waste for the campsite area (the area and vegetation within the boundary defined by the core area and satellite sites).

Amount of litter - Circle the appropriate description of the amount of litter currently present at the site. This is also measured primarily for the amount of food scraps left behind by the number of ant colonies occurring at a site. Enter the number of ant colonies, as evidenced by ant hills, in the core area of a site (where the kitchen is most likely to be located).

Detrimental impacts to wildlife - If the site meets any of the criteria defined on the datasheet circle yes for that factor, otherwise circle no.

To track site measurements over time, data collected from river monitoring trips is entered into the river corridor monitoring database. These steps are:

- 1) Select "Enter Designated Site Data " on the Home Page.
- 2) To change information about the center or photo point, or to add a new site select "Edit or Add General Site Information." Then navigate to the appropriate record or select "Add New Site" to add a new site to the database.
- 3) Click the "Add Record" button at the bottom of the form
- 4) For editing or entering new designated site survey data select "Enter/Edit Rec Site Data." The select the site from the dropdown menu on the next form and click "Enter Data."

5) Be sure to select the date of the survey (to edit information) or enter a new date before adding any additional information as the date the data was collected is important for generating accurate reports.

6) Enter information collected about each site. Be sure to read the description of how to enter feet and inches data in the site measurement form. For "satellite site area" and "island area," enter data in square feet.

7) When done entering or editing information about a site select "Save and Close." If any warning appear about updating records click "Ok." Ask IT how to suppress these warnings. Then select another site to enter survey information for or "Cancel/Home" to return to prior screens.

Visitor Satisfaction

Indicators measured dealing with visitor satisfaction will be primarily collected from anonymous surveys placed at the Westwater takeout. A survey sheet (Appendix C) will be stocked at the takeout and river rangers and other NCA staff will collect and replenish this box. Depending on the number of responses river rangers may also give out the survey to river users (after at least one night of camping) and/or encourage river users to comment on their experience when they take out. It is also recommended that 1-2 times per month a river ranger should be stationed at the take out on Sunday to encourage visitors to fill out the survey and gauge their river experience. This survey sheet is designed to collect quantitative information from river users and to track social conditions over time. If these surveys indicate that standards are being exceeded then the social carrying capacity of the river is being exceeded and management action is needed.

To track trends over time, responses off of surveys collected from river users are entered into the river corridor monitoring database. These steps are:

- 1) Select "Enter Visitor Satisfaction Information" on the Home Page.
- 2) Click the "Add Record" button at the bottom of the form
- 3) Enter the visitor scores and answers against each question. Then add any additional comments in the comment box.

Each indicator being analyzed by the visitor satisfaction survey is intended to be self explanatory. However, the understanding of the definition of each indicator could vary over time; therefore, definitions for each indicator are included below. If through visitor interactions it becomes apparent that there is a misunderstanding over an indicator then the form should be reworded to make the question clear.

- 1) Number and size of groups encountered while on river - this is a measure of how many other groups are on the river when a given group is also on the river. It does not include groups at campsites.

2) Number and size of groups encountered while at campsite - while at a campsite this is the number of groups encountered in neighboring sites and groups that pass by on trails adjacent to a groups campsite. Groups that pass by on the river are not counted.

3) Visitor conflicts (launch, river, campsites) - a conflict is beyond just a simple disagreement or misunderstanding. Conflicts are interactions with other groups that are negative enough to detrimentally impact the parties experience (i.e. the conflict would drop the groups rating of their experience at least one level, like from good to average). Conflicts are divided up between interactions while trying to launch, conflicts with other river groups while on the river, and conflicts over campsites.

4) Crowding at Loma boat launch - This is a measured by the amount of time a user had to wait in order to launch at Loma, measured from the time they arrive at the launch, until a space opens up for trailers/boats. It does not included rigging time or waiting for a shuttle to be completed. This is measured by four categories (no wait, < 15m, 15-30m, >30m).

5) Level of satisfaction visitors achieve, quality of visit - A measure of a parties overall experience on the river. This is measured from the time they arrive at Loma until they reach the takeout. There are five categories (terrible, poor, average, good, exceptional).

6) Amount of litter - a measure of the condition of a groups campsite when they arrive. Basically the condition the site was left in and includes microtrash, food waste, and

Visitor Contacts

During River Ranger patrols through Ruby and Horsethief Canyons of the NCA, staff members will be able to verify information collected off of the campsite register and make observations about campsite condition that need to be measured over a season, rather than once per year. River Rangers should record daily their observations of the following occurrences on the River Ranger Report (Appendix D and entered into the Monitoring Database following each trip). Of particular importance are the following indicators:

1) Evidence of illegal fire - Record new occurrences of fire that occurred outside of a fire pan (and then most likely clean the site). Evidence of this would include charred wood that is too large for a fire pan, fire ring with ashes, scorched earth, etc. Also include evidence of dumped ashes as these should be packed out with other waste/litter, and the dumping of ashes could lead to a fire start. Included in these counts are campfires occurring during a fire ban. Evidence such as the items above, and observations of parties breaking the ban should be catalogued. Trips with no evidence should be recorded as well in the database (enter a zero).

2) Number of parties in non-designated sites - Some areas with camping potential become available at lower water levels, and camping opportunities exist in some non-designated areas in the NCA. Each incident should be recorded, with an incident being a party camping one night in a non-designated site. Therefore, a party spending two nights in the same non-designated site would be

recorded as two separate incidents. In addition, if the camp violates the rules associated with Bald Eagle nest sites this should be noted. Site locations should be GPSed and entered into the river corridor monitoring database so these sites can be surveyed at the end of the season.

These indicators are then entered into the database for each trip. After each trip down the river observations on each indicator should be entered into the River Corridor Management Database located at :

S:\blm share\NCA\04 - River Corridor\Monitoring

To enter this information into the River Corridor Monitoring database NCA staff will:

- 1) Select "Enter Patrol Report" on the Welcome Page.
- 2) Select "Add Record"
- 3) Fill out the fields on the form being sure to enter "0" or "N/A" for any fields with nothing to report or no incidents.

Camping Signup

The indicators in this set are calculated from inputs off of the campsite signup sheet maintained by the NCA. The campground signup sheet catalogues all the primary designated sites along the river corridor and it is expected that the vast majority of river users sign up for campsites. After these sheets are collected from the Loma Boat Launch they should be entered into the River Corridor Management Database located at:

S:\blm share\NCA\04 - River Corridor\Monitoring

There are a few simple steps that will allow you to get to an input form to record campsite usage:

- 1) Select "Enter/Edit Campsite Sign-Up Data" on the Welcome Page.
- 2) Select the campsite to enter data for from the drop down box
- 3) Scroll down to enter a new record for the site. Enter the date occupied and number of users for each site along the river corridor for the given weeks you are inputting.

To produce reports on the indicators under this category select "Generate Reports" from the welcome page and choose the report you are interested in.

IV. References

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Appendix A

River Corridor Carrying Capacity Indicators, Standards, Management Actions, and Monitoring Type for the Mclnnis Canyons NCA				
Setting/Value	Indicator	Standard	Possible Mitigation Action	Monitoring
Social Setting	Number and size of groups encountered while on river	75% chance of less than 30 encounters with other groups/day Groups encountered will have 25 or fewer people if they stop anywhere and leave the water	User fees and/or permit system to reduce river usage. Increased agency presence at launch and on river for education and/or enforcement of group size limits.	Visitor surveys at Westwater takeout - see Appendix B NCA staff observations at Loma Boat Launch and during Visitor Contacts along river
	Number and size of groups encountered while at campsite	75% chance of less than 30 encounters with other groups/day Groups encountered will have 25 or fewer people if they stop anywhere and leave the water	User fees and/or permit system to reduce river usage. Increased agency presence at launch and on river for education and/or enforcement of group size limits.	
	Visitor conflicts (launch, river, campsites)	More than 3 weekends per season with more than 3 incidents (launch, river, campsites treated separately)	Increased BLM presence at sites of main conflict during high use hours. User fees and/or permit system to reduce river usage.	
	Level of satisfaction visitors achieve, quality of visit	No less than 75% of responding visitors and affected community residents achieve at least a "moderate" realization of benefits.	Change to management is dependent on specific issues identified by users.	
	Crowding at Loma Boat Launch	More than 30 minute wait to launch for more than 10 parties	Increased BLM presence at launch during high use hours. User fees and/or permit system to reduce river usage	

	Amount of litter	<p>More than 10% of users reporting litter at campsites a negative influence on trip quality</p> <p>More than 4 ant colonies on more than 50% of sites.</p>	<p>Increased agency presence at launch and on river for education and/or enforcement of “leave no trace” etiquette.</p> <p>Require tarps under food preparation and kitchen areas.</p>	
	Number of commercial parties	Standard TBD.		River campground signup sheets and commercial user signup sheet.
	Number of groups with size above 15	Not to exceed number of large campsites (12).	<p>User fees and/or permit system to reduce river usage.</p> <p>Increased agency presence at launch and on river for education and/or enforcement of group size limits.</p>	Verification by river ranger patrols.
	Weekend/holiday days with more than 300 campers	No significant increase from 2009 baseline data	User fees and/or permit system to reduce river usage.	
	Weekdays with more than 100 campers			
Environmental/Ecological Condition	Campsite and day use area size/condition	<p>No more than 10% increase in core area or total site size.</p> <p>Satellite sites limited by capacity (small = 4, medium = 6, large = 8)</p> <p>No significant increase in impact rating from prior year.</p>	<p>Defined boundaries with natural materials.</p> <p>Re-vegetation closures</p> <p>Recovery of satellite sites</p>	<p>Monitoring of all designated campsites every year (survey in the fall) with measurements including:</p> <ul style="list-style-type: none"> - Bare ground/core area/tent pads per site - Tree damage indicators - Count of social trails over camp area - Size of landing (difference from normal condition)

	Number of damaged trees (trunk and root exposure)	<p>No more than 1 visitor damaged Cottonwood per site.</p> <p>No more than 4 minor occurrences (non-cottonwood) per site.</p> <p>No cutting of standing vegetation.</p>	<p>Increased protection of cottonwoods.</p> <p>Increase education and implement no firewood collecting policy (monitor parties to see if they have charcoal/wood)</p>	
	Non-designated social trails leading from each campsite	Standard TBD.	<p>Defined boundaries with natural materials.</p> <p>Re-vegetation signs</p>	
	Degradation of bank at campsite	Sites rated a 3 or below	Harden/create steps for one specific trail. Define landing area	
	Number of sites occupied (by number and capacity)	More than 90% occupancy on weekends during summer season.	User fees and/or permit system to reduce river usage.	Campground signup sheet records and verification by informal counts during visitor contacts.
	Number of days/season site occupied	Standard TBD.	User fees and/or permit system to reduce river usage.	
	Number of parties in non-designated sites	No more than 4 incidents for more than 2 weekends per season	Change camping rule to implement camping in designated sites only.	River Ranger records from visitor contacts
	Evidence of fire (wood, fire ring, scorched earth, ashes)	No more than 10 incidents per season.	<p>Increased overnight law enforcement and/or river ranger presence.</p> <p>No firewood collecting policy (dead and down materials are important nutritional source for the environment)</p> <p>Year round fire ban (fire pans required for emergencies)</p>	Number of fire rings removed

	Dog/human waste occurrences/campsite	Standard TBD.	<p>Increased education at Loma boat launch and during river ranger visitor contacts about groover requirement</p> <p>Require dog waste be collected and taken off river.</p> <p>Increased law enforcement presence and citations for not having groover</p>	Incidents reported during visitor contacts and evidence of noncompliance during campsite monitoring
	Detrimental impacts to wildlife	<p>No camping within ½ mile of Bald Eagle nest 11/15 to 7/30.</p> <p>Coordination with CDOW and USFWS on fish and wildlife issues.</p>	<p>Modify restriction to year round policy.</p> <p>Increased BLM presence and NCA ranger tickets to violators.</p>	<p>Informal monitoring by NCA staff while on river.</p> <p>Coordination with CDOW on yearly information and documenting new raptor nests</p>

Appendix B
Recreation Site Monitoring Forms

McInnis Canyons NCA: Non-designated Site Inventory Form

Date:		Water Level:			Weather:		
Personnel:						Date entered into DB:	
Site Number	GPS Coordinates		Location	Pictures #s	Size (circle one)*	Condition Class**	Eagle Nest w/in ½ mile?
	X	Y					
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		
					0ft ² 0-75ft ² 75-400ft ² >400ft ²		

* Estimate the size of the impacted area by assessing areas of bare ground and trampled vegetation (as compared to a similar neighboring area)

** Condition Class Descriptions: Class 0 - Site no longer recognizable; Class 1 -The recreation site is barely recognizable. There is only a slight loss of vegetation and minimal disturbance of organic litter; Class 2 - The site is obvious; vegetation is lost, and organic litter is pulverized on primary use areas; Class 3 - Vegetation cover is lost, and organic litter is pulverized on most of the site. There is some exposed mineral soil in the primary use area; Class 4 - There is nearly a complete loss of vegetation cover on the recreation site. No organic litter and exposed mineral soil is widespread; Class 5 - Soil erosion is obvious. Tree roots are exposed because of severe erosion.

**McInnis Canyons NCA
Site Impact Survey Form**

Date:	Water Level:	Weather:
Personnel:		Date entered into DB:

Campsite/Area:		Vegetative Community:		Offsite % Cover:				
Picture:	Type and location (landing, core, satellite, etc.)	Distance and Direction to Core Area Center Point				Site Measurements from Core Area Center Point		
		Point Description		Direction	Distance	Direction	Core	Site
GPS Location: X		Y						
		1				0		
		2				22.5		
		3				45		
		Satellite Area:		Type (tent pad, waste, etc.)	From Center Point	Area (m ²)	Condition* (0, 1, 2, 3, 4, or 5)	67.5
					Direction			Distance
		1						112.5
		2						135
		3						157.5
		4						180
		5						202.5
		6						225
		7						247.5
		8						270
		9						292.5
		10						315
								337.5
If this is a new site, describe the location of the photo point in the comments section								
Comments:								

* Condition Class Descriptions: Class 0 - Site no longer recognizable; Class 1 -The recreation site is barely recognizable. There is only a slight loss of vegetation and minimal disturbance of organic litter; Class 2 - The site is obvious; vegetation is lost, and organic litter is pulverized on primary use areas; Class 3 - Vegetation cover is lost, and organic litter is pulverized on most of the site. There is some exposed mineral soil in the primary use area; Class 4 - There is nearly a complete loss of vegetation cover on the recreation site. No organic litter and exposed mineral soil is widespread; Class 5 - Soil erosion is obvious. Tree roots are exposed because of severe erosion

McInnis Canyons NCA
Ecological Condition Measurements

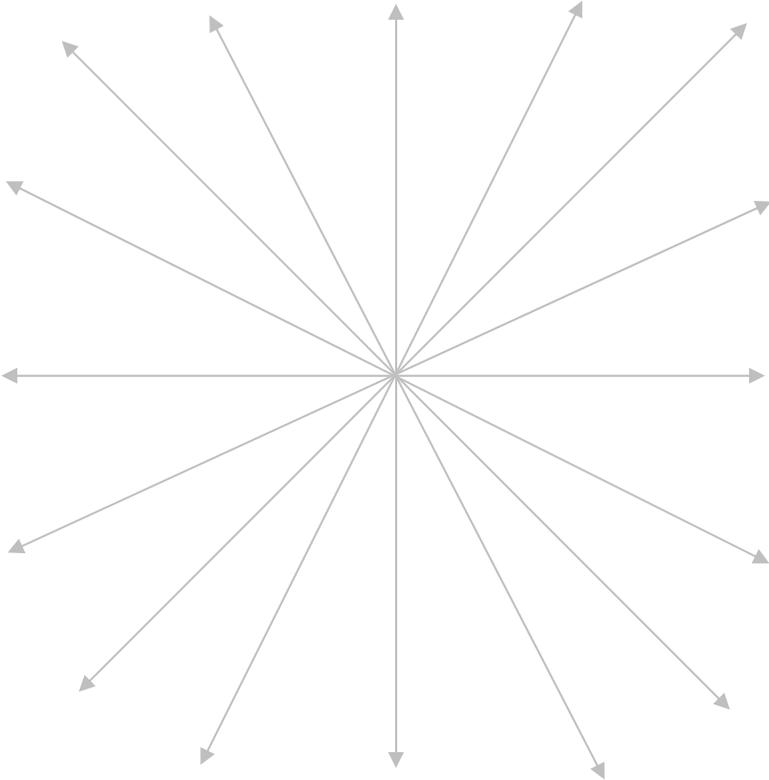
Date:	Water Level:	Weather:
Personnel:		Date entered into DB:

Campsite/Area:					
1) Number of social trails connecting the core area to satellite sites defined trails and other areas (including all with at least light vegetation trampling to those with defined tread). Sketch on the campsite map with dashed lines:					
2) How many ant colonies are located in the core area of the site?					
		1	2	3	4
3) What is the impact of the trail from the landing to the core area?	Minor landing and narrow trail to core area (minimal erosion and shoreline intact)	Moderate landing and trail to core area (loss of soils on trail and/or shoreline)	Larger landing and wide devegetated trail(s) to core area (pronounced erosion, landing w/ obvious soil loss)	Highly impacted landing and wide eroded trail to core area (gullied access trails, obvious large soil loss at landing)	
4) Trees	Cottonwoods	No damage or no trees	1 w/ human damage	2 w/ human damage	>2 w/ human damage
	Other	No damage or no trees	< 10% of trees with damage	10-35% of trees have damage	>35% of trees have damage
5) Human Waste	Toilet Paper	None	1-2 Pieces Toilet Paper	3-4 pieces toilet paper	>4 pieces of toilet paper
	Fecal material	None	1 pile feces	2 piles feces	>2 piles feces
6) Dog Waste	Fecal material	None	1 pile feces	2 piles feces	>2 piles feces
7) Litter		None	<4 pieces, microtrash	4-6 pieces larger trash	>6 pieces larger trash
8) Wildlife	Is the site within ¼ mile of a bald eagle nest?				No
	Is the site within ½ mile of a bald eagle nest?				No
Comments:					

Campsite Map

Campsite/Area:

Date:



Total Satellite Area:		Total Island Area:	
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Appendix C

Visitor Survey to Assess Social Carrying Capacity

McInnis Canyons National Conservation Area

River Corridor Social Condition Evaluation

How long did you wait to launch at Loma?				
N/A	No Wait	< 15m	15 to 30m	> 30m
While you were floating the river, how many other river groups did you encounter?				
0 to 5	5 to 10	10 to 20	20 to 30	> 30
While at your campsite, how many groups walked by?				
0 to 5	5 to 10	10 to 20	20 to 30	> 30
While at your campsite, how many groups floated by?				
0 to 5	5 to 10	10 to 20	20 to 30	> 30
Did you experience any conflict with other visitors/parties during your trip?				
	No Conflict	Minor Conflict	Major Conflict	
Launch	X	X	X	
On River	X	X	X	
Campsite	X	X	X	
Did you camp at the site you signed up for at the Loma Boat Launch?				
Didn't sign up	No (state why in comments)			Yes
How much litter was at your campsite(s)?				
1) very little	2) some	3) significant	4) unacceptable	
How would you rate your overall experience?				
1) terrible	2) poor	3) average	4) good	5) exceptional
Any additional comments?				
For additional concerns please contact Troy Schnurr at (970) 244-3032 or troy_schnurr@blm.gov				

McInnis Canyons National Conservation Area

River Corridor Social Condition Evaluation

How long did you wait to launch at Loma?				
N/A	No Wait	< 15m	15 to 30m	> 30m
While you were floating the river, how many other river groups did you encounter?				
0 to 5	5 to 10	10 to 20	20 to 30	> 30
While at your campsite, how many groups walked by?				
0 to 5	5 to 10	10 to 20	20 to 30	> 30
While at your campsite, how many groups floated by?				
0 to 5	5 to 10	10 to 20	20 to 30	> 30
Did you experience any conflict with other visitors/parties during your trip?				
	No Conflict	Minor Conflict	Major Conflict	
Launch	X	X	X	
On River	X	X	X	
Campsite	X	X	X	
Did you camp at the site you signed up for at the Loma Boat Launch?				
Didn't sign up	No (state why in comments)			Yes
How much litter was at your campsite(s)?				
1) very little	2) some	3) significant	4) unacceptable	
How would you rate your overall experience?				
1) terrible	2) poor	3) average	4) good	5) exceptional
Any additional comments?				
For additional concerns please contact Troy Schnurr at (970) 244-3032 or troy_schnurr@blm.gov				

Appendix D
River Ranger Reporting Format

COLORADO RIVER PATROL REPORT

Loma to Westwater

Date:	Water Level:	Weather:
Estimated # users:	Number of parties:	Contacts made:
Method of travel:	Take out: Westwater	Rangers:
Shuttled by: Fire	Number of nights:	

Launch Issues:

LEO Follow-up Needed:

Condition and Usage of Campsites:

How many parties in undesignated sites?

Undesignated Site Used (GPS and note new sites, add to database):

Commercial Usage:

User Comments (reported conflicts at launch, on river, or at campsites?):

Follow up needed:

Unusual Wildlife Seen:

Resource Conditions: (i.e. Cottonwoods, noxious weeds, etc.)

Unusual Occurrences:

Projects worked on:

Evidence of illegal fire (large charred wood, fire ring with ashes, scorched earth, dumped ashes, fire during ban)?

Future Projects:

Narrative:

Submitted By:

Reviewed By:

Appendix E

Campsite Impact Rating Calculation Description

The campsite impact rating system assigns a score to each measured campsite by weighting a series of measured factors to come up with a total. Scores range from 25 to 100 with lower scores indicating fewer disturbances to the natural environment than a higher score. A low score would indicate a site with minimal ground disturbance, few satellite sites, a minimal landing, a low damage a waste scores. A site with a higher score would be the result of a larger core area, larger landing, lots of litter and waste, and many satellite sites and social trails. The indicators and weights (a higher weight puts more importance on that particular factor) are shown below:

	Score				Weight	Min	Max
	1	2	3	4			
Campsite Area	0-1500	1500-3000	3000-5000	>5000	4	4	16
Barren Core	0-750	750-1500	1500-2500	>2500	2	2	8
Satellite Sites	0-2	3-5	6-8	>8	4	4	16
Social Trails	0-2	3-5	6-8	>8	3	3	12
Ant Colonies	0	1-2	3-4	>4	1	1	4
Landing	Minor landing and narrow trail to core area (minimal erosion and shoreline intact)	Moderate landing and trail to core area (loss of soils on trail and/or shoreline)	Larger landing and wide devegetated trail(s) to core area (pronounced erosion, landing w/ obvious soil loss)	Highly impacted landing and wide eroded trail to core area (gullied access trails, obvious large soil loss at landing)	4	4	16
Cottonwoods	No damage or no trees	1 w/ human damage	2 w/ human damage	>2 w/ human damage	2	2	8
Other	No damage or no trees	< 10% of trees with damage	10-35% of trees have damage	>35% of trees have damage	1	1	4
Toilet Paper	None	1-2 Pieces Toilet Paper	3-4 pieces toilet paper	>4 pieces of toilet paper	1	1	4
Human Waste	None	1 pile feces	2 piles feces	>2 piles feces	1	1	4
Dog Waste	None	1 pile feces	2 piles feces	>2 piles feces	1	1	4
Trash	None	<4 pieces, microtrash	4-6 pieces larger trash	>6 pieces larger trash	1	1	4
						25	100