

GRAND CANYON NATIONAL PARK

RAPID SITE INVENTORY OF BACKCOUNTRY CAMPSITES



Parks and Recreation Management
Department of Geography, Planning, and Recreation
Northern Arizona University

Pamela E. Foti, Aaron K. Divine, John D. Lynch, Tim Carley

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to date is the “Limits of Acceptable Change” or LAC (Frissell and Stankey 1972; Stankey et al. 1984). LAC is a nine-step process (Figure 2) weighing policy, economic, and social considerations as well as ecological criteria for management prescriptions of what is and is not acceptable as human-caused change or impact to the resource base. Although widely popularized, LAC is not often used in its complete and original theoretical form. Managers and researchers more often use LAC planning framework as a conceptual framework. McCool and Cole (1998) note that the original nine-step process need not be followed rigidly for successful results as the processes are iterative and circular in nature rather than linear.

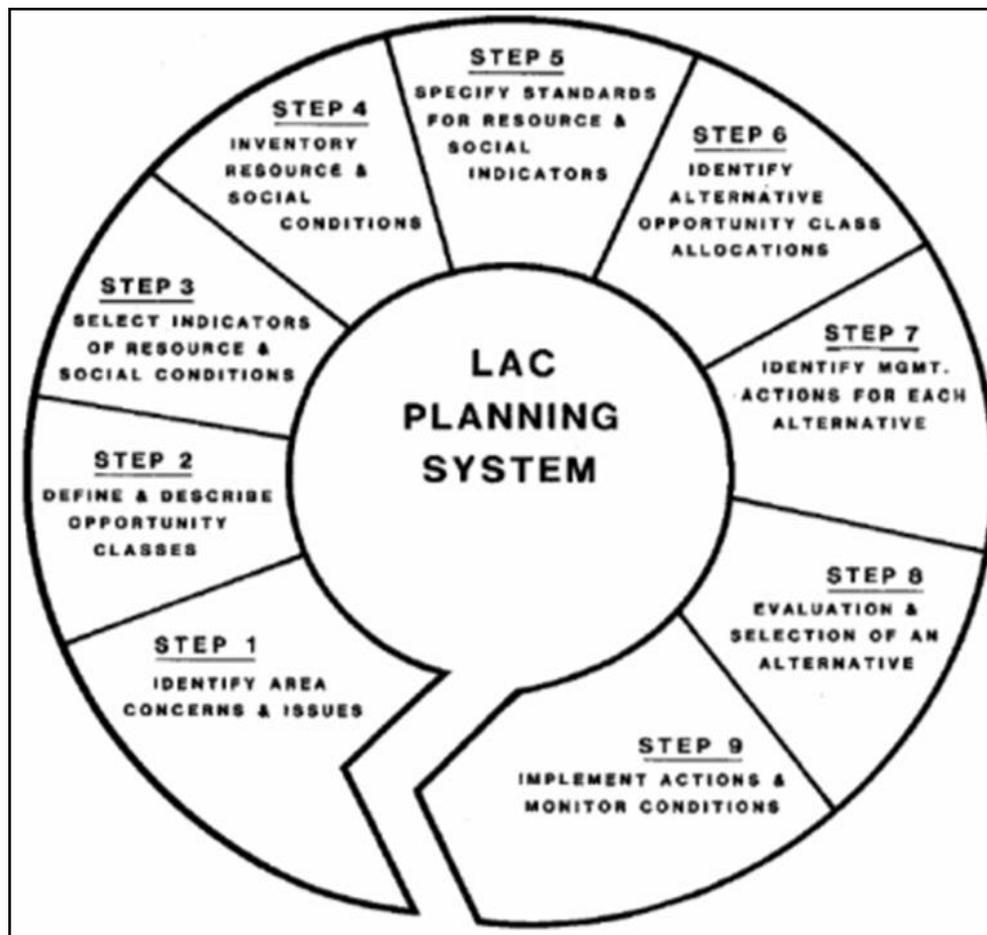


Figure 2 – The Original Nine-Step LAC Planning System (source: Adapted from Frissell and Stankey 1972).

The simplified LAC process (Figure 3) is comprised of four steps: 1) Set management objectives—Specify acceptable and achievable resource and social conditions; 2) Inventory current conditions with the collection of baseline data—Analyze the relationship between existing conditions and those judged as acceptable; 3) Identify management actions judged to best attain desired conditions; and 4) Implement a program of monitoring and evaluating management effectiveness—Know when resource change occurs and management action/change is needed (Hammit and Cole 1998; McCool and Cole 1998; Leung and Marion 1999).

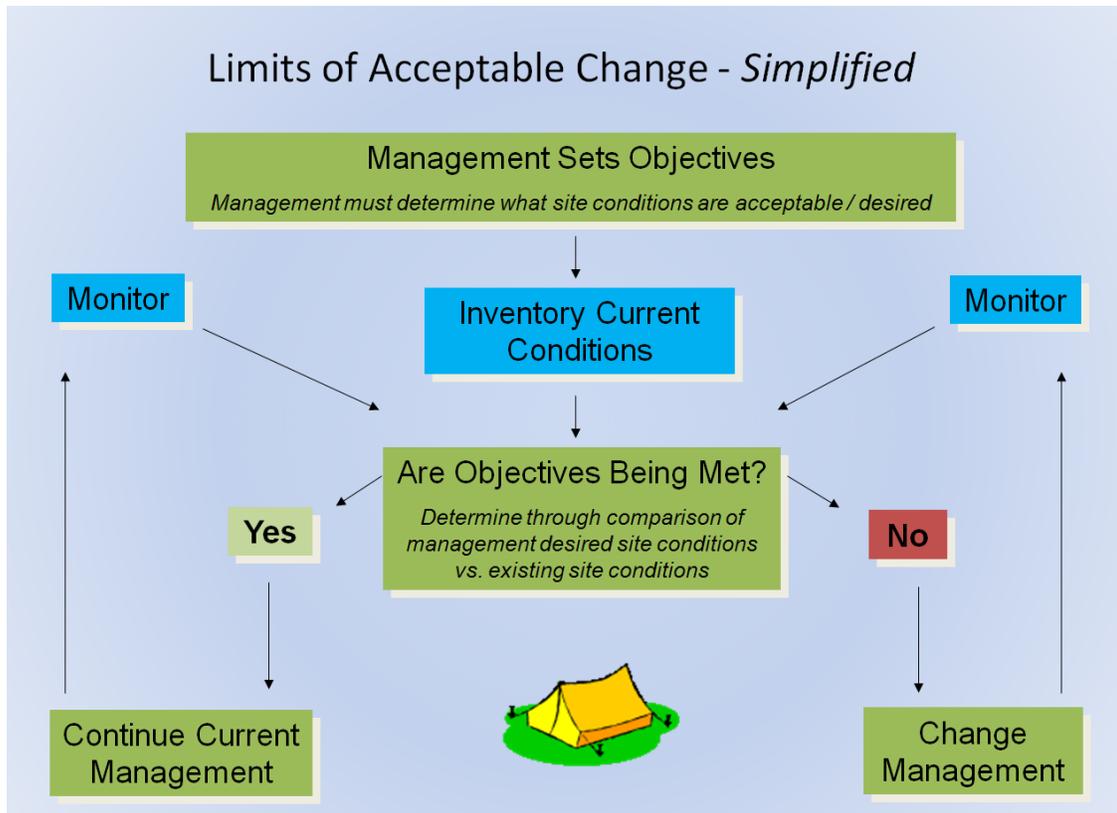


Figure 3 – Simplified LAC Process (source: Adapted from Hammitt and Cole 1998).

Step 2 of the simplified LAC process, Inventory of Current Conditions, can be accomplished by drawing from a number of established systems for documenting impacts to campsites and trails to develop an area/activity specific inventory system. According to Hammitt and Cole (1998) campsites inventories generally use one or a combination of Photographic, Condition Class (Frissell 1978), or Multi-Parameter Systems. Trail inventories typically utilize the systems of Replicable Measurements, Rapid Survey Samples (Cole 1983a), and Census Techniques (Marion 1994). Each of the measurement systems has certain advantages over the other, often determined by the specific area/activity impact being assessed in combination with project objectives. A compromise is met by seeking an appropriate balance between time spent per site and the number of measures required to accomplish goals of the project (Cole 1983a, 1983b).

A Rapid Site Inventory (RSI) of trail conditions combines rapid site survey sampling and census techniques (Cole 1983b; Marion 1994), targeting data collection methods geared toward collecting baseline assessments that documents an impacted site’s presence and general characteristics for future relocation and monitoring efforts. The primary focus of RSI is “capturing” a “snapshot” of approximately 95% of *all* encountered impact sites within a given area or trail segment within a short duration of time (less than 15 minutes per site). This method allows the researcher to capture a greater sample of sites while collecting fewer site specific variables at each location than is

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standard with more comprehensive Multiple-Parameter or Replicable Measures inventory/monitoring programs which can require from one to three hours of data collection per site (Hammit and Cole 1998).

With the advent of better technologies, the combined use of Geographical Information Systems (GIS), Global Positioning Systems (GPS)/data-loggers and remote sensing techniques may prove to be an integral part of future recreational impact monitoring applications (Hammit and Cole 1998).

LAC as it applies to this GRCA/NAU campsite inventory project: In this particular study, GRCA assisted NAU researchers in identifying several popular backpacking trails and frequented routes within the park to be inventoried (See Appendices). The ensuing RSI data forms a foundational basis for which an on-going or longer-term physical impact monitoring program can be developed. As opposed to the RSI, an on-going monitoring program, as suggested earlier, may reflect a greater quantitative assessment of recreational physical impacts over a prescribed length of time, thus requiring more time at each individual site to collect additional data variables, as determined by management.

In an integrated on-going inventory/monitoring program, it is assumed that the number, type, and extent of physical human impacts on a recreation site is a useful indicator of both visitor behaviors and visitor numbers. Based upon physical impact information (in combination with social information, managerial expertise and the setting of campsite standards), site managers have the ability to formulate recreation management prescriptions for a site or area (such as education, outreach, allocations, fees, use limits, group size numbers, site closure, site rehabilitation, site “hardening”, rest-rotation of sites, etc.). Again, the focus of this RSI project was to initiate baseline data collection for a number of use areas and routes in GRCA. Following the establishment of this baseline inventory, it is anticipated that GRCA will return to the LAC process to create/clarify a set of campsite standards or parameters to evaluate impacts that are deemed by management to be acceptable/unacceptable, then initiate an on-going recreational physical impact monitoring system to determine if longitudinal trends of impacts and campsite proliferation in the GRCA backcountry continue to fall within the determined acceptability standards.

Project Background

The GRCA backcountry rapid site inventory was based on the tenets of the planning process entitled “The Limits of Acceptable Change”. The focus of this project was to determine the number and level of impacts on GRCA backcountry campsites. Inventory areas were at the discretion of the National Park Service and inventory variables were agreed upon by both the researchers and the park staff.

The Limits of Acceptable Change (LAC) provides a useful foundation for the study. While LAC includes consideration of 9 components, the process can be distilled down to 4 focus questions:

1. What do you want on-site? This question deals very specifically with managerial decisions related to desired conditions on-site. For this study, managers need to consider the number, size, and distribution of allowable backcountry campsites in GRCA, as well as the level of impact that is acceptable for the park.
2. What do you have on-site? This question was the focus of the current study. The study determined that there were 757 backcountry sites in the areas inventoried and described the impacts per site in detail using variables agreed upon by the researcher and the agency.
3. How will you get to where you would like to be related to site management? This question deals with “what do you want on-site” and will be addressed in this section of the report.
4. How do you know when change occurs on-site? The use of a continuing recreation impact assessment program is critical to determine “if and when” change occurs on-site. GRCA encompasses over 1.2 million acres, there is no feasible way to keep track of changes without a systematic monitoring system which rotates through the park’s backcountry on a regular basis. Any recreation impact monitoring system for GRCA needs to include the following components:
 - a. A developed system with identified variables and protocol,
 - b. Implementation criteria to ensure validity of data collection,
 - c. A design and commitment to allow replication over time,
 - d. Feasible procedures to implement related to time, personnel, and money,
 - e. A set of variables which record changes over time,
 - f. Output of data/results which are at a level that provides information for managerial decision making.

In addition to the Limits of Acceptable Change, the study included two additional tenets of wildland recreation management. First, there was recognition and acceptance of the idea that all site users are consumptive users, at some level, and that resource impacts are the inevitable result of site use. In spite of this, the importance of user interactions with the resource base cannot be undervalued in consideration of future resource protection. Second, it was noted that the amount and

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type of acceptable change on a site or in the backcountry is a managerial decision. In the case of GRCA backcountry, the National Park Service has been entrusted with a mission to preserve in an unimpaired manner the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. Regardless of the duplicity of these tenets, they are both critical components of future resource management.

A total of 32 backcountry areas were inventoried using a “Rapid Site Inventory” process (see Appendix A for data collection sheet and backcountry areas inventoried). The over-riding goal of the project was to obtain a quick “snap-shot” of a site without extensive quantitative analysis of each site. In addition, the project was designed to collect information on as many backcountry sites as possible. As a goal, the project anticipated a site capture rate of 90-95% of the sites in NPS identified backcountry areas. The project assumed that the number, type, and extent of recreation impacts would be a useful indicator of visitor behaviors and numbers.

Data was collected in 2004 and 2006 and during the two data collection periods, a total of 757 campsites were inventoried. Below is a brief overview of (a) site descriptors and (b) recreational site impacts related to the inventoried sites within GRCA backcountry.

Site Descriptors Summary and Results for GRCA Backcountry Sites (n=757)

- The majority (85.6%) of backcountry campsites were visible from the travel route. In most cases (74.4%) “other campsites” were not visible while visitors were engaged in backcountry use. On site analysis showed that most of the “sites” inventoried had evidence of “camping” use (97%). Over 80% of the identified sites were classified as small (54.8%) or medium (26.9%). Most of the backcountry campsites (91.5%) were not alcoves.
- In most cases (70.5%), water was not present on-site in the GRCA backcountry campsites. If water was present, the most common water sources were streams, (2) the River, (3) springs, and (4) potholes.
- The surface of GRCA backcountry campsites was soil (62.9%), sand (59.6%), and talus/rocky (25.2%). There was soil erosion present on just over half of the sites (55.4%) and cryptobiotic soil was present on about 21.3% of the campsites.
- Given the desert landscape of the Grand Canyon and the natural vegetative loss in relation to camp use, it was not surprising to find ground cover of 0-5% on 89.4% of the backcountry campsites. This can be compared with a common off-site ground cover of greater than 25%. As anticipated, recreational use of campsites has a significant impact on site vegetation which is further complicated by Arizona’s propensity toward natural barren areas.

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- In spite of Arizona’s limited vegetative cover, 40.0% of the sites had short desert shrub present, 28.5% of the sites had Pinyon-Juniper, 18.9% of the sites had Tall Desert Shrub, and 8.6% were vegetated with Native Riparian species.
- The majority (82.8%) of GRCA backcountry sites were described as “too close” to the trail (using the LNT criteria of “too close” equaling <200 feet). It is not uncommon in backcountry areas to have sites in close proximity to the travel route since visual cues account for the major method of site discovery while traveling through the backcountry. Additionally, 21.9% of the sites were “too close” to water sources and 14.0% were described as “too close” to cultural features.
- Archeological resources were present on 16.5% of the GRCA backcountry sites. This included roasting pits and rock walls (10.4%), rock art and/or historic inscriptions (1.8%), and cultural artifacts (12.0%)
- Recreational Site Impacts Summary and Results for GRCA Backcountry Sites (n=757)
- Most of the GRCA backcountry sites include access trails (78.6%) and barren cores (areas with complete loss of vegetative cover) on-site (95.5%). The number of barren core areas on sites varied, however, most sites had 1-2 barren cores (61.6%) or 3-5 barren cores (25.5%). In fact, the mode for on-site barren cores was 1 (39.2%).
- Backcountry sites frequently included user created social/spurious trails around the site (69.1%) and often had user deposited litter on-site. Micro-litter accounted for 52.3% of the site impact, while macro-litter was found on 18.9% of the sites. Campfires are prohibited in the backcountry of GRCA, however, active campfire indicators were found on 5.3% of the sites and residual indicators of fire were recorded on 22.2% of the sites.
- As with most backcountry areas, the proper disposal of human sanitary waste has become an increasingly difficult management problem. In some cases, backcountry sites have primitive toilets available (ex. Horseshoe Mesa), however, in most of the backcountry areas, users are required to use cat hole sanitation in compliance with the tenets of Leave No Trace (LNT). Human sanitary waste was found on 17.7% of the backcountry sites. Indicators included toilet paper (13.7%), improperly created catholes (7.4%), and human fecal matter (4.4%).

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- Resource impacts on-site in backcountry areas can cause a significant problem in terms of protecting the integrity of the area. This is particularly critical to fragile desert environments where vegetation has a difficult time taking hold and maintaining any presence. In GRCA, resource impacts on backcountry sites were significant. For example, 81.0% of the sites showed recent and obvious human-caused shrub impacts, 20.2% of the sites were recorded with recent and obvious human-caused tree impacts (with 4.2% of the sites having incidents of root exposure), and researches documented 11.5% of the sites with recent and obvious human-caused cactus damage. Along the same lines, cryptobiotic soil impacts were recorded for 16.9% of the sites, streambank impacts were noted on 8.1% of the sites, and rock impacts were found to be present on 3.2% of the backcountry sites. While not common in the backcountry of GRCA, site vandalism was seen on 2.5% of the sites.
- As noted above, archeological resources were documented on 16.5% of the GRCA backcountry sites. While this number is not significant, the incidence of impacts to feature IF present is quite significant. For example, related to cultural features, IF rock art or historic inscriptions were present, they were impacted 64.3% of the time. Similarly, if cultural features were present, they were impacted 79.7% of the time and if cultural artifacts were present, they were impacted 81.3% of the time. In terms of rock art/historic inscriptions, the major impacts included graffiti, chipping, and flaking. Major impacts related to cultural features include erosion around the area, camping on the feature, and re-arrangement of feature components. Finally, artifact impacts including camping and hiking on-top of artifacts and erosion in artifact areas.
- Each GRCA backcountry campsite was assigned a rating related to the number and level of site impact incidence. A complete description of site rating explanations is contained in Appendix A. Site ratings range from “Extreme” to “Unimpacted”. An extreme site is considered to have impacts at an unacceptable level of use and to the detriment of the resource integrity. These sites should receive managerial attention as soon as possible. Moderately impacted sites are considered to be those receiving use, however, use is not detrimental to the resource base and should be allowed to continue. Unimpacted sites are those that have been used in the past, so there is on-site evidence to indicate prior use; however, the site may not be currently in use and impacts are receding.

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For GRCA, the backcountry sites were rated as noted below:

GRCA Backcountry Site Ratings (n=757)

| <u>Rating</u> | <u>N</u> | <u>%</u> |
|---------------|----------|----------|
| Extreme | 29 | 3.8% |
| Heavy | 110 | 14.5% |
| Moderate | 270 | 35.7% |
| Slight | 309 | 40.8% |
| Unimpacted | 39 | 5.2% |

GRCA backcountry included 29 extremely impacted sites. These sites were located in the following areas: Hermit Creek (8), Hoseshoe Mesa (8), Tanner (5), South Bass (3), and Hance Creek (2).

Primary site indicators for extremely impacted sites included large size, access and social trails, active fires, litter, human sanitary waste, large numbers of barren cores, shrub and tree damage, and cultural impacts.

GRCA also included 110 heavily impacted sites. These sites were located in the following areas: Tanner (14), Thunder River (9), Esplanade near Indian Hollow (8), Royal Arch (8), Boucher Creek (7), the Monument Cluster (7), South Bass (7), and Hermit Creek (5). Primary site indicators for heavily impacted sites included large size, other sites visible, access trails, social trails, litter, residual fires, and human sanitary waste. There was also a fair number of barren cores on-site and shrub and tree damage.

Project Recommendations

At this point, there are 6 specific considerations for the GRCA management team to assess related to moving forward with on-going monitoring and/or managerial decisions related to backcountry campsites: the Number of Sites, Distribution of Sites, Site Mitigation, Site Closure, Backcountry User Education and Outreach, and GRCA Policies to Assist in Backcountry Management, respectively.

1. Number of Sites

The first decision focus on the number of sites determined to be appropriate for the backcountry of GRCA. The current research determined that in the areas identified for inclusion in the backcountry inventory, there were a total of 757 sites. The question for management becomes is this “acceptable” or “unacceptable”. The question becomes more realistic and accessible when broken down into resource components. For example, what is the appropriate number of sites for each backcountry attraction area or zone or near the river? By focusing attention on specific areas, it will be easier to determine “how many sites” might be appropriate for any small area.

2. Distribution of Sites

The next question focuses on how backcountry campsites might be distributed across the resource base. A major consideration is how sites might be distributed in heavily used areas versus low use areas. In essence, is it better to cluster sites (almost in campgrounds) or allow a flurry of dispersed sites at the discretion of the user? Another consideration is the distribution of sites in areas shared by hikers and boaters. Some of the most impacted river sites were in areas where use was shared by the two recreation types; this was particularly evident related to “short distance” river hike-in opportunities.

3. Site Mitigation

The study determined that there are 29 extremely impacted sites in GRCA backcountry and 110 heavily impacted sites. The extremely impacted sites represent an opportunity for immediate mitigation. In some cases these sites may need to be closed due to the level and intensity of resource damage; in other cases, site adjustments may be able to re-direct use in a less intrusive and destructive mode. As a first step, it is recommended that each extremely impacted site be visited and a rehabilitation plan be developed. The heavily impacted sites are also in need of additional managerial action. These sites have not reached the level of impact intensity noted on the extreme sites, however, there is room for impact mitigation. Once the extreme sites have been addressed, the heavily impacted sites should be visited and assessed for impact mitigation.

4. Site Closure

With GRCA backcountry boasting over 757 sites and with 139 rated as either “extreme” or “heavy”, there is no question but that some sites will be closed. GRCA needs to determine a matrix for assess site viability based on social and physical resource conditions. This matrix will enable the park staff to make decisions based on rational criteria. Examples of criteria include: cultural resource presence, proximity to water resources, relationship between number of sites and user threshold for the zone, on-going inability to mitigate significant resource impacts, and user conflicts due to resource or social situations.

5. Backcountry User Education and Outreach

While some resource impacts are certainly examples of unacceptable visitor behaviors, in many cases (especially in a unique environment like Grand Canyon National Park) resource abuse may be the result of uninformed and unintentional user actions. Not every user impact can be solved or modified via education; however, there certainly are some backcountry resource impacts that can be softened through user involvement. For example, in GRCA the issues of campfires, litter, and human sanitary waste can be addressed through modifying user behavior and improving user education. Through websites and user contacts, visitors can be alerted to the extreme behavioral needs related

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to these items. Visitors can be receptive to resource education and they need to know that “...they’re not in Kansas anymore...” the landscape and resiliency of that landscape has changed...and their behavior on-site needs to adjust.

Additional areas for user education include “making wise campsite selections” (away from cultural and water resources) and camping softly with desert vegetation (especially at the Colorado River and in the Pinyon-Juniper forests).

For some user behaviors, park personnel intervention on site may be needed. For example, all park personnel who travel in the backcountry should be prepared to break-down any campfire rings discovered. Constant vigilance to the destruction of campfire rings can be very useful in dissuading visitors from bad campfire behaviors. In terms of sanitary waste, the park may need to assess each situation and consider the need for additional backcountry toilets in some areas. Backcountry areas that are receiving high use from populations with poor ethics are prime targets for installation of sanitary waste facilities. While the reality of the situation is that all backcountry users who travel in a river corridor, whether by boat or foot, should be prepared to pack out their sanitary waste, this is not a realistic expectation in a large backcountry area with many first time or novice users.

6. GRCA Policies to Assist in Backcountry Management

A useful task for GRCA backcountry staff might be to complete a “policy audit” related to what policies exist, what is the rationale for the policy, and is it working. Policies that need to be monitored on a regular basis include, as follows: group size, length of stay, and number of nights permitted in a campsite (considered by zone). There is no question but that large groups often create more impacts and that large sites are the most impacted of the backcountry sites in GRCA. There is also available research indicating that length of stay on a site results in heavier impacts. Probably the most important current policy at GRCA that needs to be considered is the option of users creating new sites. The current number of backcountry sites in GRCA is a direct result of the “new site development” policy. GRCA needs to consider disallowing new site development and a strong focus on “camp only in existing sites” (LNT).

A final policy adjustment to consider for GRCA backcountry is the designation of all campsites from Tanner to Boucher off the south rim and Nankoweep, Thunder River, and Deer Creek off the north rim. While the development and implementation of this campsite system will take time and effort, the resulting benefits to the resource base will far out-weigh the human time and effort. The GRCA backcountry of 2008 is not equivalent to the extremely remote and under-used backcountry of previous years. GRCA backcountry management can no longer rely on a laissez-faire approach to resource protection. The future of GRCA’s backcountry will rely on the fundamental goals of

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wildland recreation management: protecting the integrity of the resource base and providing access. Furthermore, backcountry protection will be based on active managerial engagement.

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- ___ Cryptobiotic Soil Impacts:
(1) yes, single trail/prints (2) yes, multiple trails/prints (3) yes, barren-core disturb. (4) no
- ___ Rock Impacts (1) yes (2) no
- ___ Streambank Impacts (1) yes (2) no
- ___ Non-Cultural Site Vandalism/Graffiti (1) yes (2) no
- ___ Water Cache Present: (1) yes (2) no
- ___ Camp Arrangements: (1) yes (2) no (3) unclear

Additional Physical Impact Comments:

Cultural Impacts:

- ___ Presence of Archeological Resources (1) yes (2) no
- ___ Site Number (if previously recorded)
- ___ Presence of Archeological Features (1) yes (2) no
- ___ Feature Type(s): _____
- ___ Feature Impacts: _____
- ___ Presence of Rock Art/Historic Inscriptions (1) yes (2) no
- ___ Rock Art/Inscription Impacts: _____
- ___ Presence of Artifacts (1) yes (2) no
- ___ Artifact Type (s): _____
- ___ Artifact Impacts: _____

Additional Cultural Impact Comments:

___ **Inherent Site Problems** (1) yes (site is <200 feet from trail, water, cultural site) (2) no

- ___ Proximity of Site to Main Trail
- ___ Proximity of Site to Water
- ___ Proximity of Site to Cultural Feature
(1) <10' (2) 11-25' (3) 26-50' (4) 51-100' (5) 101-200' (6) Not Applicable

___ **OVERALL SITE IMPACT RATING:** (refer to cheat sheet)
(1) Extreme (2) Heavy (3) Moderate (4) Slight (5) Unimpacted

Additional Field Comments: _____

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Appendix B:

Rapid Site Inventory Cheat Sheet

| Dominant Vegetation | Vegetative Cover | Overall Site Rating |
|--------------------------|------------------|---------------------|
| PP = Ponderosa Pine | 1 = 0-5% | 1 = Extreme |
| PJ = Pinyon-Juniper | 2 = 6-25% | 5 High Frequency |
| TDS = Tall Desert Shrub | 3 = 26-50% | 10 Impact Areas |
| SDS = Short Desert Shrub | 4 = 51-75% | 2 = Heavy |
| NR = Native Riparian | 5 = 76-95% | 3-4 High Frequency |
| ER = Exotic Riparian | 6 = 96-100% | 7-9 Impact Areas |
| GR = Grasses | | 3 = Moderate |
| BA = Barren | | 1-2 High Frequency |
| | | 5-6 Impact Areas |

A Special Note on Condition Class Definitions: Following are two sets of definitions/descriptions for each level of site condition class. The first listed, *in italics*, is the standard typically used by NAU/PRM. The second, *in non-italics*, is the standard that was utilized during the first backcountry inventory of Grand Canyon during the 1980s – which was based on the Frissel (1978) system – but adapted to a Grand Canyon desert environment. Both are similar, valid, and provided here for reference to reach better consistency between assessments from the previous and current inventories.

Extreme/Severely Impacted

The site has many impacts noted on the monitoring form (either a high number of impact areas or a high frequency of impacts in an impact area). The impacts are at an unacceptable level for recreational use and/or are detrimental to the resource base. The site is hammered. The site needs managerial assistance in order to protect the integrity of the resource base. This is an “out-of-control” site.

Extreme/Severely impacted sites are extremely well established and additional campsites are being pioneered along their peripheries. There are as many as ten barren cores present and tent sites occur in clusters throughout the site. The site contains rock arrangements, camp arrangements, extensive social trailing, widespread vegetation damage, and more than one access trail. Evidence of recent campfire, improperly disposed human waste, and graffiti may be present. There may be extensive micro and macro litter, including discarded equipment or food. Habituated animal species such as ravens and mice are prevalent. Soil erosion is present and there is nearly total on-site loss of vegetation cover and organic soil crusts.

Heavily Impacted

The site has many impacts noted on the monitoring form and is being well used (either a high number of impact areas or a high frequency of impacts in an impact area). The impacts are not at the level of being unacceptable to either recreational use or the resource base - but the site is on the threshold of becoming overused. The integrity of the resource base is being stretched, but still protected. The site needs to be watched to prevent impacts from becoming extreme.

Heavily impacted sites are well established campsites. They are characterized by multiple barren cores and rock arrangements and may contain residual evidence of campfires and camp arrangements, such as seats and wind blocks. There may be improperly disposed human waste on or near the site. Vegetation damage is apparent

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throughout the site and the campsite may have multiple access trails. Organic litter and surface crusts are disturbed throughout the site. There may be multiple pieces of micro and macro trash present.

Moderately Impacted

The site has obvious use and the range of impacts are noted on the form (either a medium number of impact areas or a medium frequency of impacts in an impact area). The impacts are appropriate for the site and not detrimental to the resource base. Continue to allow current use and monitor.

Moderately impacted sites are established campsites. They are characterized by one to three barren cores, rock arrangements, an access trail and multiple social trails. Both microtrash and macro trash may be present on sites. There is vegetation damage adjacent to social trails and barren cores, but minimal vegetation damage to surrounding area.

Slightly Impacted

The site has a few impacts noted on the form, but the impacts are neither numerous or significant (either a low frequency of impact areas or a low frequency of impacts in an impact area). The site may have been used in the past and is not currently receiving use or the site may be receiving very little current use. The integrity of the resource base for this site is being protected. Continue to monitor if site has the potential to move from slight to moderate.

Slightly impacted sites show evidence of overnight use. Organic surface disturbance may be apparent in the form of one or two tent sites or social trails. There is little to no microtrash and no macrotrash on site. There is minimal disturbance to vegetation, soil crusts, and rocks.

Unimpacted

The site has been used in the past (perhaps historic site or pre-historic), but is not currently being used. Site has few or no impacts to note (either no impact areas or an extremely low frequency of impacts in any 1-2 impact areas), but there is visual evidence on-site to indicate that there has been prior use.

Unimpacted sites are defined as those that receive little or no visitation. Although potentially suitable for overnight camping, there is no evidence that these sites have received overnight use. There is little to no disturbance to vegetation or organic litter and cryobiotic soil crusts, if present, are intact. No litter, social trails, or access trails are present on site.

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Appendix C:

Use Area Codes for RSI database

| GRCA AREA | NAU Inventory ID Code | NPS Use Area Code |
|--|------------------------------|--------------------------|
| Boucher | BO | BN9 |
| Cardenas | CA | BC9 |
| Clear Creek | CC | AK9 |
| Corridor | CIG or "other" | CIG |
| Cottonwood Creek | CO | BG9 |
| Cremation | CR | BJ9 |
| Escalante Creek | EC | BC9 |
| Grapevine | GR | BH9 |
| Hance Creek | HA | BE9 |
| | | |
| Hermit Cluster | HE | |
| -Hermit Creek | HE | BM7 |
| -Hermit Rapids | HE | BM8 |
| -Dripping Springs** | DS | BM7 |
| <i>** Note: DS is in Hermit Creek Use Area and restricted to established campsites only. DS sites are not permitted by NPS</i> | | |
| | | |
| Horseshoe Mesa | HO | BF5 |
| | | |
| Monument Cluster | MO | |
| -Monument Creek | MO | BL7 |
| -Horn Creek | MO | BL4 |
| -Granite Rapids | MO | BL8 |
| -Cedar Spring | MO | BL6 |
| -Salt Creek | MO | BL5 |
| | | |
| Nankoweap | NA | AE9 |
| North Bass | NB | AS9 |
| Powell Plateau | PP | AS9 |
| Red Canyon | RC | BD9 |
| South Bass | SB | BQ9 |
| Tanner | TA | BB9 |
| Royal Arch | RA | BR9 |
| | | |
| Thunder River Region | TR | |
| -Upper Tapeats | TR | AW7 |
| -Lower Tapeats | TR | AM9 |
| -Indian Hollow | TR | AN9 |
| -Deer Creek | DC | AX7 |
| -Esplanade | ES | AY9 |

Appendix D:
GRCA RSI Map of
Campsites 2003-2005

