



Bright Angel Lodge, Grand Canyon National Park.

Science and Resource Management Campus Comprehensive Plan

Section 1 – Conceptual Site Master Plan

December 2008

A Partnership Project of
Grand Canyon National Park
Ecological Monitoring & Assessment Program, Northern Arizona University
College of Social and Behavioral Sciences, Northern Arizona University

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1 Introduction

The Grand Canyon National Park (GCNP) in partnership with Northern Arizona University offered students an opportunity to be involved with the current and future planning of the SRM Campus and design of the Science and Resource Management (SRM) office building. A team of students and faculty mentors examined current and future needs for the “campus” and office building and developed recommendations to improve efficiency, safety, comfort, and sustainable practices as defined by the Leadership in Energy and Environmental Design (LEED).

This section presents the conceptual master plan for the SRM Campus. Initial recommendations were developed from a site visit and interviews with park personnel and Xanterra and Grand Canyon Association staff. An initial draft was submitted and circulated to all parties for comment. A second draft incorporated revisions and was reviewed by park personnel. This final report reflects the last step in the planning process, recommendations for developing the SRM Campus. Although the SRM office building is currently located on the campus, our findings indicate that this location is not a suitable site for the SRM office building due to the heavy traffic associated with the neighboring storage and distribution areas. Thus, these recommendations reflect that the most sustainable use of this site is as a storage and distribution area for park and concessionaire operations.

Overall Goal: Provide a complete concept site plan that coincides with the mission of the National Park Service and with LEED standards.

- Preserve the existing natural and historic landscapes.
- Provide for the restoration of landscape that does not compliment the natural/cultural landscape.
- Develop a plan that complements the redesign of the SRM building with sustainability and LEED guidelines.

2 Planning Process

2.1 Design Charette and Walk Through

June 9, 2008 attended by members of the planning team. The purpose was to examine the site and learn about site design needs of the SRM personnel.

2.2 Site Analysis

Simple site analysis based on existing data, discussion with Park Service, Grand Canyon Association and Xanterra personnel, plus observation and measurements of the site.

2.3 Concept Plan Alternatives

The usual approach to concept planning is to develop three alternative plan concepts (these are located in Appendix C), then after discussion with the client, use the best features of the alternatives to develop an optimal concept plan for the site. In this case, it was suggested to add a fourth alternative: to move the SRM operations to another site because of the difficulty in making the SRM Campus a sustainable site.

2.4 Final Concept Plan

The fourth alternative, to move the SRM building to an alternative site, was accepted. So the approach was to plan the SRM Campus as a functional and sustainable operational support center.

3 Overall Planning Considerations

“As a place of national and global importance, Grand Canyon National Park is to be managed to:

- “Preserve and protect its natural and cultural resources and ecological processes, as well as its scenic, aesthetic, and scientific values.*
- “Provide opportunities for visitors to experience and understand the environmental interrelationships, resources, and values of the Grand Canyon without impairing the resources (NPS, 1995).”*

As noted in the mission statement for the most recent Grand Canyon management plan, above, Grand Canyon National Park’s primary mission is to preserve and protect its natural and cultural resources. The planning and design of any site in the park should therefore stand as an example of construction that fits within its natural and cultural environments. The choice of making a building sustainable should also recognize that the site should also “fit” with the existing landscape. However, that sustainable design and planning should also be compatible with the existing landscape, not just the natural environment but also the architectural history built around Puebloan sites and the historic buildings designed by such people as Charles Whittlesey and Mary Colter.

Functionally the SRM Campus is a warehouse/staging area for many of the park’s operations. A Science/Education Building is considered a “front stage” function that will attract visitors and provide for them an opportunity to learn about the Grand Canyon environment. The SRM Campus is a “back stage” site, primarily used for office, warehouse, and delivery functions. These uses provide constraints in trying to design the site to be sustainable and practical. Truck stops normally do not house sustainable, state of the art buildings.

Aesthetic composition of the GCNP Science and Research Building site will be followed, with the LEED criteria in mind, to reach a balance between visual quality and energy efficiency. The 1970

National Environmental Policy Act “contributes the most protecting, or at least considering, aesthetic values” to be considered within the National Parks (Whittaker, 1987. p.9).

4 Planning Goals

4.1 Preserve Natural/Cultural Landscapes.

This requires concern for not increasing the paved area, protecting the known archaeological site, and maintaining design compatibility with the existing landscape.

4.2 Restore Natural Landscape.

If there are opportunities to restore the existing natural landscape then they should be taken.

4.3 Complement Redesign of SRM Building.

The site plan should be complementary to the redesign of the building so that open space, pedestrian use, and resource conservation efforts should be as close as possible to a “seamless” continuity with the building. In some instances, for example, solar panels could be placed on site to generate electricity for building use.

4.4 Use Elements of LEED Where Possible.

Sustainable landscapes are important for both conservation and quality of life. The National Park Service has an additional moral need to demonstrate the best in design and planning practices. The Leadership in Energy and Environmental Design (LEED) program is sustainability assessment method created by the U.S. Green Building Council using criteria derived from the consensus of design and planning professionals based upon life cycle considerations and accepted environmental design principles and practices. So LEED assessment criteria will be used in this process. For planning larger sized units, however, the criteria are not as well developed as for building design and reconstruction, so reference will be made to the LEED Neighborhood Rating System which is in the pilot stage. This version incorporates the use of site sustainability within a working community, which the South Rim is.

4.5 Discover and Provide for Effective Site Function for all Users.

The NPS allows two other users to use the SRM Campus: Xanterra Corporation and the Grand Canyon Association. Both organizations have a significant presence in the location and use/access needs that were addressed in the site plan. Interviews with representatives of both groups were conducted and considered in the final concept plan. However the final decision is up to the client, GCNP, and considered in final concept plan.

5 Site Analysis



Figure 1 Aerial photo of the site. Scale = 1: 1 464/ 1"=122'. The disturbed area is 431,000 square feet.

5.1 Cultural/Natural Resource

- Juniper, pinion, and ponderosa trees surround the site along with native and foreign vegetation.
- The asphalt shows poor drainage patterning especially on the north side of the McKee building, where freezing temperatures can create a hazard in the winter months.
- An archaeological site is located to the south of Xanterra building 12 (THIS AREA MUST NOT BE DISTURBED)

5.2 Site Functions

- Large industrial warehouse buildings dominate the area.
- The entire landscape is almost entirely paved to facilitate access to all buildings by large trucks and trailers. Large semi trucks need ideal clearance to continue with unloading and loading.
- Water transportation truck and pump house.
- No separation of automobile, truck and pedestrian/bicycle traffic on site.
- Two bicycle trails leading to the site are paved.
- The trail on the east edge enters directly into the east parking area on the site.
- The north bicycle trail does not enter the site but connects with an informal path onto the site.
- Fed Ex and UPS drop off center is in Building 10 (Xanterra).
- Large garage southwest of the gas tanks is a bus wash.
- Small garage next to bus wash is a car wash.
- 2c GCA is used by GCA for maintenance.

5.3 Structures

- Eleven buildings are permanent structures.
- Six mobile storage containers have been identified; the contents are currently unknown
- Above ground gas tanks are used by GCNP. One holds diesel and the other three contain unleaded fuel.

5.4 Hazards

- No flood hazards
- Fire and explosion are a high hazard risks. There are many different fuel sources located on the Campus. Some are close to outlying forest.
- Fuel tanks on site are not well protected.
- Old propane shed is rusted and within the tree line.

5.5 Climate Considerations

Summer Averages: High 81°F Low 50°F Precipitation 6.03"

Autumn Averages: High 65° F Low 36°F Precipitation 5.25"

Winter Averages: High 47°F Low 22°F Precipitation 5.97"

Spring Averages: High 61°F Low 32°F Precipitation 4.12"

The Grand Canyon's South Rim is in the arid Southwest. This area experiences temperatures as high as 102° to a low in the negative twenties. Precipitation levels vary from times of drought where precipitation levels are less than 15" to times of flooding where levels can reach over 30" a year. The key consideration for the plan is the winter cold. Prevailing winds in the winter months are from the northwest with speeds up to 40 miles an hour. This greatly affects the wind chill factor making outside temperatures feel much cooler. Prevailing winds in the summer are southerly flows that usher in monsoonal storms. For planning purposes, the landscape configuration should protect from the winter winds (e.g. evergreen trees on the west) and allow the cooling effects of the south winds of the summer.

6 Design Considerations for the SRM Campus

Provide for a functional site respects the cultural history and natural appearance of the site that is also appropriate to the needs of GCNP, GCA, and Xanterra.

6.1 Cultural

Northern Arizona is a central southwest area that has many cultural mixtures. Early architects, such as Charles Whittlesey and Mary Colter, incorporated these values into their designs. The Bright Angel Trail Lodge is an example of early rustic arts and crafts influences in a rich traditional Pueblo blend to create a long lasting landmark built within the Grand Canyon.

6.2 Natural Appearance

"Take only pictures and leave only footprints." This quote is well known to many who frequent National Parks. Preservation of the natural landscape and esthetically pleasing built structures give many national parks their appeal. The Grand Canyon National Park has early structures that blend well with this natural theme. The site being evaluated is roughly a mile or two away from the South Rim development.

National Parks are areas preserved and maintained to protect our country's natural and historic sites. Built structures often blend with the natural scenery. The Lookout, designed by Mary Colter, and located on the edge of the South Rim is an example of this style. The use of natural, native building material allows for the structure to be perceived as rising out of the stone itself.

7 Conceptual Site Master Plan - Recommendations

The SRM Campus is a busy site with multiple types of traffic. Upon review the decision was reached that another site would better suit a new LEED certified Science and Resource building. Alternative sites have been reviewed and evaluated. Findings will be provided in a separate report on or before February 15, 2009. The following recommendations, if implemented, will help the

SRM Campus align more closely with LEED guidelines, helping to make GCNP South Rim a more sustainable and environmentally conscious park.

7.1 Green Belt of Natural Vegetation

Replacing some parking spaces between the existing McKee and the Museum Collections buildings with a green belt of natural vegetation, will obtain several LEED points. Planting native grasses, junipers and Ponderosa pines in this area will help eliminate carbon emissions, improve a drainage problem by allowing ground water to be replenished, and prevent wasted storm water runoff. This re-vegetated area will also offset heat island effects in the summer months created by the large area of asphalt. The asphalt removed through this process could be recycled to create berms to channel runoff and perhaps earn LEED points for reuse of materials.

Although this area is not large enough to earn LEED points it does improve this site's sustainability. (This area can be re-paved to allow better drainage if preferred. Drainage would need to go to existing green areas surrounding the site so as not to cause ponding and freezing in a different area.)

7.2 Bike Racks

The addition of bike racks will encourage users of the site to walk or ride to work, reducing carbon emissions.

7.3 Harvest Rainwater

Installing rainwater collection barrels with properly directed downspouts will keep the precipitation that falls onto the site on-site for future use during drier months and short bouts of drought (LEED p.118-119).

7.4 Solar Panels

The addition of solar panels on the McKee, Museum, and Xanterra Building 12 will provide energy to the site. This renewable energy could also direct excess electricity back to the grid when the buildings are operating under capacity. (Page 203 within the LEED New Construction & Major Renovation Guide covers the use of renewable energy sources including but not limited to solar.)

7.5 Temporary Storage Units

The removal of all temporary storage bins will allow better use for open areas in the future. (This open area is ideal to, in the future, house wind turbines for additional on-site renewable energy.)

7.6 Retain/Reuse the McKee Building

The remaining four bays on the west end of McKee will be left intact for storage and additional space for future needs. Retaining the existing McKee Building or reusing the footprint for a future facility will reduce the need for new construction materials and save time in the building process. The plan allows for the option of keeping the building intact. Material reuse at 5% is one LEED

point and a reuse of 10% gives an additional point. Furniture counts as well as structural materials (LEED p.263).

Table 1: LEED Points for Redesigned Site Plan

LEED CHECKLIST	Credit	Description	Points
SUSTAINABLE SITES			
Alternative transportation	4.1	Bicycle racks	1
Alternative transportation	4.4	Parking Capacity	1
Site Development	5.1	Protect or restore Habitat	1
Site Development	5.2	Maximize open space	1
Storm water Design	6.1	Quantity controlled	1
Storm water Design	6.2	Quality controlled	1
Heat island effect non-roof	7.1	Green belt	1
WATER EFFICIENCY			
Water efficient landscaping	1.1	Reduce by 50%	1
Water efficient landscaping	1.2	Use no potable or irrigation	1
ON-SITE RENEWABLE ENERGY			
12.5% + Renewable Energy	2.1	Solar panels	3

From the LEED New Construction v 2.2 Registered Project Checklist

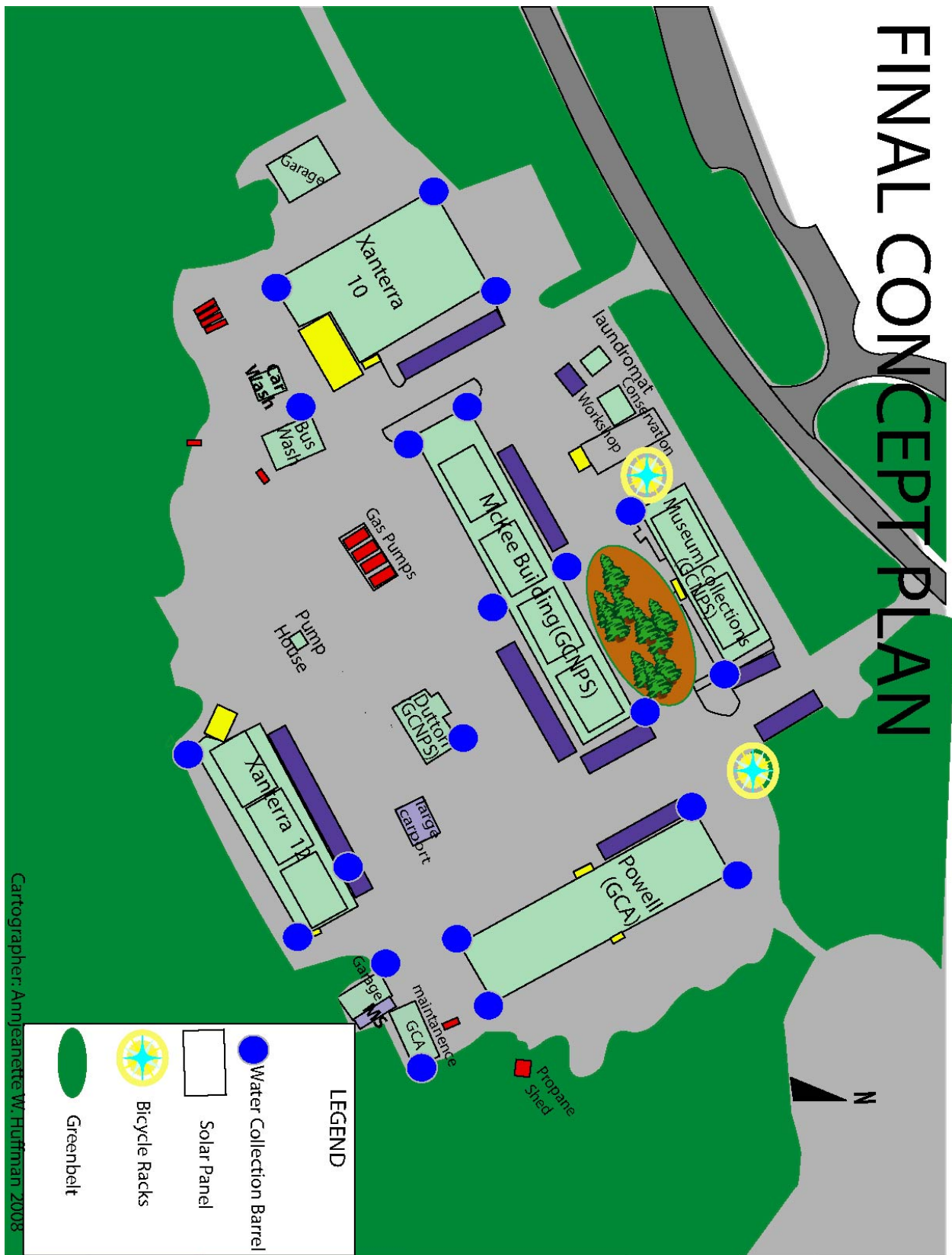


Figure 2. Recommended SRM Campus conceptual site master plan.

8 Conclusion

The SRM Campus offers a great space for future endeavors involving GCNP. Recommended changes to this site would be minimal but would provide optimal results. LEED points can be earned under several LEED criteria. The SRM Campus is predominantly used for storage, distribution and as a maintenance facility. The decision to maintain this site for these purposes allows GCNP to place the new SRM building in a more suitable site.

Five sites are under investigation for the new SRM building. The information gathered is currently being reviewed for an addendum to be released at a later date. (February 15, 2009) Three sites have potential for building a state of the art sustainable building.

The placement of the SRM building on a different site leaves future uses for the current SRM Campus to be considered. One option is to make the McKee Building into a recycling plant where glass, aluminum, and plastic is collected and bundled. This would provide jobs and increase revenue to the South Rim. This would also provide a centrally located place for recyclables to be collected and additional LEED points to be obtained. The changes to the SRM Campus will help the GCNP South Rim to become a more sustainable area of the park with relatively little effort. Because of the overall management and purpose of the GCNP the entire South Rim can be a model of sustainable planning and design. Helping the park to reach goals towards sustainability has been a positive experience.

References

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Appendix A

Notes from Interview with Jon Streit, Xanterra, Grand Canyon NP 8/10/08 (JLS)

Building #10 (west side) is used for purchasing and warehousing for the restaurants and hotels. Semi trucks and trailers usually come in early in the morning. Houses 12 staff.

Building # 12 (south side) is for warehousing for the retail stores. Houses 25 staff.

Bus wash building is for Xanterra and Paul Revere buses.

Smaller wash building is for smaller cars and pickups

The fuel tanks and pumps are for small vehicles (less than 16 feet) for Xanterra and NPS personnel, service about 90 vehicles total. The major concern with these is that they do not block truck or bus traffic, but Xanterra is flexible on where they go.

The enclosed area north of Building 10 is used by Xanterra for storage.

The “wooden building” next to the Conservation Workshop is the laundry.

The gates to the Albright Center never close.

Of the c. 37 personnel, all live in the park, most drive, some walk or ride bicycles.

Xanterra Issues:

Parking is an issue for Xanterra personnel, especially in front of Building 10 because that also serves as the pickup place for UPS and Federal Express deliveries (we saw 4 people stop for a short time to pick up packages in the 1.5 hours we were there). While it looks like there is too much parking for the Park Service personnel to the east, there is not enough for Xanterra staff.

There are no problems with wildlife.

There was some discussion that in the past, Xanterra was allowed to assume that the Powell and McKee Buildings would eventually be assigned to them. Their view is that the Albright Center is more of an industrial/warehouse area than one that will support visitors.

Because Buildings 10 and 12 were built with Xanterra funds, they have a commitment to use the area as a staging area for their operations.

The Park Superintendent has asked that Xanterra park up to 20 busses east of the Powell Building. Mr. Streit feels such parking would only be feasible in a one-way counterclockwise circuit around the Powell Building.

Truck access is a major issue because of the large vehicles, semi tractor/trailer rigs up to 45 feet. Trucks need areas to align to loading docks and back up safely.

Xanterra is shifting to compressed natural gas (CNG) in their buses and will need to build a special, explosion-proof building to fill-up and maintain the busses. Mr. Streit believes such a facility can be built at the edge of the lot south of Building 10.

The garage bay at the southwest end of the McKee Building is not of value to Xanterra, and they would rather see it torn down.

Potential Planning Solutions:

The fueling/maintenance building for CNG busses needs to be located and thought needs to be put into expansion of such a facility.

Tearing down the McKee SW bay and paving that area would provide a way for trucks and trailers to align themselves and back up to Building 10.

Moving the fuel tanks would also open up the area for trucks backing into the dock at Building 12.

The roadway between the Powell and McKee/ Dutton Buildings must be left open for trucks to Building 12 and busses to park behind the Powell Building.

Mr. Streit has no objection to removing the moveable storage units from around the Dutton Building.

The paved area between the Museum Collection and McKee Buildings are not important and can be closed.

Mr. Streit believes the trucks and trailers that presently drive through the paved area between the McKee and Dutton Buildings could maneuver through the area between the Dutton Building and Building 12 if the fuel tanks and moveable storage units were out of the way.

Ultimately the question has to be asked whether Xanterra will need to expand its support facilities, yet keep them concentrated in the Albright Center.

Appendix B

Notes from Interview with “Tricia” Grand Canyon Association 8/21/08

Powell houses the GCA warehouse used to redistribute to their bookstores throughout the Canyon.

Seven people work at this location.

One van, used for transporting merchandise, is located behind the warehouse.

Two cars are usually on site during the day.

Large trucks and semi’s frequent the loading bay on the west side.

The trucks need enough room to back into the dock.

They are concerned with some earlier options that would block the south driveway and prohibit their trucks from being able to back in to the dock.

2C Albright is used for GCA maintenance.

Propane shed is a hazard waiting to happen.

One building marked as “Shed” is actually a water pump house.

Someone from the NPS has been getting rid of the stuff behind the GCA building, which is nice.

Planning Issues for Grand Canyon Association:

GCA needs access to the west loading dock on their building for semi trucks and trailers, which use the space between McKee and Dutton to align before backing up.

Fuel tanks are fire and explosion hazards.

GCA buildings are used and staffed by up to 7 people; mostly two staff is on duty at any time during the day.

Appendix C

Concept Maps With Options



Concept Map A1 Options

1. Change nothing leave site as is.
2. Update existing McKee Building.
3. Fill asphalt in north parking area of McKee to encourage better drainage.
4. Add Water harvest barrels.
5. Place solar panels on McKee, Museum Collections building and Xanterra Building 12.
6. Remove temporary storages.

Concept Map A2 Options

1. Remove eastern 2/3 of McKee building.
2. Foot print option, reuse existing footprint for SRM building.
3. Relocate gas pumps to south area.
4. Leave west four bays of McKee building.
5. Place area between buildings for drive through.
6. Close off both north and south driveways around McKee.

7. Use of trees and green belts to accomplish above stated.
8. Bus parking.
9. Later area for CNG garage (Xanterra)
10. Relocate mobile storages.

Concept Map A3 Options

1. Close off driveway between Museum Collections and McKee with green belt and trees.
2. Replace three parking spaces.
3. Relocate gas pumps to the south.
4. Demo entire McKee building saving materials to be reused on site or in the construction of the new SRM building.
5. Remove propane shed.
6. Widen area of vegetation on the north and south sides of the GCA building.
7. Park Xanterra buses behind the GCA building.
8. Footprint option for new SRM Building.
9. Remove all remaining mobile storage containers.
10. Add bicycle racks.
11. Pave small pathway at north.

Concept Map A4 Options

1. Build new SRM building in a location closer to the Rim where its design can be seen and appreciated, as well as allowance for more public access.
2. Leave SRM Campus as it is an industrial/ warehousing district
3. Remove existing McKee building.
4. Bus parking in north section.
5. CNG Garage (Xanterra) By Building 10.
6. Add solar panel field.
7. Repair north parking area south of Museum Collections.
8. Use rain water harvest barrels for all remaining permanent buildings.
9. Replant green belt areas with native plants, grasses and wildflowers.

Appendix D

Park Service Response to Concept Plan Alternatives



United States Department of the Interior

NATIONAL PARK SERVICE

GRAND CANYON NATIONAL PARK

P.O. BOX 129

GRAND CANYON, ARIZONA 86023-0129

IN REPLY REFER TO: SRM Campus

September 16, 2008

Sonya Malkhassian

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PO Box 15600

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Dear Sonya:

This letter is in response to your second draft of the Science and Resource Management (SRM) Campus Comprehensive Plan, submitted on September 2nd, 2008. The purpose of this letter is to provide comments on the SRM campus comprehensive plan, as put together by the NAU design team, and to make specific recommendations as far as selecting alternatives from the planning, transportation, and the McKee building redevelopment sections of the plan that would be conducive to an on-site development alternative. In addition, the Grand Canyon National Park (Park) would like to offer its own recommendations for an off-site alternative, including potential locations for a new SRM campus. We would also welcome any general comments on any or all of the potential new locations selected.

To begin with, it is understood that the present site of the SRM campus is, unfortunately, situated in an industrial area, and that there are certain needs inherent to an industrial area that must be met, and are certainly limiting factors in the redesign of this campus. However, with the majority of these needs belonging to Xanterra and Grand Canyon Association (GCA) and not to National Park Service (NPS), it should be stated that the SRM campus is located on NPS lands, as are the surrounding warehouses, NPS or not. This being said, it should not be the needs of non-NPS entities within the project area that are driving the entire planning effort for the redesign of this NPS campus. As long as reasonable access and accommodation can be met for non-NPS parties (parking, truck access), we believe that the redesign of this campus still has many viable options beneficial to NPS and should not be limited by the demands of non-NPS parties.

Given many of the existing conflicts associated with the current site location of the SRM campus, we feel that exploring an alternative that includes moving the SRM campus to a different location on the south rim is, as of now, our preferred alternative. We understand that analyzing new locations for potential sites for the SRM campus includes factors specific to each location, and will take a great effort. We also understand that this is not a part of this effort, but we would like to include 5 different locations of potential sites that the SRM campus could move to, and solicit a few, very general comments regarding LEED as well as pros / cons (proximity to shuttle bus access, residential areas, utilities, customers, parking, access, solar aspect, etc.), suited to each location from a planning standpoint as well as a transportation standpoint. We don't feel that selecting a new location for the SRM campus will drastically change the design of the building, but do welcome any comments that could affect the design.

We agree that this is a very well put together report, and is definitely very thorough as far as exhausting many alternatives and proposing many new alternatives for redesigning the SRM campus. We also feel that this report shall provide us with much of the needed information to proceed with exploration of a new off-site location, as well as leave us with an implement able on-site alternative. Specific comments are as follows:

- Your description of the site as presently used was very accurate.
- This project should be referred to as the Science and Resource Management Campus rather than the SRM Campus.
- The planning goals stated in section 4 of planning section are very important things to keep in mind, and are consistent with our preferred alternative of moving the location of the SRM. We appreciate your use of them. If analysis of a new offsite location is done, these goals are more important to keep in mind within the boundary of the National Historic District.
- Under planning goal 4.4, considering on-site redevelopment and off-site development of the SRM campus, how does the LEED Neighborhood Rating System differ from

reconstruction the existing building to constructing a new campus off-site, and does the Neighborhood rating system help in achieving LEED points or in certification?

- Under planning section 9, maps, map A2 and A3, is there sufficient parking available for NPS staff at the new McKee building?
- Concept maps A2 and A3 propose a new CNG station for Xanterra purposes. While it is part of the overall concept of this site's development, a new CNG station location for non-NPS buses shall be left to the concessionaire's of buses needing CNG, and need not be anticipated in site planning at this location.
- Concept map A4, relocation of the SRM campus, is our preferred alternative. Anything beyond moving the site shall be up to the new lessees. Your list of ideas shall be passed along if this course is pursued.
- Only one viable transportation alternative is presented, alternative C. It is agreed that this alternative addresses the current needs of all users of the site, and anticipates future needs. However, multiple aspects of the planning conceptual maps are not implement able with only 1 transportation alternative.
- Our selected alternative for on-site development is as follows;
 - 9.1.3, better grade the area north of the McKee building
 - 9.1.4, add rain harvest barrels where possible
 - Please help in describing most efficient use of harvested water
 - 9.1.5, place solar panels on buildings
 - 9.1.6, remove temporary storage containers
 - 9.2.1, remove eastern 2/3 of McKee Building
 - 9.2.2, footprint option 2
 - 9.2.4, leave last for bays of McKee
 - 9.2.5, leave a space between new McKee and existing
 - 9.3.10, add bicycle racks
 - This selected on-site alternative is most directly consistent with needs stated in transportation plan alternative C.
 - We consider using footprint option 1 in this selected alternative if it could be made conducive to truck docking at GCA, and we believe that it can.
- Many Xanterra and GCA comments in their interview could be viewed by NPS as speculation and not necessarily demands for driving an alternative, such as bus parking, multiple truck access to warehouses, etc.
- Part B, transportation plan, section B- while it is desirable to move the fueling station from this location to a different on-site location, it is a reality that this site location for the fueling station works very well for NPS. An off-site location for the fueling station would be most desirable if an on-site overall alternative is done, if not, NPS would like the fueling station to remain in current location.
- Part C, McKee building redevelopment, part 5, floor plan options, it is important to have this section remain flexible for site specific design adaptations. This project, at this point, will probably not be a building redesign, but a new building. What general characteristics in design must be considered?

- Selected alternative under section C, McKee building redevelopment, is alternative 1, as is.

We thank you very much for your efforts, and the opportunity to comment on your hard work. I shall enclose a copy of the comments submitted to me by Jon Streit on this report, in addition to a separate pdf file containing 5 new locations, ranked in order, on the south rim for the new campus location. All 5 new locations have been selected because they were previously disturbed or are currently disturbed sites. All 5 sites are each very viable options for a new location. Many of the new sites shall require continued use of the Powell building as storage, and keeping the Dutton building as an overnight house.

If you have any questions, please don't hesitate to call me, Phil Fessler, at 774-1239, or email at phil_fessler@nps.gov. I will be happy to get with you as a group or individually to work on specific items. We look forward to seeing your final report.

Sincerely,

/s/ Phillip A. Fessler, PE

Civil Engineer / Project Manager

Grand Canyon National Park

