

**PETITION TO PRESERVE ARCH CANYON'S  
NATURAL AND CULTURAL HERITAGE**



**SUBMITTED BY:  
SOUTHERN UTAH WILDERNESS ALLIANCE  
NAVAJO UTAH COMMISSION  
GREAT OLD BROADS FOR WILDERNESS  
FAR OUT EXPEDITIONS  
WILD RIVERS EXPEDITIONS  
CALF CANYON BED & BREAKFAST**

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# PETITION TO PRESERVE ARCH CANYON'S NATURAL AND CULTURAL HERITAGE

## EXECUTIVE SUMMARY

### **The Resources, the Threats, and the Solution**

Arch Canyon, situated on the northern edge of Cedar Mesa, contains spectacular and significant cultural resources that will add important information to the story of previous civilizations. Prehistoric civilizations were present in the Four Corners area for thousands of years and beginning about 2,000 years ago engaged in a remarkable transformation from itinerant hunters and gatherers to sedentary farmers. Some settled in southeastern Utah's Arch Canyon. No longer were they dependent on moving from resource to resource; instead these early residents could manipulate their environment to grow food. This extended habitation resulted in the spectacular ruins that have captured the imagination of generations who have come since, and who gaze in wonder at how a society could become so large and complex in an area where farmers today struggle just to make ends meet.

Arch Canyon's extensive riparian area and perennial stream no doubt attracted the Ancestral Puebloans and provided a setting for agricultural practices that could not be sustained in many of the region's other canyons. Although only a handful of archaeological sites in Arch Canyon have been identified and recorded, based on recent surveys it is estimated that there are likely more than 100 sites in the canyon. Incredibly, the vast majority of this rich cultural heritage remains undocumented, with its stories not

yet told. Chapters of this story are at risk of being lost through intentional and inadvertent actions as a result of increased off-road vehicle (ORV)<sup>1</sup> use in Arch Canyon.

The stream in Arch Canyon that attracted Ancestral Puebloan farmers continues to flow today, making the canyon a very rare and a valuable natural resource in the arid desert of southeastern Utah. In fact, riparian areas make up less than 1% of Utah's public lands, yet they support 75-80% of all wildlife species. Three native fish species, including one state sensitive species, reside in Arch Canyon. One or more of these may be "relict" species – generally unique from other populations due to being separated from the species' larger gene pool in bigger rivers for perhaps millions of years. Yet, vehicles that travel up this canyon cross the stream 60 times in the short eight and one-half mile trip from the mouth of the canyon to the U.S. Forest Service boundary – or 120 stream crossings for the round trip. While the Bureau of Land Management (BLM) is allowing the use of ORVs in this rare riparian habitat, the U.S. Forest Service – which manages the upper reaches of Arch Canyon – prohibits motor vehicle use at its boundary to protect cultural and natural resources.

Over the past four years, ORV registrations in San Juan County have increased 252%. Not surprisingly, ORV use in Arch Canyon and on the surrounding public lands has dramatically increased during this same period. In fact, ORV advocacy groups are targeting Arch Canyon for use in ORV events. New ORV routes are being pioneered along the stream and to archaeological sites, potentially damaging prehistoric middens along the way. Undocumented cultural resources that make Arch Canyon an important area for scientific study of Ancestral Puebloan agricultural practices are in harms way.

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<sup>1</sup> The term "ORV" will be used in this Petition to denote dirtbikes, all-terrain vehicles (ATVs), quad-runners, high-clearance jeeps and trucks, rock crawlers, and other similar 4-wheel drive vehicles. See 43 C.F.R. § 8340.0-5(a) (defining off-road vehicle).

The preservation of Arch Canyon is likewise important to current-day Native Americans' cultural and spiritual values. The rocks, plants, and animals are all part of the balance of life to many Native American Tribes. In addition to causing impacts to cultural resources and Native American values, ORV use in Arch Canyon is currently causing and will continue to cause adverse impacts to the rare and extensive riparian area, including stream bank erosion, loss of vegetation, increased sedimentation, lowered water tables, and most certainly impaired fish habitat.

The Southern Utah Wilderness Alliance, in partnership with the Navajo Utah Commission, Great Old Broads for Wilderness, Far Out Expeditions, Calf Canyon Bed & Breakfast, and Wild Rivers Expeditions, (collectively referred to as "SUWA") are petitioning the BLM – pursuant to Executive Orders 11644 and 11989, and to BLM regulations 43 C.F.R. §§ 8341.2, 8342, and 8364.1 – to restrict ORV use in Arch Canyon and along the canyon's rims. BLM must immediately close the area defined on the attached Map (Exhibit A) to ORV use in order to protect the cultural and natural resources and eliminate the adverse effects caused by ORV use.<sup>2</sup>

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<sup>2</sup> The Hopi Tribe also supports SUWA's Petition and requests immediate interim closure of Arch Canyon and the canyon rims to ORV use, pending consultation with the BLM on issues raised in SUWA's Petition and the Hopi Tribe's subsequent assessment, in order to preserve and protect the cultural resources in Arch Canyon.



Archaeological site in Arch Canyon.



Perennial stream in Arch Canyon.

## 1. Cultural Resources at Risk

Arch Canyon is particularly rare in the canyon country of southeastern Utah. The canyon has a perennial water source that appears to have been the focus of intense prehistoric occupations by Ancestral Puebloan farmers, resulting in spectacular architectural remains along the canyon bottom and at various higher cliff levels. Remnants from this occupation include residential structures and shelters, possible defensive structures, storage granaries, elaborate petroglyphs and pictographs, pottery and ceremonial artifacts. Unfortunately, the vast majority of the cultural resources in and near Arch Canyon has not been documented, has no protective management prescriptions in place, and is at risk from intentional and inadvertent damage.

The ORV route that leads up the bottom of the canyon provides easy access to many of these archaeological sites. The abundance of visually impressive archaeological sites combined with this easy vehicular access has brought about greater levels of public visitation than is seen elsewhere in the region. This ease of access has also resulted in increased damage and adverse impacts to Arch Canyon's cultural resources, including wanton vandalism, illegal collecting of artifacts, and inadvertent damage by visitors unaware of proper site etiquette. Jerry Spangler, a professional archeologist, has studied the relationship between motor vehicle access to cultural sites and damage to cultural resources and concluded that

there is a direct relationship between unrestricted vehicular access and site vandalism. Areas inside the [ ] controlled access points had significantly less evidence of adverse impacts caused by illegal or inappropriate human activities, whereas cultural sites located outside controlled access points have been seriously damaged and in some cases destroyed. These data suggest that individuals engaged in illegal activities use mechanized vehicles to arrive at their targeted

sites, and that illegal activities typically occur within 200 meters of an existing road.

Jerry Spangler, Site Condition and Vandalism Assessment of Archaeological Sites, Lower and Middle Arch Canyon, San Juan County, Utah, (October 2006), at 42, (emphasis added) (statement based on Mr. Spangler's recent study in Range Creek, Utah), attached as Exhibit B.

Mr. Spangler recently conducted two on-the-ground surveys of the cultural resources in Arch Canyon: 1) a re-documentation of the nine previously recorded sites and 2) a narrowly-focused intuitive survey in a short section of Arch Canyon. In re-documenting the nine previously recorded sites, Mr. Spangler inadvertently discovered five new sites. In the narrowly-focused survey, Mr. Spangler documented nine new sites on both sides of the canyon (previously documented sites were on the north side only) in a short segment of the canyon only 0.7 linear miles long, and previously undocumented features were identified at two previously recorded sites. *Id.* at 1, 2, and 9.

Based on Mr. Spangler's work in Arch Canyon, he concludes that:

Cultural resources in Arch Canyon area will continue to deteriorate without an aggressive management plan that includes public outreach, limitations on vehicular access, site stabilization and better management of pedestrian traffic on and around significant sites.

*Id.* at 1.

Mr. Spangler further states that all of the sites that he examined and identified are eligible for the National Register of Historic Places. His findings include the following:

- The sites collectively contribute to a broad understanding of ancestral Puebloan prehistory during Pueblo II and Pueblo III times, particularly as it relates to human adaptations in the Cedar Mesa and Cockscomb areas.
- The sites reflect the distinctive characteristics of Ancestral Puebloan architecture evident throughout the region from about A.D. 1100 to 1300. The sites have high

architectural values, characterized by exceptional stone and adobe masonry construction that has survived more than seven centuries.

- These sites have significant potential to yield information important to prehistory. Little is known about how prehistoric agriculturalists adapted to this arid environment. Sites in Arch Canyon offer significant potential to researchers attempting to explain how prehistoric groups responded to social and environmental changes through time, and to explain why agricultural lifeways were abandoned after thriving for many centuries.
- It is also highly probable that subsurface deposits in Arch Canyon will yield new insights into prehistoric groups who occupied the canyon prior to the Pueblo II-Pueblo III occupation, and later hunter-gatherers who superseded them.

*See id.* at 41-42.

Based on Mr. Spangler’s survey work, he estimates that there ***could be in excess of 100 sites located along the approximately eight and one-half (8.5) miles of BLM-managed lands in Arch Canyon, with the majority of sites located along the base of the first cliff level and along the first bench above the floor of the canyon.*** *See id.* at 19.

The many undocumented cultural sites in Arch Canyon bear out the recent findings reported by the National Trust for Historic Preservation that only six percent (6%) of BLM-managed lands have been surveyed for cultural resources. National Trust for Historic Preservation, Cultural Resources on the Bureau of Land Management Public Lands, authored by T. Destry Jarvis, President, Outdoor Recreation & Park Services, LLC (May 2006), attached as Exhibit C. And, although “approximately 263,000 culturally-significant sites have been found [on BLM-managed lands] . . . ***archeologists think that there may be 4.5 million not yet identified – much less protected, preserved, monitored, and interpreted.***” Richard Moe, President of the National Trust for Historic Preservation, Address to the City Club of Denver, Historic Preservation: An Unfinished Agenda in the West, (May 16, 2006), attached as Exhibit D.





Archaeological site in Arch Canyon.



Archaeological site in Arch Canyon.



Rock art panel in Arch Canyon.



Archaeological site in Arch Canyon.

Mr. Spangler is particularly concerned that BLM does not know how many or what types of sites exist in Arch Canyon:

Current BLM management strategies are predicated on previous research that was clearly inadequate, and little effort has been expended to determine the nature, density and distribution of sites throughout the canyon. The degradation of significant sites clearly eligible for the National Register of Historic Places remains a serious problem that warrants aggressive management.

*Id.* at 1 (emphasis added).

Based on the significance of the sites documented by Mr. Spangler, the estimated number of undocumented sites in Arch Canyon, and the fact that BLM is allowing ORV use in Arch Canyon – potentially in very close proximity to cultural resources – Mr. Spangler strongly recommends that BLM restrict ORV use in Arch Canyon:

Given the potential for significant numbers of undisturbed archaeological sites of National Register significance in the Arch Canyon drainage, the BLM should restrict vehicular access in Arch Canyon to administrative, law enforcement and research purposes only as an appropriate strategy to protect the long-term integrity of sites in all areas above [ ] at the mouth of the canyon. All trails, especially those into sensitive areas with potential cultural deposits, should be closed and the closures enforced. The archaeological values evident on the slopes below architectural sites and along the edges of the floodplain – all areas accessible to mechanized vehicles – remain poorly understood and have not been adequately documented. There remains a high potential that at least one major site with National Register eligibility could be directly impacted by off-road activities in the future [ ]. It is anticipated that additional sites will be located along the existing ORV route and could be directly impacted by vehicular activities.

*Id.* at 42.



Archaeological site in Arch Canyon.



Elaborate pictograph panel at a previously undocumented site in Arch Canyon

## 2. Valuable Riparian Resources and Relict Fish Species Adversely Impacted by ORV Use

### a. Arch Canyon's Exceptional Riparian Area is Being Harmed

Riparian areas are “*the most important, productive, and diverse ecosystems, yet they comprise less than one percent of the approximately 22 million acres of public lands administered by the Bureau of Land Management (BLM) in Utah.” Utah Riparian Management Policy, IM UT-2005-091 (Riparian Policy) at 1 (September 8, 2005) (emphasis added). The Utah Division of Wildlife Resources estimates that riparian areas *support 75-80% of all wildlife*. Charles Schelz, Arch Canyon Assessment and Management Recommendations, at 1 (August, 2006) (*citing* Utah Division of Wildlife Resources (1997)) attached as Exhibit E.*

*Arch Canyon's riparian area has been recently assessed as “Functioning at Risk” with a downward trend. See Schelz, at 10, 31, 47-48. The primary cause for this alarming assessment is the existing ORV route that traverses the floodplain,* according to Charles Schelz, biologist, botanist, and ecologist with 19 years of experience in designing protocols and monitoring ecosystems in southeastern Utah and around the western United States. *See id.* at 31, 47-48. Mr. Schelz recommends that in order to reverse the downward trend and to return the riparian zone to a more ecologically balanced system, BLM must:

Close the 4-wheel drive route and keep motor vehicles and bicycles out of Arch Canyon.

\* \* \*

[I]f the road remains, the downward trend will continue and the system will eventually degrade further. Sections of the channel that now handle spring runoff and summer floods easily will become unstable and erode.

*Id.* at 38, 40 (emphasis added).

The ORV route in Arch Canyon has caused significant adverse impacts to the riparian area. As Mr. Schelz notes:

Many sections of the riparian areas of Arch Canyon that contain the 4-wheel drive route are at risk of becoming non-functional in their present state of increased erosion and scouring. These at-risk sections lack productive habitat for fish, amphibians, aquatic organisms, and wildlife. They no longer dampen flood peaks or assist in recharging subsurface aquifers. There is evidence of a lowered water table in areas where once-productive wet meadows are now occupied by sagebrush, cheatgrass and other typical upland plants.

*Id.* at 38.



Jeep crossing stream in Arch Canyon.



Jeep crossing stream in Arch Canyon.



Same stream crossing (as previous photo) after large flood event in October 2006 scoured ORV route.

Mr. Schelz reports that multiple negative effects of vehicle routes in riparian areas are related by a *cascading sequence of cause and effect*. The cascade begins when vehicle tires cross the stream bank – vegetation is crushed and eliminated, which allows more soil to erode and the velocity of high water flows to increase. The subsequent scouring effect uproots downstream vegetation and can decrease the naturally meandering nature of the stream channel. *See id.* at 31-32. The adjacent floodplain is also affected as flood events are not spread out and slowed down by stream bank vegetation, resulting in a decrease in groundwater recharges:

The 4-wheel drive route then becomes a “storm water discharge conduit,” causing scouring, lateral cutting between the 4-wheel drive route and the original stream channel, straightening of the channel where the 4-wheel drive route cuts off a natural meander, increased water velocity, and reducing the amount of potential floodplain infiltration and recharge. With diminished sediment in the stream channel and less ground water recharge in the floodplain, in-stream flow is lowered during low flow periods – negatively affecting aquatic habitat. Ultimately, the final loser in this cascade of events is native biodiversity.

*Id.* (emphasis added).





Overhanging streambank severely eroded by ORV route crossing – one of 60 crossings in Arch Canyon.



ORV route crossing stream has damaged streambank and vegetation in Arch Canyon.

Unfortunately, most of the adverse impacts predicted by Mr. Schelz's initial report were borne out in Arch Canyon after the heavy rainstorms and flood events of October 2006. Mr. Schelz's assessment of the damage is that:

The heaviest damage was documented in areas where the floodwaters jumped from the channel, and instead of spreading out over the floodplain, as would occur in a properly functioning system, were quickly diverted by the presence of an unvegetated and entrenched 4-wheel drive route that crosses the channel 60 times in 8.5 miles. This interception of the floodwaters by the 4-wheel drive route contributed to a substantial increase in flow velocity and energy because the waters became constricted and concentrated within the artificial channel created by the 4-wheel drive route.

Charles Schelz, Addendum to Arch Canyon Assessment and Management

Recommendations, at unnumbered 0, (December 2006), attached as Exhibit F.

Mr. Schelz's assessment concludes that the existence of the ORV route in the canyon bottom

contributed to substantially more erosion than what would have occurred if the 4-wheel drive route didn't exist, and it greatly increased the destruction of vegetation and streambanks, in particular in areas where the 4-wheel drive route crosses the stream channel. There are many areas where the stream channel has widened due to streambank failure and vegetation loss during these floods. All of this has contributed to the further loss of riparian habitat, and in particular, fish habitat, upon which the flannelmouth sucker and the bluehead sucker depend for survival.

*Id.* (emphasis added).



Heavy damage to floodplain due to ORV route. Floodwaters jumped from the stream channel and rather than spreading out over the floodplain, as would occur in a properly functioning system, the floodwaters were diverted by the ORV route and quickly scoured and entrenched the route - several feet deep with roots exposed. This occurred in many places along the route, contributing to a substantial increase in flow velocity and substantially more erosion.

**b. Arch Canyon’s Sensitive Fish Species Are at Risk**

The stream in Arch Canyon supports three native fish species, including the flannelmouth sucker, a state sensitive species. The presence of fish the size of the flannelmouth sucker in a canyon as small as Arch Canyon is extremely rare, especially where there is no continuous connection to a larger river. Indeed, according to Mr. Schelz, these fish could be *“relict” populations that have been separated from the species’ larger gene pool for over a million years, making them genetically unique and likely candidates for listing under the Endangered Species Act in the near future.* See Schelz at 4 (August 2006).

According to Mr. Schelz, the presence of a disjunct population of the sensitive flannelmouth sucker in Arch Canyon

[d]istinguishes the canyon as unique in the area, and as such this canyon should be afforded special status and increased protection against human-induced impacts. [ ] The most serious impact to the flannelmouth sucker is probably the loss of suitable habitat due to the destruction of the streambanks and vegetation by motor vehicles and the accelerated erosion process caused by the presence of a 4-wheel drive route that crosses the stream at least 60 times.

*Id.* at 37 (emphasis added).

The Utah Division of Wildlife Resources states that a petition for listing one or more of the fish species found in Arch Canyon under the Endangered Species Act is expected, and that efforts to study and protect these species are needed. Utah Department of Natural Resources, Div. of Wildlife Resources, Surveys to Determine the Current Distribution of Roundtail Chub, Flannelmouth Sucker, and Bluehead Sucker Conducted During 2005, at 1 (December 2005)

Mr. Schelz concurs with the Utah Division of Wildlife Resources that these fish species need to be studied and that BLM should:

Fund research studies of the fish of Arch Canyon and in particular the flannelmouth sucker and the bluehead sucker. Research should focus on their movement patterns, habitat needs, and how long the flannelmouth suckers have been isolated from other populations. Comparative genetic studies are recommended. . . .Institute additional measure to protect the fish populations in Arch Canyon.

Schelz at 41 (August 2006) (emphasis added).

Mr. Schelz's post-flood assessment of the Arch Canyon riparian system concludes that the presence of the ORV route, in association with the heavy floods, resulted in increased loss of fish habitat. *See* Schelz, at unnumbered 0 (December 2006).



Flannelmouth sucker in pool in Arch Canyon.

### **3. Solution: Protecting Arch Canyon**

Pursuant to existing Executive Orders and federal regulations applicable to BLM's management of public lands, the agency must take immediate action and *close the Arch Canyon area, (as defined on the Arch Canyon Natural and Cultural Heritage Petition Area Map, Exhibit A) to ORV use in order to protect the cultural and natural resources and to eliminate the adverse effects caused by ORV use in the canyon and on the canyon rims.*

In addition, SUWA incorporates the recommendations of scientific experts and requests that BLM take the following steps to protect Arch Canyon:

- Implement a permit system so that non-motorized visitors to Arch Canyon must identify themselves by name and address.
- Designate pedestrian trails to archaeological sites to avoid damage to potential midden areas and exposed artifacts.
- Commit to comprehensively document the cultural resources in Arch Canyon.
- Restore sections of Arch Canyon where ORV use has created areas susceptible to erosion, especially where the ORV route crosses the stream channel.
- Fund research studies of the three native fish species in Arch Canyon, including comparative genetic studies.
- Institute management measures to protect the fish populations, especially the flannelmouth sucker and the bluehead sucker, and enhance their habitat.
- Inventory for macroinvertebrates, frogs, toads, and salamanders.

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## LIST OF EXHIBITS

A – Arch Canyon Natural and Cultural Heritage Petition Area Map

B – Jerry Spangler, Site Condition and Vandalism Assessment of Archaeological Sites, Lower and Middle Arch Canyon, San Juan County, Utah, (October 2006)

C – National Trust for Historic Preservation, Cultural Resources on the Bureau of Land Management Public Lands, authored by T. Destry Jarvis, President, Outdoor Recreation & Park Services, LLC (May 2006)

D – Richard Moe, President of the National Trust for Historic Preservation, Address to the City Club of Denver, Historic Preservation: An Unfinished Agenda in the West, (May 16, 2006)

E – Charles Schelz, Arch Canyon Assessment and Management Recommendations, August, 2006

F – Charles Schelz, Addendum to Arch Canyon Assessment and management Recommendations, December, 2006

G – BLM Correspondence, November 16, 2006

H – S.P.E.A.R. Sponsors Road Repair Efforts in Beautiful Arch Canyon, San Juan Record, November 29, 2006

I – Strategic Paper on Cultural Resources "At Risk", Information Bulletin No. 2000-136, June 2000

J – Southern Utah Wilderness Alliance, Preserving Prehistory (2002)

K – Utah Department of Natural Resources, Div. of Wildlife Resources, Surveys to Determine the Current Distribution of Roundtail chub, Flannelmouth Sucker, and Bluehead Sucker Conducted During 2005, (December 2005)

L – Declaration of Dan Kent, December 19, 2006

M – Declaration of Lynell Schalk, December 20, 2006

N – Utah Off Highway Transactions by County and Fiscal Year 1998-2004, Utah Div. of Motor Vehicles (1998-2004)



## **PETITION TO PRESERVE ARCH CANYON'S NATURAL AND CULTURAL HERITAGE**

### **I. INTRODUCTION**

#### **1. Arch Canyon's Natural and Cultural Resources**

Arch Canyon carves its way through a great dome of slickrock rising above Comb Wash opposite Comb Ridge, the imposing 600-foot-high sandstone monocline that stretches 90 miles from northern Arizona to southern Utah's Abajo Mountains. Arch Canyon is on the northern periphery of Cedar Mesa, and on the southeastern flanks of the Abajo Mountains in southeastern Utah. *See* Arch Canyon Natural and Cultural Heritage Petition Area Map, attached at Exhibit A. Although the National Park Service recommended National Monument protection for Arch Canyon as early as 1937, and even though the upper four miles of Arch Canyon are managed as part of a roadless area by the U.S. Forest Service, this spectacular area has not received significant or protective management attention from the Bureau of Land Management (BLM).

Arch Canyon's redrock walls, cliffs, spires and arches frame the course of Arch Canyon Creek, an extensive riparian and wetland area that supports a diverse array of native vegetation, wildlife, and at least three (3) species of native fish (flannelmouth sucker, bluehead sucker, and speckled dace), including one (1) state sensitive species, the flannelmouth sucker, which is very likely to be petitioned for listing under the Endangered Species Act in the near future. *See* Utah Department of Natural Resources, Div. of Wildlife Resources, Surveys to Determine the Current Distribution of Roundtail

Chub, Flannelmouth Sucker, and Bluehead Sucker Conducted During 2005, at 1 (December 2005). Along its meandering course from the Abajo Mountains to its eventual confluence with Comb Wash, the stream is bordered by Douglas fir, ponderosa pine, pinyon pine, juniper, cottonwood, and willow trees, as well as gambel oak, manzanita, sumac, cliffrose, sagebrush, buffalo berry, Utah serviceberry, rabbitbrush, rice grass, snakeweed, arctic rush, salt grass, reedgrass and riparian reeds and rushes. Arch Canyon also supports well-developed macrophyte, periphyte, and aquatic macroinvertebrate communities. Golden eagles, peregrine falcon, and hawks can be observed diving and wheeling between the canyon walls, and the calls and notes of songbirds can be heard as they flit between trees and shrubs scattered from the stream banks to the canyon walls. Mountain lions, bobcat, coyote, ringtailed cats, and wild turkeys make their homes amongst the native plants that grow on the benches and along the cliffs and crevices of Arch Canyon. Arch Canyon is potentially suitable habitat for the southwestern willow flycatcher, is designated as critical and suitable habitat for the Mexican spotted owl, and is being used by foraging owls. *See Final Designation of Critical Habitat for the Mexican Spotted Owl*, 69 Fed. Reg. 53182 (Aug. 31, 2004). A portion of upper Arch Canyon has been designated as a Mexican spotted owl primary activity center (PAC).

**a. Cultural Resources Threatened**

Arch Canyon is particularly rare to the canyon country of southeastern Utah in that it has a perennial water source that appears to have been the focus of intense prehistoric occupations by Ancestral Puebloan farmers. This in turn resulted in

spectacular architectural remains along the canyon bottom and at various higher cliff levels. *See* Jerry Spangler, Site Condition and Vandalism Assessment of Archaeological Sites, Lower and Middle Arch Canyon, San Juan County, Utah, at 1 (October 2006).

Arch Canyon has a wealth of cultural resources, including residential and storage structures, and elaborate petroglyphs and pictographs. These sites offer significant potential to researchers attempting to explain how prehistoric groups responded to social and environmental changes. *See id.* at 18-41. In addition, Arch Canyon's many undocumented sites can potentially provide information about prehistoric agricultural practices and perhaps help explain why these were abandoned after thriving for many centuries. *See id.* at 41-42.

For more than a century, the impressive cultural resources of the Cedar Mesa region of southeastern Utah have been of keen interest to professional researchers, amateur enthusiasts, and pot-hunters who have sought to acquire and profit from valuable Pre-Columbian artifacts. *See id.* at 1. The vehicle route that leads up the bottom of Arch Canyon provides easy access to many of these archaeological sites. The abundance of visually impressive archaeological sites combined with this easy vehicular access has resulted in greater levels of public visitation than is evident elsewhere in the region. This, in turn, appears to have resulted in much greater levels of adverse impacts to cultural resources, including wanton vandalism, illegal collecting of artifacts, and inadvertent damage by visitors unaware of proper site etiquette. *See id.* There is an extremely high potential for unidentified and undocumented cultural sites and related prehistoric middens to exist along the ORV route in the bottom of the canyon in the floodplain. *See id.* at 2. Such sites are at risk of damage from ORVs both along the main

route and on the spur routes that have been created to access cultural sites near the benches. *See id.* at 34-42

Unfortunately, the vast majority of the cultural resources in and near Arch Canyon have not been documented. *See id.* at 19. Thus, BLM and the scientific community do not have a record of the resources that are present and, therefore, will not know what resources are eventually lost due to pot-hunting, looting and/or collecting. *See id.* at 42-43.

#### **b. Riparian Area Threatened**

Riparian areas represent the most biotically diverse and important habitat type in the southwestern United States, and constitute only one percent (1%) of the landscape in Utah, yet they support 75-80% of the wildlife. *See* Charles Schelz, Arch Canyon Assessment and Management Recommendations, at 1 (August, 2006). Unfortunately, Arch Canyon's riparian area has been recently assessed as "Functioning at Risk" with a ***downward trend***. *See id.* at 10, 31, 47-48. The primary causes for this alarming assessment are past livestock grazing and the existing ORV route that traverses the floodplain and crosses the streambed approximately 60 times from the mouth of the canyon to the BLM-Forest Service boundary eight and one-half miles up the canyon. *See id.* at 31, 47-48. Because livestock grazing is no longer carried out in Arch Canyon, impacts associated with such activity have become less of a factor. *See id.* at 31. The presence of the existing ORV route in the canyon remains the most significant impediment to the riparian system reaching a Proper Functioning Condition. *See id.*

Over the past several years, ORV use has dramatically increased in and near Arch Canyon. New unauthorized routes have been pioneered at most of the stream crossings, and new trails have been pioneered through vegetation in areas with archaeological sites, causing obvious damage to the cultural and natural resources. *See* Declaration of Dan Kent, at ¶¶ 7-16, December 19, 2006, and Declaration of Lynell Schalk, at ¶¶ 14-17, December 20, 2006, attached as Exhibits L and M.

Among other impacts, these user-created ORV routes have crushed and worn down riparian vegetation, denuded stream banks and created ruts. ***The loss of vegetation along the stream banks prevents high water flows from slowing down and backing up onto the floodplain to allow for groundwater and nutrient recharge.*** *See* Schelz, at 31-32 (August 2006). In addition, the routes act as flood water conduits, which results in scouring, lateral cutting between the routes and the original stream channel, straightening of the channel as the water flows down the new linear tracks, and increased water velocity, thereby reducing the amount of potential floodplain infiltration and recharge. *See id.* Eventually, the decreased recharge in the floodplain will result in lowered in-stream flow that will, necessarily, have significant adverse effects on the native fish and their habitat, and will leave critical riparian vegetation high and dry, directly impacting and reducing the native biodiversity. *See id.* at 31-39.

### **c. Sensitive and Potential “Relict” Fish Species at Risk**

In addition to Arch Canyon’s rare, arid desert riparian area, the fact that there are three species of native fish in the stream provides unquestionable biological evidence of the uniqueness and importance of this canyon stream. *See id.* at 3-4. The presence of

the flannelmouth sucker and the bluehead sucker highlights this canyon as very atypical of this area due to the large size of these fish species. *See id.* Fish of this size are extremely rare in the broader Four Corners region, but are particularly rare in the Arch Canyon location as there is no continuous water connection to a larger river, such as the San Juan River approximately 25 miles away. *See id.* ***It is quite possible that these fish are “relict” populations that have been separated from the species’ gene pools for millions of years. See id.***

There is no research that has comprehensively studied the Arch Canyon fish populations, including their long-term reproduction, the genetic comparisons with populations in larger rivers in the area, and the impacts of the ORV route on their habitat, which causes higher sedimentation, petroleum pollution, and decreased low-water instream flows. *See id.* at 41.

## **2. Current Management Designations**

Pursuant to the 1991 Decision Record for the San Juan Resource Management Plan (RMP) and the ORV Route Designation Map (1988), Arch Canyon is to be managed as a “Limited to Designated Roads and Trails” area. It has been 15 years since the RMP was finalized, yet during this extended time period BLM has failed to designate ORV routes in the “Limited to Designated Roads and Trails” areas, including Arch Canyon. Instead, BLM has, for all practical purposes, managed the “Limited to Designated Roads and Trails” areas, including Arch Canyon, as “Open” areas, or as “Limited to Existing Roads and Trails” areas. Few, if any, restrictions have been imposed on ORV use in the “Limited to Designated Roads and Trails” areas, including Arch Canyon.



In addition, pursuant to the RMP and the Special Designation Areas Map (1988) that accompanies the RMP, Arch Canyon is within the Cedar Mesa Area of Critical Environmental Concern (ACEC). According to the RMP, the Cedar Mesa ACEC shall be:

Managed to protect the cultural resources, scenic values, and natural values associated with primitive recreation. Cultural resources would be managed for information potential, public values, and conservation.

\* \* \*

Activities within the ACEC would be approved only with special conditions to protect cultural and visual resources and primitive recreation opportunities.

San Juan RMP Decision Record at 87. In addition, the RMP states that all cultural resources “eligible for the National Register of Historic Places would be surrounded by an avoidance area sufficient to allow permanent protection.” *Id.*

Further, the RMP’s ORV Designations Map identifies Arch Canyon as a “Floodplain and Riparian and Aquatic Area.” According to the RMP:

All floodplains and riparian/aquatic areas are managed in accordance with Executive Orders 11988 and 11990 and the Endangered Species Act, the BLM Riparian Area Management Policy. [ ] The [floodplains and riparian area] acreage (32,910) was estimated based on a corridor width of 100 feet.

*Id.* at 94.

### **3. Significant Increase in ORV Use in Arch Canyon**

Public lands in San Juan County, along with other areas in southern Utah, experienced a significant increase in ORV use over the past 10-15 years since the San Juan RMP was completed. And more recently, according to the State of Utah’s ORV registration data, San Juan County has had a 252% increase in ORV registrations from 1998-2004. *See* Utah Off Highway Transactions by County and Fiscal Year 1998-2004,

Utah Div. of Motor Vehicles (1998-2004), attached as Exhibit N. In addition to local ORV users, ORV recreationists from outside of San Juan County recreate on public lands managed by the Monticello Field Office, including Arch Canyon.

In short, ORV use on public lands managed by the Monticello Field Office (FO) is completely different than it was when the RMP was drafted. Fifteen years ago, there were few, if any, ORVs used for recreation on public lands managed by the Monticello FO, including in Arch Canyon. In contrast, today it is extremely rare, and maybe impossible, to visit Arch Canyon without encountering the loud engine noise and whine of these machines, and the attendant odor and air pollution emitted from the exhaust pipes. *See* Declaration of Dan Kent ¶¶ 7-10, attached as Exhibit L; and Declaration of Lynell Schalk at ¶¶ 12, 15, 16, attached as Exhibit M. As ORV use has expanded over the past few years, so, too, have the impacts. New, unplanned and unauthorized routes have been created in sensitive natural and cultural resource areas – including in and along the stream, over vegetation, and possibly through archaeological sites – and new “multiple” stream crossings are evident in many places where the ORV route crosses the stream. *See* Dan Kent Decl. ¶¶ 8-10, 13-14.

#### **4. Recent Events and BLM’s Actions Concerning Arch Canyon**

##### **A. October 2006 Flood Events**

In early October 2006, heavy rains in the Arch Canyon area produced torrential floods that thundered down Arch Canyon. In many places the flood waters jumped out of the stream channel, and rather than spreading out over the floodplain as would be expected in a properly functioning system, the flood waters were diverted into the

unvegetated and entrenched ORV route. *See* Schelz, at unnumbered 0 (Dec. 2006). This unnatural diversion created an artificial channel that contributed to a substantial increase in flow velocity and energy, which contributed to substantially more erosion and increased destruction of vegetation and streambanks than would have occurred in the absence of the ORV route. *See id.* Indeed, in some places the ORV route was scoured down several feet below the surrounding ground level. This chain of events led to further loss of riparian habitat, including critical fish habitat upon which the flannelmouth sucker and bluehead sucker depend for survival. *See id.*

The presence of the ORV route, and its role in channelizing the floodwaters, robbed the floodplains of the additional sediment and nutrients that would have been naturally deposited during the flood, and deprived the water table of significant recharging. Such recharging is necessary to maintain riparian vegetation and in-stream low-water flow levels. In uncompromised riparian systems, this type of flooding presents the ideal scenario for the development and enhancement of future riparian habitat, but in compromised riparian systems, large flood events can cause significant, and sometimes irreparable damage. *See id.*

**b. BLM's Recent Decision to Focus ORV Use in Arch Canyon Exacerbates Impacts to Resources**

Faced with the post-flood situation in Arch Canyon in which the ORV route had certainly caused damage to the riparian area, and with many sections of the ORV route completely washed away or deeply entrenched, the BLM's Monticello FO authorized actions that will encourage ORV use in the canyon rather than protect the resources. Rather than conduct comprehensive and thorough surveys to determine how best to

rehabilitate the damage that had been caused to the natural cultural resources as a result of the ORV route, the BLM decided to create and, for all practical purposes, designate a new ORV route in Arch Canyon.

BLM's decision to authorize post-flood construction work in Arch Canyon was based on incorrect information. In particular, the BLM based its "repair work" on "the fact [ ] that the current land use plan identifies the route in Arch Canyon as open."

Electronic mail from Nick Sandberg, Ass't Monticello FO Manager to Sandra Meyers, Monticello FO Manager (Oct. 30 and Nov. 2, 2006); Electronic mail from Sandra Meyers, Monticello FO Manager, to Nick Sandberg, Ass't Monticello FO Manager (Oct. 29 and Nov. 16, 2006); and Electronic mail from Michael Dekeyrel, Utah State Office Land Realty Specialist, to Sandra Meyers (Nov. 16, 2006), attached Exhibit G; *See also*, S.P.E.A.R. Sponsors Road Repair Efforts in Beautiful Arch Canyon, San Juan Record, November 29, 2006, at 2, attached as Exhibit H. The official ORV Route Designation Map that accompanies the San Juan RMP clearly indicates that Arch Canyon is in a "Limited to Designated Roads and Trails" area, and as noted above, there has been no route designated as open to ORV use in Arch Canyon. Thus, there is no official "open route" in Arch Canyon for which BLM can or should authorize construction, maintenance or repair work.

BLM's unilateral decision to allow ORV signs and surface disturbing work in Arch Canyon failed to comply with the environmental review and public participation requirements of the National Environmental Policy Act, 42 U.S.C. §§ 4321 *et seq.* and consultation requirements of the National Historic Preservation Act, 16 U.S.C. §§ 470 *et seq.* In addition, BLM's decision to authorize construction work on the "route" and the

placement of ORV signs directing ORV use in the canyon is a violation of BLM's management responsibilities to close areas in which ORV use is causing considerable adverse impacts, and to designate ORV routes to minimize resource damages and conflicts with other uses under 43 C.F.R. §8341.2 and 8342.

## **5. Executive Order 11644 and Executive Order 11989**

Recognizing the destructive effects of ORV use, President Nixon signed Executive Order Number 11644, 37 Fed. Reg. 2877 (Feb. 8, 1972), which declares that:

The widespread use of such vehicles on the public lands—often for legitimate purposes but also in frequent conflict with wise land and resource management practices, environmental values, and other types of recreational activity—has demonstrated the need for a unified Federal policy toward the use of such vehicles on the public lands.

\* \* \*

It is the purpose of this order to establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among various uses of those lands.

Executive Order Number 11644 Preamble and § 1.

Under Executive Order 11644 the BLM and other federal agencies are directed to “establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among various uses of those lands.” *Id.* § 1. In addition, the Executive Order requires federal agencies to implement regulations that designate areas and trails for ORV use so that “such areas and trails will be based upon the protection of the resources of the public lands, promotion of the safety of all users of those lands, and minimization of the conflicts among the various uses of those lands.” *Id.* § 3. In particular, ORV areas and

trails must be designated to “minimize damage” to natural and other public land resources – including watershed and riparian areas, vegetation, soils, cultural resources, and wildlife – and to “minimize conflicts between off-road vehicle use and other existing or proposed recreational uses” of public lands. *Id.* Such designations are to be open to public participation and comment. *Id.*

In 1977, President Carter issued Executive Order 11989, which considerably strengthened Executive Order 11644 by requiring agencies to "immediately close" areas or trails to ORV use whenever the agency determines that "the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources." Exec. Order No. 11989, 42 Fed. Reg. 26959 (May 24, 1977). The areas or trails must remain closed until the agency makes a specific determination that the "adverse effects have been eliminated and that measures have been implemented to prevent future occurrence." *Id.*

## **6. BLM’s Off-Road Vehicle Regulations**

### **a. 43 C.F.R. §§ 8341.2 and 8342**

In 1979, BLM incorporated Executive Order 11644, as amended by Executive Order 11989, in its regulations at 43 C.F.R. Part 8340. See 44 Fed. Reg. 34,834 (June 15, 1979), and 53 Fed. Reg. 31,002 (Aug. 17, 1988). BLM’s regulations direct agency officials to designate public lands as open, closed, or limited to ORV use, and to generally follow the public participation requirements of the resource management planning process described in 43 C.F.R. §§ 1600 *et seq.* See 43 C.F.R. §§ 8340.0-1 and 8342.2.

The regulations also implement President Carter's amendment of Executive Order 11644 by exempting mandatory ORV closure actions from the land use planning and public participation requirements in 43 C.F.R. § 8342.2. The regulations provide that:

Notwithstanding the consultation provisions in § 8342.2(a), where the authorized officer determines that off-road vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the authorized officer shall immediately close the areas affected to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence.

43 C.F.R. §8341.2(a); *see also*, *Am. Motorcycle Ass'n, v. Watt*, 543 F. Supp. 789, 796 n. 14 (C.D. Cal. 1982) (discussing closure mandate in § 8341.2); and *Rocky Mountain Trails Ass'n*, 156 IBLA 64, 70 (2001). As BLM explained in the preamble to the regulations, an exemption from FLPMA's land use planning requirements was necessary to allow the agency to respond rapidly to avert harm. *See* 44 Fed. Reg. at 34,835.

**b. 43 C.F.R. § 8364.1**

In addition to the closure mandate in 43 C.F.R. § 8341.2, BLM officials are authorized under a broader regulation, 43 C.F.R. § 8364.1, to “close or restrict use of designated public lands” in order to “protect persons, property, and public lands and resources.” 43 C.F.R. § 8364.1(a). The preamble to the Part 8340 off-road vehicle regulations explained that the broad public lands closure authority in § 8364 “is in addition to that contained in § 8341.2.” 44 Fed. Reg. at 34,836.

## 7. Continued ORV Use in Arch Canyon Violates Executive Orders and Federal Regulations

As described in more detail below, ORV use in the Arch Canyon area is causing and will continue to cause considerable adverse effects to cultural resources, riparian resources -including soils and vegetation – and special status fish species. Thus, pursuant to the Administrative Procedures Act, 5 U.S.C. §§ 500 *et seq.*, 43 C.F.R. §§ 8341.2, 8342, and 8364.1, and Executive Orders 11989 and 11644, ***BLM must immediately protect the natural and cultural resources of the Arch Canyon area and close the Arch Canyon area to motorized vehicle use.***<sup>3</sup>

The Southern Utah Wilderness Alliance, the Navajo Utah Commission, the Great Old Broads for Wilderness, Far Out Expeditions, Calf Canyon Bed & Breakfast, and Wild Rivers Expeditions hereby petition the BLM to implement an immediate closure of the Arch Canyon area to ORV use. This Petition requests that all motorized travel within the area depicted on the attached map (Exhibit A) be prohibited by this emergency closure.<sup>4</sup> SUWA bases this petition on the significant adverse effects that ORV use is

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<sup>3</sup> The BLM and the Department of the Interior have previously and successfully issued numerous closure orders to protect wetland and riparian areas, cultural resources, wildlife habitat, vegetation, threatened and endangered species, and fragile soils. *See e.g.*, 71 Fed. Reg. 55,010 (Sept. 20, 2006) (to protect threatened and endangered species in the Factory Butte area); 70 Fed. Reg. 46,541 (Aug. 10, 2005) (to protect soil, vegetation, wildlife, cultural and riparian resources in the Vermilion Cliffs area); 66 Fed. Reg. 6659 (Jan. 22, 2001) (closure to protect soils, vegetation, and wildlife habitat resources); 62 Fed. Reg. 34303 (June 25, 1997) (closing 56 acres to protect special status plant species); 62 Fed. Reg. 43744 (Aug. 15, 1997) (closing area to ORVs due to adverse effects on soil, vegetation and wildlife habitat); 62 Fed. Reg. 8770 (Feb. 26, 1997) (closure to protect wildlife); 62 Fed. Reg. 67889 (Dec. 30 1997) (closure to protect fragile soils, sensitive plant species and to prevent trespass); (61 Fed. Reg. 43559 (Aug. 23, 1996) (closure to prevent damage to soil, vegetation, and scenic resources).

<sup>4</sup> Any ORV route designated within the area depicted on the map at Exhibit A must be reviewed and analyzed pursuant to 43 C.F.R. §8342 to protect natural resources and to minimize the conflicts among various uses.



causing or will cause to cultural resources, riparian and wetland resources, and to fish and wildlife and their associated habitats.<sup>5</sup>

## **II. ORV USE IN THE ARCH CANYON AREA IS CAUSING AND/OR WILL CAUSE CONSIDERABLE ADVERSE EFFECTS TO CULTURAL RESOURCES**

### **1. BLM's Lack of Information and Proactive Management Puts Cultural Resources at Risk**

According to BLM's own reports, the "threat to BLM's cultural resources has developed into a crisis. . . If urgent steps are not taken now, this time period may well be viewed, in retrospect, as the turning point that relegated these non-renewable resources to the mantelpiece of posterity." Information Bulletin No. 2000-136, Strategic Paper on Cultural Resources "At Risk", June 2000 ("Strategic Paper"), attached as Exhibit I.

As noted in the Strategic Paper, the BLM manages the largest, most diverse and scientifically most important body of cultural resources of any federal land management agency. These resources, which have been referred to as BLM's "Great Outdoor Museum," span virtually the entire spectrum of human experiences since people first set foot on the North American continent more than 13,000 years ago. This "Great Outdoor Museum" provides a unique opportunity for BLM to document the full spectrum of western prehistory and history, and tell the complete story of people on the western lands. No other federal land managing agency can make this claim. *See id.* However, "BLM's ability to relate the complete and unbroken story of western land use and occupancy can only be realized if a representative and relatively pristine body of cultural resources is

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<sup>5</sup> As noted in the Executive Summary of this Petition, the Hopi Tribe supports SUWA's Petition and requests immediate interim closure of Arch Canyon and the rims to ORV use, pending consultation with the BLM on issues raised in SUWA's Petition and the Hopi Tribe's subsequent assessment, in order to preserve and protect the cultural resources in Arch Canyon.

preserved into the next millennium. *At this moment in time, so much of the cultural resource base is at risk that it will soon lack sufficient integrity and representativeness to relate anything more than anecdotal accounts of western land use.*” *Id.* at Attachment 1-3,4, (emphasis added).

BLM’s Strategic Paper identifies issues that are not currently being addressed, and predicts irreparable losses of cultural resources if the agency fails to immediately take appropriate action to protect the cultural resources on public lands. The Strategic Paper states:

Recently, the Office of Inspector General (OIG) identified several critical weaknesses in the BLM’s cultural resources management program. Among other things, the OIG report criticized the BLM for its failure to prioritize and conduct non-Section 106 [National Historic Preservation Act] cultural resource inventories on public lands deemed to have a high potential for important cultural resources. The failure to undertake such inventories creates a paradoxical situation where BLM may be managing less important known resources at the expense of more important but unknown resources.

Natural and human-caused threats are reducing our opportunities for interpreting sites, for providing long-term access to properties valuable to Native Americans and other ethnic groups, for promoting and facilitating scientific research, and for conserving properties for future study. The lessons we can learn from past cultures have direct relevance on the choices our society is faced with today. With every year that passes, the diversity of our cultural resources is reduced. We are losing our ability to tell the complete story of our Nation’s history on the public lands by not fully meeting our responsibilities under the Federal Land Policy and Management Act and Section 110 of the National Historic Preservation Act to proactively manage this fragile legacy. Because of this situation, the American people are losing their connections to the land — their sense of place—and ultimately their respect for the past and its meaning as an anchor to the present and a guide to the future.

*Id.* at Attachment 1-6 (emphasis added).

The Strategic Paper describes important resource areas that are at particular risk, including southeastern Utah:

[W]e have indications of alarming trends. We know that close to 100 percent of the “classic” Mimbres sites in southwestern New Mexico have been looted and destroyed. Similarly, in the Four Corners states, where more than 150,000 sites have already been recorded, between 30 and 50 percent of all sites have been looted, while among the larger and more significant sites the percentage of looted sites may be closer to 90 percent. Many of the prehistoric pueblos and cliff dwellings in southeastern Utah’s Grand Gulch [a few miles southeast of Arch Canyon on Cedar Mesa], where more intact prehistoric plastered buildings occur than in Mesa Verde, are seriously threatened. By no means, however, are threats to archaeological and historical sites confined to looting and vandalism, as recreational activities, urban sprawl, overuse and natural erosion are increasingly taking their toll on our Nation’s irreplaceable treasures.

Because of the importance attributed to the cultural resources on the public lands by Native Americans or Alaska Native groups with ancestral links to public lands, and by local western communities, other ethnic groups, the public at large, scientists, educators, international visitors, and others, it is critical that these preservation needs begin to be addressed. By failing to address the critical and enormous cultural resource preservation and protection needs, we condemn our Nation’s legacy to the mantelpiece of posterity.

*Id.* at Attachment 1-4 and 1-5 (emphasis added).

The Strategic Paper also notes that:

A recent Office of Inspector General (OIG) audit identified several critical weaknesses in BLM’s cultural resource management program. The OIG found that [the BLM] lack[s] a long-range plan to survey areas for the purpose of understanding human behavior and use of the land.

\* \* \*

Increasing visitation to the public lands is resulting in intentional and inadvertent damage through collection, vandalism, surface disturbance, and other depreciative behavior. . . . With every year that passes, the diversity of our cultural resources is reduced, and we lose more of our ability to tell the story of the public lands.

\* \* \*

Uncontrolled use is the most immediate and pervasive threat to cultural resources on BLM lands. [ ] The explosion in the use of mountain bikes and ATVs, and even the designation of backcountry byways, has dramatically increased visitation to lands that were previously used only by small numbers of hikers. This increased visitation inevitably results in intentional and inadvertent damage through collection, vandalism, surface disturbance, and other depreciative behavior.

*Id.* at Attachment 1-2, 1-7 (emphasis added).

BLM's Strategic Paper concludes that the agency is "***failing to actively manage*** the resources entrusted" to it. *Id.* at Attachment 1-2 (emphasis added).

## **2. Cultural Resources in Arch Canyon: Previously Documented, Recently Documented, and Undocumented**

As discussed in Jerry Spangler, Site Condition and Vandalism Assessment of Archaeological Sites, Lower and Middle Arch Canyon, San Juan County, Utah, (October 2006) ("Archaeological Sites in Arch Canyon"), Arch Canyon has two qualities that, in tandem, are particularly rare to this region: (1) a perennial water source that appears to have been the focus of intense prehistoric occupations by Ancestral Puebloan farmers, resulting in spectacular architectural remains along the canyon bottom and at various higher cliff levels, and (2) a route through the bottom of the drainage that provides easy vehicular access to many of these archaeological sites. Unfortunately, "the abundance of visually impressive archaeological sites combined with vehicular access has precipitated greater levels of public visitation than is evident elsewhere in the region, and this in turn appears to have resulted in much greater levels of adverse impacts to cultural resources, including wanton vandalism, illegal collecting of artifacts and inadvertent damage by visitors unaware of proper site etiquette." *Id.* at 1, attached as Exhibit B

Despite a relative wealth of research conducted in the Cedar Mesa region generally, the ***Arch Canyon corridor has not been subjected to quantitative or qualitative scientific inquiry and no comprehensive or systematic efforts have been initiated to identify sites within the Arch Canyon drainage or integrate Arch Canyon***

*within broader discussions of prehistoric human behavior in the region. See id.* at 1-5.

A review by Mr. Spangler of reported data currently on file with the Antiquities Section of the Utah Division of State History revealed no significant scientific research projects or cultural resource management initiatives conducted in the middle and lower portions of Arch Canyon, the BLM-managed lands downstream from the U.S. Forest Service boundary. No Class II or comprehensive Class III surveys have been conducted to determine actual density, nor has any effort been initiated to determine the suite of site types, the nature of prehistoric adaptations in the drainage specifically or the relationship of these adaptations to others on the Cedar Mesa generally.<sup>6</sup> *See id.* at 3

Mr. Spangler, an independent archeologist, recently conducted two surveys of the cultural resources in Arch Canyon: 1) a re-documentation of the nine previously recorded sites, and 2) a narrowly-focused intuitive survey on a short section of Arch Canyon. In re-documenting the nine previously recorded sites, Mr. Spangler inadvertently discovered five new sites. And more significantly, in the intuitive survey, Mr. Spangler documented nine new sites on both sides of the canyon (previously documented sites were on the north side only) in a short segment of the canyon only 0.7 linear miles long, and undocumented features were identified at two previously recorded sites. *Id.* at 2. The results of the site re-documentation and new site documentation demonstrated the presence of 12 prehistoric sites in this area (only two had been

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<sup>6</sup> Previous archaeological research in the lower/middle Arch Canyon area is limited to a handful of sites initially recorded by the University of Utah in 1958 (Weller 1959) and several additional sites documented in 1965, presumably as part of an intuitive survey by the BLM. Both of these efforts lacked a systematic approach to archaeological survey, and it appears that only sites clearly visible from the road were documented. A subsequent clearance survey, apparently conducted largely from a moving vehicle, identified no additional sites (Davidson 1989). These surveys are inconsistent with acceptable systematic survey techniques (e.g., Banning 2002) and they are clearly inadequate. *See Archaeological Sites in Arch Canyon* at 5, Exhibit F.

previously documented). The density of sites was considerably greater than anticipated, based on the level of sites previously documented in the canyon. *See id.* at 1, 2 and 19.

Based on Mr. Spangler's survey work, he estimates that there is potential for a site density of 17 prehistoric sites per linear mile and that sites will be found on both sides of the canyon in relative proximity to the floodplain. In other words, ***there could be in excess of 100 sites located along the approximately eight and one-half (8.5) miles of BLM-managed lands in Arch Canyon, with the majority of sites located along the base of the first cliff level and along first bench above the floor of the canyon. Id.***

Mr. Spangler's report discusses the archaeological sites:

Based on the limited amount of site documentation conducted by CPAA,<sup>7</sup> it would appear that Arch Canyon has a particularly high density of sites, including sheltered residential areas, some with contiguous storage, storage sites and wall remnants suggestive of storage facilities, rock art sites, special use localities and at least one large circular depression, possibly a ceremonial site. These sites are located on both sides of Arch Canyon, predominantly at the base of the first cliff level above the floodplain or on ledges associated with the first cliff level. Generally, these sites do not reflect defensive posturing, but instead reflect expedient access to the floodplain area.

Only one site was observed on the floodplain itself, although this site [ ] is particularly significant. Collectively, these sites appear to reflect adaptations by prehistoric farmers who produced surplus amounts of domestic grains that were stored in nearby facilities for expedient access. All residential sites identified during the CPAA reconnaissance have on-site storage units, but not all storage sites are clearly associated with nearby residential sites. This suggests the possibilities that (1) nearby residential sites have not yet been identified or are obscured by alluvial deposits on the valley floor, or (2) prehistoric farmers were, at times, transient residents of the canyon who engaged in episodic caching and retrieval strategies. A smaller number of sites (3) appear to have been situated in defensive locations more than 100 meters above the floodplain were observed. Additionally, two sites are located on ledges near the valley floor, but were situated as to be extremely difficult to access. These may or may not be defensively oriented.<sup>8</sup>

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<sup>7</sup> In Mr. Spangler's report, he makes reference to CPAA, Colorado Plateau Archaeological Alliance, which is Mr. Spangler's professional consulting organization.

<sup>8</sup> Many of the new sites documented by Mr. Spangler have very significant features, which are detailed in his report, but will not be discussed in detail in this Petition in order to protect these sites.

*Id. at 18.*

In addition, Mr. Spangler notes that previous site documentation is deficient:

[P]reviously recorded sites are often much more complex than the descriptions noted on the original site forms. For example, at [Site X], a previously unmentioned rock art panel was documented 25 meters north of the architectural features; at [Site Y], an additional structure and two rock art panels (one quite elaborate) were documented on the cliff level above and to the southwest; and at [Site Z], two additional features with multiple storage units were described to the east of the main cluster of architectural features. None of these features were described in the initial site forms yet are important components of the overall character of the sites.

*Id. at 19.*

### **3. Site Eligibility for the National Register of Historic Places**

Mr. Spangler's Arch Canyon report emphasizes that although many of the sites are badly deteriorated, all of the sites examined during the course of his site analysis are eligible for the National Register of Historic Places under one or more criteria.

All 24 sites are eligible under Criterion A inasmuch as they collectively contribute to a broad understanding of Ancestral Puebloan prehistory during Pueblo II and Pueblo III times, particularly as it relates to human adaptations in the Cedar Mesa and Cockscomb areas. This adaptation was characterized by small agricultural groups who exploited the limited sources of permanent water and arable lands, and who aggregated and dispersed through time in response to various social and environmental variables. Most sites in Arch Canyon reflect occupations by small nuclear or extended family units living in close proximity to Arch Canyon Creek. However, other sites [ ] reflect population aggregations into defensive postures 100 to 200 meters above the floodplain, and the protection of food resources in inaccessible localities, as indicated by [ ].

All but three sites are also eligible under Criterion C inasmuch as these sites reflect the distinctive characteristics of Ancestral Puebloan architecture evident throughout the region from about A.D. 1100 to 1300 (Pueblo II to Pueblo III times). These high architectural values, characterized by exceptional stone and adobe masonry construction that has survived more than seven centuries. [ ] Furthermore, [ ] could be reflective of an organized system of beliefs, practices and traditions representing mankind's relationship to perceived supernatural

forces. This relationship may be further represented by rock art panels at []. Although some sites are badly deteriorated, these remnants are likewise significant in that each of them represents a significant and distinguishable entity whose components lack individual distinction, but which collectively contribute to a broader perspective of land use patterns through time.

Most importantly, all 24 sites are eligible under Criterion D inasmuch as they have significant potential to yield information important in prehistory. As discussed above, extremely little research has been conducted into prehistoric manifestations in the Arch Canyon drainage, and little is known about how prehistoric agriculturalists adapted to this arid environment. Most evidence, based on architectural and ceramic cross-dating, is indicative of a population florescence during Pueblo II and Pueblo III times, a period of tremendous social and environmental stress that prompted widespread population aggregation and dispersal, eventually culminating in abandonment of the area in the decades prior to A.D. 1300. Sites in Arch Canyon offer significant potential to researchers attempting to explain how prehistoric groups responded to social and environmental changes through time, and to explain why agricultural lifeways were abandoned after thriving for many centuries. It is highly probable that subsurface deposits in this locality will also yield new insights into prehistoric groups who occupied the canyon prior to the Pueblo II-Pueblo III florescence, and later hunter-gatherers who superseded them.

*Id.* at 41 (emphasis added).

Mr. Spangler's fieldwork and analysis underscores the importance of Arch Canyon's cultural resources to a greater understanding of Ancestral Puebloans lives and agricultural practices. Preservation of these resources should be paramount to BLM to study and eventually relate a more complete story of prehistory agricultural practices, and social and historical changes that occurred over time.

#### **4. Threats to Arch Canyon's Cultural Resources**

Various studies, including those funded by BLM, have concluded that motor vehicles facilitate the work of pothunters and vandals, and the ease of access afforded by the use of motorized vehicles has led to increases in vandalism and greater damage to archaeological resources. *See* A Survey of Vandalism to Archaeological Resources in



Southwestern Colorado, Paul R. Nickens, Signa L. Larralde, and Gordon C. Tucker, Cultural Resource Series No. 11, BLM (1981); and Potheading in Central Arizona: the Perry Mesa Archaeological Site Vandalism Study, Richard V.N. Ahlstrom, Cultural Resource Management Series No. 13, BLM and USFS (1992), *cited in*, Southern Utah Wilderness Alliance, Preserving Prehistory, at 16 (2002), attached at Exhibit J. These studies conclude that there is little question that cultural sites that are not easily accessible to ORVs are more likely to retain their integrity and their value to science.<sup>9</sup>

Not surprisingly, Mr. Spangler notes that his recent research at Range Creek confirm conclusions of the previous studies. *See* Spangler, at 42. In particular, the Range Creek research demonstrates that there is a direct relationship between unrestricted vehicular access and site vandalism. Cultural resources inside the vehicle restriction areas had significantly less evidence of adverse impacts caused by illegal or inappropriate human activities, where as cultural sites located where there were no vehicle restrictions have been seriously damaged and in some cases destroyed. Generally, illegal activities occurred within 200 meters of an existing road. *See id.*

A former BLM Law Enforcement Ranger and Special-Agent-in-Charge who has over 25 years experience in the field, including archaeological surveillances in southeastern Utah, and specialized in cultural resource crimes and related actions has “witnessed hundreds of archaeological sites impacted by off-road motorized vehicle use –

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<sup>9</sup> This is not new information to the Utah BLM. For instance, in southwestern Utah, the Kanab Field Office’s 26-year old Environmental Assessment Record, Off-Road Vehicle Designation (1980) essentially contains the same information.

[ORV] travel negatively impacts cultural and vertical displacement of artifacts. This artifact displacement is caused by the movement of the vehicles themselves and is also a result of the erosion caused by ORV use. ORV use can also damage the artifacts themselves by causing mechanical breakage. ORV use would disturb potential coarbon-14 samples which are used to date a site. Due to increased accessibility through ORV use, there is an increased potential for vandalism of cultural resource sites.

Environmental Assessment Record at 19 (emphasis added).

particularly on the public lands in the California Desert and in Southeast Utah.”

Declaration of Lynell Schalk, ¶ 8, attached as Exhibit M. These impacts included running over sites, looting vandalism, collecting and unintentional damages. *See id.* ¶ 10. Significantly, Ms. Schalk’s observations are that “[s]ites that are closer to roads or trails are invariably more looted and trashed than sites in remote or inaccessible areas.” *Id.*

Closely tracking the results of Mr. Spangler’s study in Range Creek, Ms. Schalk’s observation from her many years of service with the BLM is that “***damage to cultural resources – intentional, malicious damage as well as inadvertent damage – is greater in areas in which ORV use is permitted than in the areas where ORV use is prohibited.***”

*Id.* ¶ 9. Ms. Schalk states that she is “not aware of any ATV users who have ever reported archaeological damage to the BM authorities. Most reports of archaeological site looting or damage [ ] are reported by hikers and backpackers,” and that these user groups have less adverse impacts on cultural resources. *Id.* ¶ 11.

Since all of the sites documented by Mr. Spangler in his recent Arch Canyon report are eligible for the National Register, and given that there has been no comprehensive efforts to document the cultural resources that are present in Arch Canyon that could be impacted by ORV use, Mr. Spangler recommends that the canyon be closed to motorized vehicles. Such a closure would help protect the undocumented and likely significant sites on the canyon floor:

The archaeological values evident on the slopes below architectural sites and along the edges of the floodplain – all areas accessible to mechanized vehicles – remain poorly understood and have not been adequately documented. There remains a high potential that at least one major site with national Register eligibility could be directly impacted by off-road activities in the future [ ]. It is anticipated that additional sites will be located along the existing ORV route and could be directly impacted by vehicular activities.

\* \* \*

It is [ ] anticipated that closer inspection of the floodplain and adjacent slopes will identify agricultural features, middens and special use locales that will provide a broader understanding of human adaptations in the regions. BLM land management decisions should be predicated on a scientifically sound database, although such a database currently does not exist. The BLM cannot properly take into account potential adverse effects if it does not know what those resources are.

*Id.* at 42, 44 (emphasis added).

Archaeological sites in the Cedar Mesa region have long been the target of malicious destruction of architecture and illegal excavations in search of valuable artifacts. *See* Spangler at 1. Given the ORV route that provides easy access to Arch Canyon, it would be expected that sites in this drainage have suffered significantly from these illegal activities. Mr. Spangler's recent work in Arch Canyon concludes that sites in the lower and middle sections of Arch Canyon have been degraded to varying degrees from inadvertent and malicious acts.

In particular, in Arch Canyon Mr. Spangler notes that:

The CPAA analysis found that four of 19 sites examined had evidence of looter's holes, all of them small and none of them impacting overall site integrity or National Register eligibility. These looter's holes range from 20 to 50 centimeters in diameter and typically range from 10 to 30 centimeters in depth, suggesting that looting activities occurred in the past and the holes have largely filled through natural erosion. It should be noted that only one of the eight sites directly examined in 1965 exhibited evidence of vandalism, and even that evidence was considered to be marginal. This suggests the vandalism observed in 2006 has occurred over the past four decades.

Without a detailed catalog of artifacts on any given site, any determination of the extent of illegal surface collecting becomes an intuitive exercise. However, two lines of circumstantial evidence suggest that surface collecting is a serious problem in the Arch Canyon area. First, artifacts are extremely rare at 15 out of 19 sites documented by CPAA, even at the exceptionally large and complex sites that should contain abundant middens. The paucity is both striking and puzzling. These are mostly sites with architecture consistent with late Pueblo II or Pueblo III occupations when abundant ceramic and stone tool production was a fundamental part of local lifeways. These artifacts are typically concentrated on the slopes directly below residential occupations. In the Cedar Mesa generally, these middens may contain thousands of individual artifacts. However, the

middens at the Arch Canyon sites are extremely sparse, containing only a few lithic flakes and one or two potsherds. The areas around the structures are almost entirely devoid of artifacts, suggesting even small lithic waste flakes have been removed.

Evidence of surface collecting is also suggested by the negative evidence observed at [ ], a previously unrecorded site (possibly a large kiva) located immediately adjacent to the ORV route in the canyon bottom. Despite its proximity to the route, the site is obscured by pinyon and juniper trees, and modern visitation appears to be minimal (some rusted tin cans on the site suggest it may have been a temporary campsite at one time). Compared to the sites that are clearly visible from the ORV route that all have a paucity of artifacts, site [ ] contains an abundance of chipped stone, groundstone and ceramic artifacts, including large painted potsherds highly prized by surface collectors [ ]. Ceramic evidence is also abundant at [ ], a structure that is visible from the road. However, the artifacts are not located in direct association with the structure and appear to have escaped detection. Also, at least four highly unusual wooden artifacts, bone and corncobs were observed in plain view at [ ], which is also not visible from the road. The presence of collectible artifacts at these three sites implies that recreational visitation and its co-occurring problem of surface collecting is directed at easily visible sites, but that sites not readily visible remain relatively intact.

*Id.* at 34-36 (emphasis added).

Mr. Spangler observes that ORVs are mechanically capable of providing easy and efficient access to areas without official road access and that, indeed, they have had direct adverse effects on Arch Canyon's cultural resources. In addition,

[T]he peripheral impacts of ORVs on archaeological sites are substantially greater. At least eight sites have ORV routes leading from the main route to the base of the slope directly below the sites. These routes vary from rarely used trails where crushed vegetation is slowly recovering to major spur routes leading to campfire rings. All of these routes terminate at topographical features that have a moderate to high potential to contain buried cultural deposits (e.g., potential midden areas). In at least two instances, artifacts were observed within 5 meters of a vehicular access route. As was observed in October 2006 after a series of rainstorms, these ORV routes facilitate severe erosion that could seriously erode subsurface cultural deposits along the alluvial floodplain. It should also be noted that no systematic surveys have been conducted of the alluvial areas now being impacted by ORV use, and the little is known of the spatial relationship of alluvial areas to adjacent residential and storage sites.

*Id.* at 38 (emphasis added).

## 5. Management Recommendations to Protect Cultural Resources in Arch Canyon

Owing to the significance of the documented cultural sites, and the estimated number and likely significance of the undocumented cultural resources that exist in Arch Canyon as described and analyzed in Mr. Spangler's report and discussed above, it is imperative that BLM take immediate action to protect these resources. Given that all of the sites discussed in Mr. Spangler's report are eligible for the National Register, federal land management strategies should reflect the agency's commitment to preserve cultural resources of significance to all Americans and to protect inherent values of spatial context and aesthetics in a manner that does not diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. BLM must undertake more comprehensive efforts to document the cultural resources that could be impacted; more aggressive planning efforts to avoid, minimize and mitigate adverse effects to historic properties; and a more detailed analysis of adverse impacts. It is imperative the agency take immediate steps to protect the outstanding cultural resources of Arch Canyon and to prevent further adverse impacts to these resources.

BLM's Strategic Paper acknowledges that the agency is failing to protect these resources:

*[W]e are failing to actively manage the resources entrusted to us.* Our Section 106 compliance efforts have resulted primarily in finding cultural properties and avoiding them, or allowing them to be destroyed after mitigation. While this is a form of preservation, it is not the same as long-term management of cultural properties for the full range of values they contain.

Natural and human-caused threats are reducing our opportunities for interpreting sites, for providing long-term access to properties valuable to Native Americans and other ethnic groups, for promoting and facilitating scientific research, and for conserving properties for the future. *Increasing visitation to the public lands is*

*resulting in intentional and inadvertent damage through collection, vandalism, surface disturbance, and other depreciative behavior. . . . With every year that passes, the diversity of our cultural resources is reduced, and we lose more of our ability to tell the story of the public lands.*

Strategic Paper at Attachment 1-2, attached as Exhibit I. (emphasis added).

Mr. Spangler makes the following specific recommendation, based on his fieldwork, and professional experience in other areas of the state with significant cultural resources:

- 1) Given the potential for significant numbers of undisturbed archaeological sites of National Register significance in the Arch Canyon drainage, the BLM should restrict vehicular access in Arch Canyon to administrative, law enforcement and research purposes only, as an appropriate strategy to protect the long-term integrity of sites in all areas above [the signed and fenced site] at the mouth of the canyon. All trails, especially those into sensitive areas with potential cultural deposits, should be closed and the closures enforced. The archaeological values evident on the slopes below architectural sites and along the edges of the floodplain – all areas accessible to mechanized vehicles – remain poorly understood and have not been adequately documented. There remains a high potential that at least one major site with National Register eligibility could be directly impacted by off-road activities in the future. It is anticipated that additional sites will be located along the existing ORV route and could be directly impacted by vehicular activities.

As demonstrated by vandalism research in Range Creek Canyon in eastern Utah (Spangler, Arnold and Boomgarden 2006), there is a direct relationship between unrestricted vehicular access and site vandalism. Areas inside the Range Creek controlled access points had significantly less evidence of adverse impacts caused by illegal or inappropriate human activities, whereas cultural sites located outside controlled access points have been seriously damaged and in some cases destroyed. These data suggest that individuals engaged in illegal activities use mechanized vehicles to arrive at their targeted sites, and that illegal activities typically occur within 200 meters of an existing road.

- 2) The BLM should implement a permit system that requires Arch Canyon visitors to identify themselves by name and address and/or limiting the number of visitors in the canyon on any given day. A similar permit system has been employed in other areas of southeastern Utah, and both strategies were recently employed in Range Creek Canyon where they have produced notable results. Visitors are less likely to engage in illegal or inappropriate

behavior if their names are on an official register. And in Range Creek, the limited access has promoted a greater awareness among visitors as to the sensitive nature of cultural resources, and it has also afforded law enforcement an opportunity to disseminate appropriate information about site etiquette. It should be noted that the success of this effort in Range Creek Canyon is predicated on a consistent law enforcement presence in the canyon (Spangler, Arnold and Boomgarden 2006).

- 3) The BLM should clearly identify preferred pedestrian routes to archaeological sites that avoid potential midden areas and exposed artifacts. Several heavily visited sites have multiple foot trails, many in areas of potential sensitivity for cultural resources. Ceramic artifacts are visible on or near two of these foot trails, suggesting the potential for degradation of subsurface deposits is significant. Preferred pedestrian routes should include signage regarding surface collecting, restacking walls, concentrating artifacts into piles and climbing on or through architecture. Access to structures on narrow ledges should be prohibited inasmuch as access to these features poses serious safety risks and potential for structural degradation due to leaning against or pulling on walls for support.
- 4) A greater BLM presence in the canyon would promulgate a greater public awareness of the importance of site preservation. Given the agency's budgetary restrictions, the BLM should seek the assistance of commercial tour operators, site stewards and volunteer organizations with a vested interest in the long-term preservation of the canyon's resources. This should include training requirements for commercial tour operators and outfitters to ensure proper site etiquette, and written materials should be disseminated to all canyon visitors as a means to promulgate the importance of these resources to all Americans.
- 5) A consistent and clear message of site preservation and ethics must be implemented to promulgate proper protection of cultural resources for future generations. BLM efforts toward this end have been thwarted by the theft of signage, and although deplorable, it does not exonerate the agency of its responsibility to promote the preservation and protection of cultural sites. Appropriate educational and preservation messages should be disseminated at selected locations of high visitation, including but not limited to the trail heads at major sites. Currently, a checklist of intended activities filled out by visitors at the BLM kiosk at the mouth of the canyon includes a generic "collecting" category. This is confusing and could be construed by some to mean that surface collecting of cultural materials is an appropriate activity. Appropriate activities should be clearly specified, and the "collecting" category deleted.
- 6) The BLM should initiate consistent site monitoring to better determine the nature of illegal collecting and the cumulative effects of site degradation. The apparent absence of a photographic database and detailed IMACS forms has

inhibited detailed assessments in the past. A regular monitoring program could assist land managers in the development of strategies to quantify site degradation and to develop strategies to mitigate and repair damage to sites.

- 7) Previous efforts to document the spatial distribution of archaeological sites in Arch Canyon are clearly inadequate and the quality of this research does not reflect current scientific standards. During the course of relocating nine previously recorded sites, five additional sites were identified by CPAA in April 2006, and nine additional sites were identified in October 2006 in a concentrated area of the canyon. Additionally, at least three previously recorded sites had significant features that were not mentioned in the initial site forms. The identification of new sites and additional features was made with little effort, suggesting a more comprehensive effort (Class III) will identify significant numbers of additional sites within the canyon corridor. It is further anticipated that closer inspection of the floodplain and adjacent slopes will identify agricultural features, middens and special use locales that will provide a broader understanding of human adaptations in the region. BLM land management decisions should be predicated on a scientifically sound database, although such a database currently does not exist. The BLM cannot properly take into account potential adverse effects if it does not know what those resources are.

*Id.* at 42-44 (emphasis added).

### **III. ORV USE IN THE ARCH CANYON AREA IS CAUSING AND/OR WILL CAUSE CONSIDERABLE ADVERSE EFFECTS TO RIPARIAN RESOURCES**

#### **1. Importance of Riparian Areas**

Riparian areas are “*the most important, productive, and diverse ecosystems, yet they comprise less than one percent of the approximately 22 million acres of public lands administered by the Bureau of Land Management (BLM) in Utah.*” Utah

Riparian Management Policy, IM UT-2005-091 (Riparian Policy) at 1 (emphasis added).

Riparian habitats in the southwestern United States, including southern Utah, have been significantly reduced from their original abundance, and it is estimated that “*at least 70% of the original area of riparian ecosystems has been cleared by human activities*” and that only 10% of the original native cottonwood-willow habitat type remains. *See*



Charles Schelz, Arch Canyon Assessment and Management Recommendations, (August 2006) at 2, (citing Swift and Barclay (1980)) (emphasis added), attached as Exhibit E.

Charles Schelz cites a study from the Utah Division of Wildlife Resources that estimates that *riparian areas support 75-80% of all wildlife species*. *Id.* at 2. Many of the conditions that make riparian areas rare and valuable, such as water retention and increased primary production, particularly in an arid landscape, also make them sensitive to disturbance and major destructive changes. *Id.* (citing Muldavin et al. (1998)).

“Riparian areas are a form of wetland transition between permanently saturated wetlands and upland areas. They are defined as an area of land directly influenced by permanent (surface or subsurface) water. They have visible vegetation or physical characteristics reflective of permanent water influence. Lakeshores and streambanks with perennial water flow are typical riparian areas. It includes wetlands and those portions of floodplains and valley bottoms that support riparian vegetation.” Utah Riparian Policy, at 1.

Scientists have long recognized the importance of healthy and productive riparian areas, and BLM’s Riparian Policy incorporates this knowledge noting that riparian areas “provide water, food, cover, and travel lanes for many aquatic and terrestrial wildlife species, some of which are obligate to the riparian area and not found in dryer upland areas. Native riparian area plants and their root systems contribute to improved water quality and quantity by holding soils in place while filtering sediments, increasing ground water recharge, and protecting streambanks. The value of riparian areas to the general public has been increasing by providing opportunities for a wide variety of recreation activities and aesthetic attributes.” *Id.* at 1. And, as discussed in an earlier section of this

Petition, riparian areas also attracted Ancestral Puebloan settlements, who left behind artifacts and other clues as to their life and farming practices.

## **2. Executive Order 11988 and Executive Order 11990 and BLM's Utah Riparian Management Policy**

### **a. Executive Order 11988 and Executive Order 11990**

In recognition of the critical importance of riparian areas, two executive orders have been issued which require their protection. Executive Order 11988 (May 24, 1977) requires federal agencies take actions to *restore and preserve* the natural and beneficial values served by floodplains. Executive Order 11990 (May 24, 1977) requires federal agencies to *minimize the destruction, loss, or degradation* of riparian areas and wetlands, and to preserve and enhance the natural and beneficial value of wetlands.

### **b. BLM Riparian Management Policy: Riparian Areas Must be Restored and Improved**

Given the extreme scarcity of riparian areas on public lands in Utah, the protection of these resources must be a top priority. Indeed, BLM's Utah Riparian Policy, which expands on the Executive Orders, states:

The objective of the policy is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses.

*Id.* at 2 (emphasis added).

To that end, the Policy Statement of the Utah Riparian Policy states:

In order to meet the purpose and objective of this policy, field/monument offices will, to the extent possible:

1. Maintain and/or improve riparian areas to Proper Functioning Condition (PFC) by incorporating riparian resource needs in Resource Management Plans (RMPs) and other activity plans.<sup>10</sup>
2. Inventory and map riparian areas within each office.
3. Classify riparian areas into logical, usable groups for planning purposes which include activity plans, and project plans.

Riparian areas are functioning properly when adequate vegetation, land form, or large woody debris is present to:

- a. dissipate stream energy associated with high water quality,
- b. filter sediment, capture bedload, and aid floodplain development,
- c. improve floodwater retention and groundwater recharge,
- d. develop root masses that stabilize streambanks against cutting action,
- e. develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for native fish production, waterfowl breeding, and other uses, and
- f. support greater biodiversity.

Riparian areas are functioning properly when there is adequate structure present to provide the listed benefits applicable to a particular area.

4. Protect riparian areas through sound management practices and avoid negative impacts to the maximum extent practicable; compliance with and monitoring of mitigating measures for surface disturbing activities in the riparian area; and, where appropriate, identify crucial or unique riparian areas that would benefit from special designation.

No new surface disturbing activities will be allowed within 100 meters of riparian areas unless it can be shown that:

- a. there are not practical alternatives or,
- b. all long term impacts can be fully mitigated or,
- c. the activity will benefit and enhance the riparian area.

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<sup>10</sup> Proper Functioning Condition (PFC) is a methodology for assessing the physical functioning of riparian-wetland areas. The term PFC is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland area. *Id.* at 14.

5. Riparian areas are to be improved at every opportunity. Enhancement will be through management methods unless it is obvious that structural developments are the only feasible solution.
6. Objectives for restoration, enhancement, protection, preservation, and development of riparian areas shall be included in all land use and/or activity planning efforts. Objectives shall be established for key sites and effectively monitored.
7. Riparian areas will be retained in the public land system unless it can be clearly demonstrated that specific sites are so small or isolated that they cannot be managed in an effective manner by BLM or through agreement with State or Federal agencies or interested conservation groups.

Exchanges involving land containing riparian areas will generally not be permitted unless it can be shown that parcels containing superior public values are being acquired or that existing riparian areas will be enhanced.

8. Cooperate with and encourage the involvement of interested Federal, State, Tribal, and local governments as well as private conservation and volunteer groups. They will be encouraged to share information, implement management systems or projects, coordinate activities, and provide education on the value, productivity and management of riparian areas.

*Id.* at 3-4 (emphasis added).

### **3. Arch Canyon is “Functioning at Risk” with a Downward Trend Due to ORV Use**

#### **a. Arch Canyon’s Riparian System is at Risk**

Even though riparian areas are the most productive and biotically diverse habitat in Utah, and even though BLM’s stated policy is to maintain and/or improve riparian areas to Proper Functioning Condition, BLM is managing Arch Canyon in a way that is allowing ORV use to impact the riparian area, such that it is not in Proper Functioning Condition (PFC). Indeed, as discussed below, the BLM’s current management actions

are contributing to the current downward trend, which will not likely start reversing until ORV use is prohibited from the canyon.

BLM's most recent PFC assessment forms for Arch Canyon are dated 1994 and 1995 – assessments that are over 10 years old. The 1994 PFC assessment states that Arch Canyon is “Functioning at Risk” and the factors that were listed as contributing to the “Functioning at Risk” rating includes roads and recreation. The “road” was acknowledged as contributing to excessive sedimentation. Although the 1995 PFC lists Arch Canyon as “Properly Functioning” the worksheet states that “excessive sedimentation” is occurring. There are no current PFC assessments for Arch Canyon on file at the BLM.

Charles Schelz, a botanist, biologist and ecologist with nearly 20 years of experience in the western United States and the Four-Corners region (including southeastern Utah) has recently studied Arch Canyon and determined that *Arch Canyon is currently “Functioning at Risk” with a downward trend.*<sup>11</sup> See Schelz, at 9-26, 47-49, attached as Exhibit E.

It is no great surprise that the ORV route has caused significant adverse impacts to the riparian area. Mr. Schelz states:

Many sections of the riparian areas of Arch Canyon that contain the 4-wheel drive route are at risk of becoming non-functional in their present state of increased erosion and scouring. These at-risk sections lack productive habitat for fish, amphibians, aquatic organisms, and wildlife. They no longer dampen flood peaks or assist in recharging subsurface aquifers. There is evidence of a lowered water table in areas where once-productive wet meadows are now occupied by sagebrush, cheatgras and other typical upland plants.

*Id.* at 38.

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<sup>11</sup> Mr. Schelz has spent many hours in the field performing PFC analyses, and has worked with the National Riparian Service Team evaluating nearby Salt Creek, in the Needles District of Canyonlands National Park. See Schelz at 9-10, attached as Exhibit E.

Mr. Schelz concludes that:

[I]f the road remains, the downward trend will continue and the system will eventually degrade further. Sections of the channel that now handle spring runoff and summer floods easily will become unstable and erode.

*Id.* at 38, 40 (emphasis added).

Mr. Schelz's PFC assessment documented unnatural channelization in areas where the stream channel has connected with the ORV route and straightened. This unnatural straightening affects the stream's energy absorbing capacity to slow and spread the water out onto the floodplain, which is an extremely valuable ecological function. *See* Schelz at 13. Mr. Schelz's PFC assessment also states that the bank stability is moderate to poor in 30-40% of the middle reach of Arch Canyon (the "middle reach" encompasses approximately 80% of the canyon area managed by BLM – beginning 1.5 miles below the USFS boundary downstream to 0.5 miles above the mouth of the canyon). The "poor" rating for bank stability is based on "the many unvegetated and unstable and detached areas associated with the route crossings. At a number of crossings the streambank is in excellent condition upstream but deteriorates immediately downstream due to flooding damage and erosion of the unvegetated sections." *Id.* at 14. Mr. Schelz also notes that the floodplain in the middle reach is traversed numerous times by the 4-wheel drive route and thus is "extremely susceptible to increased flow velocity and washouts." *Id.* at 19.

Although streambed rock armoring in Arch Canyon is generally good, the notable exception is where the ORV route crosses the stream – at these crossings, larger rocks are broken up and displaced, creating an almost entirely smooth sandy streambed and bank at and downstream of the crossing. *See id.* at 20. "These sandy areas enlarge and spread

further downstream as more and more flood events scour downstream rock armoring. They also are deepened by scouring during floods, creating deep open pools that vehicles avoid, thus spreading the damage to an even wider area.” *Id.* at 20.

Mr. Schelz’s assessment noted that point bar revegetation (vegetation on sediments that have accumulated on the inside bend, or point bar, of a meander which helps decrease sedimentation and increase sinuosity) is inhibited in many areas of Arch Canyon, due to scouring and increased flow velocity. As a result, the channel widens, tending away from balance. *See id.* at 21. The increased velocity of the flow during floods has likely affected the establishment of cottonwood trees and retarded the development of younger age classes in the floodplain, which could explain the gap in young mature cottonwood trees in Arch Canyon. *See id.* at 21, 22. Grasses and forbs have also been impacted by the lateral cutting and the subsequent erosion and clearing. Mr. Schelz estimates that 55%-65% of the channel is covered by plant cover, where as areas in a functional condition would have 80%-90% of the surface covered by vegetation. *Id.* at 24.

Mr. Schelz’s assessment states that:

There are many sections of Arch Canyon that contain vegetation with deep binding root masses, but there are also many sections where the vegetation and/or soil has been so disturbed that these conditions do not exist. The fact that there are sections with well established vegetation indicates that this condition should be more prevalent throughout the system. If the stream channel is protected from excessive erosion and lateral cutting, the establishment of these types of plants in damaged areas would occur in time. I estimate that 55% to 65% of the stream bank in Arch Canyon contains deep binding root masses, however, all indications are that this system could support more than 85% cover of this vegetation type.

*Id.* at 25.

Based on his thorough Condition Assessment and past experience, Mr. Schelz concludes that the presence of the 4-wheel drive route in the canyon bottom, which traverses the floodplain and crosses the stream as many as 60 times in the 8.5 miles of BLM-managed lands, is the primary factor for the current assessment of “Functioning at Risk” condition with a downward trend. *See id.* at 31, 48. The presence of the 4-wheel drive route is a significant impediment to Arch Canyon reaching Proper Functioning Condition. *See id.* at 31.

**b. ORV Route in Arch Canyon is Causing Adverse Impacts to Riparian Area Resources**

Mr. Schelz’s riparian Conditions Assessment contains references for extensive studies concerning the ecological effects vehicle routes on riparian areas (Andrews 1990, Brown 1994, Dittmer and Johnson 1975, Forman and Hersperger 1996, Forman and Alexander 1998, Gelbard 1999, Harris and Gallagher 1989, Harris and Scheck 1991, Iverson et al. 1981, Langton 1989, Miller et al. 1996, Montgomery 1994, Oxley et al. 1974, Schmidt 1989). It is clearly documented that there are negative ecological effects caused by routes including:

- 1) increased soil erosion and compaction;
- 2) increased water velocity;
- 3) plant community destruction;
- 4) loss of terrestrial and aquatic insect communities;
- 5) soil, water, and air pollution;
- 6) sound pollution;
- 7) exotic plant invasion;
- 8) loss of fish and wildlife habitat;
- 9) reduction of fish and wildlife populations.

Many of these effects are top priority resource issues identified by the Bureau of Land



Management and other federal and state land management agencies. *See id.*

Mr. Schelz's report emphasizes that multiple negative effects of vehicle routes in riparian areas are related by a cascading sequence of cause and effect:

An overview of this cascade begins with the impact of vehicle tires on a stream bank. Vegetation is crushed and eliminated, which allows more soil to be washed downstream and the velocity of high water flows to increase. This scouring effect can uproot and further destroy vegetation downstream, as well as diminish the naturally meandering and morphologically diverse nature of the channel. The adjacent floodplain is affected in two primary ways by 4-wheel drive routes. Loss of vegetation along the stream bank prevents high water flows from slowing down and backing up onto the floodplain to allow for groundwater and nutrient recharge. Alternatively, high water flows can jump onto the incised, compacted soil path of a 4-wheel drive route. The 4-wheel drive route then becomes a "storm water discharge conduit," causing scouring, lateral cutting between the 4-wheel drive route and the original stream channel, straightening of the channel where the 4-wheel drive route cuts off a natural meander, increased water velocity, and reducing the amount of potential floodplain infiltration and recharge. With diminished sediment in the stream channel and less ground water recharge in the floodplain, in-stream flow is lowered during low flow periods – negatively affecting aquatic habitat. Ultimately, the final loser in this cascade of events is native biodiversity.

*Id.* at 31-32, Exhibit E.

Mr. Schelz identifies the impacts of the ORV route in Arch Canyon for several individual natural resources that are associated with a healthy riparian area:

**Vegetation.** Observations focused primarily in areas at or downstream of the 4-wheel drive route crossings. At these locations, it was common to see denuded and washed out stream banks, sparsity of regenerating shrubs (in contrast to the higher levels of shrub regeneration away from the 4-wheel drive route), less than ideal total ground cover of native grasses and forbs, lower than expected deep binding root masses along the streambank, and the occasional presence of undesirable exotic plants. Figure 19 [of Report] shows one area of many in Arch Canyon where these negative conditions exist. This kind of damage is extremely difficult to stop once the initial damage takes place. With every new high flow event, the damage widens and continues downstream because bank and vegetation damage, especially to the shrubs, grasses, forbs, and exposed soils, creates ideal openings for undercutting and uprooting established vegetation downstream of the

scar. The lack of vegetation rooted in the soil next to a stream channel negatively affects several ecological functions of a healthy riparian area, including: the filtering of sediment, capturing of bedload, slowing down high water flows to decrease scouring (erosion), as well as the promotion of over bank flooding to recharge both water and nutrients in the floodplain. In addition, loss of vegetation inhibits the ability of the overall riparian corridor to support greater biodiversity. These ecological functions will continue to be impeded by the existence of the 4-wheel drive route.

**Landform/Soils.** The soils in a properly functioning riparian area are sufficiently deep to hold water and act as a rooting medium, are relatively unexposed, are present on the bottom of the stream channel, and build up on the inside of stream meanders in the form of point bars. The exposed soil visible in Arch Canyon at the 4-wheel drive route crossings and on the 4-wheel drive route bed allow an intensifying cycle of erosion to occur downstream of the initial scar, with all the attendant negative effects of erosion on water quantity, establishment of native vegetation, and channel morphology. If a flood is large enough, the flow will be diverted onto the 4-wheel drive route, which will make the vegetation and soil between the 4-wheel drive route and the stream bed highly susceptible to lateral cutting impacts, furthering erosion. Figures 11-14 [of the report] illustrate typical areas where the 4-wheel drive route has a direct effect on the loss of vegetation and exposure of bare ground. The conditions in these photos point to future erosion problems.

There are many sections in Arch Canyon where flow velocity has increased, due to the cascade of 4-wheel drive route effects, to the extent that sediment does not have a chance to settle and the formation of point bars is inhibited. This often results in banks that are either scoured to bedrock or left with a jumble of large cobbles and boulders. This rock armoring performs valuable functions that protect the channel from excessive erosion, but it does not encourage the development of point bars and vegetation.

**Hydrology.** Hydrologic conditions in a properly functioning riparian area consist of a meandering channel with diverse ponding and channel characteristics, and banks that are vegetated and stable. Hydrological impacts [in Arch Canyon] were obvious in areas where the road ran parallel to and where it crossed the stream. Although stream channel meanders and point bar formation were visible in the Canyon, there were also areas where the 4-wheel drive route has caused a straightening of the channel and increased erosion effects. Channel straightening occurred from lateral cutting when high flows jumped up onto the road and scoured banks from increased flow velocity. The loss of the naturally meandering channel has serious negative effects on the transport of sediment, development and maintenance of habitat for fish, aquatic insects and aquatic plants, and the

transfer of oxygen into the water. These are all major components of healthy fish habitat, the loss of which is a great danger to the continued survival of the flannelmouth sucker in Arch Canyon. Any loss of the channel's sinuosity also lessens the water retention function of the floodplain and thus seriously impacts the ability of the water table to stabilize and sustain a healthy riparian system.

One of the critical ecological functions of a healthy riparian area is to stabilize stream banks. Motor vehicles going up and down a stream bank often swerve and cause additional damage with multiple passes, widening the bank scar. Figure 21 [of the Report] shows areas [in Arch Canyon] where multiple routes have formed, destabilizing the streambank, degrading fish habitat, and making the area susceptible to future flood damage.

Oftentimes, stream channel erosion is initiated at a crossing due to the displacement of coarse streambed materials in the channel by the passing of vehicles. This will start the formation of a deep pool at the crossing without vegetation or rocks to armor it against high velocity flows. Once a deep sandy pool is formed drivers will avoid it by driving around it, thus creating a larger bank scar, or creating another 4-wheel drive route up the bank altogether. The total failure of sections of stream bank in Arch Canyon is testament to the presence of hydrological dysfunction in the Canyon.

**Exotic Species.** When the stream channel loses its wet meadow vegetation and widens, and the channel becomes straighter and incised because of a persistent disturbance, such as a 4-wheel drive route, the nature and ecological functioning of the riparian landscape changes. Acting as a storm water conduit, the channel experiences less shifting of the kind that historically created mosaics of riparian vegetation, especially cottonwood and willow habitat (Crawford et al. 1993). Decreased over bank flooding creates less suitable floodplain habitat for establishment of cottonwood seedlings, which are dependent on recently inundated sediments to become established. Less over bank flooding also results in a decline in the diversity of native species because when the frequency or intensity of a natural floodplain disturbance is decreased, competitively superior non-native exotic plants may invade the floodplain (Hobbs and Huenneke 1992).

Exotic species invasion is a top priority resource management issue for the federal land management agencies. Changes in plant species composition, relative abundance of species, and plant density cause the overall plant community structure to change. Roads and motor vehicles are the primary vector for invasive weeds (Gelbard 1999), and the establishment of weeds is only successful if there has been some disturbance to the system. Having the 4-wheel drive route in Arch Canyon not only introduces seeds of exotic and noxious weeds to the canyon, but it also creates the conditions for successful germination and survival by the

destructive actions described above. At this point, the weeds in Arch Canyon can be easily controlled, but if degradation continues to occur, control will be much more difficult.

**Water Quality.** Although no water quality parameters were measured, information about probable trends and potential impacts can be presented by extension from nearby analogous studies. Schelz (2001) collected water samples in Salt Creek in Canyonlands National Park just north of Arch Canyon. In a comparison of 3 water quality sites, the site with a 4-wheel drive route had relatively higher levels of turbidity, temperature, and Total Suspended Solids (TSS) compared with those lacking a 4-wheel drive route. These elevated levels in the 4-wheel drive route site also exceeded state standards. The BLM has been monitoring water quality in various streams in the SE Utah area. In streams where a 4-wheel drive route is present, the agency also found elevated levels of turbidity, temperature, and Total Suspended Solids (USDI 2005).

An additional parameter measured by the BLM in SE Utah streams was the presence of Total Petroleum Hydrocarbons (TPH). They detected levels at all sites where vehicles drove through water (USDI 2005). Not all sites were sampled for TPH, but the results clearly suggest that TPH are likely to be present wherever vehicles traverse water. Considering this information, the BLM should be concerned about the cumulative impact of TPH. TPH in water cause chronic and deleterious effects on aquatic organisms, especially algae, plants, and aquatic macroinvertebrates. These organisms are the primary constituents in the natural food chain of desert riparian areas, and they are particularly important to fish. Any leak of TPH into natural waters will adversely affect the food base of fish and other animals of the riparian area, including amphibians, reptiles, and birds. Fish and amphibians can be impacted directly through uptake by the gills, ingestion of oil or oiled prey, effects on eggs and larval survival, loss of algae, or changes in the ecosystem. Oil has the potential to impact spawning success, as eggs and larvae of many fish species are highly sensitive to oil toxins (USDI 2004).

Preventing leakage of TPH from vehicles is nearly impossible. There are few 4-wheel drive vehicles that do not leak some amount of TPH. Also, once TPH leaks into the water, it is virtually impossible to clean it up without specialized equipment. Unlike other water quality parameters affected by vehicles, TPH does not disappear within a few hours, but is persistent within the system and accumulates with each additional dose from other vehicles.

**Aquatic Macroinvertebrates.** Aquatic macroinvertebrates are integral components in the food chain of riparian areas throughout the world. They supply food to nearly every faunal group in these extremely important wildlife

habitats. They are an important food source for anadromous and resident fish, as well as amphibians, birds, bats, and other mammals. They also are important herbivores, detritivores, as well as predators of other invertebrates and, therefore, play a critical role in the cycling of energy and nutrients through stream ecosystems (Vaughan 2002). As mentioned previously, riparian areas provide habitat and sustenance to an inordinate proportion of wildlife in desert ecosystems.

Aquatic macroinvertebrates are extremely sensitive to water quality and habitat degradation. Schelz (2001) studied macroinvertebrates in pools in Salt Creek, a nearby similar riparian system. I found on that study decreases in species richness in sections of Salt Creek where vehicles drove through the channel. Haskell (1998) found that macroinvertebrate terrestrial fauna was significantly less abundant and less diverse close to roads in his study. Leaf-litter depth was also reduced close to roads. Haskell suggested that the effects of roads on faunal abundance and leaf-litter depth may persist up to 100 m from the road, whereas the effect on faunal richness persists to 15 m. Streams that had steep declines in macroinvertebrate abundance and richness tended to be wide and to have open canopies. These conditions are present in Arch Canyon, primarily due to the presence of the 4-wheel drive route.

In Arch Canyon, a variety of aquatic macroinvertebrate species was observed throughout the Canyon. Although aquatic macroinvertebrates were not sampled for this Assessment, it is likely that the habitat degradation documented in this report has had detrimental impacts on species richness of the aquatic macroinvertebrates in Arch Canyon. It is also likely that the immediate and cumulative effects of the leaking of THP from vehicles also has a detrimental effect on aquatic macroinvertebrate populations.

*Id.* at 32-38.

#### **4. Post-Flood Impacts**

As noted in the Introduction section of this Petition, there was a series of heavy rainstorms, in the beginning of October 2006 that released over one-half the yearly average rainfall of a normal year of precipitation within a week. *See* Schelz, at unnumbered 0 (Dec. 2006), attached at Exhibit F. The consequent flooding in Arch

Canyon brought about many of the adverse impacts predicted in Mr. Schelz's August 2006 report.

Mr. Schelz's assessment of the damage that resulted from the October flood events is as follows:

The heaviest damage was documented in areas where the floodwaters jumped from the channel, and instead of spreading out over the floodplain, as would occur in a properly functioning system, were quickly diverted by the presence of an unvegetated and entrenched 4-wheel drive route that crosses the channel 60 times in 8.5 miles. This interception of the floodwaters by the 4-wheel drive route contributed to a substantial increase in flow velocity and energy because the waters became constricted and concentrated within the artificial channel created by the 4-wheel drive route. This, in turn, contributed to substantially more erosion than what would have occurred if the 4-wheel drive route didn't exist, and it greatly increased the destruction of vegetation and streambanks, in particular in areas where the 4-wheel drive route crosses the stream channel. There are many areas where the stream channel has widened due to streambank failure and vegetation loss during these floods. All of this has contributed to the further loss of riparian habitat, and in particular, fish habitat, upon which the flannelmouth sucker and the bluehead sucker depend for survival.

If the 4-wheel drive route did not exist in Arch Canyon at the time of the flood, the water would typically have spread out over the floodplain instead of being channeled quickly down the 4-wheel drive route. Spreading onto the floodplain, the water's energy would have been significantly reduced and dispersed. This would have minimized erosion and streambank failure and added many ecological benefits to the floodplain and surrounding area. The floodplains would have received additional sediment and nutrients and the water table would have been significantly recharged. This would have presented the ideal scenario for the development and enhancement of the future riparian habitat in Arch Canyon.

*Id.* (emphasis added).

Mr. Schelz's Addendum report provides photographic documentation of the riparian condition, comparing photographs taken in April 2006 before the flood events, and repeated in October 2006 after the flood events. Examination of this "before and after" photo-documentation dramatically illustrates that the potential threats described in

Mr. Schelz's August 2006 report have, indeed, become reality in Arch Canyon due to the presence of the ORV route. The "before and after" photographs exemplify the "detrimental processes that have occurred in Arch Canyon as a direct consequence of floodwaters being diverted onto the road channel." *Id.* at 2, attached as Exhibit F.

The following series of photographs illustrate, in detail, the detrimental processes that have occurred in Arch Canyon as a direct consequence of floodwaters being diverted onto the ORV route. Mr. Schelz's discussion of the flood impacts state:

- 1) The channel has widened in many sections because of the destruction of the streambank in many areas, especially areas where the 4-wheel drive route crosses the stream. [Photo sets 1, 2, 4, 5, and 6 on following pages].
- 2) The channel has changed from its natural sinuosity and straightened due to merging of the 4-wheel drive route and the stream in many areas, particularly at stream crossings. The effect is similar to having a constructed storm drainage channel. [Photo set 1 on the following page].
- 3) There has been a significant loss of riparian and upland vegetation due to erosion and increased energy of the stream flow. Higher flow energy occurs in areas with less vegetative and substrate resistance, such as the 4-wheel drive route. [Photo sets 1, 2, and 5 on the following pages].
- 4) The loss of fish habitat is visible in the form of soil and streambank erosion, and the loss of overhanging vegetation. This kind of impact from increased energy flow could eliminate the flannelmouth sucker and the bluehead sucker from Arch Canyon. These fish populations are physically separated from other populations and could be rare disjunct populations. Movement patterns, genetic studies, and habitat analyses are needed to answer questions about their viability in Arch Canyon. [Photo set 6 on the following pages].
- 5) There was a visible increase in coarse rocky material and a decrease in fine sandy materials in the stream channel throughout Arch Canyon. This condition negatively effects the establishment of native riparian vegetation and it may give exotic weeds an advantage in the few areas where plants can re-establish. [Photo set 1, 2, 3, 4, 5, and 6 on the following pages].

*Id.* at 3-14 (emphasis added).



**Figure 1a.** Photo taken in April, 2006. This is a proper functioning section of the streambed in Arch Canyon. Note the thick riparian vegetation on both sides of the ORV drive route.



**Figure 1b.** Repeat photo of Figure 1a, taken in October, 2006. The ORV route (in center of photo) funneled water and caused extensive damage through widening and deepening around the route. Other areas with thick vegetation stayed intact.





**Figure 2a.** Photo taken in April 2006. Upstream view from where ORV route exits the stream channel in Arch Canyon.



**Figure 2b.** Repeat photo of Figure 2a, taken in October 2006. Many plants have been eliminated between the ORV route and the stream channel (on the left) as flow was diverted onto the route during flooding.



**Figure 3a.** Photo taken in April 2006. Downstream view where the ORV route crosses the stream channel in Arch Canyon.



**Figure 3b.** Repeat photo of Figure 3a, taken in October 2006. Note the bank erosion and loss of vegetation along the bank on the left side and the exposed tree roots.



**Figure 4a.** Photo taken in April 2006. Downstream view where ORV route crosses the stream channel in Arch Canyon.



**Figure 4b.** Repeat photo of Figure 4a, taken in October 2006. Floodwaters followed the ORV route and eroded away the stream bank and vegetation between the route and the channel. Also note the erosion of soil and exposure of large rocks from the tremendous energy of the early October floods.



**Figure 5a.** Photo taken in April 2006. Upstream view where ORV route crosses the stream channel in Arch Canyon. People are walking on the ORV route.



**Figure 5b.** Repeat photo of Figure 5a, taken in October 2006. Floodwaters jumped onto the ORV route and eroded away the streambank and vegetation between the route and the channel.



**Figure 6a.** Photo taken in April, 2006. Stream channel facing upstream in Arch Canyon; ORV route is out of sight and on left.



**Figure 6b.** Repeat photo of Figure 6a, taken in October, 2006. The stream channel has widened and deepened and vegetation has been eliminated.

## **5. Management Recommendations to Improve and Protect the Riparian Resources in Arch Canyon**

There can be little doubt that ORV use in Arch Canyon is causing and will cause considerable adverse effects to the extensive riparian area. Indeed, based upon Mr. Schelz's assessment and observations, he states that there are **sections of Arch Canyon that are at risk of becoming non-functional** due to increased erosion and scouring that is occurring and will continue to occur as long as the ORV route continues to be used. *See* Schelz, at 31-38 (August 2006). The at-risk sections of the stream lack productive habitat for fish, amphibians, aquatic organisms, and wildlife. These sections no longer dampen flood peaks or assist in recharging subsurface aquifers, and there is evidence of a lowered water table in areas where once-productive wet meadows are now occupied by sagebrush, cheatgrass, and other typical upland plants. *See id.* Based on the current conditions, Arch Canyon's riparian areas "appear to be in a less ecologically productive state than their natural potential." *Id.* at 38. Although erosion is a natural and integral part of southeastern Utah's canyon country, "there is a significant increase in the actual and potential extent and destructive energy of floods because of the presence of the road in and around the stream channel." *Id.* ***Mr. Schelz's opinion is that if the ORV route remains in Arch Canyon the downward trend will continue, the system will degrade further, current damages will be exacerbated, and new impacts will be incurred. See id.***

Based on his assessment of Arch Canyon's riparian areas and past experiences with other riparian areas in southern Utah, including nearby Salt Creek in Canyonlands National Park, Mr. Schelz recommends that BLM:

- 1) Close the 4-wheel drive route and keep motor vehicle and bicycles out of Arch Canyon, and maintain a hiking trail be that conforms to engineering standards designed to protect riparian and upland systems;
- 2) Restore sections of Arch Canyon where vehicles have created areas susceptible to erosion, focusing primarily on the 60 route crossings;
- 3) Develop a plan to actively control exotic species, including tamarisk;
- 4) Develop a coordinated management plan that will protect Arch Canyon's unique desert riparian area.

*See id.* at 39-40 (emphasis added).

#### **IV. ORV USE IN THE ARCH CANYON AREA IS CAUSING AND/OR WILL CAUSE CONSIDERABLE ADVERSE EFFECTS TO FISH RESOURCES**

##### **1. Special Status Fish Species – Flannelmouth Sucker and Bluemouth Sucker**

The flannelmouth sucker and bluehead sucker are native to the Colorado River system of the western United States and northern Mexico. In Utah, the species occur in the main-stem Colorado River, as well as in many of the Colorado River's large tributaries.

These populations have suffered reductions in abundance and distribution, similar to other near-extinct endemic fish in the Colorado River drainage. The primary threat to the flannelmouth sucker and bluemouth sucker is habitat degradation “primarily from human-induced activities that divert water, destroy overhanging vegetation, widen stream channels, and change the flow regime in both tributary and main stem streams.” Schelz (Aug. 2006) at 29. Habitat loss occurs when streams are dewatered. Habitat modification occurs when the natural stream flow regime is changed or when stream channels are modified by channelization, scouring, or sedimentation from land use practices such as grazing, building roads in erodible soils, or driving motor vehicles in the stream channel.

*See id.* **Modifications can lead to reduced streamflows and increased water temperatures especially in small tributaries, which has been shown to lead to stressed conditions with evidence of adult mortality at higher levels than normal in flannelmouth suckers.** *See id.* at 29-30 (citing Rees et al. 2005). Habitat fragmentation – precluding the exchange of individuals from separate populations -- in a small stream such as Arch Canyon, “can eventually lead to habitat loss and extirpation of some of the populations.” *Id.* at 30.

## **2. Sensitive Fish Species Threatened**

Incidental to the Conditions Assessment, Mr. Schelz documented the flannelmouth sucker, a state sensitive species, along with the more common speckled dace, in many pools throughout Arch Canyon starting at the outlet near Comb Wash upstream to the U.S. Forest Service boundary. *See id.* at 27.

The presence of these fish highlights Arch Canyon as “unique to the area because large fish the size of flannelmouth suckers in canyons of this small size are extremely rare in the Four Corners region, particularly in situations such as this where there is no continuous water connection to a larger river. *See id.* at 3-4. The nearest large river system is the San Juan River, which is separated from the mouth of Arch Canyon by approximately 25 miles of the mostly dry alluvium of Comb Wash. *See id.* at 3. ***It is possible that the flannelmouth sucker [and bluemouth sucker] is a “relict” population that has been separated from the species’ larger gene pool for millions of years.*** *Id.* at 4 (emphasis added).



The Utah Division of Wildlife Resources has recently conducted surveys in Arch Canyon for the flannelmouth sucker, and has published a report that emphasizes the unique situation of the fish and their precarious existence in Arch Canyon:

Little is known of the life history of isolated (i.e. lacking connectivity with mainstem drainages) populations. The presence of what may be isolated populations of flannelmouth sucker in Arch Canyon [ ] is, therefore, unique. Although the Arch Canyon population was first identified during 2003 surveys, evidence of successful reproduction was not found until this survey. Whether this reproduction is taking place by flannelmouth sucker migrating from the San Juan River into this creek during high flows or by resident fish, isolated from the mainstem San Juan River, is unknown.

\* \* \*

The use of tributaries to [flannelmouth sucker] populations is well documented [ ]. It is, therefore, likely that the apparent reduction in tributary habitat has negatively impacted [flannelmouth sucker] populations within southeastern Utah. However, the severity of these impacts are not know at this time. Recent research [ ] suggests that some of the three species [flannelmouth sucker, bluehead sucker, speckled dace] may be phylopatric to natal streams. If site fidelity is a life history strategy of three species populations, the impacts of tributary habitat losses may be greater than previously suspected.

Surveys to Determine the Current Distribution of Roundtail Chub, Flannelmouth Sucker, and Bluehead Sucker Conducted During 2005, Utah Department of Natural Resources, Div. of Wildlife Resources (December 2005), at 14, 15. Exhibit K.

Though not yet listed under the Endangered Species Act, the flannelmouth sucker is considered “rare,” “sensitive,” a “species of concern,” or “vulnerable” in most western states. *See* Schelz, at 30. A Utah Division of Wildlife Resources survey (Walker 2003) also found bluehead suckers in Arch Canyon. Although this species is not yet officially classified as “sensitive, it is a sensitive species and should be treated the same as flannelmouth suckers in regards to protection and research. *See id.* at 37.

Flannelmouth suckers bluehead suckers are benthic (bottom dwelling) fish that

primarily eat algae, although invertebrates and many types of plant matter are also consumed. The species spawns in streams over gravelly areas during the spring and early summer. Flannelmouth suckers prefer large rivers, where they are often found in deep pools of slow-flowing, low gradient reaches. In Arch Canyon, the fish prefer deep pools with overhanging banks and thick vegetation. This habitat is not ideal, however, due to the loss of the overhanging streambank and vegetation on one side of the channel. *See id.* at 27-29.

According to Mr. Schelz:

The most serious impact to the flannelmouth sucker is probably the loss of suitable habitat due to the destruction of the streambanks and vegetation by motor vehicles and the accelerated erosion processes caused by the presence of the 4-wheel drive route that crosses the stream at least 60 times.

*Id.* at 37. It is also probable that the “effects of total Petroleum Hydrocarbons (THP) on water quality has direct and indirect negative effects on the flannelmouth suckers in Arch Canyon. *Id.*

### **3. Management Recommendations to Protect the Flannelmouth Sucker, a State Sensitive Species, the Bluehead Sucker and other Fish, Amphibians, and Macroinvertebrates**

In addition to Mr. Schelz’s recommendation to close the ORV route in Arch Canyon to help protect and restore the riparian area and protect the fish (discussed in previous section), both UDWR and Mr. Schelz recommend further research and investigations of the flannelmouth sucker and bluehead sucker in Arch Canyon. UDWR anticipates that petitions to list the bluehead sucker and the flannelmouth sucker under the Endangered Species Act are imminent and that the effort to catalog the presence or

absence, and abundance of these species will provide “information that will enable a better response to, and possibly prevent, such petitions.” UDWR (2005) at 1, attached as Exhibit K.

Based on the current database of information about the flannelmouth sucker and bluehead suckers in the region, and the dearth of scientific data about these species in Arch Canyon and surrounding BLM lands, Mr. Schelz and UDWR recommend that ***BLM Fund research studies of the fish of Arch Canyon and in particular the flannelmouth sucker and the bluehead sucker. Research should focus on their movement patterns, habitat needs, and how long the flannelmouth suckers have been isolated from other populations. Comparative genetic studies are recommended.*** UDWR notes that greater knowledge of the life histories of these fish would also enhance the effectiveness of future conservation efforts. *See id.* at 15, and Schelz at 41.

Mr. Schelz recommends that BLM institute additional measures to protect the fish populations, and in particular the flannelmouth sucker and the bluehead sucker, in Arch Canyon and to enhance their habitat. The general lack of information for the flannelmouth sucker suggests that management should begin with a ***detailed survey of each drainage on BLM-managed land that could potentially hold populations of flannelmouth sucker.*** *See id.* at 41. This effort should be coordinated with relevant agencies (i.e., UDWR and adjacent states Game and Fish Departments, U.S. Forest Service, U.S. Fish and Wildlife Service) to obtain information concerning stream reaches that are off BLM system land, yet may be influenced by BLM management activities. The BLM could use this information on habitats and populations to coordinate

management activities on BLM lands throughout the region. Mr. Schelz emphasizes that ***“given the known threats to this species, conservation measures should concentrate on maintaining aquatic habitat diversity and natural temperature and flow regimes in stream reaches with existing and adjacent flannelmouth sucker populations.”*** *Id.* at 41.

Finally, Mr. Schelz points out that the effects of the Arch Canyon ORV route on aquatic macroinvertebrates, frogs, toads, and salamanders is completely unknown. He concludes, based on his experience in other riparian areas, that these species’ habitat in Arch Canyon is probably being negatively impacted by the ORV route. To have a basis for future management decisions, Mr. Schelz recommends that BLM conduct general surveys for these species and that the agency initiate a research study on the effects of the ORV route on these species’ population health. *See id.* at 42.

Closing Arch Canyon to motorized vehicle use is necessitated by the lack of data and information about the resident fish, amphibians, and macroinvertebrates. There is ample research that confirms that motor vehicle routes have negative effects on riparian areas – increased soil erosion and compaction, increased water velocity, plant community destruction, loss of terrestrial and aquatic insect communities, increased sedimentation, pollution – resulting in loss of fish habitat, and reduction of fish and wildlife populations. Mr. Schelz’s fieldwork and analysis indicate that these adverse effects from ORV use of the route in Arch Canyon mirror the effects documented in these studies. Allowing ORV use to continue in Arch Canyon, with the knowledge that such use is or will cause adverse effects to the flannelmouth sucker, a state sensitive species, the bluemouth sucker – both perhaps genetically unique sub-species – and unknown populations of amphibians and invertebrates violates 43 C.F.R. § 8341.2

## **V. CONCLUSION**

Pursuant to existing Executive Orders and federal regulations applicable to BLM's management of ORV use on public lands, the BLM must take immediate action and close the Arch Canyon area, as identified on the Arch Canyon Natural and Cultural Heritage Petition Area Map (attached as Exhibit A) to ORV use in order to protect the natural and cultural resources and eliminate the adverse effects caused by ORV use in the canyon and on the rims.

The Southern Utah Wilderness Alliance, in partnership with the Navajo Utah Commission, Great Old Broads for Wilderness, Far Out Expeditions, Calf Canyon Bed & Breakfast, and Wild Rivers Expeditions, are petitioning the BLM, pursuant to Executive Orders 11644 and 11989, and BLM regulations 43 C.F.R. § 8341.2, § 8342, and § 8364.1 to take immediate action to eliminate these adverse effects and to protect the natural and cultural resources by restricting ORV use in Arch Canyon and along the canyon's rims.

**Dated: December 22, 2006**

**Respectfully submitted,**

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**Liz Thomas**  
**Field Attorney**  
**Southern Utah Wilderness Alliance**