

United States Department of the Interior  
Bureau of Land Management  
**Agua Fria National Monument**

BLM



**BLM National Landscape Conservation System**

**FY 2011 Annual Manager's Report**

**Agua Fria National Monument**

**BLM Phoenix District Office**

21605 N. 7th Ave.  
Phoenix, AZ 85027  
623-580-5500  
623-580-5580 fax



**Agua Fria National Monument  
Arizona**

BLM National Landscape Conservation System  
FY 2011 Annual Manager's Report



The Agua Fria National Monument is a part of the BLM's National Landscape Conservation System, the mission of which is to conserve, protect and restore nationally significant landscapes that have outstanding cultural, ecological and scientific values for present and future generations of Americans.



**United States Department of the Interior  
BUREAU OF LAND MANAGEMENT**

– NATIONAL LANDSCAPE CONSERVATION SYSTEM –

**FY 2011 ANNUAL MANAGER’S REPORT**

**Introduction**

This annual report encapsulates the efforts of the Agua Fria National Monument’s staff and its partners throughout Fiscal Year 2011 (October 1, 2010 – September 30, 2011).

a. Unit Name:

Agua Fria National Monument  
BLM Phoenix District Office  
21605 North 7<sup>th</sup> Avenue  
Phoenix, Arizona 85027  
623 580 5500

[Agua Fria National Monument web page](#)

*\*\*\*Primary Mission: Protect and sustain the extraordinary combination of cultural, natural, and scientific resources within the high desert grasslands, canyons, and streams of the Monument. To the extent consistent with resource protection, provide opportunities for scientific research, public education, interpretation, and other compatible activities.*

b. Manager(s):

Pamela A. Mathis / Sabria Mathis / Vanessa Briceno  
(Acting Managers, Agua Fria National Monument)

Phone: 623 580 5532

Email: [pmathis@blm.gov](mailto:pmathis@blm.gov)    [smathis@blm.gov](mailto:smathis@blm.gov)    [vbriceno@blm.gov](mailto:vbriceno@blm.gov)

c. Hassayampa Field Office, Phoenix District, BLM Arizona

d. Established:                      Proclamation 7263, January 11, 2000

ESTABLISHMENT OF THE AGUA FRIA NATIONAL MONUMENT BY THE PRESIDENT OF THE UNITED STATES OF AMERICA UNDER THE ANTIQUITIES ACT OF 1906

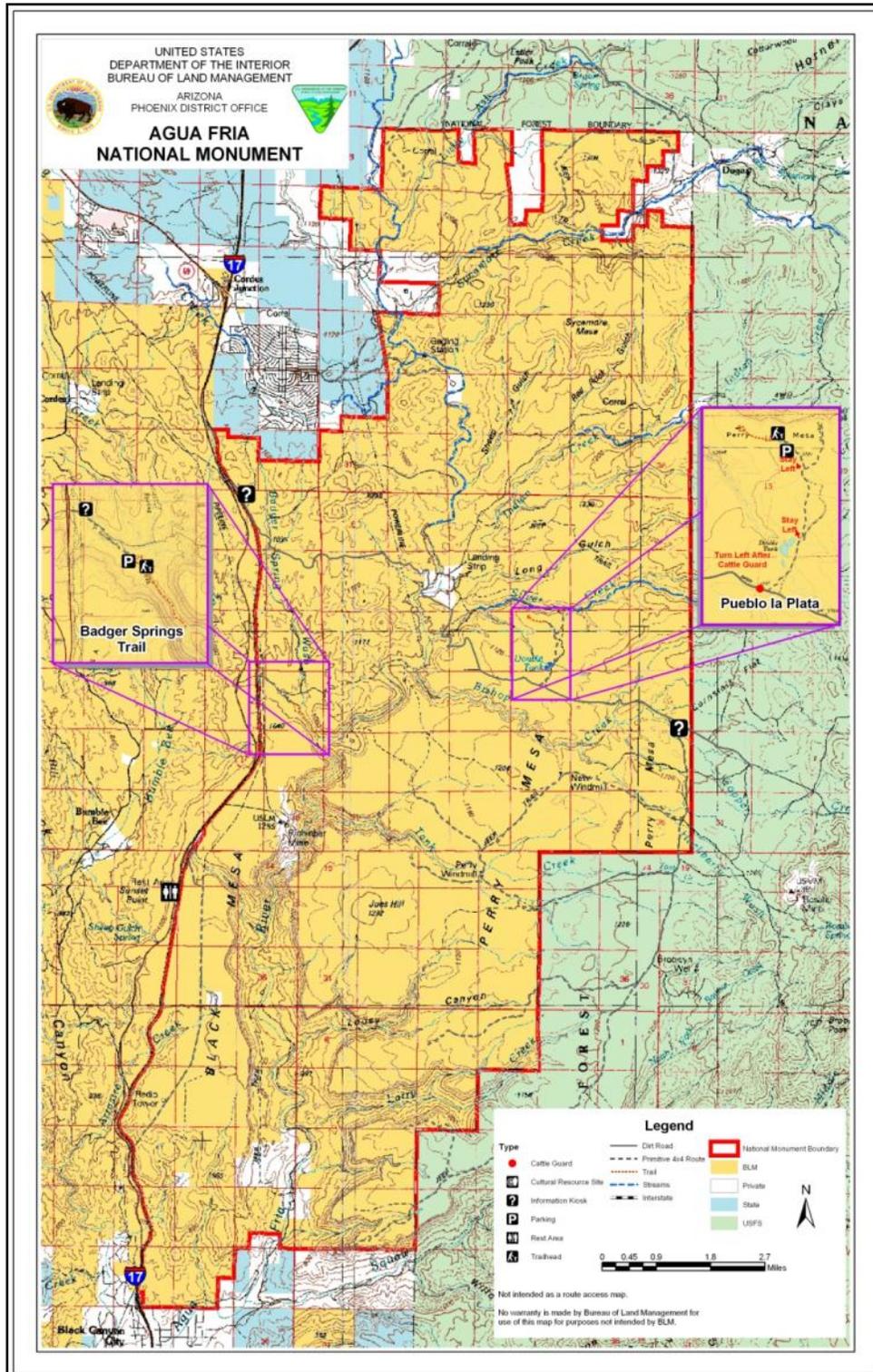


The Agua Fria National Monument, is the home of the prehistoric Perry Mesa Tradition people, and is one of the most significant natural and cultural landscapes in the American Southwest. The Monument includes all of the BLM-administered public lands that make up the Perry Mesa Archaeological District listed on the National Register of Historic Places. The District was established to recognize and protect the particularly well-preserved system of prehistoric communities that were inhabited between A.D. 1250 and 1450.

The approximately 50,000-acre Archaeological District is the largest prehistoric district in the nation. The Monument, part of the BLM's National Landscape Conservation System (NLCS), is located 40 miles north of Phoenix. The public lands within the Phoenix District, which includes the Agua Fria and Sonoran Desert National Monuments, are the BLM's most intensely urbanized.

- e. Acreage: 70, 900 acres – about 110 square miles
- f. Annual visitation: Approximately 82,000 visitors

g. Map of Agua Fria National Monument:



## 1. Natural and Heritage Resource Conditions

- a. Natural Resources Trends:** The Agua Fria National Monument (AFNM) was established in part, because of its rich and diverse ecosystems, which support an abundance of wildlife, including many special status species. Within the monument is an expansive mosaic of semi-desert grasslands, cut by ribbons of valuable riparian forest.



Perennial desert grasslands within the monument are critical fawning grounds for pronghorn antelope and an important habitat for upland birds, as well as many other wildlife species.

Riparian areas are supported by perennial streams which feed pools of water that persist year-round. These pools are designated as critical habitat for many native fish, including the endangered Gila Chub. Thick stands of willow, cottonwood, ash, and sycamore trees provide nesting and foraging habitat for a multitude of birds. Because of these natural resource values, the Audubon Society has designated Important Bird Areas along the Agua Fria River and its tributaries in the National Monument.



Additionally, the Agua Fria River has been recommended as suitable for designation as “Wild and Scenic” under the Wild and Scenic Rivers Act.

In 2011, biologists worked with its partners, the Audubon Society and Friends of the Agua Fria National Monument, completing 33 surveys of the yellow-billed cuckoo (YBC) in a total of 11 locations. The YBC is a candidate species for listing of protection under the Endangered Species Act. Monitoring efforts are critical to assessing the YBC population in the AFNM. Larry Canyon, a remote and rugged canyon was added to the 2011 yellow-billed cuckoo surveys. All locations except for Lousy Canyon were found to contain yellow-billed cuckoos.



In 2011, Monument staff monitored endangered fish populations in areas designated as critical habitat within the AFNM. Species monitored included Gila Chub, Gila Topminnow and Desert Pupfish. Critical habitat includes Indian Creek, Silver Creek, Larry Canyon, and Lousy Canyon; all critical habitats are occupied. However, Silver Creek is still feeling the effect of the 2005 Cave Creek Complex fire which has caused an excess of sedimentation and a loss of occupied habitat.



**b. Heritage Resources Trends:** The Agua Fria National Monument contains a rich kaleidoscope of human history. Over 450 distinct American Indian structures have been identified within the monument; some of the larger pueblos indicate large community settlement, containing more than 100 rooms. Petroglyphs are peppered across the landscape, concentrated in close proximity to the numerous pueblos and ruins, which were built between 1250 and 1450 A.D., when several thousand American

Indians, known as the Perry Mesa Tradition, inhabited the region. Numerous ruins of agricultural terraces and irrigation devices indicate that farming was widespread during this period. Other historical entities that occur within the monument include 19<sup>th</sup> century mining features as well as Basque sheep camps.



Indians, known as the Perry Mesa Tradition, inhabited the region. Numerous ruins of agricultural terraces and irrigation devices indicate that farming was widespread during this period. Other historical entities that occur within the monument include 19<sup>th</sup> century mining features as well as Basque sheep camps.

The free-flowing Agua Fria River, along with its tributaries, virtually bisects the monument and is a notable heritage resource. Separated by Interstate 17, the monument lies in close proximity to the Black Canyon National Recreation Trail, a network of hiking, mountain biking, and equestrian trails; there have been preliminary discussions about the possibility for linkage of the Black Canyon Trail to the monument at the Badger Springs portal.

- Heritage Resource efforts in Fiscal Year 2011 were affected, to some degree, by the monument archaeologist position being vacant from September 2010 and to May 2011.

- A significant cultural heritage project took place within the monument in 2011. Friends of the Agua Fria National Monument studied an 1891 topographical survey that described a schoolhouse. Through research, the Friends of the Agua Fria National Monument learned that the school was established on September 9, 1889 for children of local ranchers and miners. Declining enrollment in the school was a direct result from scarlet fever, small pox, labor disputes in the mining districts and the closing of mines which resulted in the closing of the school after 14 years in 1903.



- The monument archaeologist and ranger, along with volunteers from the Arizona Site Stewardship Program and Friends of the Agua Fria National Monument conducted regular patrols to monitor the conditions of more than 30 archaeological sites and features within the monument. Efforts were focused on large, conspicuous and accessible sites most vulnerable to vandalism and other types of disturbance. In addition to these efforts one volunteer provides weekly reports of sites found, their location and condition. This volunteer monitors the condition of cultural features in heavily used areas as well as in remote areas with greater risk for vandalism.

- The Friends of the Agua Fria National Monument's Cultural Resources Group, with assistance from the monument archaeologist, held the first ever Perry Mesa Symposium on September 10, 2011. The one-day program brought together professional, vocational and student archaeologists to present the findings of recent studies and some 80 years of research of the prehistoric cultures on Perry Mesa and the immediate surrounding area which includes all of Agua Fria National Monument. The symposium drew 134 participants and 15 presenters, including the Yavapai Prescott Indian Tribe. Sponsors of the symposium included the Bureau of Land Management, Arizona Antelope Foundation, Arizona Archaeological Society (AAS), ASU's Deer Valley Rock Art Center, ASU's School of



Human Evolution and Social Change, Sonoran Audubon Society, and Tonto National Forest. The proceedings of the symposium are scheduled to be available in fall 2012.

- c. **Land Health Assessments:** Eighty percent of the livestock grazing allotments and 48,388 acres in the Monument have been assessed and evaluated in reference to the Arizona Standards for Rangeland Health.

Of the allotments that have been assessed, all are meeting or making significant progress towards meeting Standards 1 and 3 for Rangeland Health in upland areas. 71% of allotments are meeting or making significant progress towards meeting Standard 2 for Rangeland Health in riparian areas. The majority of riparian areas in the Cordes and Box Bar allotments currently are not meeting Standard 2. The Cordes allotment riparian areas are excluded from grazing use, the Box Bar allotment riparian pastures are winter season grazing only, and EZ and Cross Y allotments are still being assessed. The purpose of these measures is to ensure progress towards meeting Standard 2 in these allotments.



With the completion of the Monument resource management plan in 2010, the BLM is currently implementing non-growing (winter) season grazing use for all riparian pastures within the Monument, which will lead to significant improvement in the riparian areas.

- d. **Inventory Efforts:** Work to inventory natural and heritage resources continues to be done by BLM staff and increasingly through partnerships with universities, museums, botanic gardens, members of the Friends of the Agua Fria National Monument, Arizona Site Stewards, Arizona Game and Fish Department, and local volunteers. The Desert Botanical Garden has continued to collect data for the Floristic Study on the monument.
- In partnership with the Friends of the Agua Fria National Monument, the Upper Agua Fria Watershed Partnership, and the University of Arizona, the fourth annual inventory of perennial water within the Agua Fria River was conducted. Several inventory teams mapped 28 miles of the Agua Fria River during the driest part of the year and recorded both wet and dry areas.
  - The Agua Fria National Monument is unique among BLM Arizona monuments in that its designation included a reserved water right, and requires the BLM to quantify and reserve the necessary water claim through Arizona's water adjudication process. The need to quantify and reserve sufficient water rights for the monument remains a pressing concern because of long term drought conditions, population growth and an increase of groundwater use within the Agua Fria Watershed. Also, the free-flowing nature of the Agua Fria River and its tributaries is an important aspect of its



suitability for designation as a Wild and Scenic River.

- In 2010, The BLM Phoenix District began an initiative to quantify the monument's water budget. This initiative, the Intra-Basin Water Management Project (IBWMP), capitalizes on the interest of Partners and stakeholders through setting up a framework for collective decision making in a workgroup structure. Workgroups consider benefits to wildlife, habitat, stream water quality and quantity, as well as aesthetic resource values in the identification of key issue areas for the basin.

The primary objectives guiding the development of the IBWMP have been to:

- Provide capabilities for assessing hydrologic and institutional water availability/reliability for management of the AFNM within the framework of a priority-based BLM water rights initiative.
- Provide baseline data to develop a flexible, generalized computer model for simulating the complexities of surface water management.

The IBWMP comprises four tasks:

- Surface Water Data Collection
- Assess Existing and Future Potential Groundwater Monitoring Well Locations
- Conduct Evapotranspiration Study
- Prepare Summary Report

Based on surface water data collection, the monument anticipates submitting an application for water rights with the Arizona Department of Water Resources in 2012.

- A 200 acre cultural resources survey was conducted within the monument in 2011, near Baby Canyon. Members of the Friends of the Agua Fria National Monument's Cultural Resources group, gathered location and site information on over 150 sites, within the monument during 2011. Work to inventory heritage resources continues to be conducted by the monument archaeologist and in partnership with the Friends of the Agua Fria National Monument, Arizona Site Stewards, and local universities, museums, and gateway community volunteers.
- Two prehistoric cultural resource sites and the historic 1891 Schoolhouse site were inventoried during 2011.

#### **e. Restoration Efforts**

- Grasslands Restoration: The Bureau of Land Management is one of four agencies focused on the conservation of grassland habitat in Central Arizona. With key portions of grassland habitat occurring on the Agua Fria National Monument, staff has worked in conjunction with the Arizona Game and Fish Department, the Prescott and Tonto National Forests, and the Natural Resources Conservation Service to develop the "Central Arizona Grasslands Strategy." This strategy provides a

framework for multiagency projects that benefit grassland habitat restoration on a landscape scale and across jurisdictional boundaries. Based on these efforts, the Central Arizona grasslands have also become a focal area for the Healthy Landscapes Initiative.

The majority of the Monument's restoration projects are focused on improving wildlife habitat and maintaining movement corridors for pronghorn antelope. A portion of this work is accomplished through BLM's fuels program in cooperation with the Arizona Game and Fish Department. In FY 2011, we completed 480 acres of juniper thinning and 409 acres of pile burning in the area of Sycamore Mesa to help restore connectivity between grassland habitats utilized by pronghorn. On Perry Mesa, located centrally within the AFNM and important pronghorn fawning grounds, 3600 acres were burned following naturally ignited fires. These actions improved habitat for wildlife such as pronghorn by reducing woody species encroachment and improving forage quality and quantity within the grassland habitat of the Agua Fria National Monument.

Multiple fires, both prescribed and natural, have improved resource conditions for wildlife. Juniper thinning and slash pile burning treatments were conducted to improve pronghorn movement corridors. Wildfires were used as a tool for resource benefit for approximately 3500 acres of upper grasslands to improve rangeland health and wildlife habitat.

- Biological Resources: The condition of native fish populations has remained stable. The endangered Gila Chub and Gila Topminnow populations continue to thrive in Lousy Canyon, as well as in the tributary of Larry Creek. Endangered Desert Pupfish were introduced into both of these areas in the spring of 2006; however, they do not appear to have established a self-sustaining population and additional stocking may be required. Drought conditions and sedimentation following the 2005 Cave Creek Complex fire have continued to stress the endangered Gila Chub populations in Silver Creek and Indian Creek; perennial pools provide relief for these populations.

Management actions were also taken in FY11 to protect riparian habitat along portions of the Agua Fria River. A large vehicle barrier and parking areas were installed near the town of Cordes Lakes, AZ to prevent damage to the riparian resources of the Agua Fria River. Once completed, the barrier prevented motorized access to the area which was the most heavily impacted area by illegal OHV use. During construction, threats to damage/remove the barrier were a daily occurrence. The construction of barriers were actions taken to protect habitat used each summer for breeding and nesting by the Western Yellow-Billed Cuckoo, a federal candidate for listing; as well as improve habitat conditions for native fish such as the Longfin Dace.

The Agua Fria National Monument partnered with the Arizona Antelope Foundation and Arizona Game and Fish Department to complete fence modification in areas recognized as important fawning grounds. Volunteers spearheaded the initiative to

modify fences by removing excess fence stays and wires, as well as replacing top and bottom strands of barbed wire with smooth wire. Fences are known to impede wildlife movements and barbed wire in particular can inflict wounds which may become infected. Fences around Copper Tank have been completed; other areas have been identified as potential sites to continue the fence modification project.

- Agua Fria River Protection – Construction of Vehicle Barriers: Fencing panels have gone up along a portion of the Agua Fria River east of Cordes Lakes, Arizona, where people illegally drove trucks, ATVs, and motorcycles through the river and its banks and damaged habitat within the Agua Fria National Monument. The fencing or barrier project is located at a section called the “River Bend.” The Phoenix District Force Account Crew, American Indian Science and Engineering interns, the Rio Salado Fire Crew and Hassayampa/Monument staff excavated more than 100 deep holes – some back bending work. Once concrete was poured in those holes, the fence posts were set and paneling erected. Following the installation of panels, rails were installed between the gaps to fully connect the fencing and barricade motorized traffic from entering the river. This project also protects the Agua Fria River “Suitable” recommendation for Wild and Scenic Rivers Act designation.
- River Bend Rock Art Site Vandalism: During 2011, efforts were focused on establishing the most appropriate process to safely remove the spray paint applied to the pre-historic rock art while minimizing the impact to the significant heritage resources. The project to restore the site will be in partnership with Friends of the Agua Fria National Monument and Arizona State University’s Deer Valley Rock Art Center is planned for 2012 or early 2013.
- 1891 School House (Official Arizona AZ Statehood Centennial Legacy Project): The locally collected rock foundation of the historic 1891 School House was identified during field activities designed to assist in the development of interpretative literature and a sign. The stabilization and protection of the foundation began in late 2011 with the remaining stabilization to be completed in 2012. The development of the interpretive literature and sign and stabilization of the foundation began in 2011 and ongoing and are scheduled to be completed in 2012.

## 2. Recreation Facilities, Roads, and Trails Conditions

- a. **Overview**: Visitation to Agua Fria National Monument was approximately 82,000 people in FY 2011, an increase of 22,000 visitors from what was reported in FY 2010. Visitation is calculated using traffic counters. Newly installed traffic counters have been a boon in terms of monitoring for visitor use within the monument, contributing to increased ability to report more accurate figures and ability to identify trend changes in recreational use patterns.

Historically, recreation was dominated by hunters camping within the monument during open hunting periods for myriad of game species. The most recent trend in visitation has been geared toward the monument’s rich cultural resources; an increase in new, non-

hunting recreationalists seeking to explore the area's cultural sites has been observed. Several areas have been identified wherein repeat visits are commonplace, primarily attributed to day use hiking, bird watching, and picnicking. Overnight camping by equestrian users is also a very popular activity. We can attribute this heightened visitation to the increase in population of people who live in close proximity to the monument, as well as increasing land use restrictions in other areas surrounding metropolitan Phoenix.

### **Facilities, Trails, and Roads**

- Constructed Assets: The condition of the Monument's few constructed facilities and assets is good. Vandalism of improvements continues, but was less than in previous years with no permanent destruction or theft of constructed assets.
  - Vault Toilets: The Monument has two vault toilets, one at Badger Springs Wash and the other at Silver Creek on the Bloody Basin Road. Decorative rock barriers around the restroom buildings were constructed to deter vehicular traffic. The restroom facilities are serviced regularly by the park ranger, and maintained in good condition.
  - Kiosks: In FY 2011, visitor information for the Monument was maintained throughout the monument on five robust vandal resistant informational kiosks. A two-panel kiosk outfitted with brochure holders is installed near the restroom and situated in close proximity to the Badger Springs entrance. The same type of two-panel kiosk is installed to replace the previous structure at the western entrance of Bloody Basin Road. The kiosks are also outfitted with a heavy Lexan, shatter-proof panel. In addition to the two kiosks described above, the other three are located at the Badger Springs road exit off of Interstate 17, the eastern entrance of Bloody Basin road, and the Cordes Lakes "Riverbend" area.
- Trails: There are two designated trails in the Monument, Badger Springs and Pueblo La Plata trails. Continued maintenance of the parking lots for the monument's trailheads is an ongoing annual necessity.
  - Badger Springs Trailhead: The Badger Springs trailhead access includes some of the most important constructed assets in the Monument for public visitation and resource protection. In 2011, the parking area for the Badger Springs trailhead was enhanced. The parking area was leveled, graded and graveled to address flooding issues and for general visual and parking improvement. The Badger Springs site and surrounding area include the following amenities: trailhead, vault toilets, interpretive kiosk, portal sign, and two parking lots.
- Roads: In 2010, roads within Agua Fria National Monument designated as open for motorized travel were numbered and signed. In 2011, all routes designated as closed were marked as closed to motor vehicles. Physical barriers to prevent vehicular entry at key locations were installed at the "Riverbend" area outside of Cordes Junction, the

north end of Badger Springs Wash, and the old “borrow pit” road south of Cordes Junction. A wide ranging effort to mark and/or barrier routes designated as closed was initiated and prioritized based on proximity to cultural and /or biological resources exhibiting high risk potential for impact.

The Riverbend barriers changed the recreation dynamics of the area by removing vehicle use in the river and making the area welcome to visitors looking to enjoy a day by the river camping and picnicking with their family by the river enjoying nature in a quiet and peaceful environment.



All roads in the Monument are dirt roads; most of which are very rough and only suitable for vehicles with high clearance and, in many cases, preferably outfitted with four-wheel drive. During periods of the year with storms and precipitation, many roads are not passable due to mud or flooding. Unless such road conditions contribute to resource impacts, these rough roads actually deter vehicular traffic to delicate natural resources and thereby contribute to the backcountry experience that characterizes BLM’s NLCS units. Generally, road maintenance is conducted to address only significant safety and resource protection concerns.

- **Badger Springs Road:** This road is the primary access to a popular recreation trail that runs through Badger Springs Wash; the road and parking area have been stabilized with gravel to prevent flooding damage.
- **Bloody Basin Road:** This road is the most heavily used road in the monument. During dry periods, the first five miles of this road are passable in a passenger car, but a four-wheel drive vehicle with high clearance is recommended for the rest of its entirety. Maintenance work on the road is conducted according to an approved schedule. Yavapai County maintains approximately five miles of Bloody Basin Road, and the BLM maintains an additional four miles annually.

b. **Construction:** None

c. **Maintenance:** Annual maintenance is limited. Road maintenance consists of grading six miles of road, which is adequate, and emergency repairs to the monument’s few constructed assets. Efforts to stabilize visitor areas and roads to prevent resource impacts are ongoing.

- **Backlog of Deferred Maintenance:** No change since 2006. Condition assessments were done on facilities in the monument, and are in progress for all roads.

d. **Signage:** A sign plan was completed for the Monument. The Park Ranger installed signs in compliance with the sign plan in 2011. The BLM Sign Shop produced 18 x 24 inch “*Entering and Leaving the Agua Fria National Monument*” signs out of aluminum material with the Landscape logo. These signs were placed at monument boundaries

without portal signs. All roads were marked with road number fiberglass post signs and all roads closed by the Travel Management Plan were marked as “*Closed to Motor Vehicles*” with fiberglass post signs.

Bloody Basin Road entrance: The Monument has one BLM NLCS landscape-style portal sign situated near the main entrance of Bloody Basin Road. In previous years, the portal sign had deteriorated from weather related wear-and-tear, as well as through vandalism; additionally, the associated BLM logo signs were stolen. To mitigate for this, new portal signs were installed in 2010 near the west and east entrances of Bloody Basin Road.

The Arizona Department of Transportation installed north and southbound signage on Interstate 17, alerting traffic to the Agua Fria National Monument.

Badger Springs entrance: The only other portal sign on the monument is situated near the Badger Springs entrance, which was replaced in 2010 owing to weather related wear-and-tear.

Target Shooting Signs: As identified in the Agua Fria National Monument Record of Decision and Approved Resource Management Plan, efforts to eliminate target shooting within the AFNM were implemented in FY2010. Ten “No Target Shooting” signs were installed at key access locations.

Additional Needs and Signs: Portal signs are needed for the monument entrances near the community of Cordes Junction, as well as for Dugas Road entrance, situated north within the adjacent Prescott National Forest.

- **Interstate Signs Lead Visitors to Agua Fria National Monument:** Thanks in large part to Resource Advisory Council (RAC) member and Coconino County Supervisor Carl Taylor, Arizona’s treasured landscape off of Interstate-17 is now more visible with the placement of highway signs. The idea for highway signs came about in BLM’s 2010 summit for Arizona’s National Landscape Conservation System units, with the Agua Fria National Monument aggressively pursuing the concept. Working with the Arizona Department of Transportation and Taylor, the BLM acquired the signs at no cost, saving \$75,000.

The monument now has a northbound and southbound sign for the main entrance of Bloody Basin Road and two secondary (off-ramp directional signs). The BLM expects this exposure to lead to:

- Increasing awareness of the monument
- Recognition of the importance of protecting its natural resources

Last year, the BLM installed a new information kiosk at the Bloody Basin Road entrance in anticipation of providing better information about the monument to visitors, particularly highway travelers.

### 3. Outreach, Environmental Education, Interpretation, and Volunteers Efforts

- **Overview:** The AFNM park ranger has continued to spearhead efforts pertaining to the development and distribution of interpretive handouts, as well as maintaining and updating visitor information on the five monument kiosks. Face-to-face interaction relating to monument policy and providing informal interpretive information to visitors, the park ranger again is responsible for those efforts. Interpretive themes for the monument focus on the archaeological history of the Perry Mesa Tradition, historical mining and ranching of the area, biological resources, as well as etiquette when visiting cultural and biologically rich sites.
- a. **Outreach:** With the support of the Friends of Agua Fria National Monument, staff provided stewardship project opportunities, and on-site and off-site interpretation and environmental education presentations. The focus of these presentations was cultural resource stewardship, environmental stewardship, ecological restoration, wildlife resources, tread lightly and leave no trace. Attendees included students, local individuals, archaeology enthusiasts, conservation groups, scouts, student agricultural clubs, and Site Stewards.
  - BLM and the AFNM Friends group provided tours for the public, Arizona Archaeological Society chapters, and the Arizona Hiking Club as part of Arizona Archaeology and Heritage Awareness Month.
  - In 2011, the Friends of the Agua Fria National Monument conducted fifteen guided hikes and tours for the public, highlighting the heritage resources of the Monument. The heritage sites were: Badgers Springs Petroglyphs, Pueblo la Plata, Teskey Homestead Site, Riverbend Rock Art Site and the 1891 Schoolhouse Site.
  - In partnership with the BLM, the Friends of the Agua Fria National Monument hosted the Perry Mesa Symposium in September 2011. The program brought together twenty professional, vocational and student archaeologists, who presented their findings of recent studies of the prehistoric cultures on Perry Mesa located within the Agua Fria National Monument. Presentations were given on a wide range of topics, including prehistoric agricultural practices, pottery analysis, trading trails, settlement organization, previous archaeological surveys and analysis of stone tools and projectile points. The Yavapai Prescott Indian Tribe also spoke on their past history on the monument. Attendance exceeded expectations since it numbered at approximately 130 participants.
- b. **Visitor Centers:** With the support of the Friends of Agua Fria National Monument, BLM is a partner in the development of the Black Canyon Heritage Park on the banks of the Agua Fria River in Black Canyon City. The park's visitor's center will highlight area attractions including the monument. Partners include Black Canyon City Community Association, Historical Society, Fire Department, Arizona Game and Fish, and National Park Service. BLM is also working to partner in the development of the Cordes Museum in the monument gateway community of Cordes Junction.

**c. Environmental Education:**

- In the summer of 2011, staff from the National Training Center, Washington Office and Agua Fria National Monument conducted a field training exercise at the Monument. The exercise was the culmination of a one-week orientation for the BLM's Student Career Employment Program (SCEP) students. The day-long exercise gave students the opportunity to address multiple-use management issues and an introduction to the resource planning process. Each student participated as a member of an interdisciplinary team and were given a mock scenario using the monument's real-world resources and issues. The latter part of the day was spent at the Horseshoe Ranch where student teams developed management alternatives and presented their preferred alternative at a mock public meeting. The field course is one of several national training exercises that have been conducted on the monument, supporting the effort to expand the Monument's research and education opportunities.
- Agua Fria National Monument staff and members of Audubon Society partnered with local inter-city high schools to develop and promote the River Pathways Project. The River Pathways curriculum, a collaborative effort between Audubon Arizona, the Bureau of Land Management, and the Phoenix Union High School District is intended to get urban students outdoors, introduce them to Arizona's native habitats, and build their interest in careers managing public lands. This is done through five classroom modules focused on riparian ecology and resource management, a field trip to the Nina Mason Pulliam Rio Salado Audubon Center. Students are trained in monitoring techniques used by scientists in the field, and a second field trip to the Agua Fria National Monument where select students got a chance to use what they learned while conducting field studies with biologists from the Bureau of Land Management. Students participating in this second field trip had the opportunity to apply for summer internships where they will work with Audubon Arizona and Bureau of Land Management staff during the annual Yellow-Billed Cuckoo surveys along the Agua Fria River.
- Fire Ecology Night at the Nina Mason Pulliam Rio Salado Audubon Center - Phoenix District Fire Management Officer Mike Behrens and Agua Fria National Monument Wildlife Biologist Paul Sitzmann presented "Fire Ecology of the Southwest" to students of Academy at South Mountain High School at the Rio Salado Audubon Center. Around 40 students who participate in the Teen Leaders in Conservation learned about the basic ecosystems of Arizona and how fire affects these systems. Also included in the presentation were discussions about invasive weeds, altered fire regimes and careers in land management agencies.
- Fire Ecology Hike and Trash Pickup - As part of the "Hands on the Land" initiative, Academy at South Mountain High School students who attended the Fire Ecology Night presentation at the Rio Salado Audubon Center were provided the opportunity to participate in a follow up fire ecology hike and cleanup project on the Agua Fria National Monument. Eleven students were lead on a short but strenuous hike by

Wildlife Biologist Paul Sitzmann to an area recently subjected to a prescribed burn. Comparisons between burned and nearby unburned areas were made. Discussions also included woody vegetation encroachment, invasive weeds, grazing, and other uses of public lands. Following the hike, students combed the desert near I-17 and Bloody Basin Road to pick up trash. Roughly 300lbs of trash was collected.

- BLM and Sonoran Audubon lead public tours into the monument's Audubon "Important Bird Area" for a fascinating look into the Agua Fria River riparian habitat that makes the Monument special.

d. **Interpretation:** Work continues on development of interpretive signs and updating pamphlet information for the monument. General interpretive informational brochures about the monument are made available for the public at the Phoenix District Office.

- AFNM's Pueblo la Plata site, which showcases a major settlement of stone masonry pueblos, is outfitted with a visitor register wherein interpretive pamphlets specific to the site are made available for visitors. An interpretive plan for the Pueblo la Plata site was completed through an intra-governmental order with a U.S. Forest Service enterprise team called "Recreation Solutions".
- Interpretive pamphlets are available at the Badger Springs trailhead with information about the archaeological and historical features within the monument as a whole.
- The Teskey Homesite is an interpretive site developed in partnership with the Friends of Agua Fria, outfitted with an interpretive panel displaying information about historic ranching families and their way of life.
- The Friends of the Agua Fria National Monument, in partnership with the monument archaeologist conducted extensive research relating to the historic 1891 Schoolhouse site. This research was used to design and develop interpretive literature and an interpretive sign for the site. The interpretive sign and literature will in place in FY12 for the Arizona Centennial. The 1891 Schoolhouse site is an official Arizona Statehood Centennial Legacy Project and will be dedicated on February 14<sup>th</sup>, 2012.

e. **Volunteers** (see section 5. Partnerships, Volunteer Accomplishments)

f. **Other Outreach Efforts:** The Agua Fria National Monument (AFNM) successfully obtained youth initiative funding from the National Landscape Conservation System as part of the "Hands on the Land" program. The program is intended to give students an opportunity to learn in America's largest field classroom, federally owned public lands. It has been shown that using the outside world not only increases student achievement but also helps students develop lifelong learning skills and a greater sense of respect and responsibility to public lands.

- In 2010, the Agua Fria National Monument received Youth Incentive funding to develop a partnership with the American Indian Science and Engineering Society (AISES) and conduct a 10-week Summer Intern Program for postsecondary students during the summers of 2010 – 2015. The purpose of the program is to provide students with hands-on work experience and opportunities to gain relevant skills and knowledge, to prepare for their transition to the workplace, to explore career options, and to develop professional networks. Benefits for BLM include fostering human resource diversity and opportunities to introduce participating students to public lands and recruit them into their workforce. Through an assistance agreement, BLM provided funding for two AISES intern during the summer of 2011. Recruitment targeted American Indian college students with current AISES membership. Project work assigned included constructing a barrier along a portion of the Agua Fria River to prevent illegal vehicle access in the riverbed. The students were fundamental to the construction of the river barrier projects and certainly an asset to the accomplishment. The students worked 40 hours a week in the Phoenix District Office and successfully completed the 10 week internship. Weekly updates and performance reviews were submitted to AISES program officers. At the end of the 10 week session, a representative of AISES, an AFNM staff members, and the student interns attended a close out session wherein internship results were evaluated. Additionally, the close out session served as an opportunity to discuss ways to improve the program for future internships.

#### 4. Science

- **Overview:** The BLM defines “science” broadly, including basic and applied research in natural and social science, as well as inventory and monitoring. The AFNM encompasses a wide variety of objects that pique scientific interest; these include both cultural and biological objects. Science is critical to understanding and managing these resources. Within the AFNM, at least 450 cultural sites are known. Archeological features include, but are not limited to: dwellings, racetracks, agricultural terraces, lithic and ceramic scatters, and a seemingly unending abundance of petroglyphs. The AFNM also contains diverse ecosystems which are scientifically important. These ecosystems include semi-arid grasslands which are cut by ribbons of riparian forests. Upland sites are home to species of high priority for conservation, such as pronghorn antelope and upland bird species. Riparian areas within the AFNM serves as perennial sources of water which support the endangered Gila chub and Gila topminnow, the yellow billed cuckoo (a candidate species for listing under the ESA), and a plethora of other riparian obligate species. There is great potential to expand the knowledge of scientific interests and the possible research opportunities within the monument are innumerable.

Also to be considered is the relationship of natural resources in the Agua Fria National Monument and the role they played in the lives of prehistoric people.

The AFNM exists for the purposes of protecting and understanding the unique objects and characteristics that comprise it. Several specific science needs, opportunities, and questions have been identified by BLM staff and AFNM stakeholders, partners, as well

as current/past scientific researchers. In response to these needs, a draft science plan was developed in conjunction with monument staff, other BLM staff, and monument stakeholders throughout the scientific community. The plan sets forth goals, requirements, and processes for continued scientific inquiry and research within the AFNM. Finalization of this plan is anticipated to occur in FY 2013. Specific goals related to science for the monument include:

- Establishing the AFNM as a world-class scientific research station, promoting science that both informs management decisions and explores general scientific inquiry.
  - Implementing a standard permitting process for research that encourages excellent research design, execution, and communication of scientific findings both internally and externally.
  - Promoting innovative approaches to collaboration with partners and stakeholders.
  - Establishing greater capacity to solicit investment in scientific research and communication.
- **Agua Fria Grasslands Pronghorn Capture:** In a continued effort to be at the forefront of science and research, the Agua Fria National Monument is working with Arizona Game and Fish Department as well as Prescott and Tonto National Forests to capture pronghorn antelope (*Antilocapra americana*) as part of a larger habitat study. Pronghorn were captured via aerial net gunning with a helicopter. Capture activities lasted for three days.

During each capture, DNA samples were gathered, health assessments conducted, and radio collars attached. Twenty five pronghorn were captured, collared, and released. All these efforts will help land and game managers determine the health of the animals, their habitat preferences and migration corridors of the pronghorn that inhabit the Agua Fria Grasslands. Land managers will be able to determine migration corridors necessary for the continued persistence of pronghorn.

Efforts to improve pronghorn movements and habitat through prescribed burning and juniper thinning, currently conducted by the BLM and Forest Service, can be focused in areas that will be the most beneficial to pronghorn. Additionally, potential wildlife bridges may be identified across Interstate 17 which currently fragments two populations of pronghorn. Since the completion of Interstate 17 in the late 1960's, not a single pronghorn has been known to cross the interstate.

- **Phoenix Youth Get Physical as they Gather Data for BLM:** On two consecutive Saturdays Management and Audubon staff took students and a teacher from Arizona's South Pointe High School out to the Agua Fria River to monitor the riparian area. These workdays component the River Pathways Program, a cooperative project among the BLM, Audubon Arizona, and local high schools to bring riparian ecology and management to the schools and get youth in the great outdoors. In partnership with Audubon and teachers from the Phoenix Union School District, we have completed a one-week riparian ecology and management curriculum module that can be inserted into a variety of courses. The curriculum culminates in high school students coming out into

the field to collect data with Audubon and BLM staff. The monitoring effort gives the BLM critical information to help determine if land health standards are being met and provides baseline data to track trends over time. BLM plans to expand the curriculum and field trips to include fisheries and avian survey protocols.

- **Legacies on the Landscape Retreat:**

Researchers from Arizona State University (ASU) and the Desert Botanical Gardens met with BLM staff to discuss current and future research projects on the Agua Fria National Monument. Projects discussed focus on the enduring ecological legacies of prehistoric building and farming on the Agua Fria National Monument and on the nature and extent of prehistoric agricultural production. Features evident today include dwellings, terraces, racetracks, roasting pits, isolated structures, petroglyphs, and bedrock metates. Additional studies explore the exchange of ceramics throughout central Arizona, compare and contrast cultivars of agave in the southwest, track invasive weeds, and assess the feasibility of a novel approach to determine pronghorn antelope diets using DNA analysis.



- **Citizen Science Protocol Implementation within the Agua Fria National Monument:**

The Agua Fria National Monument has partnered with the University of Arizona, the Friends of the Agua Fria National Monument, the Upper Agua Fria Watershed, and Arcosanti to implement a citizen science protocol in riparian areas. Data gathered will expand upon the multiple indicator protocol while educating public about riparian areas. The protocol introduces the public to important ecological features such as water flow rate, canopy cover and structure, stream channel integrity and tree age class structure. Most importantly, the protocol provides the public an opportunity to get out and enjoy the Agua Fria National Monument.



## 5. Partnerships

- **Overview:** The Agua Fria National Monument successfully utilizes volunteers and partnerships to support the monument's mission: protecting natural and heritage

resources, engaging local communities, and providing youth opportunities. Partner and volunteer activities provide assistance in community outreach, visitor information, cultural site monitoring and protection, historical research, data collection, and outdoor education. The AFNM and its partners are working together around a shared vision to increase mutual interests, as well as to successfully reach mutual goals.

- **Volunteer Accomplishments:** The monument has benefited from the efforts of volunteers who assist the park ranger with maintenance, public contact and monitoring. As the monument is staffed with only one park ranger, volunteer contributions have a significant impact to stewardship over the public lands. The volunteers are an invaluable resource, providing assistance to the park ranger and improving the understanding of the monument's purpose and its special resource values.

Pronghorn Partnership: In FY 2011, between 30 and 60 volunteers participated in fence projects that improved wildlife habitat within the monument, particularly for pronghorn antelope. Approximately 400 volunteer hours were utilized for this effort, valued at \$8,430.00. Volunteers included individuals from the Arizona Antelope Foundation, Arizona State University, Arizona Game and Fish Department, Boy Scouts, Friends of the Agua Fria National Monument, local ranchers, and BLM staff. Supplies were donated by the BLM and AZGFD. The team focused on the central part of the monument, which comprises of native grasslands and are home to a variety of wildlife species. The area serves as a key fawning grounds and Copper Tank is an important source of water in the area.



The Friends of the Agua Fria National Monument Partnership: The Friends contributed 1550.5 volunteer hours in 2011. The total monetary value of these hours is \$34,111.00. The Friends play an important role in assisting the Bureau of Land Management with critical support for Monument activities. The friends organize outings and perform service projects on the monument, such as:

- Monitoring trails and cultural resources
- Removing non-native plant species
- Performing trash pickups
- Recording rock art
- Assisting in Heritage Resource surveys
- Mapping and documenting of Heritage Resources
- Annual Wet/Dry mapping of perennial pools along the Agua Fria River

Arizona Site Stewards Program: Throughout 2011, members of the AZ Site Stewards program, monitored ten heritage resource sites within the monument. This volunteer time accounted for approximately 400 hours, equaling monetary value of \$8,800.00 dollars.

Because of limited BLM resources, the monitoring of sites by the Site Stewards is a critical element of the protection strategy within the monument. They act as the eyes and ears for the monument archaeologist and through their presence on the monument and at heritage sites, they serve as a deterrent to vandalism and looting, which is immeasurable.

Integrated Weed Management: Efforts to partner with the Friends of the Agua Fria National Monument and other organizations to control invasive plant species continued in 2011. A superb example of on the ground results was carried out during the annual Wet/Dry mapping. Volunteers hiked the entire Agua Fria River within the AFNM as well as portions outside the Monument. While mapping water, volunteers also located, recorded, and removed Dalmatian toadflax. Many of these areas are rarely visited by BLM staff.

Tamarisk populations continue to persist within the Agua Fria River and tributaries within the Monument. Other invasive weed species such as Malta Star Thistle, Black Mustard, Sahara Mustard, and non-native annual grass species have been documented on the Monument as well. Additional weed inventories are planned for 2012 followed by treatments to remove and eradicate invasive plant populations.

Central Arizona Grassland Management Strategy: Monument staff worked collaboratively with the Prescott and Tonto National Forests, and the Arizona Department of Game and Fish to develop an integrated management strategy for conservation and restoration of grassland ecosystems and associated pronghorn habitat in central Arizona. This coordinated approach will help facilitate the implementation of landscape level habitat projects, akin to the Healthy Landscapes initiative, by maximizing the use of available resources.

Collaborative efforts with Local Government and other State/Federal Agencies: The monument manager and staff worked closely with cooperating agencies that administer nearby lands or have special expertise in resource management. These local governmental entities include the Arizona Game and Fish Department, Yavapai County, Tonto National Forest, Prescott National Forest, Natural Resources Conservation Service, Yavapai Prescott Tribe, and local communities including Black Canyon City, Cordes Junction, and Mayer, Arizona.

## **6. Planning and Business Practices**

- **Agua Fria National Monument Record of Decision and Approved Resource Management Plan, April 22, 2010**

The Agua Fria National Monument Resource Management Plan Implementation Strategy was developed in FY2010. Monument staff attended an RMP Implementation workshop wherein goals and objectives for both natural and heritage resource conditions were identified. Demands anticipated from the monument's various users were addressed. Monument priorities were established and budget considerations were identified as well.

## 7. Manager's Corner

- **Monument Manager Receives National Landscape Conservation System Leadership Award:**

The Wilderness Society, representing over eighty non-profit organizations that support a strong and growing National Landscape Conservation System (NLCS), announced that Rem Hawes is the recipient of the fifth annual NLCS Leadership Award. Hawes is the manager of the BLM Agua Fria National Monument. The award honors a BLM employee who has shown outstanding innovation or accomplishment on behalf of our National Conservation Lands. Participants in the national coalition of nonprofit and other organizations make nominations. The Friends of the Agua Fria National Monument nominated Hawes who was among a highly qualified and impressive group of nominees. According the Wilderness Society, it was clear Hawes rose above those other candidates.



- **Agua Fria National Monument Hires New Archaeologist:** Monument Manager Rem Hawes announces the hire of Bryan Lausten as the new Archaeologist for the BLM Agua Fria National Monument. Lausten assumes duties May 23, 2011. The archaeologist joined the BLM after a successful post at the Bureau of Reclamation in Glendale, Arizona where he handled cultural resource evaluation of proposed projects for the Salt River Project, Lake Pleasant Regional Park, and Non-Indian Irrigation Districts, conducted tribal consultations, managed contracts, and served as research permit coordinator. Lausten serves on the State Historic Preservation Office's Historic Archaeology Advisory Committee and has strong archaeological work experience in Arizona. He holds a master's degree in Archaeology and Heritage Resources. Since April 2010, Bryan has served in a part-time temporary duty assignment with the BLM Hassayampa Field Office coordinating cultural resource management related to the abandoned mine lands program; and since January 2011, Bryan has served part-time as the acting Agua Fria National Monument archaeologist. "I look forward to Bryan's help to our staff in working successfully with a wide variety of individuals, companies and organizations, universities, tribes, and other agencies," said Hawes.

- **Agua Fria National Monument Hosts Diverse Girl Scout Troop:** Park Ranger Nancy Stallard recently led a troop of Girl Scouts on a hike to the Badger Springs ruin. The day was cool and windy as the Park Ranger and about 10 girls and 4 adults began the trip – a rough and rugged three-hour tour from Badger Springs. Along the way, the Park Ranger stopped at rock art images and the girls searched to find the ancient petroglyphs.

When they arrived at the ruin, Stallard presented a lecture to the troop on protocol at archeological sites and gave a short talk on archeology specific to the Agua Fria National Monument, the Badger Springs ruin and a sporting area known as the racetracks. This ruin was once home to those who lived during the prehistoric Perry Mesa Tradition occupation period. This site features 58 rooms.

This experience not only involved the study of ancient peoples, it provided an opportunity for today's multicultural and urban youth to learn about one another and their public lands. Stallard writes, "These young American girls are of Middle Eastern Decent, and their leader is of Chinese heritage. The leader shared with the group that she had lived in countries all over the world. Her mother had married a diplomat and she had to move every year to a new school



and learn a new language. Her parents had not allowed her to join the Girl Scouts because they had thought it was a religious organization. She was happy to find out as an adult that this wasn't so and allowed her daughters to be a part of the scouts." On the return trip, the girls took pictures of a new walk-through gate, seen to the right, which they found amazing. After the hike, the leaders said that the girls most enjoyed the hunt for petroglyphs. All agreed that the Badger Springs hike was appropriate for education, health, and skill level for the scouts, and that more will be planned in the future.

- **Work Day at Horseshoe Ranch:** In celebration of the Arizona Game and Fish Department acquiring private property the Horseshoe Ranch within the Agua Fria National Monument, the state agency hosted, a Saturday workday with the Friends of the Agua Fria, Monument staff, and the Antelope Foundation. Activities included a rock art recording workshop, an archeological site visit, and a fence modification project that improved pronghorn movement corridors. The Friends of the Agua Fria National Monument will assist in the facilitation of activities along with AZGFD and BLM staff.
- **American Indian Science & Engineering Society Places Two Interns at Phoenix BLM:** The end of another college school year marked the beginning of a grand adventure for two interns of the American Indian Science & Engineering Society, Danner Peter and Joey Tapaha. Both hail from Kirkland, New Mexico. Joey and Danner spent their 10-week internship working on various projects at the Phoenix District Office.
  - Joey Tapaha is a sophomore at San Juan College majoring in Engineering, with a goal of being a structural engineer.
  - Danner Peter is a junior at the University of New Mexico seeking a degree in Biology and a minor in music, with his eye on medical school.

During their time here, Bryan Lausten, AFNM Archeologist proudly served as their mentor.

- **Organized Group Hikes at Agua Fria National Monument:** The Friends of the Agua Fria National Monument conducted group hikes on the monument, with a different location and lesson featured monthly from October to next year's spring season. Some hikes are open to the public and others will be reserved for members. The hikes take visitors to cultural and/or biological sites. Nancy Stallard, AFNM Park Ranger, is at each hike to provide information to visitors. Wildlife Biologist Paul Sitzmann also assisted to provide information on birds found in this Important Bird Area, wildlife, and riparian systems.
- **BLM Agua Fria National Monument Presents Water Management Project at Arizona Hydrological Society 2011 Symposium:** Project Lead Mariano Lanza and Monument Manager Rem Hawes joined BLM contractor and Project Manager Chris Courtney who presented the Agua Fria National Monument Intra-Basin Water Management Project at the Arizona Hydrological Society Symposium in Flagstaff. By a show of hands, more than half of the audience knew about the monument but fewer than ten had been there or knew about the recent water project. Courtney did a great job presenting the Intra-Basin Water Management Project which measures stream flow in the Agua Fria River and key tributaries, and measures ground water levels and attributes. The cutting-edge science and link between ground water and stream flows were of particular interest to the audience. The Project will provide BLM with water management information and water quantity data to support the 2000 federal reserved water right identified in the Monument Proclamation.
- **Monument Staffing** – The Monument included five onboard positions during 2011:

Monument Manager: Rem Hawes

Park Ranger: Nancy Stallard

Wildlife Biologist: Paul Sitzmann

Archaeologist: Bryan M. Lausten

Natural Resource Specialist: Amanda James

Wildlife biologist, Paul Sitzmann is currently a graduate student and is working part-time while completing his master's degree.

Three positions (wildlife biologist, natural resource specialist and archaeologist) also provide support to the Hassayampa Field Office. This was particularly evident in FY2011 with needs to evaluate and renew livestock grazing permits. Several members of the field and district staff reciprocate support for monument work as needed.

Positions for a hydrologist and outdoor recreation planner are currently unfilled.

State Name: Arizona

Unit: Agua Fria National Monument

Manager: Vanessa Briceño, Acting Manager; Rem Hawes, Manager FY11

Table 1: SCIENCE										
Location	Project Name	Discipline	Research Contributor/ Collaborator/ Partnership	Project Description	Status	Products	Applications	Outreach Options	BLM Contributions	Partner Contributions
Agua Fria National Monument	Legacies on the Landscape	Archeology	Arizona State University School of Human and Evolution and Social Change	The objective is to examine long-term effects of prehistoric settlement and land use on the natural landscape. Current efforts focus on studies of prehistoric farming, origins and distributions of pottery types, and climate changes that affected population movements, settlement, and abandonment of the mesas.	Ongoing	Data collected will be critical in monitoring cultural sites. Baseline data is needed to inventory cultural sites. Subsequent surveys will allow the AFNM to assess the impacts of visitors to cultural sites and determine if cultural artifacts are being removed.	1) Documentation and understanding of the long-term ecological impacts of the prehistoric occupation of the semi-arid landscape of Perry Mesa. 2) Field research is organized through seminar in which ecology and archaeology faculty jointly engage students in the collection and analysis of ecological and archaeological data.	This project will not only produce data, that will be available to the ecological and archaeological communities, but ASU is planning multi-discipline symposium to present their findings. This would also include publication of the symposium presentations.	\$20,000	In kind contributions
Agua Fria National Monument	Healthy Lands Initiative	Biology	Arizona Game and Fish and The Bureau of Land Management	Assess Pronghorn movement patterns and distribution relative to I-17 and fuels treatments such as juniper thinning and broadcast burning. Movements associated with the highway corridor and fuels treatments will be determined through the deployment of radio collars. Develop recommendations to enhance pronghorn highway permeability. Provide baseline data and locations for future pronghorn habitat treatments, including corridors, and evaluate completed pronghorn treatments.	Ongoing	This research project will add greatly to our understanding of pronghorn movements in relation to highways and fuels treatments. The overarching goal of this research project is to apply insights we gain on current pronghorn movements and permeability across I-17 to develop strategies to enhance connectivity as part of future highway reconstruction and habitat management. To date, 25 GPS radio collars have been deployed. Five flights have been conducted to download data from collars.	The specific objectives and associated procedures of this research project include: Assess pronghorn movement patterns and distribution relative to I-17 and determine movements associated with the highway corridor, develop recommendations on the need for, location(s) of, and type(s) of wildlife passage structures and other mitigations to enhance pronghorn permeability, provide baseline data and locations for future pronghorn habitat treatments, including corridors, and evaluate completed pronghorn habitat treatments.	Habitat fragmentation by the proliferation of highways has led to the decline of the pronghorn in southern Arizona. This project may have the potential for future highway projects to provide a means for the pronghorn to cross the highway to expand their habitat.	\$35,000	In kind contributions

Agua Fria National Monument	Pronghorn Antelope Diet Composition	Biology	Arizona State University and Desert Botanical Gardens	Understanding species composition of wild ungulate diets will provide baseline information that directly aids monitoring and management efforts thereby helping land managers assess ranger quality for target species.	Ongoing	Genetic markers for individual plant species have been identified. A cafeteria trail feeding has begun.	Assess diet composition of pronghorn using non-invasive fecal analyses employing comparative method.		\$0.00	In kind contributions
Agua Fria National Monument	Wet-Dry Mapping	Hydrology	The Friends of the Agua Fria	Data gathered during the wet dry mapping are critical in monitoring water resources and vicariously through this monitoring, wildlife habitat. Trend data will also be used to track changes through time and monitor the effects of climate change and increased urbanization. Additionally, volunteers inventoried and removed Dalmatian toadflax which is an invasive species.	Annually	Training of participants and report finalization was completed.	Data tracks changes in water levels in the Agua Fria river over time and will be used to monitor effects of climate change and increased urbanization.	University of Arizona, Upper Agua Fria Watershed Partnership, and local volunteers working with the Friends of the Agua Fria. Wet/Dry mapping is a success story of citizen science in action.	In kind contributions	In kind contributions
Agua Fria National Monument	Agua Fria National Monument Flora Project	Botany	Desert Botanical Gardens	These studies are providing baseline data for supporting decisions that will foster productive ecosystem management and the protection of Monument landscapes, consistent with the Monument proclamation.	Ongoing	Collection, identification, and curation of AFNM flora.	Continued research, inventory, collection and curation of AFNM flora.		\$0.00	In kind contributions
Agua Fria National Monument	Racetrack Project	Archeology	Will G. Russell. Arizona State University	The Racetrack Project studies the archeological features known as "racetracks" on the Agua Fria N.M. These features are linear anomalies dating from the mid 13th to early 14th centuries. Through the use of remote sensing technologies the project has identified 57 such features within the AFNM. Mr. Russell seeks to test his hypotheses regarding diachronic change in the racetrack network and understand how social asymmetry and religious development are interrelated.	Continuing	Technical report	The various regions in the southwest, its cultural history and social processes involving central Arizona prior to European contact are relatively both unexplored or well preserved. This combination makes this an ideal setting for study on AFNM for immigration, social aggregation, ethnogenesis, reorganization, emigration, continuity, and indigenous history.	This ongoing research has the potential to engage descendent communities (tribal elders, representatives, and consultants) the general public (avocational archeologists, anthropological enthusiasts, AFNM supporters, Monument visitors, and media) an multi-disciplinary colleagues.	\$9,000	In kind contributions

Agua Fria National Monument	Natural Resource Partnership	Wildlife Biology	Dr. William Miller, Arizona State University, Polytechnic	Assess Pronghorn movement patterns and distribution relative to I-17, and determine movements associated with the highway corridor, habitat quality, and grassland restoration treatments. Provide baseline data and locations for future pronghorn habitat treatments, including corridors, and evaluate completed pronghorn treatments.	1st year	Approximately 1000 hectore plots were sampled. Data was gathered on tree densities, shrub densities, cover height, production, and species composition. Twenty-five spread spectrum GPS collars were fitted to pronghorn antelope (See HLI). Twelve weeks of data have been collected on pronghorn locations. Point data is gathered eight times a day for at least 14 months.	This research project will add greatly to our understanding of pronghorn movements. The overarching goal of this research project is to apply insights we gain on current pronghorn movements, habitat, and vegetation treatments	Improve understanding of pronghorn antelope habitat requirements and beneficial vegetation treatments of high desert grasslands in Arizona.	\$50,000	In kind contributions

State Name: Arizona  
 Unit: Agua Fria National Monument  
 Manager: Vanessa Briceño, Acting Manager; Rem Hawes, Manager FY11

Table 2: PARTNERSHIPS (table continues on next page, please scroll to the right)								
Location	Project Name	Partners	Project Description	Status	Results	Outreach Options	BLM Contribution	Partner Contribution
						<i>Identify projects or stories that may be of interest to the public</i>	<i>Funding To date by year</i>	<i>To date by year</i>
Agua Fria National Monument	Friends of the Agua Fria N.M.	Friends of the Agua Fria National Monument	Perry Mesa Symposium on 9-11-2011, Historical research for the 1891 School House interpretive site, outreach activities, wet-dry mapping, trash clean-ups, archeological hikes, oral histories, cultural resources protection and outreach efforts, site protection and documentation.	Ongoing	Continued partnership that provides a long term benefit to the management of the National Monument.	A long term partnership that continues to provide benefits to the agency, the public and the National Monument with interpretive sites, data from the wet-dry mapping, protection of resources, contributing hours of volunteers services annually.	\$500	\$1,551
Agua Fria National Monument	AFNM Youth Incentive Program	American Indian Science and Engineering Society	AISES Summer Internship Program. 10 week internship program for American Indian post secondary students to gain experience working for the BLM. Purpose of the program is to provide students with hands-on work experience opportunities to gain relevant skills and knowledge.	Ongoing	Two interns completed the program in 2011	Recruitment of American Indian youth from Universities and Tribal Colleges.	\$50,000	In kind contributions
Agua Fria National Monument	Central Arizona Grassland Strategy	Arizona Game and Fish Department, Prescott National Forest, Tonto National Forest	The BLM is one of four agencies focused on the conservation of grassland habitat in central Arizona. With key portions of grassland habitat occurring on the Agua Fria National Monument, staff is working in conjunction with the Arizona Game and Fish Department, the Prescott and Tonto Forests, and the Natural Resources Conservation Service to develop the "Central Arizona Grasslands Strategy."	Ongoing	High Desert Grassland Conservation	The strategy provides a framework for multiagency projects that benefit grassland habitat restoration on a landscape scale and across jurisdictional boundaries. Based on these efforts, the Central Arizona grasslands have also become a focal area for the Healthy Landscapes Initiative.	In kind contributions	In kind contributions
Agua Fria National Monument	River Pathways Project	Audubon Society	River Pathways Project (youth Incentive and Hands on the Land Projects)	Ongoing	Riparian monitoring, bird surveys, trash clean ups, outreach, and environmental education	Engaging urban youth in the outdoors and encourage land stewardship.		In kind contributions

State Name: Arizona  
 Unit: Agua Fria National Monument  
 Manager: Vanessa Briceño, Acting Manager; Rem Hawes, Manager FY11

Table 3. STAFF & WORK MONTHS		
Work Months and Funding (12 wms = 1 work year)	Work Months (#)	Funding (\$)
<b>Agua Fria National Monument Staff</b>		
Manager	9.97	\$ 119,588
Natural Resource Specialist	6.52	\$ 58,143
Wildlife Biologist	5.22	\$ 24,377
Park Ranger	10.14	\$ 71,875
Archaeologist	2.75	\$ 24,041
<b>Total for AFNM Staff</b>	<b>34.60</b>	<b>\$ 298,024</b>
<b>Phoenix District Office Staff Support Funded by AFNM</b>		
District Manager	1.23	\$ 15,170
Field Manager	0.14	\$ 1,645
Public Affairs	1.09	\$ 11,940
Wildlife Biologist 1	0.43	\$ 1,328
Wildlife Biologist 2	1.02	\$ 7,332
Administrative Assistant	0.46	\$ 2,780
Management Assistant	0.71	\$ 4,784
Public Contact Lead	0.66	\$ 4,783
Budget Officer	0.21	\$ 2,005
Procurement	2.17	\$ 11,519
Warehouse / Misc.	0.57	\$ 3,610
Force Account / Fire STEP	2.13	\$ 15,809
Surface Protection Specialist	0.07	\$ 545
GIS Specialist	0.17	\$ 1,291
Law Enforcement	6.90	\$ 83,188
Range Technician	0.41	\$ 2,160
Outdoor Recreation Planner	0.78	\$ 8,547
<b>Totals for Phoenix Dist &amp; Hassayampa FO</b>	<b>17.78</b>	<b>\$ 178,436</b>
<b>TOTAL Staff &amp; Work Months</b>	<b>52.38</b>	<b>\$ 476,460</b>

Table 4. PRIORITY STAFFING NEEDS		
Position	Perm or Term	Position on Approved Table of Org? Y/N
Seasonal Park Ranger 1	Term	N
Seasonal Park Ranger 2	Term	N
Hydrologist / water rights specialist	Perm	N
Range Technician	Perm	N
Outdoor Recreation Planner	Perm	N

State Name: Arizona

Unit: Agua Fria National Monument

Manager: Vanessa Briceño, Acting Manager; Rem Hawes, Manager FY11

<b>Table 5. CONTRIBUTIONS</b>	
<b>Monument Recreation Volunteers</b> - Value of 1,151 donated hours	<b>\$25,322</b>
<b>Monument Riparian/Watershed Volunteers</b> - Value of 384 donated hours	<b>\$8,448</b>
<b>Monument Archaeology Volunteers</b> - Value of 650 donated hours	<b>\$14,300</b>
<b>Monument Environmental Ed. / Interpretation Volunteers</b> - Value of 3,500 donated hours	<b>\$77,000</b>
<b>ASU</b> - Value of researchers Legacies on the Landscape field work	<b>\$20,000</b>
<b>Friends of the Agua Fria National Monument</b> - Value of 1551 donated hours	<b>\$34,122</b>
<b>Monument Biological Resources Volunteers</b> - Value of 400 donated hours (Copper Tank Fence Project)	<b>\$8,800</b>
*Estimated volunteer hourly rate \$22	
<b><i>TOTAL Contributions</i></b>	<b><i>\$187,992</i></b>