

ENVIRONMENTAL ASSESSMENT FOR FLYING W VICINITY

3.0 Alternatives

As a result of the public and internal scoping process, the no-action alternative and three action alternatives for addressing the purpose and need were selected for analysis in this EA. Each of the alternatives has been analyzed independently. The alternatives that have been evaluated are:

Alternative A - No action

Alternative B – Provide vehicle access to the northern end of Flying W for day-use activities

Alternative C – Provide walk-in access to the northern end of Flying W

Alternative D – Provide vehicle access to the northern and southern ends of Flying W for day-use activities

3.1 Elements Common to All Action Alternatives

Under all of the action alternatives (Alternatives B, C, and D), modifications to the Flying W site would include the rehabilitation and closure of the existing parking area at the top of the bluff, rehabilitation of the severely eroded trail connecting the bluff parking area and gravel bar, closure and/or rehabilitation of the network of existing roads and trails, installation of a gate and vehicle turn-around along the Gouldsmith Tract Road on the north side of the Current river, elimination of vehicle access to the Bluff Schoolhouse river ford at the south end of the site, installation of signs, the continued use by horses of the existing Bluff Schoolhouse Trace Road from the schoolhouse down the hill and across the existing horse crossing, the continued use by horses of the existing horse crossing in the vicinity of Flying W Bluff, and the designation of a horse trail through the site.

The severely eroded 0.4-acre parking area and 140-foot trail at the north end of the site near the bluff would be rehabilitated. These activities would involve the addition of approximately 800 cubic yards (CY) of clay fill. Brush removed during construction activities at Flying W would be placed on top of the fill to prevent further erosion. The parking area and walking trail would be closed to visitors during the entire rehabilitation process to prevent further damage to the site.

The network of user-created roads and trails, totaling over 1.9 miles, would be closed to visitors and either rehabilitated or simply allowed to grow up in vegetation. All of the roads traversing the open fields would be plowed and seeded in order to encourage the reestablishment of native grasses. In the two action alternatives that result in the closure of the “river road” (Alternatives B and D), this road would be allowed to revegetate naturally.

A barrier and turn-around site would be installed along the Gouldsmith Tract Road approximately 500 feet north of the Current River and bluff gravel bar. The barrier would be installed in order to close the bluff river ford to vehicles and ATVs. A small turn-around site would be cleared at this location for vehicles traveling down the Gouldsmith Tract Road. An additional barrier would be installed next to the Bluff Schoolhouse to prevent vehicles and ATVs from accessing the river ford at the south end of Flying W. Both of the barriers would be positioned in a way that would continue to provide access for horse and hiking use. Signs would encourage visitors to park and walk in to access the river.

At various locations throughout the Flying W site appropriate signs and/or educational kiosks would be installed to provide information to visitors. These signs would indicate closure (e.g. closure of river fords to vehicles, and closure of roads or trails), rehabilitation, appropriate use, and other information that would be helpful to visitors as they continue to recreate in this area.

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All of the action alternatives include the official designation of a horse trail through the site. Under Alternatives B and D, the horse trail would be constructed in a location that minimized the amount of time horses spent in the floodplain (i.e. out of the floodplain along the edge of the open fields). Under Alternative C, the horse trail would be designated along the “river road” down in the floodplain where horse use currently exists on the unmaintained park road. The designation of a horse trail in all of the alternatives would include maintenance of the trail and continued horse use of existing river crossings. The specifics of each of these trails will be discussed further within the description of each action alternative.

3.2 Description of Alternatives

ALTERNATIVE A - No-action (Figure 5)

Under the No-Action alternative no modifications or improvements to existing facilities would occur. The current undefined parking area at the top of the Flying W bluff would continue to be used by visitors to the site. Operations to maintain and patrol the area would continue as is. The trash cans located in the parking area would continue to be emptied by park maintenance staff 4-5 times per week during the summer months. No additional roads or parking areas would be constructed under this alternative.

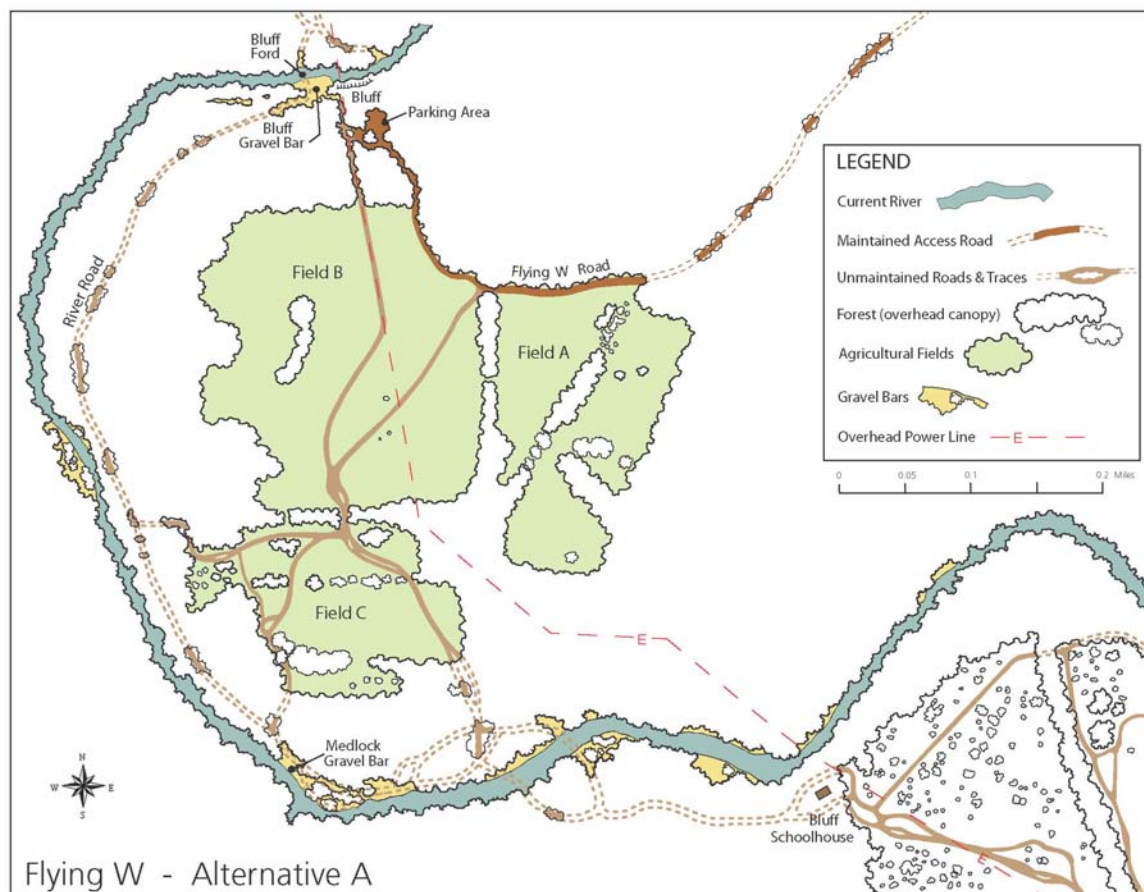
Under this alternative it can be expected that visitor use would continue at existing levels and intensity. Visitors would have access to gravel bars with their vehicles. The extreme “party” atmosphere currently associated with Flying W would continue.

The network of roads and traces throughout the Flying W site would continue to be used by vehicles, ATVs, and horses. Vehicular access through the site to the gravel bars would continue. The two river fords (one at the northern end and one at the southern end) located at the site would remain open to vehicles, horses, and ATVs. Unmanaged horse use would continue to exist on the road network, the majority of which occurs in the floodplain. Primitive camping and gravel bar camping would continue to take place.



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Figure 1. Existing Conditions (Alternative A – No Action)



ALTERNATIVE B – Provide vehicle access to the northern end of Flying W for day-use activities (Figure 6)

This alternative proposes to make modifications to the Flying W site that would result in a more enjoyable and manageable day-use visitor experience than that which currently exists while protecting the resources for which the park was established. In addition to the elements common to all action alternatives, modifications to the site would include the construction of an eight-car gravel parking area and associated walking trail at the north end of the site, construction of 0.15 miles of hardened access road, and the construction of 0.9 miles of horse trail.

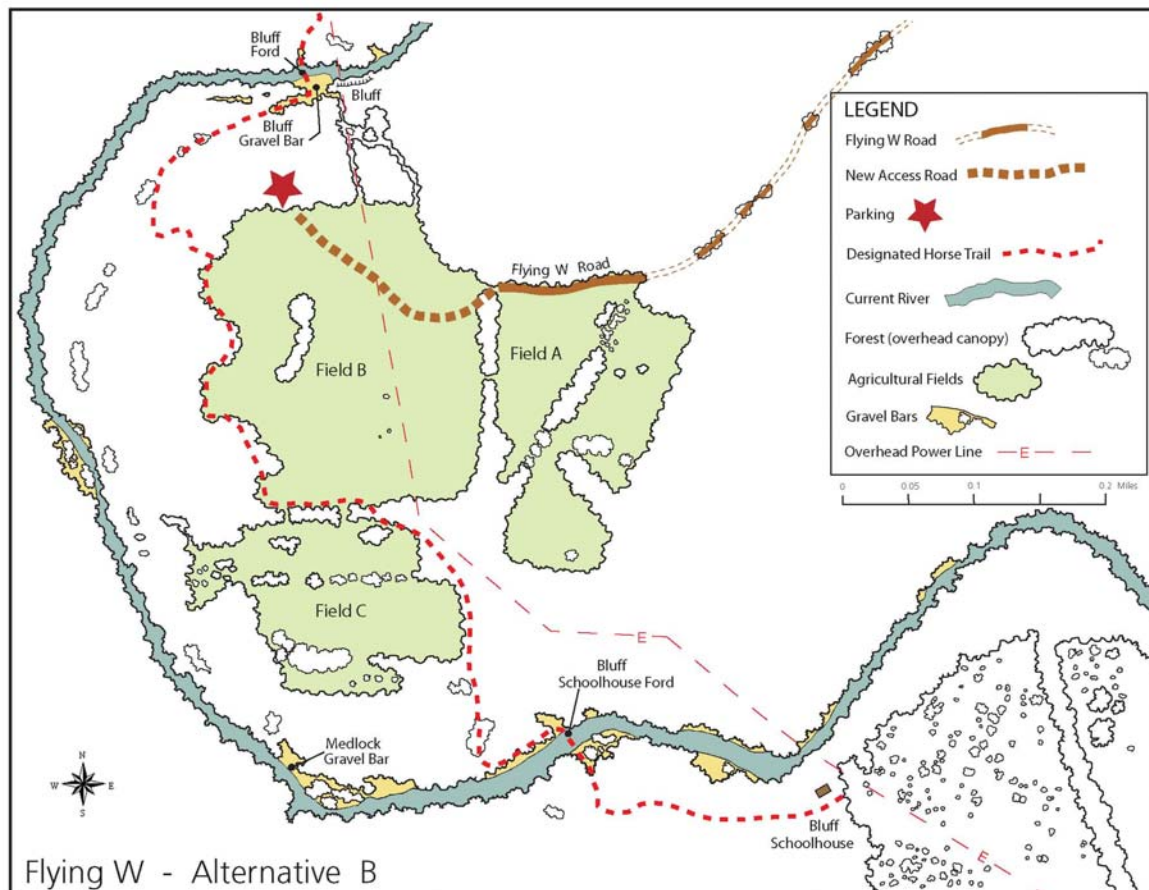
Under this alternative, the existing access road to the site (Flying W Road) would be extended through the Field B to provide access to a new parking area. This would involve the addition of 326 CY of gravel over approximately 0.15 miles. On either side of this road, ditches would be pulled to direct runoff and prevent access to the fields by unauthorized vehicles. An additional 0.1 miles of ditch would be pulled along the south side of the Flying W Road where it crossed through Field A. A single gate would be installed in the northeast corner of Field B to provide access for authorized vehicles and the agricultural permittee.

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A small gravel parking area would be constructed inside the woods line at the northern end of Field B near the bluff. This would involve the clearing of approximately 0.15 acres of small diameter trees and brush and the addition of 104 CY of gravel. The parking area would have 8 parking spaces. Construction of a 500-foot walking trail would provide access from the parking area to the bluff's gravel bar.

Currently horses legally use the unmaintained park road that follows the river and is opened to horse and vehicle use. This alternative would close the unmaintained road along the river and move the horse trail out of the floodplain and up on the bench. This new route would be 0.9 miles long and would be the designated horse trail through the site. The designated trail would begin on the north side of the Current River on the Gouldsmith Fields unmaintained park road, move south and cross the river near the Flying W Bluff at an existing horse crossing, travel up onto the edge of Field B and through Field C, drop back down into the floodplain, cross the river again at the south end of the site at the existing horse crossing and terminate near the Bluff Schoolhouse at another unmaintained park road. Construction of this trail would involve the clearing of 2400 square feet of small diameter trees (<6 inches) and brush and the addition of 197 CY of gravel to establish the trail tread. New trail construction would follow the design and maintenance standards in the 2000 Edition of the U.S. Forest Service Trail Construction and Maintenance Notebook (<http://www.fhwa.dot.gov/environment/fspubs/00232839/>).

Figure 2. Actions of Alternative B



ALTERNATIVE C – Provide walk-in access to the northern end of Flying W (Figure 7)

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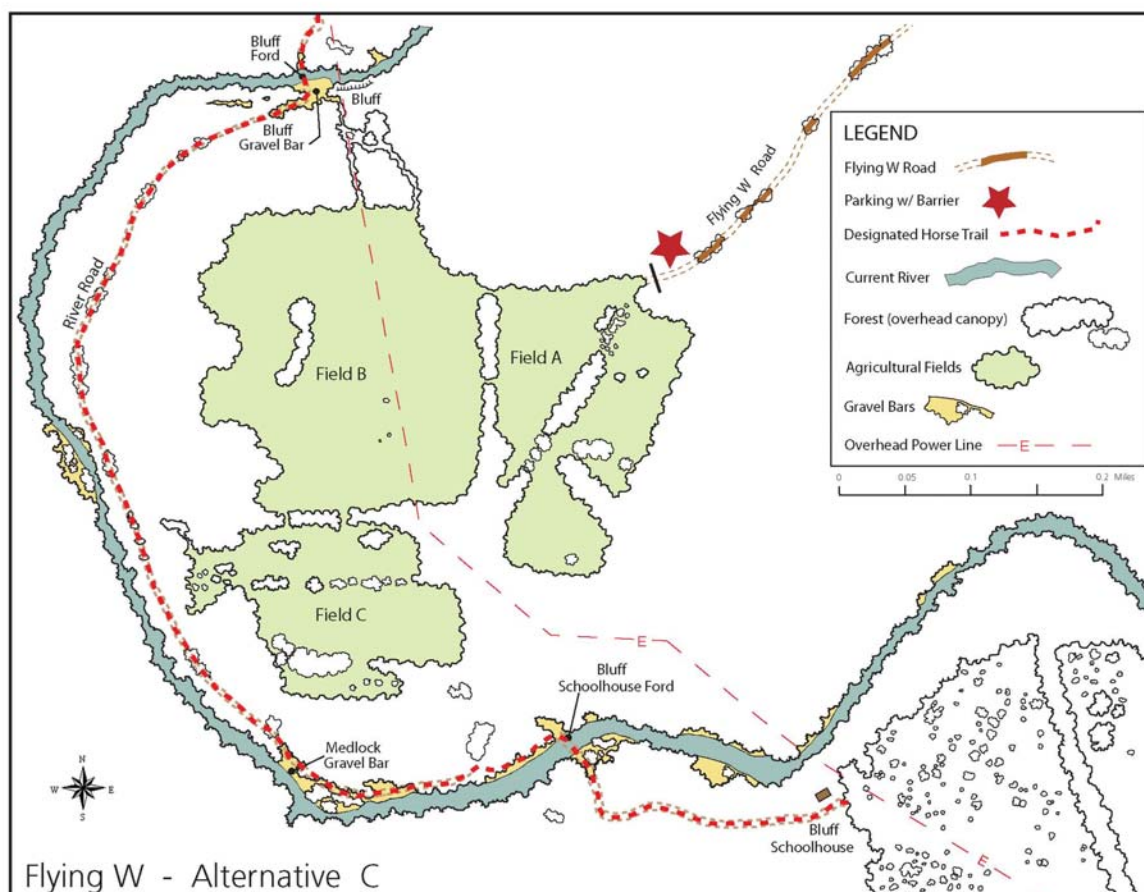
This alternative proposes to make modifications to the site that would result in a more primitive, isolated experience with walk-in access only to the site while protecting the resources for which the park was established. Under this alternative, in addition to the elements common to all action alternatives, modifications to the site would include the construction of an 8-car parking area located at the entrance to Field A and the construction of approximately 1 mile of horse trail.

Under this alternative, no additional roads would be constructed at Flying W. Vehicle access to the site would be limited to the Flying W Road and would terminate at the new parking area. A single gate would be installed on the west side of the parking area to provide access for authorized vehicles and the agricultural permittee.

A small gravel parking area would be constructed along the Flying W Road at the point where this road enters Field A. The construction of the parking area would involve minimal clearing of vegetation, and it would require the addition of 74 CY of gravel. The parking area would cover an area approximately 0.15 acres in size and contain 8 parking spaces.

This alternative would include the designation of approximately 1 mile of horse trail through the site. The alignment of this trail would be different from that described for Alternative B and D. This designated trail would begin on the north side of the Current River within the Gouldsmith fields, move south and cross the river using an existing horse crossing near the bluff, travel along the “river road” within the floodplain on the roadbed, cross the river again using an existing horse crossing at the south end of the site, and terminate near the Bluff Schoolhouse. Construction of this horse trail would involve the addition of 111 CY of gravel to correct drainage problems on the “river road.” The likelihood of this gravel washing into the river during floods and having to be replaced is high.

Figure 3. Actions of Alternative C



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ALTERNATIVE D – Provide vehicle access to the northern and southern ends of Flying W for day-use activities (Figure 8)

This alternative proposes to make modifications to the site that would result in additional drive-in access for visitors while protecting the resources for which the park was established. In addition to the elements common to all action alternatives, modifications to the site would include the construction of two parking areas (one 8-car parking area located at the north end of the site with an associated walking trail, and one 6-car parking area located at the south end of the site above the southern gravel bars), construction of 0.5 miles of hardened access roads, and the construction of 0.9 miles of horse trail.

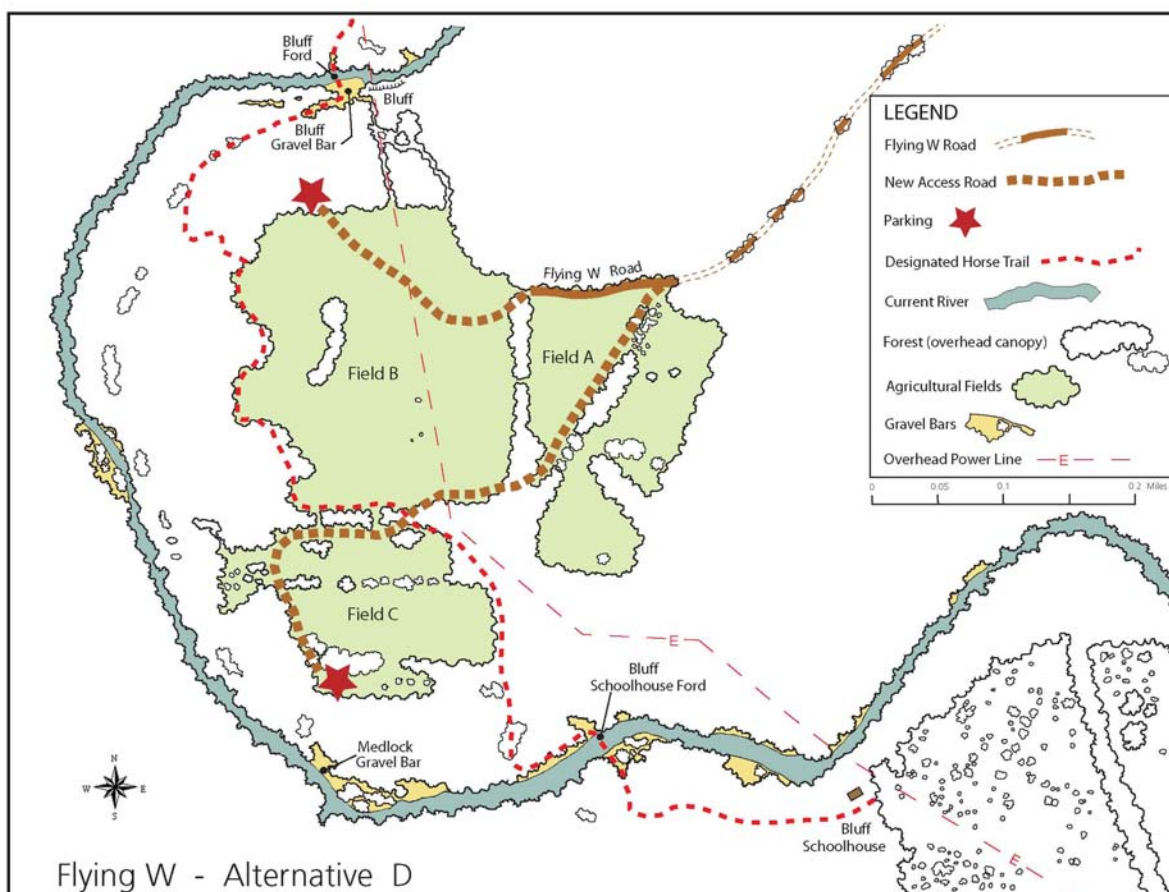
Under this alternative, the existing access road to the site (Flying W Road) would be extended through Field B to provide access to a new parking area. This would involve the addition of 326 CY of gravel over approximately 0.15 miles. In addition, a new road would be constructed as a fork off of the Flying W Road that would extend through Field A and C to provide access to a second parking area at the south end of the site. This would involve the addition of 695 CY of gravel over approximately 0.4 miles. Construction of this road would involve some minor clearing of vegetation within the open fields. On either side of these roads, ditches would be pulled to direct runoff and prevent access to the fields by unauthorized vehicles. An additional 0.1 miles of ditch would be pulled along the south side of the Flying W Road where it crossed through Field A. Two gates would be installed to provide access for authorized vehicles to the open fields; one in the northeast corner of Field B, and one along the south side of the second access road in Field C.

Two small gravel parking areas would be constructed at the site. One parking area would be located inside the woods line at the northern end of Field B near the bluff. This would involve the clearing of approximately 0.15 acres of small diameter trees and brush and the addition of 30 CY of gravel. The parking area would consist of 8 parking spaces. Construction of a 500-foot walking trail would provide access from the parking area to the bluff gravel bar. The second parking area would be located at the southern edge of Field C near the southern gravel bar. This would involve the clearing of approximately 0.15 acres of small diameter trees and brush and the addition of 30 CY of gravel. The parking area would consist of 6 parking spaces. The existing road from Field C to the southern gravel bar would be used for walk-in visitor access to the gravel bar.

Currently horses legally use the unmaintained park road that follows the river and is opened to horse and vehicle use. This alternative would close the unmaintained road along the river and move the horse trail out of the floodplain and up on the bench. This new route would be 0.9 miles long and would be the designated horse trail through the site. The designated trail would begin on the north side of the Current River on the Gouldsmith Fields unmaintained park road, move south and cross the river near the Flying W Bluff at an existing horse crossing, travel up onto the edge of Field B and through Field C, drop back down into the floodplain, cross the river again at the south end of the site at the existing horse crossing and terminate near the Bluff Schoolhouse at another unmaintained park road. Construction of this trail would involve the clearing of 2400 square feet of small diameter trees (<6 inches) and brush and the addition of 197 CY of gravel to establish the trail tread. New trail construction would follow the design and maintenance standards in the 2000 Edition of the U.S. Forest Service Trail Construction and Maintenance Notebook (<http://www.fhwa.dot.gov/environment/fspubs/00232839>).

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Figure 4. Actions of Alternative D



3.3 Alternatives Considered but Dismissed

Three additional alternatives have been considered, but none adequately satisfies the purpose and need identified for this environmental assessment. The three alternatives considered were:

- **Close the entire site by gating the Flying W Road at the ONSR boundary in the northeast corner of the site** - This alternative would have provided for the protection of park resources, but would have been inadequate with regard to providing a quality recreational experience to visitors. Visitors hoping to experience the river at this site would have had a significant distance to hike. In addition, this alternative would have closed a road designated as a county road in the 1991 Roads and Trails Study.
- **Provide a single access road to a parking lot at the south end of the site for day-use only** - This alternative would have concentrated day-use at the south end of the site in close proximity to a known gray bat cave. In addition, because of existing use patterns, the north end of the site has already been impacted. Moving day-use to the south end of the site would have resulted in additional impacts to resources.

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- **Provide day-use access to the northern end of the site and day-use/primitive camping access to the southern end of the site with identified camping sites** - As in the above alternative, this would have placed day-use in close proximity to a known gray bat cave (a federally endangered species). In addition, this would have resulted in overnight camping at the same location causing further disturbance to the gray bats. This alternative would not be consistent with the direction in the 1984 General Management Plan by establishing another primitive recreational/camping site accessed by vehicles.

Table 1. Summary of the four alternatives for Flying W.

		<i>Alternative A</i> No Action	<i>Alternative B</i>	<i>Alternative C</i>	<i>Alternative D</i>
Components of Alternatives	Day use only		X	X	X
	Day use and un-restricted vehicle camping **	X			
	Southern gravel bar day-use area				X
	Walk-in access only			X	
	Parking area near bluff	X	X		X
	Parking area above-southern gravel bar				X
	Designate a new location for horse trail		X		X
	Rehab bluff parking area and hiking trail		X	X	X
	Close/rehab undesignated roads & trails		X	X	X
	Close river ford crossings to vehicles		X	X	X
	Closed during construction		X	X	X

**Float-in camping is allowed on gravel bars throughout ONSR

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3.4 Comparison of Alternative Effects

Table 2. Comparison of effects for the four analyzed alternatives.

RESOURCE AREAS		ALTERNATIVE A — NO ACTION	ALTERNATIVE B —	ALTERNATIVE C —	ALTERNATIVE D —
	Soils	Moderate long-term adverse	Minor long-term beneficial	Negligible	Minor long-term beneficial
	Vegetation	Negligible short-term	Moderate short-term beneficial	Minor long-term adverse	Moderate short-term beneficial
		Moderate long-term adverse	Minor long-term beneficial		Minor long-term beneficial
	Water Quality	Moderate long-term adverse	Minor long-term adverse	Moderate long-term adverse	Minor long-term adverse
	Floodplain	Moderate long-term adverse	Minor long-term adverse	Moderate long-term adverse	Minor long-term adverse
	Species of Concern	May affect/Not likely to adversely affect gray bats	May affect/Not likely to adversely affect gray bats	May affect/Likely to adversely affect gray bats	May affect/Not likely to adversely affect gray bats
		Likely to jeopardize Ozark hellbenders	May affect/Not likely to adversely affect Ozark hellbenders	Likely to jeopardize Ozark hellbenders	May affect/Not likely to adversely affect Ozark hellbenders
	Cultural Resources – Archeology	Major long-term adverse	Moderate short-term adverse	Moderate short-term adverse	Moderate short-term adverse
			Moderate long-term beneficial	Moderate long-term beneficial	Major long-term adverse
	Visitor Use and Experience	Moderate adverse long-term	Moderate long-term beneficial	Minor long-term beneficial	Minor short-term adverse and moderate long-term beneficial
	Park Operations	Minor short-term and moderate long-term adverse effects on maintenance	Moderate short-term adverse and minor long-term beneficial effects on maintenance	Moderate short-term adverse effects and minor long-term adverse effects on maintenance	Moderate short-term adverse and minor long-term adverse effects on maintenance
		Minor short-term adverse and minor long-term beneficial effects on Law Enforcement	Moderate short-term adverse and minor long-term beneficial effects on Law Enforcement	Moderate short-term adverse and moderate long-term beneficial effects on Law Enforcement	Moderate short-term adverse and minor beneficial long-term effects on Law Enforcement

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3.5 Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in NEPA. The Council on Environmental Quality (CEQ) provides direction in its guidance 'Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (1981)' that "...the environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101." Using the six criteria from Section 101, it was determined that, of the three available action alternatives, **Alternative B** provides the greatest level of protection of resources of the alternatives evaluated in this EA. The rehabilitation of degraded roads and trails and the closure of river fords to ATV and vehicle use in all of the action alternatives would benefit the natural and cultural resources of the site. Alternative C would include the designation of the horse trail within the floodplain, and Alternative D would result in additional development of the site.

3.6 Agency-Preferred Alternative

The Agency-Preferred Alternative is **Alternative B**. The agency has chosen this alternative because it fulfills the goals outlined in the purpose and need while causing the least amount of resource damage of the build alternatives. Issues having a strong impact on the decision making process were the archeological sites and the extreme erosion leading to natural resource destruction and the proximity to the Current River and the 100 year floodplain.

4.0 AFFECTED ENVIRONMENT

The Flying W area is located within Ozark National Scenic Riverways on the upper Current River in Shannon County, Missouri. The 90-acre site is composed primarily of open fields (40 acres), but also contains some riparian forest, gravel bars, and mixed-oak hickory forest. The site is located on the eastern side of a large bend in the river. The Sam Steelman Hole (known locally as the "bluff area") is located on the northern end of the site and receives the most recreational use. The main access points for visitors to Flying W are from an improved road (Flying W Road) entering the site off of State Highway K, by river (canoe, tube, raft, and kayak) from the north, by crossing the river near the bluff area, or by crossing the river near the Bluff Schoolhouse to the south. The river crossings at the northern and southern ends of the site provide access to an unmaintained road known as the "river road." This road meanders through the Flying W site within the floodplain paralleling the Current River and has been traveled by horses, ATVs, and vehicles.

At four points along the "river road" within Flying W there are junctions with other trails or roads that lead up to a network of user-created roads and a parking area at the top of the bluff. Throughout the site, sections of braided roads and trails have been created over time when vehicles, horses, and ATVs attempted to avoid mudholes, fallen trees, eroded paths, or other obstacles. A total of approximately 1.9 miles of unmaintained roads, trails, and traces currently exist here. In addition to the river crossings mentioned above (the bluff area and Bluff Schoolhouse crossings), there are also two other trails which cross the river; one at Razor Hollow and one at Medlock cave. The Razor Hollow trail crossing appears to be used primarily by horse riders while Medlock cave is accessed by multiple user groups. All of the above mentioned river crossings, roads, and trails, except for the Flying W Road, are unauthorized and have not been thoroughly evaluated under the National Environmental Policy Act.

The Flying W area is a popular destination for river users (canoes, tubes, and rafts) as well as those accessing the site from land (horse riders, fishermen, vehicles, ATVs, party crowd, and day users). At a few gathering points within the site, such as the river fords or the intersections of trails and roads,

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multiple users or user groups congregate at the same location. This has the potential to exacerbate user conflicts. The bluff area and associated gravel bars on the north end of the site have traditionally been the locations where most activity occurs. These areas have become known as the “party” spots on the upper Current River where bluff jumping, alcohol consumption, and loud music are commonplace on any given weekend throughout the summer months and result in negative experiences for other river users or visitors recreating on the upland portions of the site.

4.1 Impact Topics Selected for Analysis

Topics addressed in this section and subsequently analyzed in Section 6 (Environmental Consequences) were selected based on their relevance as indicated by site visits, project scoping, reference documents, regulatory agency input, and ONSR personnel. The topics chosen for analysis are; soils, vegetation, water quality, wetlands/floodplains, species of concern, cultural resources, visitor use and experience, and park operations. Although one additional topic, soundscapes, was identified by the ONSR Interdisciplinary Team, it was determined that the analysis of this topic would be adequately covered under visitor use and experience and park operations.

4.1.1 Soils

The Flying W site is located primarily within river terrace and floodplain landforms with a small section, at the northern end of the site, located on a shoulder-ridge. Lecomma loam soils are predominantly found in the open fields and uplands portion of the site (approximately 40 acres). This soil is not typically flooded or ponded. The river valley bordering the open fields to the west contains Relfe-Sandbur soils which are indicative of the floodplain. These soils are frequently flooded. The bluff area at the north end of the site is located in a small area containing Niangua-Bardley soils. These soils have a very high surface water runoff class. All of the soil types within Flying W have a seasonal high water table at a depth of more than 6 feet (CARES 2006, USGS 2006).

4.1.2 Vegetation

The Flying W site is bordered to the north, west, and south by the Current River. The bottomland forest along the river is dominated by annual flooding activity and contains abundant early successional species such as ash (*Fraxinus Americana*), oak (*Quercus* sp.) and sycamore (*Platanus occidentalis*). A smaller portion of the site is composed of mesic bottomland forest containing species such as sugar maple (*Acer saccharum*), walnut (*Juglans* sp), basswood (*Tilia Americana*), bitternut hickory (*Carya cordiformis*), and burr (*Quercus macrocarpa*), white(*Quercus alba*), and red oaks (*Quercus rubra*).

A terrace bench extends east from the floodplain leading to large active agricultural (hay) fields on a colluvial terrace. These hay fields cover almost half of the Flying W site and are maintained in cool season grasses dominated by tall fescue (*Lolium arundinaceum*). Some native grasses are found within or adjacent to the fields along the forested edge. Bordering the hay fields are a few old fields grown up with a mix of tall shrubs and early successional tree species such as walnut (*Juglans* sp.), persimmon (*Diospyros virginiana*), ash (*Fraxinus Americana*), honey locust (*Gleditsia triacanthos*), black locust (*Robinia pseudoacacia*), box elder (*Acer negundo*), and a variety of oaks that respond well to disturbance.

White oak/dogwood forest is the last major component of the vegetation found at the site. This plant community contains white (*Quercus alba*) and red oaks (*Quercus rubra*), mockernut (*Carya tomentosa*), pignut hickory (*Carya glabra*), and dogwoods (*Cornus* sp.) in the understory.

Other plant communities found on the site, but in much smaller proportion, include mixed oak-hickory/dogwood forest, sycamore floodplain forest, and shrubby old field (Chastain et al. 2006).

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4.1.3 Water Quality

Along the Current River water quality has generally been excellent, based on trends in selected surface water sampling from 1983 to present. The Current and Jacks Fork Rivers are designated as Outstanding National Resource Waters (ONRW) under Missouri's water quality standards. They are Tier III waters that carry with them anti-degradation restrictions. Any lowering of water quality is not permitted in these waters.

The Flying W site is bordered to the north, west, and south by the Current River. An existing network of unmanaged roads and traces through the site includes two river fords and an unmaintained road that runs parallel (50-250 feet from the bank) to the Current River for 0.75 miles. Although water quality measurements have not been recorded from the Flying W site, some unmanaged recreational activities such as four-wheel drive vehicle use, horseback riding, and ATV use are of concern especially within the floodplain forest and at the two river fords. These activities cause degradation of water quality during river crossings and as a result of soil erosion from the network of roads and trails.

4.1.4 Floodplain

The soils (CARES 2006) and Ecological Classification System (Nigh et al 2000) data assisted with the identification of the floodplain within the Flying W site. Floodplain soils are restricted to an area approximately 14 acres in size within the low river terrace immediately adjacent to the Current River along the site's western border. The soils within the floodplain are frequently flooded.

National Park Service policy and Executive Order 11988 (Floodplain Management) provide clear direction related to proposed federal actions that may impact floodplains. With regard to floodplains, policy states that "...the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplain."

4.1.5 Species of Concern

ONSR supports six federal and state listed threatened, endangered or candidate status species. Of those, there are two species that occur on a regular basis in the project area; the federally endangered gray bat (*Myotis grisescens*) and the Ozark hellbender (*Cryptobranchus alleganiensis bishopi*), a candidate for listing under the Endangered Species Act.

The gray bat is a species that occupies a limited geographic range in limestone karst areas of the southeastern United States. Most populations are found in Alabama, Arkansas, Kentucky, Missouri, and Tennessee. Because of highly specific roost and habitat requirements, less than 5 percent of all caves are suitable for occupation by gray bats. Gray bats in Missouri have been observed foraging in forest canopy along river edges in addition to foraging while flying low over water. Foraging habitat such as forested corridors, river edges, and reservoir shorelines should be left intact near major gray bat summer caves. In addition disturbance to gray bat caves should be minimized. Disturbance of maternity colonies from May through mid-July, peak season at ONSR, is especially detrimental (Gray Bat Recovery Plan, 1982).

Medlock Cave and Flying W Cave are on private land immediately adjacent to the project area and are within 100 meters of the Flying W site. Medlock Cave hosts a maternal gray bat population and is habitat for several state species of concern such as the grotto salamander (*Typhlotriton spelaeus*), Salem cave crayfish (*Cambarus hubrichti*), southern cavefish (*Typhlichthys subterraneus*), and northern long-eared bat (*Myotis septentrionalis*). The federally endangered Indiana bat has been recorded from the cave, but it does appear to be highly suitable as a hibernaculum. Steel gates were installed at the entrance of Medlock to protect the endangered bat colonies roosting just inside the

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entrance. Flying W Cave is home to the grotto salamander (*Typhlotriton spelaeus*), Salem cave crayfish (*Cambarus hubrichti*), and southern cavefish (*Typhlichthys subterraneus*), three state species of concern.

Two other caves containing gray bat colonies are located within 1.2 km of the Flying W site. Bald eagle cave is located approximately 1.2 km north of Flying W. This cave is relatively short (<400 m), but contains a small but important colony of gray bats. The cave is used by these bats during transient times and for hibernation. It is not known if summer use is for a maternal or bachelor site. Welch Spring cave is located less than 1 km south of the Flying W site. It has historically been used by a significant number of gray bats (> 30,000) however the colony abandoned the cave most likely as a result of flooding. New gating provides protection for the bats and some new usage has been noted over the past year.

The Ozark Hellbender has been found upstream, downstream, and within 1200 meters of the Flying W site on the Current River (consultation with US Fish and Wildlife Service, October 2006). Hellbenders are typically found under large flat slabs of rock, in swift flowing rivers and streams. Studies conducted on Ozark and eastern hellbenders in the 1970s, 1980s, and 1990s show that hellbender populations have declined by an average of 77% with a strong shift in age structure to larger and older adults. Due to obvious population declines, the Ozark hellbender is listed as a state endangered species by the Missouri Department of conservation and is a federal candidate for listing under the Endangered Species Act. Research is being conducted as to the reasons for such a dramatic decline in population numbers, including reproductive problems, degrading water quality/habitat destruction, and the occurrence of disease or parasites causing limb abnormalities. Since hellbenders' primary means of respiration is cutaneous (through the skin), introduced toxins are readily absorbed and can cause either direct mortality or interference with physiological processes, effectively reducing individual fitness and recruitment (Mayasich and Phillips 2003). Depending on the results of the current hellbender research, more actions may need to be taken in the future to reduce impacts to this species by humans.

4.1.6 Cultural Resources – Archeology

Inventories done in October of 1985 determined that three archeological sites lie within the bounds of the Flying W Project Area. Evidence of prehistoric and historic peoples inhabiting the river terraces, bluff areas and arable fields were found at all sites. Although full excavations were not performed, relatively undisturbed archeological deposits are believed to exist at the margins of the eroded areas at depths of 20 to 30 cm below the surface. Due to erosion from camping, off road vehicles and overuse, many of these sites are losing their integrity. These sites are considered important in that they have the potential to yield significant information on prehistoric settlement patterns in the Upper Current River including the habitation of valley landforms with arable land opposed to the steep and rocky ridge slopes and crests along the river as well as the habitation of natural stream terraces which have been preferred loci for human occupation for thousands of years

4.1.7 Visitor Use and Experience

Lying within a broad bend of the Current River, the Flying W site consists of a central mosaic of open agrarian fields intersected by wooded hedgerows. Along the northern rim of the site at the river's edge a high dolomite bluff dominates the scene from the river. As the flat field terraces descend into the forested floodplain along the river's edge a series of open gravel bars that ring the site from the north to the south offer enticing opportunities to picnic, wade/swim, and fish. Today the site is host to a number of visitor uses that have accrued in a casual manner in the absence of planning. There are floaters, who stop along the gravel bars, and some of them picnic or camp. Hunting is allowed in the park, during open season, and visitors fish all year. Horseback riders, originating from outside the park boundary, cut through the site heading north or south along the river corridor. Most all of the

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visitors to this site, whether arriving by motorized vehicle, by horse, by canoe or tube are headed towards the open gravel bars which offer unimpeded access to the water. Flying W has never been formally developed by the park. It functions as a primitive non-developed recreational area. At present, recreational activities at Flying W are not defined. The park maintains a single gravel road leading into Flying W which terminates to the north of the site above the bluff gravel bar where a single trash can is located. Undefined visitor use now proliferates the area, and this is visibly apparent to visitors.

The following is a synopsis of the various visitor uses and associated experiences currently encountered at Flying W:

The Bluff Party Scene: One gravel bar in particular has been the focus of increasingly intense use, the gravel bar to the north near the bluff. On any summer Saturday afternoon, visitors floating to this site via the river will encounter a raucous riot of activity as youth scramble up the high bluff to dive into the deep pool below. On these days rangers report it is not unusual to see as many as 30 cars parked in the makeshift parking area at the top of the bluff, 8 trucks parked on the gravel bar under the bluff, and canoes dragged onto the remaining portion of the gravel bar. The scene is noisy and chaotic with high numbers of people, vast amounts of beer, and booming stereos cranked to a level that encourages this party atmosphere. Horses and riders routinely stop on the gravel bar (and in the river) to "enjoy the show". Floaters and picnickers climb and walk to the top of the bluff; some jump off intentionally swamping and/or tipping canoes. Climbing a number of the user created trails up the steep slope to the bluff can be dangerous. Park rangers note that as many as 200 people crowd to the north gravel bar to watch the spectacle. The resulting congestion creates a bottleneck for floaters wishing only to float through the area. When the party is over the area is littered with cans, bottles, and toilet paper. There are no toilet facilities provided and rangers report that on at least three occasions users have built or brought in (and left) portable camp style pit/bucket toilets.

Camping: Unlimited, unrestricted camping is currently occurring. Visitors arriving by vehicle head to informal "drive-in camps" which they set up wherever they choose at the top of the bluff, the Schoolhouse crossing sandy bar, and at the southern gravel bars. Visitors who are floating the river are permitted to camp on gravel bars all along the park including the Flying W site. Floater camps can usually be found on the riverbank across the river from the bluff, on the gravel bar below the bluff (where the party is during the day), and up stream from the bluff. Floaters will also use the southern gravel bars and the Schoolhouse sandy bar if they are not already occupied by 'drive-in' backcountry campers. Camping primarily occurs in the summer and is associated with river use, though in the autumn during bow hunting season, an occasional hunting camp will be in the Flying W area.

Canoeing & Tubing: Concession operations are limited. In the afternoons, Akers Ferry will put people and inner tubes in at the Flying W bluff area, but more often they, and Jadwin Canoe Rentals, rent inner tubes that people haul themselves. Visitors are given directions to the Flying W road which is marked (there is no sign on Hwy. K) by a large "W" painted on the asphalt. Many inner tube floaters use Flying W bluff as a takeout point having put in upriver at Cedargrove. In addition, many river users float thru the Flying W area ultimately taking out at Akers Ferry.

Hunting & Fishing: The open fields and brushy hedgerows provide plenty of good edge habitat favored by game. Local citizens, familiar with the area, hunt at Flying W. There are also hunting and fishing guides and outfitters in the area. Three outfitters offer guided trips on the Current River for fly-fishing and one of these brings clients to the Flying W area. Starting near the southern end of the Flying W site, a series of deep pools offer excellent opportunities to catch fish, and the area is a prime destination for anglers. This portion of the Current River along the Flying W site has been designated as a "white ribbon trout area" by the Missouri Department of Conservation. Floating in belly boats (tubes w/ rubber leggings) or canoes, they float this four mile stretch. Anglers prefer to fish in the early morning or evenings and hence avoid the majority of the canoe traffic.

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Horseback Riding: No designated horse trails exist in the upper Current River section of ONSR although horses can be legally ridden on park roads. Horse use is currently enjoyed by commercial trail ride operations, saddle clubs, and individuals. Private individual horseback riders are long-time users of the trail network of the upper Current area. Trail ride operations are becoming more popular and utilize the Flying W area as destinations for their guided rides. Individual riders sometimes use Medlock Cave as a stopping point. The largest commercial trail ride operation in the area does not exceed 200 horses/riders and is located outside the park on Big Creek to the northwest of the Flying W area. Most individuals park their horse-trailers at Cedar Grove or Whispering Pines (a privately operated stable northeast of the park) and use the entire upper Current area between Parker Ford and Akers. Horseback riding is less seasonal than canoeing, starts earlier in the morning and occurs daily throughout the week. Peak use overlaps with that of floaters (i.e. Saturdays during the summer months). Horse camping has been discouraged at Flying W, but permitted in the Cedargrove area. Antidotal data indicates that horse use is increasing in the upper Current between Akers and Parker Ford but there are no statistics available on the numbers of horses using the Flying W area.

Driving the River: Driving the rough, unmaintained “river road” that travels from Cedargrove to Welch Spring (approximately 4 miles) is a popular recreational activity for ATVs, 4 WD vehicles (horseback riders also follow this old trace which presents a potential conflict of use.) Often seen as a destination, the river road parallels the Current River, which it crosses many times providing quick access to the opposite side, shortening a trip that might otherwise take an hour if traveling on paved or maintained gravel roads. The Flying W and Gouldsmith crossings (fords) are used extensively during hunting seasons. During (gun) hunting season it is not uncommon for an average of 35 river crossings to occur in one day at the Schoolhouse crossing. Some of the individuals cross multiple times in one day. In the summer time, 4 wheel drive trucks and SUVs drive the “river road” just for the exciting ride. They randomly move up and down stream crossing the river with no apparent destination, splashing in and out of the river, up and down the banks for “fun”. Vehicles are reported by park staff to follow canoes down the river on this road taunting canoists and doing what is locally known as “bikini chasing.” The Flying W party scene is a destination however, and numerous ad hoc muddy roads have been created traversing the agricultural fields at Flying W to get to the “river road”. Private individuals and wrecker services from Salem are often called to pull passenger vehicles and occasionally a pickup truck out of slippery mud holes in the fields.

4.1.8 Park Operations

Maintenance: Routine site maintenance of the Flying W site by park staff consists of grading the Flying W road that accesses the site from Missouri State Highway K. Currently grading is scheduled four times per year. Periodically woody vegetation is brush-hogged along the length of this road. The park Roads crew maintains the Flying W road to the west as far as the ‘bluff’ on the north side of the site above the Sam Steelman Swimming Hole. Crews also grade the swath of cleared land which currently provides parking and a turn-around for visitors who drive into the site to access the north gravel bar and bluff outcrop. This road also currently provides the open field permittee access to the agricultural fields for seasonal mowing. Crews do not add fill or apply gravel regularly. In the past, gravel was dispersed on the access road from Highway K through the fields to the top of the bluff area. There is no maintenance and/or grading done on the opposite side of the river within the Gouldsmith Tract across from the bluff area.

During the summer season when this site receives high visitation, maintenance staff empty the trash receptacle located in the parking area above the bluff 4-5 times a week (June-September). Trash pick-up occurs once a week during the off-season.

The agricultural fields are criss-crossed with user-created traces and ruts caused by visitors trying to reach the south side of site. Here they are then able to descend from the terrace down into the

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floodplain and catch the old “river road” paralleling the Current River which takes them around to the gravel bar below the popular bluff area. These undesignated roads are not maintained by park staff and have severely damaged the agricultural fields. Travel on them is rough and erosion is prevalent. There are currently no posted signs on site discouraging or prohibiting the use of these user-created rutted roads, nor any signs directing visitors to this site out on the state highway. There are no interpretive, cautionary, or regulatory signs posted anywhere on the site informing visitors about the resource or what is expected of them.

Law Enforcement/Resource Protection: Law Enforcement (LE) Protection Rangers are responsible for protecting the park’s natural and cultural resources. They are also responsible for protecting visitors to the park by curtailing illegal or unsafe/dangerous behavior. Current conditions at Flying W make this task exceedingly difficult. The 1984 ONSR GMP identified Flying W as a primitive backcountry site which offered river access and proposed several camping sites, but no formal actions were ever taken to define or contain this proposal within a predetermined area. LE Rangers in the North District refer to the existing lack of clearly defined parameters for visitor use as a critical issue. A park maintained road leads visitors into the area but essentially leaves them to their own devices. This absence of any overt definition, coupled with the fact that there are no signs instructing visitors as to what is (or isn’t) permitted is responsible, in part, for turning Flying W into a major “problem area” for ranger operations. Off road use (ATVs, 4 wheel drives, and horseback riders) has created a proliferation of ad hoc roads and trails such that a visitor entering the site gets the message that this as a place where “anything goes”. The magnitude of this problem in terms of enforcement is enormous from a law enforcement perspective given limited staffing that can be assigned to patrol in a park this size. Issues of health and safety and illegal activities present enormous challenges to LE ranger staff as well most notably at the bluff gravel bar.

Law Enforcement Issues: Visitation to the Flying W site occurs year round, but the bluff in particular receives unusually high concentrations of visitation on summer weekends. It is not unusual to encounter 100-200 people on this gravel bar on a hot Saturday afternoon. It is quickly transformed into “party central”. The bluff and the gravel bars below and across the river resound with loud music from stereos, and rangers regularly receive complaints of public nudity, exchange of *Mardi gras* beads, offensive language, drug use, minors in possession of alcohol, disorderly conduct, and other drunken behavior. Citations have included; Disorderly Conduct, Minor in Possession of Alcohol, ATV violations, and Off Road Travel.

Rescue Operations: The bluff is also the site of repeated emergency rescues. A number of injuries have occurred to those youth who head to Flying W to jump from the bluff. This spectacle is one of the “draws” for the party crowd. The Salem ambulance crews are familiar with the route to reach the Flying W bluff, and Air Evac has landed on more than one occasion. Packaging and transporting an injured patient is difficult because all equipment must be carried down and then back up the steep, eroded, treacherous trail that leads from the gravel bar up to the road. A new regulation identified in the Superintendent’s Compendium (2007) prohibits jumping from bluffs within the park.