

September 2014

Benefit-Cost Analysis of ORV Use Regulations in Lake Meredith National Recreation Area

Proposed Rule Final Report

Prepared for

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Introduction

This report describes the results of the benefit-cost analysis of the proposed regulation for regulating off-road vehicle (ORV) use in Lake Meredith National Recreation Area (the national recreation area). For the proposed change in regulation, the National Park Service (NPS) is required to conduct a benefit-cost analysis of the proposed regulation and an analysis of the impact of the regulation on small businesses under the Regulatory Flexibility Act (RFA) of 1980. Following a description of the current and proposed regulations, this report presents baseline information about the national recreation area and the current state of ORV activity. From this baseline, we developed an economic impact analysis for the local economy, a benefit-cost analysis of the new regulation, and an analysis of the impact of the new regulation on small businesses.

1.1 CURRENT AND PROPOSED REGULATIONS

NPS has developed one no-action alternative (based on current regulations) and three action alternatives. Below we describe the elements common to all the alternatives, the no-action alternative, and the action alternatives.

1.1.1 Common Elements to All Alternatives

The elements common to all alternatives are described below.

From Draft Environmental Impact Statement (DEIS), Executive Summary, p. vi-vii (NPS, 2012A):

Operator/Vehicle Requirements

Vehicles operating in any ORV use area of the national recreation area must have an ORV use decal, per Texas state law.

All-terrain vehicle (ATV)-specific operator and vehicle requirements, per Texas state law, include the following:

- ATV operators must wear eye protection and a helmet approved by the Texas Department of Transportation.
- ATV operators must possess a valid safety certificate issued by the state of Texas under §663.031 of the Texas Transportation Code.
- ATV operators under the age of 14 must be accompanied by a parent or guardian.
- ATV operators may not carry a passenger unless the vehicle is designed by the manufacturer for carrying a passenger.

National Park Service Regulations

Title 36: Parks, Forests, and Public Properties of the Code of Federal Regulations (CFR) is applicable in all national park units, including Lake Meredith National Recreation Area. These regulations include those in Title 36 applicable to the operation of ORVs in the park and those applicable to individuals recreating at the park. Of particular note are the provisions of 36 CFR 1.5 and 1.6, which state that the superintendent may impose public use limits or may close all of the park or a portion of a park area to all public use or to a specific use or activity; may designate areas for a specific use or activity; may impose conditions or restrictions on a use or activity; and may establish a permit, registration, or reservation system.

Superintendent's Compendium

The provisions detailed in the Superintendent's Compendium define recreation area-specific regulations imposed under the discretionary authority of the superintendent of the recreation area. These provisions, as described below, are common to all alternatives and may vary annually as the contents of the compendium change.

Campfires

The Superintendent's Compendium would continue to regulate camping-related activities, such as campfires, with additional restrictions during high fire-danger times (bans in Rosita Flats and Blue Creek follow county bans).

Education and Outreach

Under all alternatives, the park would continue to

- provide a bulletin board at Blue Creek and Rosita Flats with campground rules and regulations and other park information;
- provide education through visitor contact with rangers, maintenance staff, and other park staff and through on-site

educational opportunities;

- provide trash bags to visitors on busy weekends; and
- develop a bulletin on ORV use areas and regulations, available at the park headquarters and at ranger stations. This information would also be displayed on the Blue Creek and Rosita Flats bulletin boards on a larger scale.”

1.1.2 No-Action Alternative

NPS has developed one no-action alternative. The DEIS (NPS 2012, Executive Summary p. vii–viii) describes these alternatives as follows:

From Draft Environmental Impact Statement (DEIS), Executive Summary p. vii–viii (NPS, 2012A):

Under [A]lternative A (no action), the national recreation area would continue to manage ORV use at Rosita Flats and Blue Creek per the 2007 *Interim OHV Use Plan*, as well as through the regulations contained in 36 CFR 7.57 and the Superintendent’s Compendium as authorized under the national recreation area’s special regulation at 36 CFR 7.57. This alternative would maintain the ORV use areas at Blue Creek, along the creek bottom, officially known as “cutbank to cutbank” and at Rosita Flats below the 3,000-foot elevation line. No specific ORV routes would be established in either ORV use area. The NPS would continue to manage the Rosita Flats and Blue Creek areas.

Alternative A would include camping opportunities throughout Rosita Flats and Blue Creek. There are currently no official designated camping areas at either site, and camping could occur anywhere the visitor can access. Campfires would continue to be regulated under the Superintendent’s Compendium and could be restricted further during times of high fire danger, which follow when county burn bans are in effect. Existing amenities in these areas, such as picnic tables and trash receptacles, as well as outback toilets at Blue Creek, would be maintained, but none would be added.

The national recreation area would continue to provide waste disposal services at Blue Creek and Rosita Flats at the same frequency as currently occurs. At Blue Creek, trash pickup would occur on a daily basis from mid-April to September and as needed, typically two to three times per week, from October to April. At Rosita Flats, trash pickup would occur once a week year-round.

Rules and regulations related to ORV use at Rosita Flats and Blue

Creek would be enforced by park law enforcement officers. Current methods of enforcement that would continue include patrolling Rosita Flats, with patrols more frequent at Blue Creek due to the remote nature of Rosita Flats. During high visitor-use times or special events, the NPS may coordinate with other agencies in the area for additional law enforcement support.

No additional ORV management measures, such as establishment of user zones, use limits, or a permit system (beyond what is already required by the state), would be established.

Interpretation services would not be provided in Rosita Flats and Blue Creek. Additional education, research, and monitoring would occur, as described under "Elements Common to All Alternatives."

1.1.3 Action Alternatives

NPS developed four action alternatives. The action alternatives are described in the DEIS (NPS 2012, Executive Summary p. viii–x). Elements that are common to all action alternatives include those described below:

From Draft Environmental Impact Statement (DEIS), Executive Summary p. viii–x (NPS, 2012A):

Operator/Vehicle Requirements

Additional operator/vehicle requirements would be implemented and would include the following:

- All ORVs would be required to have a functioning muffler system, a qualified spark arrester (ATVs only), and functioning headlights and taillights. If a vehicle does not have functioning headlights or taillights, it would be permitted to operate during the day but not after dark.
- Vehicle mufflers on ORVs that allow more than 96 decibels of sound would be prohibited. Noise level would be measured 50 feet from the centerline of the vehicle, the SAE J1287 standard.
- All ATVs would be required to have a triangular orange flag on top of an 8-foot pole attached to the back of the vehicle.
- All ORVs would be required to display lighted headlights and taillights after dark.

Waste Disposal

NPS would continue to provide waste disposal services at Blue Creek

and Rosita Flats and would develop new educational programs/materials for clarifying issues such as proper waste disposal techniques.

Hours of Vehicle Operation

Under the action alternatives, there would continue to be no limitation on the operating hours of vehicles in Rosita Flats and Blue Creek, except for in the designated camping areas, where nonregistered motorized vehicles (such as ATVs/Utility Terrain Vehicles (UTVs), dune buggies) would be prohibited from operating between 10:00 p.m. and 6:00 a.m. Visitors would be able to use their vehicles to access their camping site entrances and exits, but otherwise quiet hours within campground areas would be between 10:00 p.m. and 6:00 a.m.

Glass Bottle Ban

All action alternatives would include a glass bottle ban within the Rosita Flats and Blue Creek ORV use areas. This ban type is consistent with management in other areas of the national recreation area and would reduce broken glass hazards—a concern raised during public meetings for this planning effort.

Speed Limits

Speed limits in Rosita Flats and Blue Creek would be 35 miles per hour (mph) on designated routes and areas, 55 mph on sandy bottom flats and 15 mph in designated camping areas.

Temporary Route and Area Closures

The national recreation area may temporarily close ORV routes and areas if resource conditions warrant. This could include closing areas that become overly rutted or closing areas after heavy rains to prevent resource damage. Once the resource condition has been corrected or conditions improve, the area would be reopened to ORV use.

Arkansas Shiner Protection Measures

Under the action alternatives, the national recreation area would take additional steps to ensure the protection of the Arkansas River shiner. These include, but are not limited to, the following:

- no parking or staging of vehicles of any kind adjacent to or in the river;
- access to the river allowed only from designated access points;
- educational materials for visitors who receive permits (either with cost or no cost depending on the alternative);

- educational messages that include information about the prohibition of driving in full pools, entering and leaving the river at undesignated access points, and other information about the Arkansas River shiner;
- monitoring of the shiner population every 3 to 5 years to ensure that additional management is not necessary; and
- authority to close any portion of the national recreation area for protection of park resources retained by superintendent.

Education and Outreach

The current education and interpretation efforts related to ORV use at Blue Creek would be expanded under all action alternatives to also include the following:

- providing literature and trash bags to users. Literature would contain basic safety messages (e.g., speed limits). ATV rules and other park rules could be printed directly on the trash bags. NPS field staff would visit each campsite to provide this information and increase visitor contacts;
- providing ATV safety programs in schools, including more education about ORV use at community events the park staff members attend, such as the Howdy Neighbor Day in Fritch;
- including ORV education when providing information at the annual water safety day program;
- providing information containing Lake Meredith National Recreation Area ORV use area maps and rules to local retail establishments for display;
- increasing the number of educational signs in ORV use areas and increasing patrols;
- establishing a volunteer group to assist with cleanup and other efforts; and
- developing "tread lightly" pamphlets for ORV use.

Research and Monitoring

Under all action alternatives, national recreation area staff would monitor ORV use areas to identify ORV use outside of designated routes and areas. National recreation area staff would monitor ORV use on the ground throughout the year and close visitor-created ORV routes and areas by using physical barriers, signs, etc., as appropriate. During monitoring, national recreation area staff would look for new trails and new signs of disturbance, including broken fence lines. Monitoring would also include a review of law enforcement records to determine how many citations are being issued for off-trail

use. Additional monitoring would be done by aerial photography.

Photos would be taken of both ORV use areas every 2 to 4 years, depending on funding. National recreation area staff would use aerial photographs to identify ORV use occurring outside of designated routes and areas. National recreation area staff would provide physical barriers, signs, etc., as appropriate to prohibit ORV use on any new visitor-created routes.

User Capacity

NPS defines user capacity as the types and levels of visitor use that can be accommodated while sustaining the quality of park resources and visitor experiences consistent with the purposes of the park. Managing user capacity in national parks is inherently complex and depends not only on the number of visitors but on where visitors go and what they do. In managing user capacity, NPS employs a variety of management tools and strategies rather than relying solely on regulating the number of people in a park area. In addition, the ever-changing nature of visitor use in parks requires an adaptive approach to user capacity management.

The recent general management plan effort for Lake Meredith National Recreation Area and Alibates Flint Quarry National Monument establishes a parkwide user capacity program. This program includes indicators and standards for ORV use areas within Lake Meredith National Recreation Area. Indicators and standards are measureable features, monitored to track changes in resource conditions and visitor experiences. The indicators and standards help NPS ensure that desired conditions are being met.

The DEIS contains a discussion of the indicators, standards, and potential future management strategies that could be implemented in the ORV use areas. After the most appropriate indicators were identified, standards that represent the minimum acceptable condition for each indicator were assigned. The standards incorporate qualitative descriptions of the desired conditions, data on existing conditions, relevant research studies, staff management experience, and scoping on public preferences.

The DEIS describes three action alternatives as follows (NPS, 2012A, Executive Summary, p. xi–xii):

From Draft Environmental Impact Statement (DEIS), Executive Summary p. **xi–xii** (NPS, 2012A):

- **Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes—**Under [A]lternative B, the national recreation area would, in part, base the designation of routes and areas on a zoning system, with one of the purposes being separation of visitor uses that have the potential to be in conflict with one another. At Rosita Flats, two areas would be established as an ORV “area” and open to ORV use: 1) the area south of the river (currently denuded) and 2) the area east of Bull Taco hill. Access to the riverbed from the ORV use area south of the river would be from designated access points only. Outside of the two ORV use areas, ORV use would only be permitted on designated, marked routes. At Blue Creek, ORVs would only be allowed on sandy bottom areas and designated routes, with ORV use prohibited on vegetated areas. Alternative B would also institute a zoning system that is a “layer” on top of these routes and areas to further manage use. Established zones could include camping only, hunting, resource protection, low speed, and beginner.
- **Alternative C: Management through Use of a Permit System at Current ORV Use Areas—**Under [A]lternative C, the national recreation area would manage ORV use through a permit system as well as through establishment of use limits. Permits would include a fee, and initially, there would be no limit on the number of permits issued. ORV routes and areas would be the same as those under [A]lternative B, except that there would be one designated ORV use area in Rosita Flats, instead of two.
- **Alternative D: Management through Use of a Zoning and Permitting System at Current ORV Use Areas—**Under [A]lternative D the park would, in part, base the designation of routes and areas on a zoning system, with one of the purposes being separation of visitor uses that have the potential to be in conflict with one another, similar to the system under [A]lternative B. In addition, a fee permit system would be instituted that allows the national recreation area to provide additional enforcement and amenities in the ORV use area but does not establish use limits. Management would include designating routes and areas, zones, and the permit system.”

2

Baseline Description of ORV Use in Lake Meredith National Recreation Area

This section describes the Lake Meredith national recreation area and the surrounding area, information about visitors, information about the population of the region of interest, and information about the economy of the region. Parts of Sections 2.1 and 2.2 are taken from the DEIS (NPS, 2012A).

2.1 THE LAKE MEREDITH AREA

2.1.1 Lake Meredith National Recreation Area

Lake Meredith National Recreation Area is located near the geographic center of the Texas Panhandle, about 40 miles northeast of Amarillo and 9 miles west of Borger. It is composed of 44,977.63 acres within its boundaries (NPS, 2009a). According to the Lake Meredith National Recreation Area General Management Plan, the national recreation area has the following significance (NPS, 2012a, Section 1, p. 11):

- Lake Meredith National Recreational Area is the largest area of public lands in the Texas panhandle, providing opportunities for access to diverse, affordable outdoor land- and water-based recreation activities.
- Lake Meredith and the Canadian River basin in the recreation area provide aquatic, wetland, and riparian habitats and one of the few areas in the region with trees. These habitats and the ecological transition zones between them and the surrounding landscape support diverse plant and animal species, including migratory waterfowl.

- The natural and geologic resources of the recreation area have enabled human survival, subsistence, and adaptation that have resulted in a continuum of human presence in the Texas panhandle for more than 13,000 years. Cultural sites in Lake Meredith National Recreation Area and the adjacent Alibates Flint Quarries National Monument offer views of lifeways in every cultural period that has been identified.
- The exposed geologic features of the Canadian River breaks in the recreation area reveal active geological processes that are easily visible to an extent not present elsewhere in the region. The topography and geography of the Canadian River breaks create a divergence from the surrounding landscape that offers scenic values and opportunities not found elsewhere in the region.

Lake Meredith supports a number of different types of recreation, including bird and wildlife viewing, boating, camping, fishing, hiking, horseback riding, hunting, ORV use, photography, picnicking, sightseeing, swimming, and water skiing. The majority of visitors to the national recreation area go to Lake Meredith. Arizona State University (ASU) conducted a visitor survey between October 2003 and November 2004. The survey found that over 90% of visitors were from Texas. Fishing, boating, and picnicking ranked as the most popular activities among visitors who responded to the survey. Sixty-three percent ranked some kind of water-based activity as their primary reason for visiting the national recreation area. Approximately 8% of visitors who responded to the on-site portion of the survey identified ORV use as their primary activity on that trip.

2.2 ORV ROUTES AND AREAS

ORV use is currently allowed in the Rosita Flats and Blue Creek areas of Lake Meredith. ORVs have been used in these areas since the 1950s. The majority of ORV use at the national recreation area has been for recreation, primarily by local riders and riders from nearby urban areas (ASU, 2004).

2.2.1 Blue Creek

Blue Creek, located on the northwest side of the lake, contains approximately 275 acres of land designated for ORV use. Blue Creek offers a variety of visitor amenities in the ORV use areas, including picnic tables, grills, and vault-evaporator toilets. Flush toilets and drinking water are not available (NPS, 2009b).

Recreational opportunities at Blue Creek include camping, horseback riding, and ORV use. Blue Creek's terrain is different from Rosita Flats' terrain; it is more level and less extensive (Trail Source, 2009). Rangers have a greater presence at Blue Creek than at Rosita Flats, and national recreation area records show that fewer illegal operations of ORVs occur at Blue Creek (NPS, 2007).

2.2.2 Rosita Flats

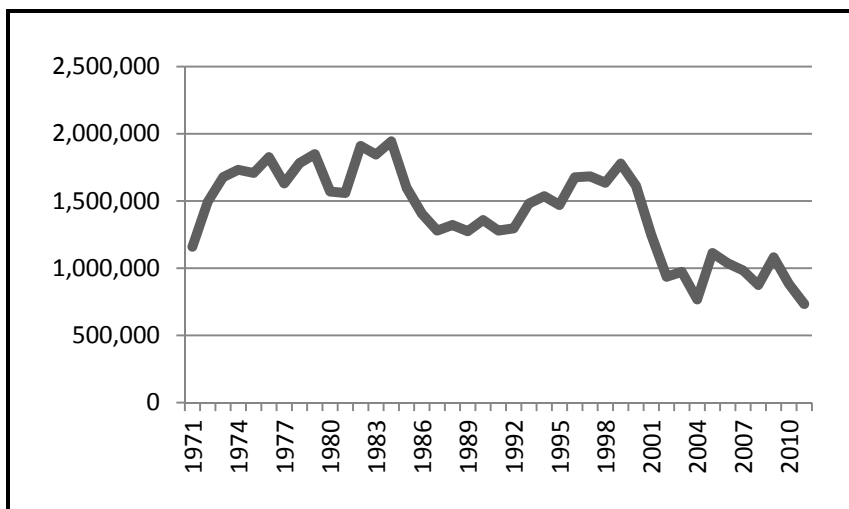
Rosita Flats, which is located in the southern section of the national recreation area between the Canadian River bed east of the Dumas Bridge to Chicken Creek, contains approximately 1,740 acres of land designated for ORV use below the 3,000-foot elevation line. All vehicles are prohibited past the mouth of Chicken Creek. Tin-cup Canyon is closed to all vehicles. Rosita Flats is an area with an undeveloped campground with no picnic tables, toilets, or drinking water (NPS, 2009b).

Rosita Flats gets almost daily use from visitors riding ORVs. Visitors to Rosita Flats enjoy sightseeing, picnicking, and camping (either in tents or camp trailers) (NPS, 2007). Rosita Flats offers ORV users sand and hill climbs over some of the most diverse land in Texas (Trail Source, 2009). Because Rosita Flats is difficult to access from the north entrance of the national recreation area, ranger patrols do not visit that area as frequently as Blue Creek, resulting in more violations of ORV use regulations in the past (NPS, 2007).

2.3 VISITATION DATA

The Lake Meredith National Recreation Area received just over one million visits in 2009. Looking at Figure 2-1, visitation has fallen steeply since 1999, in part because water levels in the lake have been dropping. Over the course of any year, visitation is higher in May, June, and July and lower in the winter, although the months of highest visitation vary from year to year. Figure 2-2 displays annual visitation data from

Figure 2-1. Annual Recreational Visitation at Lake Meredith National Recreation Area, 1971–2011



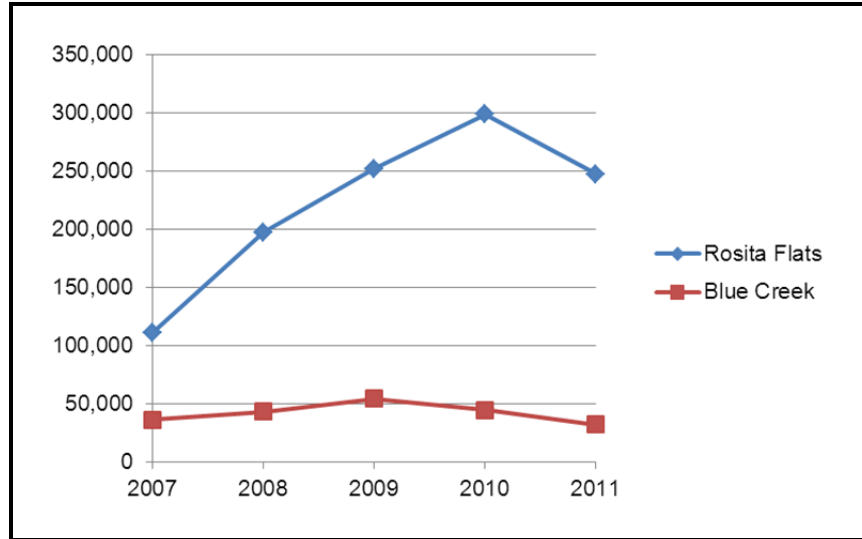
Source: NPS, 2012b.

2007 to 2011 to the Rosita Flats and Blue Creek areas of the national recreation area, which are the areas where ORV use is allowed.¹ Between 2007 and 2011, the percentage of total visitors to the national recreation area going to areas where ORVs are allowed grew from 15% in 2007 to 38% in 2011. The increase in the percentage of visitors going to areas where ORVs are allowed appears to be driven by the increase in traffic estimated to be going to Rosita Flats and the decline in overall visits to the national recreation area in the last 2 years.

The Sand Drag is a local annual event that includes races for motorcycles, four wheelers, sand rails (a type of dune buggy), and river buggies. The event, which takes place outside the national recreation area near Rosita Flats, draws approximately 30,000 people to the area in February.

¹To estimate the number of recreational visitors at Lake Meredith, a pneumatic traffic counter is placed at each entrance to the park. The count provided by the counter is adjusted to subtract a monthly average number of nonreportable usage (i.e., NPS staff traffic) based on location and season and then the number is multiplied by a person-per-vehicle multiplier of 3.5. For three areas of the park (including Rosita Flats), visitation is calculated using a formula based on traffic from other areas of the park. For example, Rosita Flats visitation is estimated by using the Big Blue area traffic count and the coefficients from a regression analysis linking visitation to the two areas.

Figure 2-2. Annual Recreational Visitation to Rosita Flats and Blue Creek Areas, 2007–2011



Source: NPS, 2012b.

2.4 ALTERNATIVE LOCATIONS FOR ORV DRIVING

Although the eastern part of Texas offers numerous locations for ORV use, the panhandle area has fewer locations where ORV use is allowed. According to the Texas Department of Parks & Wildlife (2012), the closest ORV park to Lake Meredith is the Canadian River ORV area located just off Highway 287. The next closest opportunity for ORV use is the Lake McClellan OHV Trails, which are located outside of Canadian, Texas, approximately 60 miles east of Amarillo. Access issues have sometimes prevented usage at Lake McClellan because of fire damage. Silverton, Texas, also hosts 35 miles of ORV trails at Lake Mackenzie, which is about 70 miles south of Amarillo. A few areas in the panhandle or western Texas that offered ORV trails and parks have closed in recent years, such as the West Texas Baja Offroad Area located near Lubbock, Texas.

2.5 ECONOMIC ACTIVITY IN THE SURROUNDING COMMUNITIES

2.5.1 Socioeconomic Resources

This section describes the social and economic environment that potentially would be affected by the proposed alternatives. The social and economic environment of a region is characterized by its demographic composition, the structure

and size of its economy, and the types and levels of public services available to its citizens.

The socioeconomic environment evaluated for this EIS encompasses the three counties surrounding the Lake Meredith Recreation Area in the center of the Texas panhandle. The national recreation area boundaries extend into Hutchinson County, Moore County, and Potter County. The majority of the data is reported at the county level. In some cases, we also include specific information for the urban cluster surrounding the city of Borger, which is located less than 20 miles east of Lake Meredith in Hutchinson County.

These three counties form the economic region of influence (ROI) and define the geographic area in which the predominant social and economic impacts from the proposed alternatives are likely to take place.

Demographics

The land considered under the economic ROI is primarily rural in character. However, the populations within each of the counties are concentrated in urban areas within the counties. Table 2-1 illustrates the proportion of each county's population that resides in an urban cluster or urbanized area. Potter County is home to part of the city² and surrounding suburbs of Amarillo, which accounts for the urban population in the county with a metropolitan statistical area population of 249,881 (U.S. Census Bureau, 2010). The most densely populated area of Hutchinson County is located roughly 15 miles east of Lake Meredith in the Borger urban cluster.³

Table 2-2 provides population statistics for the state of Texas and the counties in the ROI. Between 2000 and 2009, Hutchinson County saw a decline in population by 9%, while Moore and Potter grew 3% and 7%, respectively. The ROI as a whole grew 4%, which is less than one-fourth of the growth rate of the state of Texas. According to the projections of the Texas State Data Center, the population of Texas is expected to

²The city and MSA of Amarillo are split between Potter County and Randall County. Randall County is located directly south of Potter County and is not included in the ROI.

³An urban cluster is defined by the Census Bureau as "a densely settled territory that has at least 2,500 people but fewer than 50,000."

Table 2-1. Urban Population, 2010

	U.S.	Texas	Hutchinson County	Moore County	Potter County
Total Population	308,745,538	25,145,561	22,150	21,904	121,073
Urban Population	249,157,649	21,173,833	16,934	17,829	114,010
% Urban	81%	84%	76%	81%	94%

Source: RTI estimates based on Census (2010) and USDA (2012).

increase by 52% between 2000 and 2030. Although Potter County and Moore County are expected to exhibit similar high growth rates, the expectation for Hutchinson is a more modest 6%. The ROI as a whole is expected to increase 36% by 2030 relative to its 2000 total population, although this is driven mainly by the growth in Potter and Moore Counties.

In 2010, the average per capita income (in 2010 dollars) in the ROI of \$19,346 was 22% less than the average for Texas and 29% less than the national average. Within the ROI, Hutchinson County had the highest per capita income at \$21,075, while Moore County had the lowest with a per capita income of \$18,239 (Table 2-3).

In 2010, the ROI had a minority population of 49% (Table 2-3). This is less than in Texas as a whole, which had a minority population of 55% but is 13 percentage points greater than the U.S. minority population of 36%. There is significant variation between the ROI counties. Hutchinson County had a minority population of only 26%, while 62% of Moore County was considered minority. Moore County had a lower poverty rate than any of the other ROI counties, with only 13% of the population below the poverty level. The aggregate ROI had a poverty rate of 20%, which is 6 percentage points higher than the national average and 3 percentage points higher than the state average. Moore and Potter Counties had significantly higher proportions of the population over 25 years old without a high school diploma (31% and 25%, respectively) than the nation as a whole. Hutchinson County's percentage is more comparable to the national average at 17%.

Table 2-2. Population Statistics

Geographic Area	2000	2010	2020	% Change 2000–2020
Texas	20,851,820	22,802,983	24,330,687	17%
Hutchinson County	23,857	25,015	26,092	9%
Moore County	20,121	22,625	24,967	24%
Potter County	113,546	125,238	135,300	19%
ROI total	157,524	172,878	186,359	18%

Source: Texas State Data Center and Office of State Demographer, Institute for Demographic and Socioeconomic Research. University of Texas at San Antonio. 2009, assuming "no migration" scenario (no net migration).

Table 2-3. Environmental Justice Statistics, 2010

Geographic Area	Per Capita Income (in 2010\$)	Percentage of Population		
		Minority	Below the Poverty Level	Without High School Diploma (25 and Over)
United States	\$27,334	36%	14%	15%
Texas	\$24,870	55%	17%	20%
Hutchinson County ^a	\$21,075	26%	15%	17%
Borger Urban Cluster	\$22,544	26%	13%	15%
Moore County	\$18,239	62%	13%	31%
Potter County	\$18,725	51%	23%	25%
ROI ^b	\$19,346	49%	20%	24%

^a Includes Borger urban cluster.

^b Per capita income was calculated as an average of the three counties; minority, poverty, and graduation statistics were calculated from actual population figures.

Source: U.S. Census Bureau, 2010.

Employment

Table 2-4 presents the breakdown of employment by industry for the ROI, the state of Texas, and the United States in 2009. Aside from government services, the industries with the largest share of the total ROI employment are manufacturing, retail trade, and health services. These three sectors account for almost one third of the total area employment. Manufacturing

Table 2-4. Employment by Sector, 2009

Industry	Number of Employees		Percentage		Difference	
	ROI	ROI	TX	U.S.	ROI-TX	ROI-U.S.
Farm employment	1,066	0.8%	1.9%	1.5%	-1.1%	-0.7%
Forestry, fishing, and related activities	647	0.5%	0.4%	0.5%	0.1%	0.0%
Mining	7,281	5.4%	3.1%	0.8%	2.4%	4.6%
Utilities	589	0.4%	0.4%	0.3%	0.1%	0.1%
Construction	9,401	7.0%	6.8%	5.5%	0.2%	1.5%
Manufacturing	13,667	10.2%	6.3%	7.1%	3.9%	3.1%
Wholesale trade	4,044	3.0%	3.9%	3.5%	-0.9%	-0.5%
Retail trade	14,633	10.9%	9.9%	10.2%	1.0%	0.7%
Transportation and warehousing	3,800	2.8%	3.6%	3.2%	-0.7%	-0.3%
Information	1,446	1.1%	1.8%	1.9%	-0.7%	-0.9%
Finance and insurance	8,463	6.3%	5.6%	5.4%	0.7%	0.9%
Real estate and rental and leasing	4,429	3.3%	4.0%	4.3%	-0.7%	-1.0%
Professional, scientific, and technical services	5,034	3.8%	6.4%	6.8%	-2.7%	-3.1%
Management of companies and enterprises	1,048	0.8%	0.7%	1.1%	0.1%	-0.3%
Administrative and waste services	5,428	4.0%	6.3%	5.7%	-2.2%	-1.7%
Educational services	827	0.6%	1.4%	2.3%	-0.8%	-1.6%
Health care and social assistance	14,432	10.8%	9.4%	10.8%	1.4%	0.0%
Arts, entertainment, and recreation	1,752	1.3%	1.6%	2.2%	-0.3%	-0.9%
Accommodation and food services	8,945	6.7%	6.9%	6.9%	-0.3%	-0.2%
Other services, except public administration	7,793	5.8%	5.7%	5.7%	0.1%	0.1%
Government and government enterprises	17,611	13.1%	14.0%	14.2%	-0.9%	-1.1%

Source: BEA (2011).

alone accounts for 10.2% of employment, which is more than 30% higher than the share of manufacturing workers in the overall U.S. employment pool. An important figure to note is the share of mining employment within the ROI. This broad

industry encompasses all mining, quarrying, and oil and gas extraction subindustries. Although the actual fraction of mining seems small at 5.4%, mining employment is significantly higher (86%) than the share of mining employment in the United States as a whole. What is not specifically represented within the broadly defined industries in the Bureau of Economic Analysis (BEA) data is the significance of the oil and gas industry on the local economy around the Lake Meredith area. ConocoPhillips Petroleum and Chevron Phillips Chemical are large employers in Hutchinson County according to the Borger Chamber of Commerce (BCC) and local community members.

The ROI had 10,165 self-employed individuals in 2007. The industries of administrative and support services, other services (except public administration), construction, health care and social assistance, and retail trade comprise 58% of all nonemployers⁴ in the county (Table 2-5).

In 2009, an average of 6% of the civilian labor force in the ROI was unemployed (4,844 individuals) (Table 2-6). The unemployment rates for the counties within the ROI were lower than the unemployment rates in Texas as a whole in 2009. The annual unemployment rate in Texas (seasonally unadjusted) had risen to 7.6% in 2009. Within the ROI, Moore County had the lowest unemployment rate of 4.7%, and Hutchinson County had the highest rate at 6.9%.

Housing

In 2010, the ROI had a total of 65,781 housing units. Hutchinson and Moore Counties had similar proportions of urban housing (76% and 81%, respectively) to the United States as a whole (see Table 2-7). Potter County had a slightly higher rate of 94%, driven mainly by the Amarillo metropolitan area. The percentage of housing units used seasonally or recreationally is negligible within the ROI.

⁴From <http://www.census.gov/econ/nonemployer/intro.htm>: "Nonemployers are typically self-employed individuals operating very small businesses, which may or may not be the owner's principal source of income. Data are primarily comprised of sole proprietorship businesses filing IRS Form 1040, Schedule C, although some of the data is derived from filers of partnership and corporation tax returns that report no paid employees."

Table 2-5. Nonemployers by Industry, 2007

Industry	Number of Nonemployers	Percentage			Difference	
	ROI	ROI	TX	U.S.	Counties— TX	Counties— U.S.
Mining, quarrying, and oil and gas extraction	616	6%	2%	0%	4%	6%
Other services (except public administration)	1,710	17%	14%	14%	3%	3%
Accommodation and food services	362	4%	2%	1%	2%	3%
Construction	1,596	16%	15%	12%	1%	4%
Health care and social assistance	771	8%	7%	8%	1%	0%
Retail trade	990	10%	9%	9%	1%	1%
Transportation and warehousing	672	7%	6%	5%	1%	2%
Agriculture, forestry, fishing and hunting	132	1%	1%	1%	0%	0%
Utilities	10	0%	0%	0%	0%	0%
Manufacturing	132	1%	2%	2%	0%	−1%
Wholesale trade	127	1%	2%	2%	−1%	−1%
Finance and insurance	336	3%	4%	4%	−1%	−1%
Arts, entertainment, and recreation	335	3%	4%	5%	−1%	−2%
Information	52	1%	1%	1%	−1%	0%
Educational services	85	1%	2%	2%	−1%	−1%
Administrative and support and waste management and remediation services	834	8%	10%	8%	−2%	0%
Real estate and rental and leasing	688	7%	8%	11%	−2%	−4%
Professional, scientific, and technical services	717	7%	12%	14%	−5%	−7%
Total for all sectors	10,165	100%	100%	100%		

Source: U.S. Census Bureau, 2007.

Table 2-6. Employment Characteristics, 2009

	Texas	ROI	Hutchinson County	Moore County	Potter County
Labor force	11,930,847	80,720	11,439	11,554	57,727
Employment	11,020,226	75,806	10,649	11,013	54,144
Unemployment	910,621	4,844	790	541	3,513
Unemployment rate	7.6%	6.0%	6.9%	4.7%	6.1%

Source: Bureau of Labor Statistics, 2009.

Table 2-7. Housing Unit Statistics, 2010

	United States	Texas	Hutchinson County	Moore County	Potter County	ROI Total
Total	131,704,730	9,977,436	10,629	7,881	47,271	65,781
Urban	106,285,717	8,401,505	8,126	6,415	44,513	59,054
% of total	81%	84%	76%	81%	94%	90%
Occupied	116,716,292	8,922,933	8,812	7,197	42,933	58,942
Vacant	14,988,438	1,054,503	1,817	684	4,338	6,839
For seasonal, recreational, or occasional use	4,649,298	208,733	210	49	170	429
% of total for seasonal use	4%	2%	2%	1%	0%	1%

Source: U.S. Census Bureau, 2010.

Between 2000 and 2010, the ROI experienced a 4% increase in the number of housing units, relative to a 22% change statewide and a 14% change nationwide (Table 2-8). Potter County had the highest increase with 6%, while the number of housing units in Hutchinson County decreased by 2%.

Table 2-8. Change in Housing Units

Geographic Area	2000	2010	Percentage Change 2000–2010
United States	115,904,641	131,704,730	14%
Texas	8,157,471	9,977,436	22%
Hutchinson County	10,882	10,629	–2%
Moore County	7,489	7,881	5%
Potter County	44,690	47,271	6%
ROI total	63,061	65,781	4%

Source: U.S. Census Bureau, 2010.

3

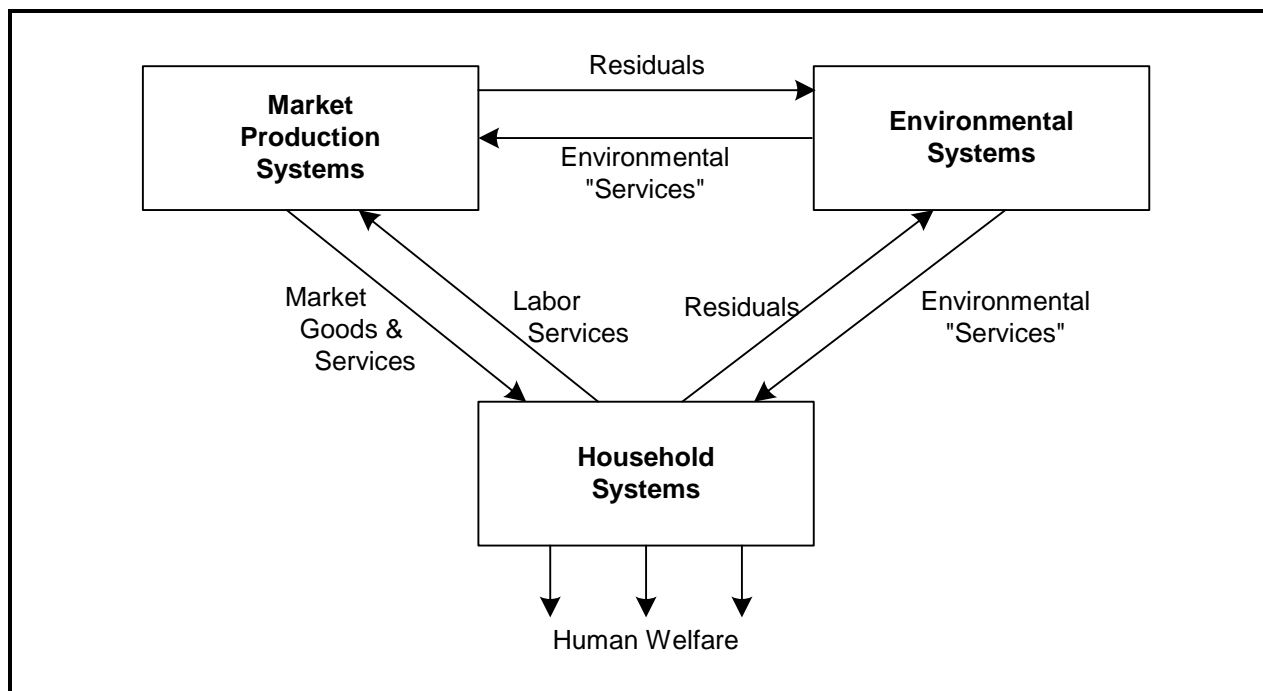
Benefit-Cost Analysis of the Alternatives

The purpose of benefit-cost analysis is to evaluate the social welfare implications of a proposed action—in this case the management of ORVs in the national recreation area. It examines whether the reallocation of society's resources resulting from the action promotes efficiency. That is, the analysis assesses whether the action imposes costs on society (losses in social welfare) that are less than the benefits (gains in social welfare). Section 3.1 provides a conceptual framework for the benefit-cost analysis and a general discussion of the externalities associated with ORV use. Section 3.2 contains a specific discussion of the benefits and costs of the three action alternatives relative to the no-action alternative.

3.1 CONCEPTUAL BASIS FOR BENEFIT-COST ANALYSIS OF ORV REGULATIONS IN NATIONAL PARKS

According to the conceptual underpinnings of benefit-cost analysis, all social welfare impacts ultimately accrue to individuals. This is represented in Figure 3-1, which depicts flows of goods, services, and residuals among three major systems: market production, household, and the environment. Because these systems are closely interconnected, actions taken to reduce releases of harmful residuals (e.g., chemicals or pollution) to the environment potentially will reverberate throughout all of these systems. Nevertheless, the impacts of these actions, both the costs and benefits, will ultimately be experienced as changes in well-being for households and

Figure 3-1. Interrelationship Among Market, Environmental, and Household Systems and Social Welfare



Under regulations that affect ORV use within the national recreation area, the most direct impact will be on visitors who use ORVs, whose recreational opportunities may be constrained by the restrictions.

individuals. As a result, identifying and measuring costs and benefits must focus on these changes in well-being.

The conceptual framework depicted in Figure 3-1, therefore, provides a basis for assessing the benefits and costs of regulating ORVs in national parks. Under regulations that affect ORV use within the national recreation area, the most direct impact will be on visitors who use ORVs, whose recreational opportunities may be constrained by the restrictions. This will result in welfare losses to these individuals. The regulations will likewise directly impact visitors who prefer an ORV-free experience. This will result in welfare gains to these individuals.

The economic concept of distorted primary markets is important in analyzing the impact of the proposed ORV regulations. ORV use may generate negative externalities⁵ that affect other visitors and park resources. If ORVs do generate negative externalities, then the private cost of using an ORV

⁵An externality is an impact (positive or negative) on anyone not party to a given economic transaction. An externality occurs when a decision causes costs or benefits to third-party stakeholders, often, although not necessarily, from the use of a public good.

(the cost to the individual driver, for example) will be lower than the social cost of ORV use (where the social cost of ORV use includes both the cost to the ORV user and the costs to others that result from the negative externalities associated with ORV use). Because ORV users do not have to pay the full social cost of using an ORV in the national recreation area and instead only pay the lower, private cost, ORV use will be higher than the socially optimal use level. Measures of net consumer surplus to ORV users that do not account for the additional costs imposed on society by the negative externalities associated with ORV use will overstate the true net social welfare associated with the activity.

If individuals change their behavior in response to ORV management changes, these changes are likely to affect environmental systems and market systems. Reductions in the market demand for ORV visitor-related goods and services will have negative impacts for those who own or work for establishments supplying these services. Conversely if the restrictions bring new visitors to the national recreation area, then businesses serving these visitors will gain. In addition, benefit-cost analysis focuses on the net impact of an action on society as a whole, not just one specific region. If visitors leave one area and visit another, then the businesses in the new area will benefit from increased business. These types of direct and indirect impacts are identified and discussed as part of this benefit-cost analysis.

Estimating the monetary value of benefits and costs requires methods for expressing welfare changes in monetary terms. In certain instances, welfare changes are directly the result of monetary gains or losses and can, therefore, be thought of as being equivalent to these gains or losses. For example, under regulations restricting ORV use, welfare losses to shops that cater to ORV visitors due to reductions in demand for their services can be reasonably measured as their resulting net loss in income. A benefit-cost analysis measures the impact on businesses by the change in producer surplus. Producer surplus measures the difference between total revenue and variable costs. Businesses will gain or lose producer surplus depending on how their customers change their behavior in response to new ORV management.

In other instances, welfare changes are not directly associated with pecuniary gains or losses. Such “nonmarket” changes might include welfare gains from improved wildlife habitat for people who are concerned about environmental protection in the national recreation area, welfare losses for ORV visitors who do not enjoy their trip as much, and welfare gains for visitors who find their trip is improved by new ORV management. In these cases, a surrogate measure of gains or losses must be used; willingness to pay (WTP) is such a surrogate. Economists generally accept WTP as the conceptually correct measure for valuing changes in individuals’ welfare. WTP represents the maximum amount of money that an individual would be willing to forgo to acquire a specified change. Thus, it is the monetary equivalent of the welfare gain from the change.

The welfare losses to individual consumers (ORV users) are measured by their loss in consumer surplus. Consumer surplus is measured as the difference between the total costs of a product or activity to the consumer and the total amount the individual would be willing to pay for that activity. Individuals gain consumer surplus if the cost of an activity decreases or the quality increases. Losses in consumer surplus come from the opposite impacts, including increases in the cost of the activity or decreases in the quality. If an individual can no longer participate in her first-choice activity because the cost is too high or access is restricted, the individual loses the entire consumer surplus associated with the trip.

The extent of the welfare loss to an individual depends crucially on the availability of substitute activities. The more substitutes an individual has for the activity, the lower his consumer surplus loss will be if that activity increases in cost, decreases in quality, or if access is restricted. If many similar substitutes exist, then the individual can switch to a new activity or location with little impact on his overall utility. What constitutes a substitute varies across individuals based on their preferences, their location, and their income.

Finally, some consumers and producers may be indirectly affected by a policy. For example, regulations restricting ORV use in national parks could lead to decreased demand for ORV sales or decreased spending on trip-related expenses such as food or lodging. Whether these indirect, or secondary, impacts should be included in a benefit-cost analysis depends on

whether the change in demand or supply in the secondary market results in price changes (for details, see a benefit-cost analysis textbook such as Boardman et al. [1996]). In general when the response to the policy change in the primary market (the market for trips to the national recreation area) is large enough to cause price changes in the secondary markets (businesses that serve visitors to the national recreation area), the net change in social welfare from the secondary market should be included in the benefit-cost analysis. If prices do not change in the secondary market, the revenue gains or losses should not be included in the benefit-cost analysis. Without more detailed information, NPS is unable to predict whether the proposed alternatives for ORV management will change the prices of goods or services purchased by ORV users. Thus, losses or gains to businesses that may be indirectly affected by the proposed alternatives are included in the benefit-cost analysis.

3.2 RESULTS FOR THE NATIONAL RECREATION AREA

Based on the approach and possible impacts outlined above, this section presents the results of the benefit-cost analysis for the Lake Meredith National Recreation Area. The section starts with a discussion of the groups most directly affected by the proposed changes in regulation and the available information. The potential benefits and costs accruing to these groups are then presented.

3.2.1 Affected Groups and Identified Externalities

The effect of the proposed alternatives on the welfare of visitors and the general public will depend on the visitors' activities and preferences and the public's preferences. The groups who may be affected by the proposed management alternatives include the following:

1. Visitors who use ORVs or who are visiting the national recreation area as part of a group with others using ORVs.
2. Visitors or potential visitors who do not ride ORVs who use the same parts of the national recreation area where ORVs are permitted but would prefer if there were fewer ORVs or a more managed environment.

3. Visitors to parts of the national recreation area where ORVs are currently not allowed and will not be allowed under any of the proposed alternatives.
4. Businesses that support visitors to the national recreation area.
5. Businesses in areas outside the national recreation area that allow ORVs.
6. The general public who may care about the national recreation area and the natural environment, even if they do not visit.
7. NPS (and federal taxpayers) who use resources to manage the national recreation area.

The size and direction of the welfare impacts from the alternatives relative to the no-action alternative will depend on how the alternatives change the quality and cost of trips and the quality of the environment. The DEIS (NPS, 2012A) identifies a number of externalities that would be addressed by the action alternatives and that would, to varying degrees, affect the quality of the environment and visitors' experiences. Based on the DEIS, the alternatives may affect

- crowding;
- visitor conflicts;
- visitor safety;
- visitor services;
- cost of the visit;
- the natural environment of the area including erosion, vegetation, wildlife habitat, and one federally threatened species (the Arkansas River shiner); and
- archeological resources.

Table 3-1 summarizes the affected groups and possible changes in welfare. Some of the impacts will be location specific, while others involving fees and education will affect all visitors who want to use ORVs. Note that individuals may fall into more than one category. An individual could be a visitor and a business owner, for example.

3.2.2 Data

Analysis of the changes in welfare to visitors, businesses, and the general public requires predicting the likely impact of the alternatives relative to the no-action alternative. Of course,

Table 3-1. Affected Groups and Possible Changes in Welfare

Group	Current Activity	Change in Activity	Change in Welfare
Visitors who use ORVs or are part of a group where others use ORVs	Use ORVs in national recreation area	Continue same activities	Consumer surplus will increase if the visitors like the management changes and believe that they improve visitor safety and services. Consumer surplus will decrease if visitors feel management changes decrease the enjoyment of their trip. Consumer surplus will decrease if a user fee increases the cost of the trip.
		Do not visit national recreation area	Consumer surplus will decrease if visitors decide not to visit because of management changes
Visitors or potential visitors who do not ride ORVs who use the same parts of the national recreation area where ORVs are permitted but would prefer if there were fewer ORVs or a more managed environment	Visit areas of the national recreation area where ORVs are allowed (or do not visit)	Continue same activity (or start visiting)	Consumer surplus will stay the same or increase if ORVs are reduced in number or if visitors like the management changes and believe that they improve visitor safety and services.
Visitors to parts of the national recreation area where ORVs are currently not allowed and will not be allowed under any of the proposed alternatives	Visit areas of the national recreation area where ORVs are not allowed	Continue same activity	Consumer surplus will stay the same.
Businesses that support visitors who use ORVs	Conduct business with visitors	Less business if visitation decreases	Producer surplus will decrease (if visitor spending is down).
		More business if visitation increases	Producer surplus will increase (if visitor spending is up).
Businesses in areas outside the national recreation area that allow ORVs	Conduct business with visitors	More business if visitors switch to riding in other ORV areas outside the national recreation area	Producer surplus will increase (if visitor spending is up).

(continued)

Table 3-1. Affected Groups (continued)

Group	Current Activity	Change in Activity	Change in Welfare
General public	Not related to use of the national recreation area	None	Consumer surplus stays the same or increases if new management benefits the environmental resources in the national recreation area
National Park Service (federal taxpayers)	Use Agency resources for management	Increase or decrease need for management resources	Society's welfare will increase (or decrease) if resources are redirected from or to higher valued activities

forecasting the impact of any of the alternatives into the future involves a great deal of uncertainty. The actual impacts will depend on how visitors change their visiting and spending patterns, the extent to which the proposed management alternatives mitigate the externalities that arise from the regulated activity, as well as factors unrelated to the alternatives such as severe weather and the national economy.

Ideally, we would forecast visitation under the no-action baseline and each action alternative and use the forecasts to derive the incremental change in visitation under each action alternative. To calculate changes in consumer surplus, the incremental change in visitation for different types of visitors would then be multiplied by the appropriate WTP value (monetary measure of the change in the visitors' welfare as a result of changes in their visits to the national recreation area or the state of the natural resources in the national recreation area) to calculate total consumer surplus change.

Likewise, the incremental change in visitation under each action alternative would be multiplied by average spending for each type of visitor. The resulting estimates of change in revenue would be adjusted to calculate producer surplus, the impact on businesses affected by the action alternatives.

Unfortunately, we lack the data to estimate baseline ORV use and spending by visitors (the official visitation data presented in Section 2 provides only an estimate of the number of visitors to the areas that allow ORVs not the number of visitors who actually use ORVs and the estimate is based on assumptions about people per vehicle and a fixed relationship between traffic

to Blue Creek and traffic to Rosita Flats). We also lack data to estimate quantitatively how current use and spending patterns would change under the action alternatives. Instead, we used the visitation statistics from NPS, discussions with NPS staff, a survey of several local businesses, and the results from a visitor survey conducted by ASU (2004) to discuss qualitatively the potential impacts, using quantitative data where possible.

To collect information from representative businesses, RTI International conducted a small-scale business survey around the Lake Meredith National Recreation Area. As described earlier, visitors to the national recreation area do not typically stay in hotels. A limited number of businesses that might serve visitors were identified. The survey focused on three primary businesses and one additional business that were most likely to be directly affected by any change in park ORV regulations. All of the businesses were located in Amarillo, TX, and involved in selling and servicing equipment and parts for outdoor recreation (e.g., ATVs, motorcycles, RVs).

The goal of the survey was to understand the businesses' current situation and how the alternatives might affect future business. Respondents were asked about their products and services, annual revenue and revenue distribution by season, and number of employees. They were then asked how many of their customers visit the Lake Meredith National Recreation Area, what kinds of activities they did there, and if they visited particular areas in the national recreation area. Then, the respondents were given short descriptions of each proposed alternative and asked how they believed each one would affect their customers.

The percentage of customers who visited the national recreation area varied across the businesses from 20% to 90%. In terms of impact on their business, again the businesses varied in their responses from no impact to a significant impact, but all the businesses had been affected by the recession. Speed limits and restrictions on driving above a particular elevation were mentioned as regulations that would be unpopular with visitors and might reduce ORV trips; one business speculated that trips might drop by as much as 50%. Overall, two of the four businesses thought the action alternatives might have a significant impact on visitation for ORV use and, by extension, on their business.

3.2.3 Benefits and Costs to Visitors and the General Public

The action alternatives provide different management approaches to ORV use in the park. Each action alternative is designed to address some or all of NPS's objectives, including protecting natural and cultural resources and promoting visitor safety and enjoyment. The management activities that affect how and where ORVs can be used in the national recreation area will result in benefits and costs to visitors. Some visitors may experience both benefits and costs from the same management action. For example, restrictions on where ORVs can drive to protect natural resources will benefit visitors who value the natural resources but can also impose costs on the same visitors if they enjoyed riding in the areas that are now off limits.

The action alternatives primarily affect visitors who use ORVs and who visit Rosita Flats and Blue Creek. Visitors who go to other parts of the park generally would be unaffected, except to the extent that they value improvements in the natural resources in the Rosita Flats and Blue Creek areas that might result from the action alternatives.

The size of the benefits will depend in large part on how successfully the action alternatives achieve their objectives. The benefits will be larger if the alternatives provide real protection to the natural and cultural resources. If enforcement and education do not result in changes in ORV use and the restrictions imposed by an alternative are widely ignored, the benefits of the alternative will be small or nonexistent. The user fees will decrease welfare for all visitors, but if the fees are used for additional facilities and services valued by the visitors, the benefits could outweigh the costs.

Based on visitation statistics from the last 5 years, approximately 260,000 ORV visits might be affected by the action alternatives. As shown in Figure 2-2, visitation has been increasing at Rosita Flats, while visitation has remained fairly constant at Blue Creek. On average, from 2007 to 2011, about 220,000 and 40,000 recreational visits occurred at Rosita Flats and Blue Creek, respectively. The data only provide an estimate of the number of visitors going to the areas, not the number of visitors who actually ride ORVs when they get there. As discussed in Section 2, there is no data available to estimate

the number of unique individuals that make ORV trips, because some visitors make multiple trips each year.

Table 3-2 reproduces a shortened version the text from the DEIS (NPS, 2012A) summarizing the impacts of the different alternatives on natural resources, cultural resources, and visitor experience. The DEIS (NPS, 2012A) categorizes the impacts based on the expected duration (short or long term), the severity (negligible, minor, moderate, or major), and whether the impacts are adverse or beneficial. The DEIS describes the thresholds for the different categories and provides a more detailed explanation for the rankings.

A number of features of the action alternatives will affect visitors' enjoyment and potentially their decisions to visit the national recreation area for ORV recreation. The areas available for ORV use will be slightly reduced under all the action alternatives relative to the no action alternative, and under Alternatives C and D, additional law enforcement may prevent some of the illegal ORV use that currently occurs. Under Alternatives B and D, the reductions in available area for ORVs should be minor and should have little effect on visitors, except visitors who currently ride illegally in areas outside the regulations under the no-action alternative. Under Alternative C, only one area will be open at Rosita Flats. This may result in greater crowding in the other areas that will be open.

Alternative C includes the possibility of limiting the number of ORVs in the future. If use limits are enforced, this could help control crowding but might also prevent some visitors from riding ORVs in the national recreation area.

The zone system to separate users under Alternatives B and D is expected to improve visitor experience for most visitors by separating conflicting uses and improving safety (issues mentioned in public comments and the ASU visitor survey [ASU, 2004]). Beginners and riders looking for a more controlled experience will be the primary beneficiaries of the zone system. However, a subset of ORV users will see a decrease in their welfare because they can no longer drive where they want and speed limits will be imposed in all areas.

Table 3-2. Environmental Impact Summary by Alternative

Impact Topic	Alternative A: No Action— Continuation of Current Management	Alternative B: Zone System— Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Soils	Under Alternative A, continued ORV use at Blue Creek and Rosita Flats would result in long-term, localized, major, and adverse impacts on soils. The long-term minor adverse effects of past, present, and reasonably foreseeable future actions, when combined with the long-term major adverse impacts of alternative A, would result in long-term moderate adverse cumulative impacts on soil resources.	Under Alternative B, continued ORV use at Blue Creek and Rosita Flats would result in localized, short- and long-term, moderate, and adverse impacts on soils. There would also be long-term beneficial impacts to soils accruing from educational measures. The long-term minor adverse effects of past, present, and reasonably foreseeable future actions, when combined with the long-term moderate adverse impacts of Alternative B, would result in long-term moderate adverse cumulative impacts on soils.	Under Alternative C, continued ORV use at Blue Creek and Rosita Flats would result in localized, long-term, moderate, and adverse impacts on soils. There would also be long-term beneficial impacts to soils accruing from enhanced resource protection measures. The long-term minor adverse effects of past, present, and reasonably foreseeable future actions, when combined with the long-term moderate adverse impacts of Alternative C, would result in long-term moderate adverse cumulative impacts on soils.	Under Alternative D, continued ORV use and management at Blue Creek and Rosita Flats would result in localized, long-term, and minor to moderate impacts. There would also be long-term beneficial impacts to soils accruing from enhanced resource protection measures. The long-term minor adverse effects of past, present, and reasonably foreseeable future actions, when combined with the long-term minor to moderate impacts of Alternative D, would result in minor to moderate adverse cumulative impacts on soils.

(continued)

Table 3-2. Environmental Impact Summary by Alternative (continued)

	Alternative A: No Action—Continuation of Current Management	Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Vegetation	The parkwide long-term, minor to moderate adverse impacts of past, present, and reasonable foreseeable future actions both inside and outside the national recreation area, when combined with localized short- and long-term, moderate, adverse impacts from continued ORV use under Alternative A, would result in localized long-term, moderate, adverse cumulative impacts on vegetation.	Localized, short- and long-term, minor, adverse impacts on vegetation could occur in areas open to ORV use. These adverse impacts would occur in fewer vegetated areas, compared with Alternative A. There would be long-term beneficial impacts to vegetation associated with closed routes and areas. In combination with the parkwide, long-term, minor to moderate adverse impacts of past, present, and reasonably foreseeable future actions, cumulative impacts on vegetation would be long-term, minor, and adverse.	Localized, short- and long-term, minor adverse impacts on vegetation would occur in areas open to ORV use. Several routes and areas would be closed to ORVs, where vegetation would have the opportunity to recover, resulting in long-term beneficial impacts to vegetation. In combination with the parkwide, long-term, minor to moderate, adverse impacts of past, present, and reasonably foreseeable future actions, cumulative impacts on vegetation would be parkwide, long-term, minor, and adverse.	Localized, short- and long-term, minor, adverse impacts on vegetation could occur in areas open to ORV use. However, impacts would occur in fewer vegetated areas because only designated routes and specific areas would be open to ORVs, resulting in long-term beneficial impacts to vegetation associated with closed routes and areas. In combination with the parkwide, long-term, minor to moderate, adverse impacts of past, present, and reasonably foreseeable future actions, cumulative impacts on vegetation would be long-term, minor, and adverse.

(continued)

Table 3-2. Environmental Impact Summary by Alternative (continued)

	Alternative A: No Action—Continuation of Current Management	Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Water resources	Under Alternative A, continued ORV use at Blue Creek and Rosita Flats would result in long-term localized moderate adverse impacts on water quality. The short- and long-term minor adverse and long-term beneficial effects of past, present, and reasonably foreseeable future actions, when combined with the long-term moderate adverse impacts of Alternative A, would result in long-term minor adverse cumulative impacts on water resources.	Under Alternative B, continued ORV use at Blue Creek and Rosita Flats would result in short- and long-term, localized, minor to moderate adverse impacts on water resources. Incremental increases in sediment delivery to streams would result from intensification of uses at certain areas and would impact water resources at those locations. However, this impact would potentially be mitigated by the establishment of zoning restrictions. The short- and long-term minor adverse and long-term beneficial effects of past, present, and reasonably foreseeable future actions, when combined with the impacts of Alternative B, would result in long-term minor adverse cumulative impacts on water resources.	Under Alternative C, continued ORV use at Blue Creek and Rosita Flats would result in short- to long-term localized minor to moderate adverse impacts on water resources. Impacts to water quality would result from intensification of uses at certain areas. However, this impact would potentially be mitigated by the establishment of use restrictions such as hike-in only camping. The short- and long-term minor adverse and long-term beneficial effects of past, present, and reasonably foreseeable future actions, when combined with the impacts of Alternative C, would result in long-term minor adverse cumulative impacts on water resources.	Under Alternative D, continued ORV use at Blue Creek and Rosita Flats would result in short- and long-term localized minor adverse impacts on water resources. Impacts would be intensified in certain areas. However, this impact would potentially be offset by the establishment of zoning restrictions. The short- and long-term minor adverse and long-term beneficial effects of past, present, and reasonably foreseeable future actions, when combined with the impacts of Alternative D, would result in long-term minor adverse cumulative impacts on water resources.

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Table 3-2. Environmental Impact Summary by Alternative (continued)

	Alternative A: No Action—Continuation of Current Management	Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Soundscapes and the acoustic environment	The effects of Alternative A on soundscapes at Blue Creek would be long term, minor, and adverse. The effects of Alternative A on soundscapes at Rosita Flats would be long term, moderate, and adverse. Cumulative impacts to soundscapes would be long term, minor to moderate, and adverse.	The effects of Alternative B on soundscapes at Blue Creek would be long term, minor, and adverse. The effects of Alternative B on soundscapes at Rosita Flats would be long term, minor, and adverse. Cumulative impacts to soundscapes would be long term, minor, and adverse.	The effects of Alternative C on soundscapes at Blue Creek would be long term, minor, and adverse. The effects of Alternative C on soundscapes at Rosita Flats would be long term, minor, and adverse. Cumulative impacts to soundscapes would be long term, minor, and adverse.	The effects of Alternative D on soundscapes at Blue Creek would be long -term, minor, and adverse. The effects of Alternative D on soundscapes at Rosita Flats would be long term, minor, and adverse. Cumulative impacts to soundscapes would be long term, minor, and adverse.
Wildlife and wildlife habitat	Localized, short- and long-term moderate adverse impacts on wildlife and wildlife habitat would result from species disturbance and displacement, habitat damage and fragmentation, and species mortality. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts from continued ORV use under Alternative A, would result in long-term moderate adverse and long-	Although short- and long-term moderate adverse impacts on wildlife and wildlife habitat could occur due, impacts would be less than Alternative A as a result of increased resource management. The use of a zone system and some driving restrictions would result in long-term beneficial impacts on wildlife and wildlife habitat at both ORV use areas. Therefore, overall impacts under Alternative B would be short-	Although short- and long-term moderate adverse impacts on wildlife and wildlife habitat could occur, the impacts would be less than Alternative A due to increased resource management, resulting in short- and long-term minor adverse impacts under Alternative C. The development of a monitoring plan and interpretive wayside program, the implementation of use limits and permitting system, and designation of ORV access points at the riverbed at	Although localized, short- and long-term moderate adverse impacts on wildlife and wildlife habitat, impacts would be less than Alternative A due to increased resource management, resulting in short- and long-term minor adverse impacts under alternative D. The use of a zone system and fee-based permitting system, as well as the enactment of resource protection rules would result in long-term beneficial impacts. Past, present, and

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Table 3-2. Environmental Impact Summary by Alternative (continued)

	Alternative A: No Action—Continuation of Current Management	Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Wildlife and wildlife habitat (continued)	term beneficial cumulative impacts on wildlife and wildlife habitat.	and long-term minor adverse. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts of Alternative B, would result in long-term minor to moderate adverse and long-term beneficial cumulative impacts on wildlife and wildlife habitat.	Rosita Flats would result in long-term beneficial impacts. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts of Alternative C, would result in long-term minor to moderate adverse and long-term beneficial cumulative impacts on wildlife and wildlife habitat.	reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts under Alternative D, would result in long-term minor adverse and long-term beneficial cumulative impacts on wildlife and wildlife habitat.
Threatened and endangered species / species of concern	Under Alternative A, short- and long-term moderate adverse effects on the Arkansas River shiner could occur. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts from continued ORV use under Alternative A, would result in long-term moderate adverse cumulative impacts on the	Short- and long-term moderate adverse impacts on the Arkansas River shiner could occur in ORV use areas. However, the use of a zone system and other restrictions would help mitigate these adverse impacts. Therefore, overall impacts under Alternative B would be short- and long-term minor to moderate adverse. Past, present, and reasonably	Short- and long-term moderate adverse effects on the Arkansas River shiner could occur in localized areas. However, the implementation of use limits, a fee-based permit system, the designation of ORV access points at the riverbed, and increased resource management would help mitigate the adverse impacts. Therefore, overall impacts of implementing	Short- and long-term moderate adverse impacts on the Arkansas River shiner at localized areas could occur with continued ORV use; however, impacts would be less than Alternative A due to increased resource management, resulting in long-term minor to moderate adverse impacts. The implementation of a zoning system and fee-based permit system would help

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Table 3-2. Environmental Impact Summary by Alternative (continued)

	Alternative A: No Action—Continuation of Current Management	Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Threatened and endangered species / species of concern (continued)	Arkansas River shiner.	foreseeable future actions both inside and outside the national recreation area, when combined with the impacts of Alternative B, would result in and long-term minor to moderate adverse cumulative impacts on the Arkansas River shiner.	Alternative C would be short- and long-term minor adverse. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts of Alternative C, would result in long-term minor to moderate adverse cumulative impacts on the Arkansas River shiner.	help mitigate the adverse impacts. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts under Alternative D, would result in long-term minor to moderate adverse impacts on the Arkansas River shiner.
Archeological resources	Alternative A would result in continued potential long-term, minor to moderate, and adverse impacts to archeological resources along or near open areas, routes, or access points; however, none of these sites are considered eligible for the National Register of Historic Places. Cumulative impacts would be long term, minor to moderate, and adverse.	Alternative B would result in long-term, minor to moderate, and adverse potential impacts to archeological resources along or near open areas, routes, or access points; however, none of these sites are considered eligible for the National Register of Historic Places. Cumulative impacts would be long term, minor to moderate, and adverse.	Alternative C would result in long-term, minor to moderate, and adverse potential impacts to archeological resources along or near open areas, routes, or access points. However, none of these sites are considered eligible for the National Register of Historic Places. Cumulative impacts would be long term, minor to moderate, and adverse.	Alternative D would result in long-term, minor to moderate, and adverse potential impacts to archeological resources along or near open areas, routes, or access points. However, none of these sites are considered eligible for the National Register of Historic Places. Cumulative impacts would be long term, minor to moderate, and adverse.

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Table 3-2. Environmental Impact Summary by Alternative (continued)

	Alternative A: No Action—Continuation of Current Management	Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Visitor use and experience / health and safety	Under Alternative A, there would be no change to the current visitor use and experience, access, or recreational opportunities. The current safety risk of unregulated ORV use within the national recreation area would remain the same. As a result, impacts to visitor use and experience/health and safety would be long term, moderate, and adverse. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts under Alternative A, would result in long-term minor to moderate adverse cumulative impacts on visitor use and experience/health and safety.	The implementation of a permit system would have adverse impacts for the majority of visitors by requiring visitors to obtain an ORV permit. The establishment of use zones would result in beneficial impacts from separation of visitor uses, improved safety, and enhanced resource conditions at the national. A minority of users would experience moderate adverse effects by loss of access to the resource protection zone and temporary loss of the hunting zone in Rosita Flats. Some users could experience long-term negligible to minor adverse impacts as the potential for user conflicts may arise with hunters not using ORVs within the hunting zone. Overall, impacts under Alternative B	The implementation of a permit system would have adverse impacts for the majority of visitors by requiring visitors to obtain an ORV permit. The proposed permit fee, while being an additional cost to visitors, would create more visitor amenities that would enhance visitor use and experience at the national recreation area. Additionally, a greater presence of law enforcement, as well as the ability to revoke ORV permits may cause visitor violations and illegal activity to decrease. As a result, impacts under Alternative C would be long term, minor, and adverse, as users would need to adjust to a user fee, and long term, beneficial from enhanced safety and additional amenities, ORV rules, and education. Past, present, and reasonably	The implementation of a permit system would have adverse impacts for the majority of visitors by requiring visitors to obtain an ORV permit. The proposed permit fee, while being an additional cost to visitors, would create more visitor amenities that would enhance visit use and experience at the national recreation area. Additionally, a greater presence of law enforcement and the ability to revoke ORV permits may cause visitor violations and illegal activity to decrease, which would have beneficial effects on visitor health and safety. Additionally, the establishment of zones and implementation of a permit system would have beneficial impacts for the majority of visitors by separating uses, implementing rules, increasing education, improving safety,

(continued)

Table 3-2. Environmental Impact Summary by Alternative (continued)

Alternative A: No Action—Continuation of Current Management	Alternative B: Zone System—Separation of Visitor Uses, with a Permit for Educational Purposes	Alternative C: Management Through Use of a Permit System at Current ORV Use Areas	Alternative D: Management Through Use of a Zoning and Permitting System at Current ORV Use Areas
Visitor use and experience / health and safety (continued)	would be long term, minor to moderate, and adverse and long-term, beneficial to ORV users at the national recreation area. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts of Alternative B, would result in long-term minor to moderate adverse and long-term beneficial cumulative impacts on visitor use and experience/health and safety.	foreseeable future actions both inside and outside the national recreation area, when combined with the impacts of Alternative C, would result in long-term minor adverse and long-term, beneficial cumulative impacts on visitor use and experience/health and safety.	and enhancing resource conditions at the national recreation area. Overall, impacts under Alternative D would be long-term minor to moderate adverse, as users would need to adjust to a user fee and a zoning system, and long-term, beneficial because of improvements to visitor use and experience/health and safety. Past, present, and reasonably foreseeable future actions both inside and outside the national recreation area, when combined with the impacts of Alternative D, would result in long-term minor to moderate adverse and long-term beneficial cumulative impacts on visitor use and experience/health and safety.

Source: NPS, 2012

Noise from ORVs also affects visitor experience. Table 3-2 summarizes the impacts of the alternatives on the noise level (the soundscape and the acoustic environment). Because ORVs have historically been used in Rosita Flats and Blue Creek, the acceptable level of noise is higher than it would be in other

parts of the national recreation area or in a different national park. All three action alternatives are expected to improve conditions at Rosita Flats, but conditions at Blue Creek are expected to remain the same.

All three action alternatives require visitors who want to use an ORV in the national recreation area to obtain a permit, and under Alternatives C and D the visitor must pay for the permit. The permits will be provided in the same way the national recreation area currently sells permits for boats on Lake Meredith at similar prices (according to the DEIS, the national recreation area is considering prices in the range of \$4 per day, \$10 for 3 days and \$40 per year). The inconvenience of needing a permit will reduce visitor welfare, as will the fee. There are no estimates of the number of visitors who might decide not to visit because of the permit system. If the fees are similar to the fees for boating, the assumption is that the impact of the fees on visitation would not be large.

To the extent that there are other areas for people to use ORVs outside the national recreation area, the welfare losses will be smaller. Section 2.4 lists a few areas that might be substitutes, but most of the areas are at least 60 miles from the national recreation area.

Under action Alternatives C and D, which require visitors to buy a permit, visitor facilities would be enhanced, which could increase the quality of trips for all visitors. NPS has not yet decided which amenities would be provided, so at this time the impacts cannot be assessed.

The data to estimate monetary measures of the benefits (WTP studies) to visitors from implementing the action alternatives do not exist currently. A few economic studies estimate the value of an ORV trip, but none of the studies were conducted for the Lake Meredith area and the general category of "ORV recreation" can include a wide variety of activities. Table 3-3 summarizes the values estimated from different studies for the value of an ORV trip. These studies provide a sense of the range of consumer surplus values associated with ORV recreation, but the studies do not provide information on the how the value of a trip would change under conditions similar to the action alternatives.

Table 3-3. Estimates of WTP for ORV Use

Study	Location	WTP per Person per Day (in 2010\$)
Walsh and Olienyk (1981)	Arapaho, Roosevelt, Pike, and Isabel National Forests, in Colorado	Mean per person per day value for ORV use: \$16.29
Bowker, Miles, and Randall (1997)	Croom Recreation Area, Withlacoochee State Forest in Florida	WTP varied from \$9.18 to \$47.18 per person per day
Bergstrom et al. (1996)	Several southeast states	WTP was \$6.05 per person per day
Bergstrom et al. (1996)	Washington State	WTP was \$46.60 for daily ORV use per person

Source: Loomis et al., 2005. All values from this study were reported in 2004 dollars; these values were converted to 2010 dollars using the Bureau of Labor Statistics' consumer price index inflation calculator.

The condition of the natural resources in the park also affects the welfare of visitors and potentially the general public. Looking at the natural resource categories, all three action alternatives (Alternatives B, C and D) are expected to result in improved conditions relative to the no-action alternative (Alternative A). The user zones proposed under Alternatives B and D should offer more protection to natural resources (in particular, the zones that limit riders to smaller vehicles). Alternative D combines a plan for use zones with a plan for greater law enforcement presence at the ORV areas funded by the permit fees. As a result, Alternative D is expected to result in greater resource protection than Alternatives B and C in a few categories. Alternative B implements a zone system to separate users and protect resources, but under this alternative the permit will be free and the plan does not include additional law enforcement presence. Alternative C does not include a zone system but does require permits to be purchased and includes plans for additional law enforcement resources at the ORV areas. Alternative C also includes the possibility of limiting the number of visitors using ORVs, which could improve resource protection. The DEIS also summarizes the impacts on archeological resources; however, all four alternatives are predicted to have the same impact.

Members of the public who do not visit the national recreation area may still place a value on the additional protection provided to the natural environment under the action alternatives relative to the no-action alternative. The value the public places on environmental improvements unrelated to their use of the resources is referred to as nonuse or existence value in the literature. Based on actual donations made to organizations that protect the environment and research in the economics literature, these nonuse values can sometimes be substantial if the resource is unique or important to the public.

Visitors to the national recreation area and the general public may place special value on threatened and endangered species. The Arkansas River shiner, a federally threatened species, has been found in the Rosita Flats area and may be in rivers or creeks in other parts of the park. All three action alternatives are expected to provide more protection but still result in cumulative minor to moderate adverse impacts. Alternative C may provide slightly more protection than Alternatives B and D because of the ability to limit the number of ORVs under Alternative C. The zone systems included in Alternatives B and D are not expected to benefit the shiner as much as they benefit other wildlife.

3.2.4 Benefits and Costs to Businesses and the Local Economy

NPS conducted an assessment of the socioeconomic impacts of the action alternatives in the three-county ROI surrounding Lake Meredith National Recreation Area. The benefits and costs to businesses from the action alternatives are all indirect. The alternatives do not regulate the businesses but rather regulate visitor access to and use of the national recreation area. As discussed in Section 3.1, secondary impacts are included in benefit-cost analysis if the impacts are large enough to change prices in the secondary market. Without further information on possible changes in prices, NPS chose to include the impacts.

The proposed alternatives may change the number of visitors, the type of visitors, or the spending pattern of visitors relative to the no-action alternative. Some businesses may benefit from these changes if they serve visitors who prefer the alternative regulation, while others may lose revenue if visitor spending decreases.

A benefit-cost analysis looks at societal welfare changes, not just local changes. If visitors who decide not to visit the Lake Meredith National Recreation Area under one of the proposed alternatives make trips to another ORV area or engage in an alternative leisure activity in another location, the gains in producer surplus to businesses in the other locations should be included in the benefit-cost calculation. Without additional information on the actions of visitors who decide not to visit the national recreation area under the different alternatives, NPS cannot estimate the potential increases in producer surpluses to businesses in other locations.

The majority of visitors to the national recreation area live in the surrounding region or the state of Texas (ASU, 2004). Based on the experience of national recreation area staff and a survey of local businesses, visitor spending in the communities near the national recreation area is low. Close proximity allows most visitors to take day trips to the national recreation area rather than spend the night. There are few hotels in the immediate vicinity of the national recreation area, and most people who spend the night camp within the national recreation area boundaries. As discussed in Section 2.3, the visitor statistics suggest that approximately 260,000 visits are made to the areas of the national recreation area where ORVs are allowed. In 2011, 38% of visits to the national recreation area included visits to one of the two areas where ORVs are allowed.

Together, the information about visitors to the national recreation area, their spending patterns, and the percentage that may be using an ORV suggest that the impacts of the action alternatives on businesses relative to the no-action alternative will be small. ORV use will still be allowed under all the action alternatives. It is possible that the requirement to purchase a permit under Alternatives C and D might result in fewer visitors. Alternative C also includes the potential for a cap on the number of permits distributed, which could cap future growth in visitation. However, the total change in visitors is not expected to be large.

Looking at the regional economy, a regional economic impact model, IMPLAN (Minnesota IMPLAN Group [MIG], 2008), was used to assess the quantitative impacts that the proposed alternatives may have on the local economy relative to the no-action baseline. An annual baseline spending level was

generated using the daily visitor spending assumptions from the Economic Benefits to Local Communities from National Park Visitation and Payroll (NPS, 2011) and average annual national recreation area visitation statistics (NPS, 2011). Potential decreases in visitation to the national recreation area resulting from implementing any of the alternatives are manifested in the model through decreases in spending in the local economy. Several possible visitation scenarios that could follow the implementation of the rule were used to account for a range of possible impacts on the local economy. Extreme changes in visitation were used to illustrate the worst-case outcomes for the overall impact on the economy. These scenarios are unlikely to result from any of the alternatives and should overstate any impact of new national recreation area regulations. Results from the IMPLAN model suggest that the impact on regional economic output and employment would be negligible under any of the scenarios evaluated. Even with the drop in spending associated with the 50% decrease in visitation, the effects on the region's economic output and employment would be minimal. Although the impact on the overall economy would be negligible, the impact on individual businesses may vary, and a few businesses may bear the majority of any potential impact of any of the alternatives. Overall, two of the four businesses surveyed felt that the alternatives would have a significant impact on their customers and, subsequently, their businesses. However, the actual reduction in visitation from the action alternatives is uncertain.

3.2.5 Costs to NPS

The action alternatives will also change the cost of managing the recreational area. Table 3-4 provides estimates of the cost to the national recreation area of each alternative as presented in the DEIS (NPS, 2012A). The action alternatives are all more expensive to manage than the no-action alternative. Alternative A, the no-action alternative, would cost \$315,000 to continue under the current ORV management. The remaining alternatives all carry higher costs because the park will be required to increase the quantity and effort of its staff, particularly in the area of law enforcement. The most expensive plan would be Alternative B, at \$1,775,000, because of its need for increased staffing. These costs would not be offset by a fee permit system. This plan would cost \$1,460,000 more to enact when compared with the no-action alternative. Alternative D

Table 3-4. Estimates of the Cost to the National Recreation Area of Each Alternative as Presented in the DEIS

	Alternative A	Alternative B	Alternative C	Alternative D
Lake Meredith National Recreation Area Management and Operations	Existing staffing and funding levels would continue at the same levels as currently managed. The total approximate cost of implementing Alternative A would be \$315,000. Actions under Alternative A would result in long-term, negligible adverse impacts because there would be no noticeable change in national recreation area management and operations. Past, present, and reasonable foreseeable future actions, when combined with the impacts of implementing Alternative A, would result in long-term, negligible to minor, adverse impacts to national recreation area management and operations.	Implementation of Alternative B would require additional efforts from park staff. Law enforcement staff levels would be increased to ensure park management and operations. Additionally, there would be an increase in responsibilities for the interpretation and resource management staff. The total approximate cost of implementing Alternative B would be \$1,775,000. Implementation of Alternative B would result in long-term, minor to moderate, adverse impacts to national recreation area management and operations with impacts more moderate than minor because a fee permit system would not be in place to help offset additional expenses. Past, present, and reasonable foreseeable future actions, when combined with the impacts of implementing Alternative B, would result in long-term, minor to moderate adverse impacts.	Implementation of Alternative C would require additional efforts from national recreation area staff in the areas of law enforcement, resource management, interpretation and facilities management, which would in part be offset by fees from the ORV permit. The total approximate cost of implementing Alternative C would be \$442,500 and would be offset, in part, by money collected in the proposed fee system. Implementation of Alternative C would result in long-term, minor to moderate, adverse impacts, which would be more minor than moderate due to the funding from the permit system. Past, present, and reasonable foreseeable future actions, when combined with the impacts of implementing Alternative C, would result in long-term, minor to moderate adverse cumulative impacts.	Implementation of Alternative D would require additional efforts from park staff in the area of law enforcement, which would, in part, be offset by fees from the ORV permit. The total approximate cost of implementing Alternative D would be \$1,775,000. Implementation of Alternative D would result in long-term, minor to moderate, adverse impacts, which would be more minor than moderate due to the funding from the permit system. Past, present, and reasonable foreseeable future actions, when combined with the impacts of implementing Alternative D, would result in long-term, minor to moderate adverse cumulative impacts.

Source: NPS, 2012A.

would have the same operations and management cost as Alternative B but would be offset in part by a fee permitting system. Alternative C is a \$127,500 increase in cost when compared with the no-action alternative, and this cost would also be offset, in part, by a fee permitting system. Overall, each

alternative will have long-term cumulative minor to moderate adverse impacts on the management and operations of Lake Meredith National Recreation Area.

3.3 SUMMARY

The impacts of the action alternatives are difficult to assess partly because it is difficult to predict whether visitors will comply with the proposed regulations establishing user zones, the extent to which a greater law enforcement presence will be needed and will be effective in enforcing the new regulations, and the impact of the permit system and fees on visitation levels.

In general, the establishment of user zones is expected to improve visitor safety and resource protection. It is also expected to improve the overall visitor experience for many visitors. However, it is unknown whether the user zones will need the support of additional law enforcement to work.

The overall benefits and costs of the action alternatives relative to the no-action alternative are ranked as follows:

- **Alternative D:** Alternative D provides for user zones, a fee-based permit system, and additional law enforcement. If the user zones need additional law enforcement presence to be effective, then Alternative D may offer the highest level of benefits to visitors and natural resources. However, the fee may reduce visitation. Costs to NPS will be lower than Alternative B because of the funds collected from the user fees.
- **Alternative B:** Alternative B provides for user zones and a permit system, but the permits will be free. If visitors comply with the user zone regulations, Alternative B may offer the highest benefits to visitors, while providing additional protection for natural resources. However, Alternative B has the highest costs for NPS.
- **Alternative C:** Alternative C does not employ a zone system, but it does include fee-based user permits and additional law enforcement. Visitors who do not like the zone system will favor Alternative C. Overall, the lack of a zone system and the potential for a cap on the number of permits may result in lower benefits to visitors (unless crowding becomes a serious issue under the other alternatives). Alternative C offers more protection to the threatened Arkansas River shiner because of the

ability to limit the number of ORVs in the area, and the alternative is projected to have the lowest costs for NPS.

4 Small Entity Impact Analysis

Regulations potentially affect the economic welfare of all businesses, organizations, or governmental jurisdictions, large and small. However, because small entities may have special problems in complying with such regulations, the Regulatory Flexibility Act of 1980, as amended in 1996 (RFA), requires special consideration be given to these entities during the regulatory process.

To fulfill these requirements, agencies perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities.

NPS found no small entities that were potentially directly affected by the rule. The proposed rule does not directly regulate any small entities within the meaning of the RFA. The proposed rule regulates visitors' ORV use in the national recreation area. However, businesses and business activity within the national recreation area are not regulated under any of the proposed alternatives. Because some visitors may change their visitation patterns based on the alternatives, the alternatives may indirectly affect businesses that cater to ORV visitors. NPS has evaluated these indirect effects in the benefit-cost analysis. Socioeconomic impacts were dismissed as a topic for the DEIS (NPS, 2012A) because the impacts are expected to be negligible. However, the RFA does not require agencies to analyze the indirect effects of proposed rules on small entities, absent direct effects on them, in a regulatory flexibility analysis.

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