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Appendix U
Regional Economic Development
and Other Social Effects Analyses

Final Report

Chatfield Reservoir Reallocation Project Regional Economic Development and Other Social Effects Analyses



Final Report

August 20, 2010

**Chatfield Reservoir
Reallocation Project
Regional Economic Development and
Other Social Effects Analyses**

Prepared for

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SECTION I.
Introduction

SECTION I.

Introduction

This report addresses the Regional Economic Development (RED) issues and Other Social Effects (OSE) of the proposed Chatfield Reservoir Storage Reallocation Project (Proposed Reallocation Project). The Proposed Reallocation Project increases conservation storage capacity of Chatfield Reservoir, altering operations during a multi-year construction period and affecting surrounding park recreational usage thereafter.

The RED portion of this study estimates the regional economic impact of construction and operation of the four alternatives under consideration in the United States Army Corps of Engineers (USACE) Feasibility Report/Environmental Impact Statement (FR/EIS).

The OSE portion of this study calculates impacts of the Proposed Reallocation Project on Colorado State Parks' (State Parks) revenue and concessionaire revenue and provides a discussion of lost aesthetic values as a result of new water management practices, environmental justice considerations and potential property value impacts in the area.

This introductory section describes the Chatfield State Park setting and the proposed Reallocation Project alternatives and documents RED and OSE methodology.

Background

Chatfield State Park is located about 25 miles southwest of downtown Denver along the border of Arapahoe, Douglas and Jefferson counties at the confluence of the South Platte River and Plum Creek. The United States Army Corps of Engineers (USACE) manages the Reservoir for urban flood control. Colorado State Parks manages the Reservoir surface and the surrounding land for recreation.

Approximately 15 Denver area water suppliers have proposed a new water storage project, expanding Reservoir storage capacity, raising the water surface level, and altering water level fluctuations from current practices. Presently, the surface rises and falls about nine feet during the course of a year, and six feet during the high season (May 1 to September 30). Proposed practices would alter annual water level fluctuation, potentially causing an increase in the future distance between high and low water levels of up to 21 feet. These changes in storage practices would reshape the Reservoir's boundaries and periodically submerge up to 500 acres of upland and riparian habitat, as well as certain roads, utilities, trees, facilities, beaches and general recreation including equestrian trails. Changes will also affect the natural environment at the Park, altering wildlife migration corridors, as well as visitor use and perception of the Reservoir and the Park experience.

A FR/EIS is underway that addresses the broad impacts of Proposed Reallocation Project alternatives, pursuant to National Environmental Policy Act (NEPA) requirements. The USACE is completing an economic impact analysis as part of the proposed Reallocation FR/EIS that projects the economic impacts on a national level, known as a National Economic Development (NED) analysis. This supplemental analysis, sponsored by the Colorado Water Conservation Board and the Colorado

Division of State Parks, documents how facility construction and changes in Reservoir management will affect regional economic activity, park visitation, concessionaire revenues and Colorado State Parks revenues.

FR/EIS Alternatives and Analytical Coverage

The following is a list of alternatives with a brief description:

- **Alternative 1.** Under Alternative 1 (No Action), Chatfield Reservoir would not be reallocated to multipurpose storage and the operation of the reservoir and high water level would remain unchanged (5,432 feet m.s.l.). Storage would be achieved through construction of Penley Reservoir and the use of existing downstream gravel pits.
- **Alternative 2.** Under Alternative 2 (No Action), the status of Chatfield Reservoir would remain the same as in Alternative 1. Future water demands would be met through non-tributary groundwater and the use of existing downstream gravel pits.
- **Alternative 3.** Under Alternative 3 (Proposed Alternative), storage would be reallocated in Chatfield Reservoir and the conservation pool elevation would be raised 12 feet to an elevation of 5,444 feet m.s.l.
- **Alternative 4.** Under Alternative 4, storage would be reallocated in Chatfield Reservoir and the conservation pool elevation would be raised 5 feet to an elevation of 5,437 feet m.s.l. Non-tributary groundwater and gravel pit storage would be used to supplement storage in the reservoir.

The RED portion of this analysis estimates regional economic impacts of construction and operation of water delivery infrastructure associated with each of the four alternatives.

In addition to construction and operation impacts for Alternatives 3 and 4, the RED analysis estimates the regional economic impact of the recreation-related response to construction and new water management practices at the park. The recreation analysis focuses on proposed reallocation Alternative 3 of the FR/EIS, where the new high water elevation would be 5,444 feet m.s.l. Alternative 4 in the FR/EIS would raise the high water elevation to 5,437 feet m.s.l. at the Park and will likely cause similar or less severe types of recreation impacts.

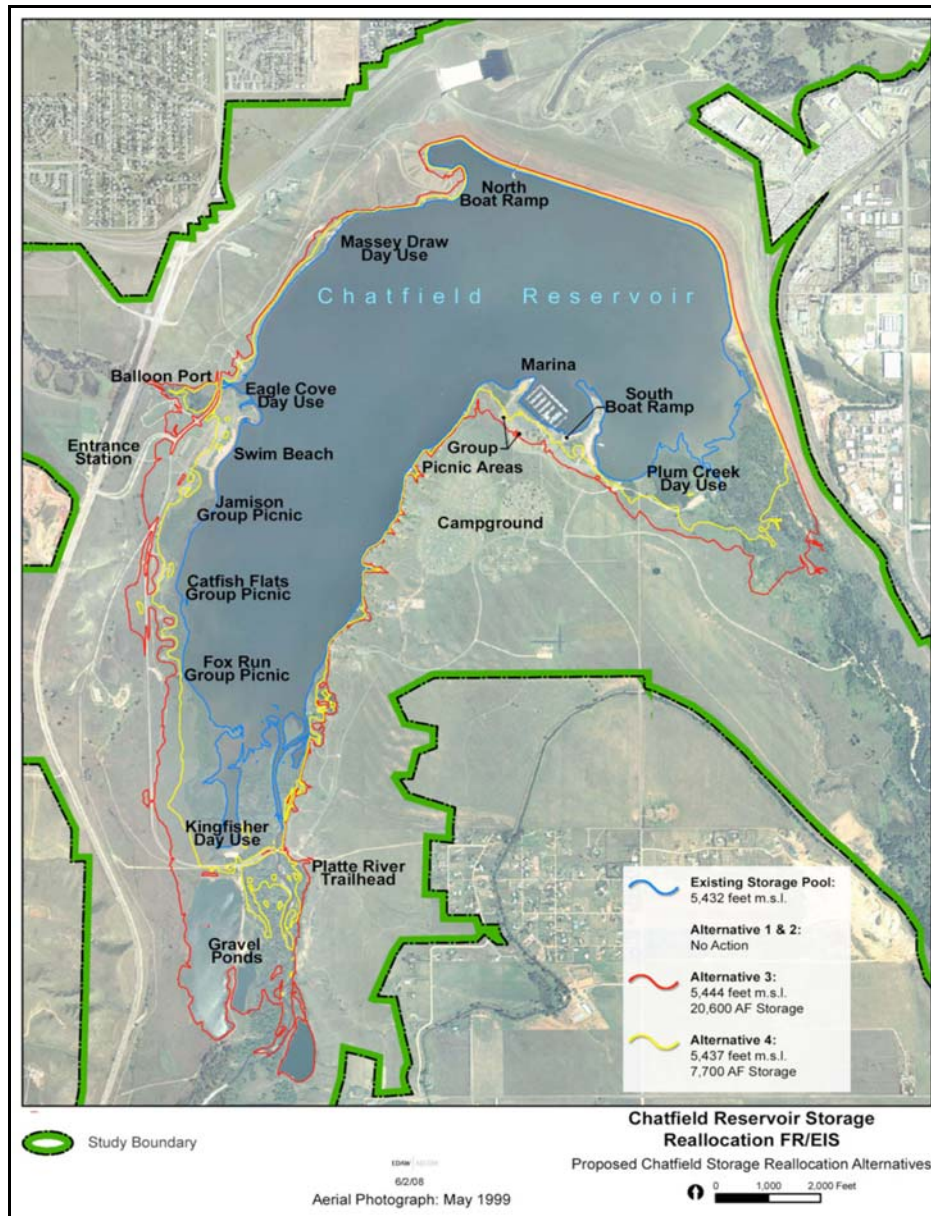
The RED analysis also considers the economic impact of the expenditure of local funds to the United States Treasury in payment for storage rights in Chatfield Reservoir. This applies to the two reallocation alternatives only. The remaining alternatives assume no transfer of local funds to the United States Treasury.

The OSE portion of this report focuses on impacts to State Parks and concessionaire revenue as a result of reallocation under Alternatives 3 and 4. The OSE portion of this report also offers a qualitative discussion of impacts related to Alternatives 1 and 2. The OSE report also includes a qualitative discussion on the benefits of the reallocation project for all four alternatives.

Chatfield State Park

Chatfield State Park provides full service campgrounds, hiking and biking trails, horse stables, and a hot air balloon port, all of which are located around the Reservoir with boating, fishing and a full-service marina. The Park is popular for its beautiful views of the nearby foothills and water-based recreation located in close proximity to the Denver Metro Area. Chatfield State Park had over 1.6 million visitors in 2007 and remains one of the most visited sites in the Colorado State Parks system. Exhibit I-1 shows Chatfield State Park, the extent of proposed inundation under Alternatives 3 and 4, the Reservoir and key recreation facilities.

Exhibit I-1.
Chatfield State Park and Environs



Source: EDAA.

▲ In the map on the preceding page, the red line indicates the new high water level for reallocation under Alternative 3 and the yellow line indicates the new high water level under Alternative 4; illustrating the loss of upland and riparian habitat at high water, and the need to relocate recreation facilities.

Chatfield Reservoir Proposed Storage Reallocation Project

In 2004, the USACE initiated a feasibility report to “reassign a portion of the storage space in Chatfield Reservoir to joint flood control-conservation purposes, including storage for municipal and industrial water supply, agriculture, and recreation and fishery habitat protection and enhancement.”¹ Increased water storage will be achieved by raising water elevation, which will also result in inundation of portions of the existing Park and developed recreation areas. Seven areas of the park will require in-kind replacements of current facilities due to full or partial inundation.

The Proposed Reallocation Project will have immediate and long-lasting effects on Chatfield Reservoir and the surrounding Chatfield State Park. The current maximum high water level at Chatfield is 5,432 feet above sea level. Under proposed Alternative 3, the USACE would increase the water level to 5,444 above sea level (an increase of 12 vertical feet). Under proposed Alternative 4, the USACE would increase the water level to 5,437 above sea level (an increase of 5 vertical feet).

Accomplishment of this expansion would require a two-year construction effort during which various recreation areas around the Park would be intermittently closed for earthwork and facility relocation. In general, facilities would be pulled further away from the current water line and elevated by extensive cut and fill to accommodate the rising water level. Where possible, trees and other natural amenities would be relocated along with the facilities. Efforts would be made to keep the most popular park facilities (e.g., swim beach and marina) open for the summer high season during the construction period.

Following facility relocation, the allocated space will be filled—a process requiring approximately one to five years, based on water availability. During this time, termed the “incremental reallocation period,” the water level would likely be perceived as low as the reservoir fills based on water availability.² Adverse recreation conditions may persist during post construction, but Park visitation is expected to rise once construction activities have ended and vegetation regrowth is underway.

The final phase of expanded reservoir development, called the stabilization period, would see a return to relatively stable water levels and traditional park management practices. However, likely water storage requirements at the enlarged facility would produce increased seasonal surface level fluctuations in comparison with current practices. The reallocation alternatives (5,444 feet and 5,437 feet) would increase potential water surface fluctuation during the recreation season. This increased surface fluctuation could have a lasting effect on the number of recreation visitors at the Park and the quality of the recreation experience.

¹ Federal Register September 30, 2004 Vol.69, No.189

² It is uncertain how long the “incremental reallocation period” will ultimately last as it is based on water availability and the seniority of the water users’ water rights. The period could take anywhere from 1 to 10 years. This analysis assumes a 5-year incomplete reallocation period.

▲ **RED and OSE Analysis Methodology**

RED methodology. For the purpose of this report, regional economic impacts include the direct, indirect and induced impacts of increased or reduced economic activity associated with construction, operation and implementation of each proposed alternative in the FR/EIS. The RED analysis calculates the positive regional economic impacts of facility construction and operation as well as the negative regional economic impacts of the projected recreation response to construction and new reservoir management practices. Specifically the RED analysis employed the following methodology:

- BBC obtained construction cost and timeline data from State Parks, the CWCB and the USACE for the four alternatives under consideration in the EIS. Cost estimates form the basis of economic impact modeling for construction.
- BBC interviewed Chatfield recreation user groups to assess their sensitivity to the reallocation process. The input of current Chatfield recreators provides the basis for visitation change and site substitution estimates, which in turn is used to model economic impacts. BBC used visitor responses to calculate expected changes in visitation in all periods of Reservoir construction, incremental reallocation and stabilization.
- BBC defined an appropriate study area for economic impact estimation consistent with methodology used by the USACE for the NED analysis.
- For the two reallocation alternatives, BBC conducted IMPLAN³ model runs for construction, operations and recreation impacts. Direct, indirect and induced effects are estimated for regional economic output and employment. Recreation related economic impact analysis is considered for all non-substituted local recreation spending.
- For the two non-allocation alternatives, BBC conducted IMPLAN model runs for construction and operations impacts only. Direct, indirect and induced effects are estimated for regional economic output and employment.
- The RED analysis also considers the economic impact of the expenditure of local funds to the United States Treasury in payment for storage rights in Chatfield Reservoir. This applies to the two reallocation alternatives only. The remaining alternatives assume no transfer of local funds to the United States Treasury.

The RED analysis is contained in Section IV of this report.

OSE methodology. The USACE defines OSE to include social impacts that result from specific project elements that are not considered in RED or other associated USACE studies. In this application, BBC considers State Parks and concessionaire revenue as the main subject of the OSE report. Specifically the OSE analysis employed the following methodology:

- BBC conducted a series of interviews with Chatfield State Park staff and Park concessionaires to gain an understanding of current operations and prospective changes under new reservoir management practices.

³ IMPLAN is a regional economic modeling software package commonly used in economic impact analysis. The economic modeling process is discussed in detail in Section IV.

- ▶ ■ Using interviews; and visitation and visitor spending data obtained from Colorado State Parks and the USACE, BBC documented current levels of State Parks revenue and concessionaire receipts as a baseline condition. Baseline visitation data are shown in Appendix A.
- Post-reallocation revenue impacts were calculated for the State Parks system and on-site marina and horse stable concessionaires. BBC projected these impacts for several years to document the effects of changes in visitation during the construction period and after visitation stabilizes under the new Reservoir management practices.
- Final State Parks revenue impact calculations include estimates of in-system recreation substitution where persons no longer satisfied with the Chatfield experience will find a substitute State Park venue, e.g. Cherry Creek State Park, thus minimizing overall State Parks losses.
- In addition to the above, BBC provided qualitative discussions on lost aesthetic values as a result of new water management practices, environmental justice considerations and potential property value impacts in the area. The OSE report also includes a qualitative discussion on the benefits of the reallocation project.
- The OSE report offers a qualitative discussion of impacts of all four alternatives considered in the EIS, although the focus of the analysis is the on-site revenue impacts of reallocation on Chatfield State Park.

The overall objective of the RED/OSE study is to supplement current EIS efforts and more accurately portray local socioeconomic impacts associated with the Proposed Reallocation Project. The USACE is conducting a separate study that portrays economic impacts on a broader level (NED Analysis).

Limitations and Caveats

The visitation and associated park revenue and visitor spending impacts described in this report are based on a construction schedule that lasts approximately 2 years and has a phased closure of facilities that strives to minimize recreation impacts. Any variation in the duration of construction and the timing of certain facility closure will alter the impact projections contained in this report.

Additionally the speed at which the reallocated storage space in the reservoir is filled with water post construction is not known at this time. It is likely that visitation will rise with the amount of water stored at Chatfield. If reallocated storage space is slow to be filled, park visitors will perceive the water level to be low, and visitation may be slower to rebound. After reallocation project is complete, water management practices will have effects on recreation at Chatfield. A water management agreement is not currently in place between State Parks and the water suppliers. This report assumes a return to somewhat normal water fluctuation for recreation, but that may not be the case in practice.

Park visitation response to reallocation is based on a survey of recreation user group representatives. Survey respondents were instructed to answer the survey as a representative of a broader group. The survey had about 88 individual responses, although many respondents stated visitation preferences on multiple recreation activities. Admittedly, the survey sample size is small, but a larger survey effort was not possible due to budget and timing constraints. A multi-seasonal intercept survey would be

the most appropriate sampling method in the absence of monetary and temporal constraints. The survey respondents only considered their visitation response to Alternative 3 and did not provide any information for Alternative 4. Accordingly, recreation impacts of Alternative 4 are estimates, provided by BBC, using Alternative 3 visitor reactions and current conditions as estimate boundaries.

Project Scope Change

In March 2008, BBC was retained by the Colorado Division of State Parks to examine the impacts of the Proposed Reallocation Project on visitation and visitor spending at Chatfield State Park. At the completion of that engagement, BBC was retained by the Colorado Water Conservation Board (CWCB) and the USACE to expand the previous scope and produce the RED/OSE report contained herein.

BBC produced this report for incorporation in the FR/EIS under the direction of the USACE and CWCB. State Parks participated only as a cooperating agency.

Report Organization

Following this Introduction, Section II describes current economic conditions in the Denver Metropolitan Area and current conditions at Chatfield State Park, including current visitation and associated visitor spending. Section III describes the physical changes to facilities associated with the Proposed Reallocation Project. Section IV presents the RED analysis and Section V presents the OSE analysis. A detailed visitation profile is included in Appendix A. The survey instrument used to estimate changes in visitation is included as Appendix B.

SECTION II.
Current Conditions

SECTION II.

Current Conditions

This section describes current economic conditions in the Denver Metropolitan Area as well as visitation at Chatfield State Park and associated revenue generated by visitor spending. Current visitor related spending and revenue is presented for expenditures that occur inside the park and outside the park for recreation related supplies and services. Current visitation and related spending activity forms the baseline for estimation of recreation-related economic impacts related to reallocation. Current economic data are shown to give context for economic impact estimates presented in Section IV and State Parks revenue impacts presented in Section V.

Study Area Demographic and Economic Conditions

Based on USACE Design Memorandum PC-46, Master Plan, Chatfield Lake, Colorado, Updated January 2002, the Chatfield State Park “market area” consists of Adams, Arapahoe, Denver, Douglas, and Jefferson counties, within which 92 percent of Chatfield visitors reside. Those five counties also comprise the Denver Metropolitan Area, the largest metropolitan area in Colorado. The following tables present demographic and economic data on the five-county study area and the State, for comparison.

Population. The total population of the five-county study area is estimated at about 2.5 million in 2010. The study area accounts for about half of Colorado’s population. Within the study area, the city and county of Denver is the most populous, with over 600,000 residents projected in 2010. Exhibit II-1 shows historic and projected population in the study area and in the State of Colorado from 1990 to 2030.

Exhibit II-1. Historic and Projected Population, Five-County Study Area and State of Colorado, 1990 to 2030

	Population					Population Growth	
	2000	2005	2010	2020	2030	2000-2010	2010-2030
Adams	363,857	401,332	447,760	548,709	647,222	23.1%	44.5%
Arapahoe	487,967	533,091	578,444	677,125	772,616	18.5%	33.6%
Denver	554,636	576,928	631,809	700,455	743,782	13.9%	17.7%
Douglas	175,766	249,094	296,072	388,905	464,492	68.4%	56.9%
Jefferson	527,056	532,417	551,938	608,282	669,464	4.7%	21.3%
Total Study Area	2,109,282	2,292,862	2,506,023	2,923,476	3,297,576	18.8%	31.6%
Colorado	4,301,261	4,731,275	5,171,798	6,186,161	7,227,385	20.2%	39.7%
<i>Study Area Portion of State Population</i>	<i>49.0%</i>	<i>48.5%</i>	<i>48.5%</i>	<i>47.3%</i>	<i>45.6%</i>		

Source: State of Colorado, Department of Local Affairs.

▲ Growth in the study area is estimated at about 19 percent between 2000 and 2010, which is slightly less than growth in the State as a whole (20 percent). Among study area counties, Douglas County grew the most between 2000 and 2010, about 68 percent.

Study area population growth is estimated at about 32 percent between 2010 and 2030, while the State is expected to grow by 39 percent over the same period. By 2030, the study area is expected to account for about 45 percent of total State population, which represents a decline from 49 percent in 2000.

Employment. In 2009, there were over 1.2 million jobs in the study area, which accounts for about 49 percent of all jobs in the state. Exhibit II-2 shows employment growth in the study area and the State from 1990 to 2009.

Exhibit II-2.
Employment and Employment Growth, Denver Metropolitan Area and State of Colorado, 1990 to 2009 ▲

	Employment			Employment Growth	
	1990	2000	2009	1990-2000	2000-2009
Adams County	136,389	181,994	205,195	33.4%	12.7%
Arapahoe County	216,760	275,617	285,555	27.2%	3.6%
Denver County	238,400	296,655	293,799	24.4%	-1.0%
Douglas County	34,345	103,664	148,131	201.8%	42.9%
Jefferson County	246,796	302,787	281,768	22.7%	-6.9%
Total	872,690	1,160,717	1,214,448	33.0%	4.6%
Colorado	1,678,229	2,300,192	2,492,540	37.1%	8.4%
<i>Study Area Portion of State Employment</i>	<i>52.0%</i>	<i>50.5%</i>	<i>48.7%</i>		

Source: State of Colorado, Department of Local Affairs.

Employment in study area and the State has grown since 1990. Between 1990 and 2000, employment in the study area grew by 33 percent, while the State increased 37 percent. For the 2000-2009 period, study area employment increased by about 5 percent and the state by about 8 percent.

Labor force and unemployment. Between 1990 and 2009, the labor force in the study area grew by over 405,800 or about 44 percent (Exhibit II-3). Comparable growth in the State was 932,100 or about 53 percent. The comparatively more rapid increase in labor force in the State is attributable to greater population growth in other areas of the State relative to the study area.

**Exhibit II-3.
Labor Force and Unemployment Rate, Denver
Metropolitan Area and State of Colorado, 1990 to 2009**

	1990		2000		2009	
	Labor Force	Unemployment	Labor Force	Unemployment	Labor Force	Unemployment
Adams County	144,431	5.6%	187,163	2.8%	225,426	9.0%
Arapahoe County	225,057	3.7%	282,477	2.4%	309,366	7.7%
Denver County	252,190	5.5%	305,904	3.0%	321,346	8.6%
Douglas County	35,429	3.1%	105,842	2.1%	158,548	6.6%
Jefferson County	256,416	3.8%	310,079	2.4%	304,674	7.5%
Study Area	913,523	4.5%	1,191,465	2.6%	1,319,360	8.0%
Colorado	1,768,954	5.1%	2,364,990	2.7%	2,701,026	7.7%

Source: State of Colorado, Department of Local Affairs.

The unemployment rate for the study area has been volatile since 1990. For that year, the rate averaged 4.5 percent. By 2000, it averaged 2.6 percent, and in 2009 it rose to 8.0 percent. For the State, comparable figures are 5.1 percent, 2.7 percent, and 7.7 percent, respectively.

Chatfield State Park Current Visitation

In 2007, 1,664,148 people visited the park. The park is popular for its views of the nearby foothills and water-based recreation including boating, fishing, swimming and marina services. The park attracts visitors for camping, hiking and biking trails, the horse stables, a hot air balloon port, and model airplane runways. The south end of the park features bird watching, open fields popular with dog tracking and training enthusiasts, and a gravel pond popular with fishing enthusiasts, picnickers, swimmers and scuba divers. Exhibit II-4 below displays visitation by recreation activity in 2007.

Exhibit II-4.
Visitation by Recreation Activity, Chatfield State Park, 2007

	Visitation 2007	Percent of Visitation 2007		Visitation 2007	Percent of Visitation 2007
Trail Uses:	403,503	29.9%	Surface Water (continued):		
Hiking / Jogging / Walking	83,591	5.0%	Jet Skiing	29,856	1.8%
Bicycling on Trail	204,372	12.3%	Water Skiing	44,164	2.7%
Dog Exercise Area	88,636	5.3%	Fishing:	34,640	4.1%
Equestrian Trail Use	13,007	0.8%	Ice Fishing at Reservoir	2,300	0.1%
Personal Interpretation	2,570	0.2%	Shore Fishing at Reservoir	32,340	1.9%
Non-Personal Interpretation	10,083	0.6%	Picnicking:	14,270	0.9%
Environmental Education	1,244	0.1%	Group Picnicking	10,000	0.6%
Camping	94,758	5.7%	Non-Group Primary Picnicking, Lake	4,270	0.3%
Gravel Pond Uses:	35,819	2.2%	Special Uses:	30,644	1.8%
Canoeing and Kayaking	414	0.0%	Dog Tracking	1,764	0.1%
Long-Distance Swim Training	9,400	0.6%	Search and Rescue Dog Training	100	0.0%
Open Water Swim	16,300	1.0%	Hot Air Ballooning	4,404	0.3%
Shore Fishing	2,497	0.2%	Flying Model Airplanes	15,570	0.9%
Primary Picnicking (non-group)	3,350	0.2%	View Birds / Wildlife; Photography	8,806	0.5%
Water Rescue Dog Training	230	0.0%	Equestrian Use:	39,138	2.4%
Scuba diving	3,628	0.2%	Horseback Riding - Spring Gulch	2,548	0.2%
Swimming/Swim Beach	50,235	3.0%	Horseback Riding, not in trail counts	36,590	2.2%
Surface Water Recreation:	185,721	14.4%	Subtotal, Non-Sightseers	943,046	56.7%
Boat Fishing	54,318	3.3%	Sightseeing	721,102	43.3%
Other Motorcraft Use	68,156	4.1%			
Other Non-Motorcraft Use	43,545	2.6%	Total 2007 Visitation	1,664,148	

Note: The visitation categories are aggregated for ease of description; note that State Parks and the Corps defined more than 40 categories

Source: Colorado State Parks; US Army Corps of Engineers.

About one-third of Chatfield visitors use trails for their primary recreation, this includes hiking, biking and equestrian trail use. Other large visitation groups are surface water recreation (14 percent) and camping (6 percent). Although the swim beach accounts for just 3 percent of overall visitation, it is only open from Memorial Day to Labor Day. The swim beach often attracts more than 15,000 visitors per month during the summer. The largest visitor group is considered “sightseers,” who are defined as those who do not participate in any defined recreation activity or merely accompany an active recreator to the park. In 2007, about 721,102 sightseers visited Chatfield State Park.

▲ The following describes each recreation activity and the park facilities used by recreators at Chatfield.

Trails. Chatfield State Park has an extensive trail system. Bike and foot travel comprise the majority of traffic on Chatfield's trails. Access to trails is gained entering the park via a vehicle gate or through one of five public trail systems that connect to the Chatfield trail system.¹ In 2007, 403,503 people visited the park for trail use, including environmental education and interpretive users.

Camping. Camping is one of the few year round activities available at Chatfield. There are 197 campsites, offering a mix of electric and full service recreational vehicle sites, although tent camping is permitted at all sites. The campground is located south of the marina. Camping fees are assessed on a per-night basis by type of site provided.² Other amenities provided at the campsite area include laundry machines, shower/restroom facilities, volleyball nets, horseshoe pits, a playground, and an amphitheater. In 2007, 94,758 people visited the park for all types of camping.

Gravel ponds. The Chatfield gravel ponds offer a unique deep-water environment for swimming, fishing, scuba diving and other activities. The gravel ponds are also popular with picnickers and dog trainers. In 2007, 35,819 people visited the gravel ponds at Chatfield.

Swim beach. The swim beach is a popular destination for summer visitors at the park. Located on the west side of the reservoir, the swim beach offers changing rooms, showering facilities, restrooms, picnic tables, and grilling facilities. In addition to the beach facilities there are horseshoe pits, lawn areas, and a beach volleyball court that provide additional recreation opportunities. In 2007, 50,235 people visited the park to use the swim beach.

Boating and surface water recreation. Water recreation is another popular activity at the park. During the peak boating season, from April to October, the reservoir hosts powerboats, sailing vessels, jet skis, water-skiers, and fishing boats. The water surface is accessed through one of three boat ramps. Two boat ramps are located in the northwest portion of the park and the third is located southeast of the marina. Chatfield's marina concessionaire offers slip rentals, boat rentals, boat storage, a restaurant and a small grocery store. The area surrounding the marina attracts visitors to the 20 picnic tables, two group picnic areas, a fishing pier, a beach volleyball court, and two horseshoe pits. In 2007, 240,039 people visited the park for surface water recreation, including boat anglers.

Fishing. Chatfield offers a variety of fishing opportunities. Visitors who purchase a Colorado Division of Wildlife fishing license can participate in fishing at the park. In addition to individual and group fishing trips, commercial fishing companies utilize the reservoir for fishing tours year round. Shore fishing is available at the reservoir as well as ice fishing. In 2007, 34,640 people visited the park for shore and ice fishing.

¹ Trails that feed into Chatfield are: Mary Carter Greenway, Centennial trail, Columbine Trail, Highline Canal Trail, and Waterton Canyon/Colorado Trail.

² Chatfield offers electric hookups at all campsites and full hookups (water, sewer, and electric) at select sites.

▶ **Picnicking.** Picnic areas are located throughout the park. Open from May 1st through September 30th, picnic sites are available on a first come, first serve basis offering tables and grills. There are group picnic sites available for reservation located at Marina Point, Riverside, Heronry Overlook, and Fox Run. During operation in 2007, 14,270 people visited the park for group and individual picnicking.

Special uses. Chatfield is home to several special use sites that are unusual in Colorado. Chatfield provides launch sites for hot air balloons, runways for motorized model airplanes, and fields for dog tracking and rescue dog training. Chatfield is also popular for wildlife viewing and photography. In 2007, 30,644 people visited the park for all special uses.

Equestrian. Chatfield accommodates individual and group horseback riding in Spring Gulch and at the Chatfield Livery. Visitors who do not own their own horse can visit the concessionaire operated Chatfield Livery for hayrack rides, pony rides and horseback rides. For horse owners, Chatfield Livery offers boarding opportunities on a monthly basis. In 2007, 39,138 people visited the park for equestrian uses.

Chatfield State Park On-site Revenue

Visitors to Chatfield State Park spend money on entrance fees, camping, group picnics and at either of the concessionaire operated businesses at the park. The following discusses current revenue generated inside the park by visitors.

State parks revenue. According to the 2007 fiscal year end Chatfield park manager report, Chatfield generated about \$1.15 per visitor in revenue during the previous fiscal year. Exhibit II-5 displays park revenue in 2007.

Exhibit II-5. Revenue Estimates, Chatfield Reservoir, 2007 ▶

Source:
June 2007 Chatfield State Park Manager Report.

Category	Values
Total Visitors	1,664,148
Revenue per Visitor	<u>\$1.15</u>
FY 2007 Revenue	\$1,913,770

In 2007, Chatfield State Park generated \$1.9 million in revenue, which represents about 3 percent of State Parks approximate \$60 million budget in FY 2007. State Parks generates revenue from park admission passes, camping charges, group picnic fees and special use permits. The park also generates revenue indirectly through its concessionaire agreements with the marina and horse stables operators, which contribute a portion of their gross revenue to State Parks.

BBC used reported park revenue per visitor to estimate park revenue receipts because it takes into account variation in group size, as park admission is imposed per vehicle and not per person. State Parks also sells season passes that add further variation to admission charges per visit. The use of an average revenue per visitor figure accounts for these variations in admission charges.

Concessionaire revenue. The marina is one of two concessionaires permitted within Chatfield. The marina provides services to boaters and campers at Chatfield. Exhibit II-6 below displays annual revenue collected by the marina and the associated revenue shared back to State Parks as part of the concessionaire agreement.

**Exhibit II-6.
Annual Marina Revenues**

Source:
Colorado State Parks; Personal interview with
Linda Perry, Chatfield Marina Concessionaire,
April 28, 2009

Revenue Source	Annual Revenue
Slip Rentals	\$800,000
Dry Storage	\$192,000
Rentals	\$30,000
Restaurant, Groceries, Sundries	\$149,000
Total Revenue at Marina	\$1,171,000
Annual fee (2008)	\$5,000
Gross Revenue Share (4.7%)	\$54,640
Annual Revenue to State Parks	\$59,640

Annual slip rentals provide the majority of revenue for Chatfield marina (nearly 70 percent). The remaining 30 percent of marina revenue is generated by dry boat storage, boat rentals and food and grocery sales. State Parks receives a portion (approximately 4.7 percent or \$54,640) of total revenues in addition to a \$5,000 annual fee as part of the concessionaire agreement.

The horse stables concession generates revenue through boarding, adult and children’s riding lessons, hay rides and guided horseback rides. Exhibit II-7 below displays annual revenue collected by the marina and the associated revenue share to State Parks as part of the concessionaire agreement.

**Exhibit II-7.
Annual Horse Stable Revenues**

Source:
Colorado State Parks, Phone interview with
Bob Hantschel, Paint Horse Stables Concessionaire,
May 27, 2009.

Revenue Source	Annual Revenue
Boarding	\$58,690
Rides, Lessons, Other	\$58,690
Total Horse Stable Revenue	\$117,380
Annual fee (2008)	\$500
Gross Revenue Share (6.7%)	\$7,918
Annual Revenue to State Parks	\$8,418

The horse stables concessionaire provided data on sources of revenue via a telephone interview. State Parks receives a portion (approximately 6.7 percent or \$7,918) of total revenues in addition to a \$500 annual fee.

Together the marina and horse stables generate about \$1.3 million dollars in gross revenue before annual fee and revenue share payments to State Parks. State Parks receives approximately \$68,000 in fees and gross revenue sharing from concessionaires under the concessionaire agreements.

Chatfield State Park Off-site Visitor Spending

Park visitors also generate economic activity outside the park by purchasing goods and services related to their trips to Chatfield. In 2009, Corona Research completed a market assessment study for State Parks. The report compiled information on demographics, marketing, funding, visitor preferences, satisfaction and visitor spending. The Corona study provides information on visitor spending within a 50-mile radius of the park associated with respondents' trips to Chatfield. Off-site visitor spending was calculated on a per vehicle basis. State Parks data from traffic counts at the park shared with BBC indicated that there are about 2.6 visitors per vehicle at Chatfield. Exhibit II-8 displays the estimated annual visitor related expenditure within a 50-mile radius of Chatfield Reservoir.

Exhibit II-8. Expenditure within 50-mile radius of Chatfield Reservoir, 2007

Source:
2009 Corona Research Colorado State Parks Market
Assessment Study; 2007 Chatfield State Park Visitation Data.

Category	Value
Total Visitors	1,664,148
Expenditure per visitor within 50-mile radius of Chatfield	\$17.19
Estimated Annual Expenditure	\$28,606,704

According to the Corona study, visitor expenditure within a 50-mile radius is about \$17.19 per person.³ Estimated annual off-site direct economic activity related to Chatfield visitor spending is about \$28.6 million.

³ The question on the survey stated, "On this visit to the state park, how much money did you spend within 50 miles of the park that was related to your trip to the state park?" Spending was reported by vehicle at \$44.70 per vehicle. The survey also report an average of 2.6 persons per vehicle, thus spending per visitor is \$17.19.

SECTION III.
Proposed Reservoir
Management and Operational Changes

SECTION III.

Proposed Reservoir Management and Operational Changes

This section describes current facilities at Chatfield State Park, proposed facility location changes with reallocation and the associated construction timeline. The final park program is also discussed.

Recently, EDAW, a planning and engineering firm, completed a Recreation Modification Study of Chatfield Reservoir that details affected areas and proposed facility relocation associated with reallocation. The EDAW report supplies much of the content in this section.

Current Facility Inventory and Proposed Changes

The current maximum water level at Chatfield under normal conditions is 5,432 feet above sea level and the average water level between May 1 and September 30 is 5,426 feet above sea level. The USACE plans to increase the maximum water level to 5,444 (12 feet) above sea level under the proposed alternative (Alternative 3) of the Reallocation Project. Seven areas of the park will require in-kind replacements of current facilities due to full or partial inundation. Embankment material will be excavated from the project site and facilities will be relocated to effectively raise the level of the facilities surrounding the park. Facility relocation and excavation activities will have impacts on recreation until construction is complete and grading and re-vegetation efforts are underway.

The following discussion of park facilities and reallocation impacts focuses on Alternative 3, although information is also offered on Alternative 4. Under Alternative 4, the maximum water level will be increased to 5,437 feet above sea level, which is 5 feet higher than the current maximum water elevation. Impacts will be similar to Alternative 3, although more facilities will be partially inundated rather than fully inundated under Alternative 4.

North Boat Ramp. The North boat ramp area provides boater access to the water on the west side of the park. There are two boat ramps, a paved parking area, restrooms, picnic tables, grills, bollards, and a variety of additional support facilities. Under Alternative 3, the asphalt, concrete trails, picnic tables, dumpsters, grills, regulatory signs, and water hydrants will be partially inundated. Four day-use shelters and four bollards will be fully inundated at 5,444 feet. To offset inundation impacts, the parking lot and ramp turn-around area will be re-graded and raised. The boat ramps will be re-graded, raised and extended. Fill material will be excavated west of the existing parking lots for use in facility relocation.

Under Alternative 4, the two existing boat ramps would be inundated. Remaining areas, including most of the parking, the picnic shelters and circulation roads, would remain above the normal high water line.

▲ **Massey Draw.** Massey Draw is located south of the North Boat Ramp. Massey Draw attracts visitors for its proximity to the lake, picnic tables, volleyball courts, horseshoe pits and grills. Under Alternative 3, the asphalt trails will be partially inundated and the beach area, volleyball court, and horseshoe pits will be fully inundated. To offset inundation impacts, there will be relocation of trees, trails, parking lots, and the beach with in-kind replacements. There is no extensive fill needed for facility relocation at Massey Draw.

Under Alternative 4, the beach area, including a volleyball court and horseshoe pits, and the picnic area would be fully inundated, and the asphalt trails would be partially inundated.

Swim Beach Area. The Swim Beach area is heavily visited during high season and has experienced significant facility development to accommodate its popularity. The Swim Beach area consists of a main swim beach, Jamison picnic area, Eagle Cove beach, and Deer Creek picnic area and balloon launch.

Under Alternative 3, all facilities at the main swim beach, Jamison picnic area, and Eagle Cove beach will be fully inundated and the majority of the facilities at Deer Creek will be inundated at 5,444 foot water level. To offset inundation impacts, there is extensive fill material needed to raise facilities and create new breakwater capes to protect the swim beach. Fill excavated from open space west of the existing swim beach area will be a source of material for the modification project. Several trails, picnic areas, parking lots, and day-use areas will be relocated with in-kind replacements throughout the Swim Beach area.

Under Alternative 4, all facilities at the main swim beach, Jamison picnic area and Eagle Cove beach will be fully inundated. The Deer Creek area would not be inundated under Alternative 4.

Catfish Flats/Fox Run Group Areas. Located south of the Swim Beach area, the Catfish Flats/Fox Run Group areas are home to picnic tables/shelters, restrooms, a volleyball court, horseshoe pits, and related facilities.

All facilities will experience near full inundation under Alternative 3. To offset inundation impacts, fill will be used to raise areas around existing facilities. Fill excavated from open space west of the existing facilities across the main park road will be a source of material for this modification project. Trails, picnic areas, restrooms, and parking lots will be relocated with in-kind replacements throughout the Catfish Flats and Fox Run Group areas.

Under Alternative 4, most facilities at Catfish Flats and Fox Run will experience full inundation. Only the north picnic area, parking area and restrooms at Catfish Flats, and the parking area at Fox Run will escape full inundation.

King Fisher, Gravel Pond and Platte River Trail Head. Located at the southern end of Chatfield Lake, the King Fisher, Gravel Pond and Platte River Trail Head areas have facilities including trails, restrooms, dumpsters, and benches. The majority of usage in this area of the park consists of groups including kayakers, scuba divers, water dog training, fishing and swimming.

In their present configuration, all King Fisher and Gravel Pond facilities will be fully inundated under Alternative 3. If full inundation were to occur, the Gravel Pond would become part of the reservoir and in-kind replacement is not feasible. To offset inundation impacts, the main park road

running on the north side of the pond (separating the reservoir and pond) will be rebuilt on top of a new bridge. There will also be dikes constructed that abuts the north and east side of the gravel pond to prevent inundation. The new dikes on the north and east side of the Gravel Pond will need extensive fill taken from open spaces south of the horse stables.

Under Alternative 4, the Kingfisher areas will also experience full inundation. The Gravel Pond itself will not be inundated under Alternative 4, however, adjacent roads and parking area will be partially inundated and must be raised with earth fill and rebuilt.

The Platte River Trail Head is not as affected by reallocation as King Fisher or the Gravel Pond under either Alternative 3 or Alternative 4. The parking area, restroom and trailhead are not affected by reallocation. Certain sections of concrete trail, however, will be inundated and will require modification.

Marina Area. Similar to the Swim Beach, the Marina Area has been extensively developed to accommodate its popularity. Facilities at the marina include a boat ramp, picnic tables, fishing pier, restaurant, and a network of trails and walkways.

The entire Marina Area will be inundated under Alternative 3 and Alternative 4. To offset inundation impacts, fill will be used to raise and re-grade the boat ramp and breakwaters. Excavated fill from open spaces south of the existing marina will be a source of material for the modification project. The marina, rip-rap embankment, restaurant, parking lots, and trails will be relocated with in-kind replacements.

Plum Creek Area. The Plum Creek Area is located at the southwestern side of the reservoir and is a popular location for wildlife viewing. The area has a trailhead with picnic tables, restrooms and parking. The entire Plum Creek Area will be inundated under Alternative 3 and Alternative 4. Fill is not necessary and minimal construction is needed to relocate existing trails, roads and parking areas with in-kind replacements, although there will be significant underground utility relocation in this area.

Construction Period and Phasing

The USACE and State Parks plan to minimize visitation loss by developing a construction schedule with minimal impact during high season and extensive impact during low season. The USACE and State Parks have agreed to allow the swim beach and marina to remain open from May through September during the entire construction period. Exhibit III-1 displays a preliminary construction schedule for the Proposed Reallocation Project, developed by State Parks construction consultants. The expected start and finish dates of construction for each park recreation area is presented along with shading to represent the high season (May through September). Construction is planned to begin in mid-September of year 1 and continue, uninterrupted, until mid-May of year 4. The overall construction period is estimated at 32 months. The construction period for recreation related economic impacts is estimated to occur over 2 years, as all facility closures will take place within the first 24 months of construction.

The recreation impacts discussed in subsequent Section IV and Section V are based on the construction schedule presented in Exhibit III-1. Any change in the schedule of facility closure or the

↑ overall duration of the construction period will alter the recreation impacts and revenue loss projections shown in this report.

It is important to note that the construction schedule provided on the following page represents the construction schedule for Alternative 3 only. No construction schedule for Alternative 4 was provided to BBC.

Exhibit III-1.
Chatfield State Park Reallocation Construction Schedule

Facility	Year 1				Year 2												Year 3												Year 4					
	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	
North Ramp	█																																	
Swim Beach	█																																	
Massey Draw									█																									
Eagle Cove										█																								
Jamison										█																								
Deer Creek Day Use/ Balloon Launch										█																								
Catfish Flats											█																							
Marina Point												█																						
South Ramp and Riverside Marina													█																					
Fox Run																						█												
King Fisher																						█												
Gravel Pond																						█												
Platte River																						█												
Roxborough Cove																							█											
Plum Creek Picnic Area																							█											
Misc. Work Items																									█									
Erosion Control	█																																	

Note: Shaded months indicate high visitation season.
Source: BBC Research & Consulting

SECTION IV.
Regional Economic Development Analysis

SECTION IV.

Regional Economic Development (RED) Analysis

This section presents the results of the RED analysis for the Chatfield Reallocation Feasibility Study. The RED analysis has been prepared in accordance with the methodology described in Section I of this report. For this analysis, the study area has been defined as Arapahoe, Adams, Denver, Douglas and Jefferson Counties, which encompasses all physical facilities of each proposed alternative. The study area is described in detail later in this section. The RED analysis supplements the related National Economic Development (NED) analysis, which covers costs and benefits of alternatives at the national level.

The RED results are organized into two components, corresponding to different economic effects anticipated under the Project. The construction and operation of each proposed alternative is analyzed, including the regional economic effects attributed to construction-related capital outlays and ongoing facility and water delivery system operation. Construction and operations economic impacts are presented for all four Alternatives in the FR/EIS. The RED analysis also considers the economic impacts of the recreation response at Chatfield State Park during the construction period and when park and water management practices stabilize after construction. Both beneficial (construction impacts) and adverse effects (recreation impacts) are considered in the RED analysis.

The values reported for economic output represent monetary impacts and are reported in 2010 dollars. Employment impacts represent the change in the number of annual jobs in the region. In the context of this analysis, one annual job is equivalent to one person being employed full time during a single year. Changes in employment are tied to relationships between economic activity and labor productivity and do not consider local labor force conditions.

Regional Economic Modeling

The RED effects considered in this report are quantified using a regional economic model that is based on the principles of input-output (I-O) analysis. I-O analysis is a method of measuring the flow of commodities and services among industries, institutions, and final consumers within a defined study area. I-O models capture transactions in an economy and account for industry linkages and availability of local goods and services. These economic linkages allow I-O models to calculate the effects of an economic event on all sectors of the local economy.

This analysis employs I-O analyses to measure two types of economic impacts—industry output and employment. Industry output refers to the value of goods and services produced in a region, which includes the value of local intermediate goods and services used in the production process. Employment is measured by the number of annual jobs produced by an economic event.

The I-O model presents results in direct, indirect, and induced economic output and employment within a study area. Direct economic impacts refer to the response of a given industry (i.e., changes in output and employment) based on demand for that industry. Indirect effects refer to changes in output and employment resulting from the purchasing of local intermediate goods and services caused by the direct economic effects. Induced economic effects refer to changes in output and

employment caused by expenditure associated with changes in local household income generated by direct and indirect economic activity.

For this study, the IMPLAN modeling package is used to estimate regional economic effects of the Proposed Reallocation Project. IMPLAN is commonly used to perform economic impact analysis. It was originally developed by the US Forest Service and is widely used by public and private sector analysts for regional economic impact modeling.

The RED analysis is based on a five-county model of the Denver Metropolitan Area. A 2006 IMPLAN dataset was used in the analysis, which was obtained from the State of Colorado, Department of Local Affairs, State Demographer's Office. The data has been specially customized for the State Demographer and represents the data set used by the State for economic modeling. All input values were deflated to 2006 dollars for modeling purposes; however, all economic impact estimates are presented in constant 2010 dollars.

Study Area

The definition of an appropriate study area is important for the RED analysis because the extent of regional economic impacts will depend on the size of the study area. The study area, at a minimum, should capture the direct economic effects of the Proposed Reallocation Project, but should not be so large that project effects would be "drowned out" by other economic activity. An operating economic area is generally the appropriate study area. The five-county Denver Metropolitan Area, which includes Adams, Arapahoe, Denver, Douglas and Jefferson Counties has been chosen as the study area because it is the closest operating economic area and will capture most project-related impacts. The study area also produces the majority of recreation related visitors at Chatfield State Park.

Regional Economic Impacts—Project Construction and Operation

Implementation of any of the alternatives would result in substantial construction-related expenditures and generate demand for construction labor and support services, which would generate a positive short-term impact to the regional economy. Expenditures on construction materials and equipment that are made within the region would generate additional economic benefits as spending flows through the local economy through industry linkages.

Project construction would temporarily support a labor force hired to physically construct the project, as well as for construction management and oversight services. Further, labor income earned by construction-related workers would be re-spent, in part, in the local economy, generating additional economic activity.

In addition to construction, there would be ongoing annual expenditure to operate the facilities and delivery systems implemented under each alternative. Economic impacts of annual operating costs are estimated for each alternative. A third cost is estimated in addition to the positive impacts of construction capital outlay and annual operations costs: the negative regional economic impact of a lump sum payment made by local water users to the Federal Treasury for water storage at Chatfield Reservoir. This impact is estimated for Alternatives 3 and 4 only. No Federal water storage payments are assumed for Alternatives 1 and 2.

▲ The following table summarizes the direct expenditure associated with construction, operation and storage payments for each alternative. Exhibit IV-1 presents direct expenditure on construction, operations and Federal water storage payments for the 4 alternatives.

**Exhibit IV-1.
Construction, Operations and Water Storage
Direct Expenditure, Alternatives 1-4, Chatfield Reallocation Project**

Cost Category	Costs in 2010 \$Millions			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Construction Costs	\$270.80	\$179.90	\$105.90	\$177.20
Annual Operating Costs	\$1.66	\$0.79	\$2.01	\$1.38
Federal Storage Payment	\$0.00	\$0.00	(\$14.00)	(\$5.20)

Note: Construction cost estimates include the cost of facility construction, and construction related to environmental and recreation modification requirements. See Section III for a detailed discussion.

Source: Colorado Water Conservation Board; Tetra-Tech.

The total direct effects of project construction were translated into annual values because the IMPLAN model is based on annual data. Estimates of annual construction activity were developed based on a rough approximation of project schedule and phasing supplied by the FR/EIS lead engineering consultant. These data indicate that for Alternatives 1 and 2, a two-year construction schedule is anticipated with uniform activity across both years. The construction schedule for Alternatives 3 and 4 is presented in prior Section III. For the purposes of RED modeling, about 90 percent of construction is expected to be complete in years 1 and 2, with the remaining 10 percent occurring in year 3.¹

Operations related spending is estimated as an ongoing annual economic impact that is assumed to begin the year following construction. Economic impacts from operational expenditures are projected for 50 years from the onset of construction.² The lump sum Federal water storage payment associated with Alternatives 3 and 4 is assumed to occur in year 1 at the start of construction.³

Spending and labor requirements are estimated on an annual basis, based on the above assumptions. The estimated annual values represent the direct inputs into the IMPLAN model developed for the study area.

A summary of the regional economic impacts of each alternative is presented in Exhibit IV-2, which shows economic impacts by year, as well as 50-year total values. The proposed alternative (Alternative 3) is expected to generate a total of \$318.0 million in economic output in the region, which includes the direct impact of the project (\$186.4 million) and the resulting economic activity generated in

¹ Environmental modification activity and related expenditure is expected to continue after recreation facility modifications are complete, but the vast majority of these expenditures will be for real estate acquisition rather than construction materials or labor.

² The 50-year analysis period used in the RED analysis is slightly different from the 50-year analysis period used in the NED analysis. The RED analysis period starts at the onset of construction and extends 50 years. The NED analysis period starts after construction is complete and extends 50 years. The economic impacts of project operations are expected to extend beyond the 50-year analysis period.

³ The water users may make their water storage payment in a lump sum or over a mutually agreed payment period. A lump sum payment is assumed in this analysis.

response to project demands for goods and services (indirect impacts) and spending attributed to direct and indirect labor earnings (induced impacts), which total an additional \$131.6 million. Economic impacts for the other three alternatives are shown for comparison.

Each alternative would also generate direct, indirect, and induced jobs. In addition to the approximate 324 construction jobs per year directly supported by the proposed alternative over the first two years of construction, an additional 292 annual jobs would be generated in the study area, for a total of about 615 annual jobs in the study area per year during the first two years of project construction. Payment associated with water storage leaving the region represents a loss of about 154 total jobs (i.e., direct, indirect and induced jobs) during the first year of construction under the proposed alternative. Ongoing operational spending is estimated to support about 22 total jobs per year. In total, the employment benefits of project construction and operations are estimated to be approximately 2,257 person-years of employment over the 50-year analysis period in the study area under the proposed alternative. About half of that total is attributable to ongoing operations expenditure. Employment impacts for the other three alternatives are shown for comparison.

Exhibit IV-2.

Regional Economic Impacts, Construction, Operations and Water Storage Expenditure, Alternatives 1-4, Chatfield Reallocation Project

Impact/Year	Output			Employment		
	Construction	Operations	50-Year	Construction	Operations	50-Year
	Year 1-2	Year 3-50	Total	Year 1-2	Year 3-50	Total
Alternative 1						
Direct	\$135.4	\$1.7	\$350.4	920.0	11.8	2,406.4
Indirect	\$52.7	\$0.1	\$108.8	327.3	0.4	673.8
Induced	\$63.4	\$0.8	\$163.8	501.2	6.1	1,295.2
Total	\$251.6	\$2.5	\$623.1	1,748.5	18.3	4,375.4
Alternative 2						
Direct	\$90.0	\$0.8	\$217.9	611.5	5.6	1,491.8
Indirect	\$35.1	\$0.0	\$71.7	217.6	0.2	444.8
Induced	\$42.2	\$0.4	\$101.9	333.2	2.9	805.6
Total	\$167.2	\$1.2	\$391.5	1,162.3	8.7	2,742.2

Impact/Year(s)	Output					Employment				
	Construction		Storage	Operations		Construction		Storage	Operations	
	Years 1-2	Year 3	Payment (Year 1)	Years 4-50	Total	Years 1-2	Year 3	Payment (Year 1)	Years 4-50	Total
Alternative 3										
Direct	\$47.7	\$10.6	(\$14.0)	\$2.0	\$186.4	323.8	72.0	(99.5)	14.3	1,292.2
Indirect	\$18.6	\$4.1	(\$0.6)	\$0.1	\$44.7	115.2	25.6	(3.2)	0.5	276.3
Induced	\$22.3	\$5.0	(\$6.5)	\$0.9	\$86.9	176.4	39.2	(51.3)	7.4	688.5
Total	\$88.5	\$19.7	(\$21.1)	\$3.0	\$318.0	615.4	136.8	(154.0)	22.2	2,257.0
Alternative 4										
Direct	\$79.7	\$17.7	(\$5.2)	\$1.4	\$237.0	541.8	120.4	(37.0)	9.8	1,627.6
Indirect	\$31.1	\$6.9	(\$0.2)	\$0.1	\$71.5	192.8	42.8	(1.2)	0.3	441.3
Induced	\$37.4	\$8.3	(\$2.4)	\$0.6	\$110.8	295.2	65.6	(19.0)	5.1	876.7
Total	\$148.2	\$32.9	(\$7.8)	\$2.1	\$419.4	1,029.8	228.8	(57.2)	15.2	2,945.6

- Note: 1. Economic output figures in millions of 2010 dollars.
- 2. Direct impacts based on data provided by the FR/EIS lead engineer, indirect and induced impacts calculated by the IMPLAN model.
- 3. Total employment represents the total number of employment person-years over the 50-year analysis period.
- 4. Figures may not add precisely due to rounding.

Source: BBC Research & Consulting.

⌋ All impacts in the preceding table can be considered relatively insignificant (less than 1 percent) when compared to the Denver Metropolitan Area's \$150.8 billion metropolitan GDP⁴ and 1.2 million⁵ in employment in 2009.

Recreation Economic Impacts—Alternative 3

Construction and operation of the proposed alternative will affect recreational activity at Chatfield State Park if recreational facilities are closed to accommodate construction activities. Reduced recreation use would affect recreation-related spending patterns and local economic activity resulting in adverse RED impacts.

Recreation preferences survey. To estimate visitation loss at Chatfield State Park during construction, surveys were distributed to representatives of Chatfield recreation user groups, who were specifically assembled by the USACE on April 16, 2009 to review the reallocation and facility modification plan for the proposed alternative. The information gathered during the meeting forms the basis of the NED analysis completed by the USACE and the RED analysis in this report.

Attendees were asked to describe their primary, secondary and tertiary (if applicable) recreation activity at the park. The visitation survey instrument is included in Appendix B. Attendees reported the number of days they use the park per activity and if there are any local substitute sites for their primary recreation activity. The attendees were then shown graphics that depicted the new facilities and water levels that would exist under the two reallocation alternatives. To gauge visitation loss, respondents were asked to review the reallocation plan and estimate the extent to which their usage may change during construction; one to five years after construction when water is incrementally reallocated to the reservoir conservation storage pool (incremental reallocation); and when park and water management practices stabilize. Attendees were aware that they were providing responses as a representative of a broad user group.

Survey respondents were only asked to state their visitation responses to the effects of the proposed alternative (Alternative 3). Because Alternative 4 would have similar, but less severe effects on facilities at the park during and post-construction, BBC estimated impacts for Alternative 4 using Alternative 3 as an estimate boundary. Estimates for visitation impacts associated with Alternative 4 are provided following Alternative 3 estimates. There will be no recreation impacts at Chatfield State Park associated with Alternatives 1 or 2.

Forty-five individuals completed the survey reporting 88 activities, indicating each respondent was involved in nearly two activities at the park. Among all responses, 22 types of activities were identified. The breadth of activities suggests that all visitation groups were represented. In this analysis, uses were aggregated into like categories. For instance, "water dog training", "scuba diving" and other like uses were placed in the category "Gravel Pond Use" because these groups exclusively use that facility and will likely have similar reactions to park facility changes.

Exhibits IV-3 through IV-5 present projected visitation loss at Chatfield during three periods of the Proposed Reallocation Project: (1) project construction; (2) the incremental reallocation period where

⁴ Bureau of Economic Analysis. http://www.bea.gov/newsreleases/regional/gdp_metro/2009/pdf/gdp_metro0909.pdf

⁵ See Exhibit II-2 for Denver Metropolitan Area employment.

reallocation is incomplete and water levels are perceived as low; and (3) after reallocation is complete and park management operations stabilize.

Results are calculated based on total days among all survey respondents. For example, trail hikers, joggers and walkers will have an estimated loss of 23.3 percent of visitation during construction. All of the visitors who specified this activity in the survey were asked to estimate the number of days they visit the park each year. Respondents were then asked by how many days they would reduce their visits during construction. All of the respondents' visitor days were summed (total visitor days) and all respondents' reduced days were summed (total decreased days). The total number of reduced days was divided by the total number of visitor days yielding the percent visitation loss. All figures are annual.

Reported sightseers at the park are reduced by the average reduction of all other recreation users. Sightseers are defined as participating in no particular recreation activity and most often accompany other recreators at the park.

Visitors who indicated they will not visit Chatfield during and after construction may choose to recreate at other parks and recreation areas in the study area. Many survey respondents indicated they would substitute their visit to Chatfield with a visit to another local recreation site, either at another state park or municipal or county recreation area.⁶ For example, trail users reported substitute sites including Bear Creek Trail, Washington Park, and the Platte River trail. Visitors to substitute recreation sites are assumed to make similar purchases of goods and services as they would had they visited Chatfield. Exhibits IV-3 through IV-5 also present projected regional visitation recovery through substitute recreation sites. All substitute site data is obtained directly from survey responses.

State Parks has indicated that nearby substitute parks, especially Cherry Creek State Park, reach capacity during summer weekends. Substitute site capacity was not evaluated as part of this analysis and it is assumed that nearby parks can absorb displaced Chatfield recreation.

The basis for recreation-related regional economic impacts is the non-substituted visitation at Chatfield State Park. All visitors who will not continue visiting Chatfield and do not substitute a trip to Chatfield with another local recreation site are assumed to discontinue their recreational activity or seek recreation opportunities outside the region, thus causing regional reduction of recreation related spending. No adverse regional economic impact is calculated for those visitors that would substitute a visit to Chatfield with a visit to another regional recreation area.

Following Exhibit IV-5 is a discussion of each park use that describes park usage categories, sources of visitation loss estimates and the rationale behind any adjustments made to the survey data. Shaded figures in the exhibits have been adjusted from the stated survey results by BBC and State Parks to better reflect expected visitor response to proposed reallocation.

⁶ Nearby substitute sites include Cherry Creek and Roxborough State Parks, Waterton Canyon, Aurora Reservoir, Jefferson County Open Space, Bear Creek Reservoir, an extensive regional trail network and other county and municipal parks.

Exhibit IV-3.
Chatfield State Park Visitor Response Construction Period — RED Alternative 3

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Construction	Visitors Lost Construction	Percent Recovered at Regional Alt Site	Visitors Recovered at Regional Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	23.3%	19,477	81.8%	15,932
Bicycling on Trail	204,372	37.7%	77,048	80.0%	61,638
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	6.5%	845	25.0%	211
Personal Interpretation	2,570	23.3%	599	81.8%	490
Non-Personal Interpretation	10,083	23.3%	2,349	81.8%	1,921
Environmental Education	1,244	23.3%	290	81.8%	237
CAMPING	94,758	20.0%	18,952	81.8%	15,503
GRAVEL POND USES:					
Canoeing and Kayaking	414	3.7%	15	50.0%	8
Long-Distance Swim Training	9,400	3.7%	348	50.0%	174
Open Water Swim	16,300	3.7%	603	50.0%	302
Shore Fishing	2,497	3.7%	92	50.0%	46
Primary Picnicking, Gravel Ponds	3,350	3.7%	124	50.0%	62
Water Rescue Dog Training	230	3.7%	9	50.0%	5
Scuba diving	3,628	3.7%	134	50.0%	67
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.7%	2,010	70.0%	1,407
Other Motorcraft Use	68,156	3.7%	2,522	70.0%	1,765
Other Non-Motorcraft Use	43,545	3.7%	1,611	70.0%	1,128
Jet Skiing	29,856	3.7%	1,105	70.0%	774
Water Skiing	44,164	3.7%	1,634	70.0%	1,144
FISHING:					
Ice Fishing at Reservoir	2,300	11.0%	253	83.3%	211
Shore Fishing at Reservoir	32,340	11.0%	3,557	83.3%	2,963
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	35.7%	1,572	33.3%	523
Flying Model Airplanes	15,570	10.0%	1,557	25.0%	389
Dog Tracking	1,764	100.0%	1,764	16.7%	295
Search and Rescue Dog Training	100	100.0%	100	16.7%	17
View Birds / Wildlife; Photography	8,806	59.3%	5,222	66.7%	3,483
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	25.0%	-
Horseback Riding, not in trail counts	36,590	6.5%	2,378	25.0%	595
SUBTOTAL, NON-SIGHTSEERS:	943,046		165,864		127,417
SIGHTSEEING	721,102		126,828		97,429
Total 2007 Visitation	1,664,148	Total Visitors Lost	292,692	Total Visitors Lost After	67,846
		<i>Construction</i>	<i>17.6%</i>	<i>Regional Substitution</i>	<i>4.1%</i>

Source: BBC Research & Consulting.

Exhibit IV-4.
Chatfield State Park Visitor Response Incremental
Reallocation Period (Years 1–5 after Construction) RED Alternative 3

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Inc. Reallocation	Visitors Lost Inc. Reallocation	Percent Recovered at Regional Alt Site	Visitors Recovered at Regional Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	14.8%	12,371	81.8%	10,119
Bicycling on Trail	204,372	14.5%	29,634	80.0%	23,707
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	3.5%	455	25.0%	114
Personal Interpretation	2,570	14.8%	380	81.8%	311
Non-Personal Interpretation	10,083	14.8%	1,492	81.8%	1,220
Environmental Education	1,244	14.8%	184	81.8%	151
CAMPING	94,758	10.0%	9,476	81.8%	7,751
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	50.0%	-
Long-Distance Swim Training	9,400	0.0%	-	50.0%	-
Open Water Swim	16,300	0.0%	-	50.0%	-
Shore Fishing	2,497	0.0%	-	50.0%	-
Primary Picnicking, Gravel Ponds	3,350	0.0%	-	50.0%	-
Water Rescue Dog Training	230	0.0%	-	50.0%	-
Scuba diving	3,628	0.0%	-	50.0%	-
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.5%	1,901	70.0%	1,331
Other Motorcraft Use	68,156	3.5%	2,385	70.0%	1,670
Other Non-Motorcraft Use	43,545	3.5%	1,524	70.0%	1,067
Jet Skiing	29,856	3.5%	1,045	70.0%	732
Water Skiing	44,164	3.5%	1,546	70.0%	1,082
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	83.3%	-
Shore Fishing at Reservoir	32,340	0.0%	-	83.3%	-
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	33.3%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	16.7%	295
Search and Rescue Dog Training	100	100.0%	100	16.7%	17
View Birds / Wildlife; Photography	8,806	42.7%	3,760	66.7%	2,508
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	25.0%	-
Horseback Riding, not in trail counts	36,590	3.5%	1,281	25.0%	320
SUBTOTAL, NON-SIGHTSEERS:	943,046		88,992		68,522
SIGHTSEEING	721,102		68,048		52,396
Total 2007 Visitation	1,664,148	Total Visitors Lost	157,040	Total Visitors Lost after	36,122
		<i>Incremental Reallocation</i>	<i>9.4%</i>	<i>Regional Substitution</i>	<i>2.2%</i>

Source: BBC Research & Consulting.

Exhibit IV-5.
Chatfield State Park Visitor Response
Stabilization Period (6+ Years after Construction) RED Alternative 3

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Stabilization	Visitors Lost Stabilization	Percent Recovered at Regional Alt Site	Visitors Recovered at Regional Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	8.5%	7,105	81.8%	5,812
Bicycling on Trail	204,372	10.9%	22,277	80.0%	17,822
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	3.5%	455	25.0%	114
Personal Interpretation	2,570	8.5%	218	81.8%	178
Non-Personal Interpretation	10,083	8.5%	857	81.8%	701
Environmental Education	1,244	8.5%	106	81.8%	87
CAMPING	94,758	0.0%	-	81.8%	-
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	50.0%	-
Long-Distance Swim Training	9,400	0.0%	-	50.0%	-
Open Water Swim	16,300	0.0%	-	50.0%	-
Shore Fishing	2,497	0.0%	-	50.0%	-
Primary Picnicking, Gravel Ponds	3,350	0.0%	-	50.0%	-
Water Rescue Dog Training	230	0.0%	-	50.0%	-
Scuba diving	3,628	0.0%	-	50.0%	-
SWIMMING/SWIM BEACH	50,235	0.0%	-	100.0%	-
SURFACE WATER RECREATION:					
Boat Fishing	54,318	0.0%	-	70.0%	-
Other Motorcraft Use	68,156	0.0%	-	70.0%	-
Other Non-Motorcraft Use	43,545	0.0%	-	70.0%	-
Jet Skiing	29,856	0.0%	-	70.0%	-
Water Skiing	44,164	0.0%	-	70.0%	-
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	83.3%	-
Shore Fishing at Reservoir	32,340	0.0%	-	83.3%	-
PICNICKING					
Group Picnicking	10,000	10.0%	1,000	50.0%	500
Non-Group Primary Picnicking, Lake	4,270	10.0%	427	50.0%	214
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	33.3%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	16.7%	295
Search and Rescue Dog Training	100	100.0%	100	16.7%	17
View Birds / Wildlife; Photography	8,806	36.7%	3,232	66.7%	2,156
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	25.0%	-
Horseback Riding, not in trail counts	36,590	3.5%	1,281	25.0%	320
SUBTOTAL, NON-SIGHTSEERS:	943,046		38,822		28,216
SIGHTSEEING	721,102		29,685		21,575
Total 2007 Visitation	1,664,148	Total Visitors Lost	68,507	Total Visitors Lost after	18,716
		<i>Stabilization</i>	4.1%	<i>Regional Substitution</i>	1.1%

Source: BBC Research & Consulting.

‡ **Trail Use.** The trail use category includes visitors who walk, run, hike, cycle, mountain bike and ride horses on Chatfield’s trail network. The visitation loss numbers are taken directly from the survey, with the exception of dog exercise area users. The dog exercise area is located below the dam at Chatfield and will be unaffected by construction activities.

Camping. Camping visitation includes the following categories of visitation: group camping, electric camping and basic camping. No adjustments were made to the survey data.

Gravel pond. Gravel pond visitation includes the following categories of visitation: scuba diving, water dog training, long distance swim training at the gravel pond, shore fishing at gravel ponds, canoeing and kayaking at gravel ponds, open water swimming and primary picnicking at the gravel ponds. There was no visitation loss reported for these users, although these data were adjusted upward to 3.7 percent during the construction period to reflect the annualized amount of visitation loss over the 2-year construction period based on the number of days the gravel ponds are closed, based on the construction schedule presented in prior Section III.⁷

Swim Beach. Swimming/swim beach visitation had just one observation from the survey and thus required adjustment. The respondent originally indicated a 100 percent loss during construction and a 50 percent loss during the post construction period. BBC has adjusted the loss downward to 25 percent during the construction period and the incremental reallocation period. This adjusted visitation response was vetted through State Parks and reflects a significant visitation response given the popularity of the swim beach.

Surface water recreation. Surface water recreation visitation includes the following categories of visitation: boat fishing, other motorcraft use, other non-motorcraft use, jet skiing, and water skiing. The visitation loss numbers are taken directly from the survey, with the exception of adjusting the visitation loss to zero (from 1 percent in the survey) during the “stabilization” period. There is an expectation that boater visitation will return to present levels after reallocation is complete.

Shore and ice fishing. No adjustments to the survey data were made for shore and ice fishing.

Hot air ballooning. No category aggregation or adjustments to survey data were made for hot air ballooning.

Model airplanes. Model airplane survey respondents indicated no sensitivity to construction or reallocation. They indicated that there are few other model airfields in the region. Included is a 10 percent visitation loss during construction to reflect a mild visitation response to the general adverse conditions at the park at the request of State Parks. There is an expectation that model airplane enthusiast visitation will rebound immediately after construction.

⁷ Gravel Ponds estimated to be closed for about 27 days over 2 summer seasons (May through October). The percent reduction was divided in half to annualize visitation loss over the two-year construction period.

▲ **Picnicking.** Picnicking visitation includes the following categories of visitation: group picnicking, and non-group primary picnicking. The survey indicated no picnicker sensitivity to construction or reallocation. State Parks believes the impacts to be greater, however, because of general adverse conditions during construction and facility distance from the water line during the incremental reallocation and stabilization periods. The figures have been adjusted to a 50 percent visitation loss during construction and incremental reallocation, and a 10 percent loss thereafter.

Dog tracking/search and rescue. For dog tracking and dog search and rescue training, the survey yielded little sensitivity to construction or reallocation. The numbers were adjusted to a 100 percent loss across construction, incremental reallocation and stabilization because the areas of the park presently used for dog tracking will be inundated or unusable for their specialized purposes. State Parks staff is uncertain whether these uses will return to Chatfield after reallocation. This projected total loss of visitation represents a worst-case scenario that may be resolved post-reallocation between State Parks and dog tracking/search and rescue groups.

Wildlife viewing/nature observation/photography. No adjustments to the survey data were made for wildlife viewing/nature observation/photography visitation.

Equestrian. Equestrian visitation includes the following categories of visitation: horseback riding - Spring Gulch and horseback riding - (not in trail counts). Equestrians exhibited only a modest sensitivity to the construction and incremental reallocation periods. The visitation loss numbers are taken directly from the survey.

Total visitation loss and site substitution. The results of the survey and subsequent adjustments yields a total annual loss at Chatfield State Park of about 292,700 visitors or 18 percent during construction, about 157,000 visitors or 9 percent during incremental reallocation and about 68,500 visitors or 4 percent after operations stabilize. After site substitution is considered, regional visitation loss is substantially less: about 67,800 visitors or 4 percent during construction, about 36,100 visitors or 2 percent during incremental reallocation and about 18,700 visitors or 1 percent after operations stabilize.

Regional Economic Impacts—Recreation—Alternative 3

Implementation of the proposed alternative would result in a reduction of recreation related expenditure in the region, which would generate a negative impact to the regional economy, as local residents and out of region visitors recreate and spend outside the study area. BBC applied a similar IMPLAN modeling framework to recreation as was used for modeling construction and operations impacts. The following exhibit shows the process for calculating direct economic impacts of construction-related recreation losses at Chatfield State Park.

**Exhibit IV-6.
Direct Regional
Recreation
Spending Loss,
Alternative 3**

Note:
Regional Spending per person
obtained from Colorado State
Parks Visitation survey, See
Section II, page 6-7 for more
discussion.
Source:
BBC Research & Consulting.

	Recreation Analysis Period		
	Construction	Incremental Reallocation	Stabilization
Annual Regional Visitation Loss	67,846	36,122	18,716
Regional Spending (Per person per Visit)	\$ 17.19	\$ 17.19	\$ 17.19
Annual Direct Economic Impact (2010 Dollars)	\$ 1,166,273	\$ 620,937	\$ 321,728

Direct economic impacts are calculated by multiplying the annual expected visitation loss after regional substitution sites are considered by regional spending per person, obtained from Colorado State Parks 2009 Market Assessment Study.⁸ The resulting annual figures represent lost spending in the regional economy as a result of project construction and subsequent water management practices. These figures are then input directly into the IMPLAN model to calculate the associated indirect and induced economic impacts. Results of the IMPLAN modeling process are presented in terms of economic output and employment.

A summary of the regional economic impacts of construction of each alternative is presented in Exhibit IV-7, which shows economic impacts by year, as well as 50-year total values. The proposed alternative is expected to reduce economic output in the region by about \$37.3 million over 50 years, which includes the direct impact of the project (a loss of \$21.3 million) and the resulting indirect and induced impacts, which total an additional loss of \$16.0 million.

**Exhibit IV-7.
Regional Economic Impacts, Recreation, Alternative 3,
Chatfield Reallocation Project**

Impact/Year	Output (2010 \$Million)				Employment (Annual Jobs)			
	Incremental			50-Year Total	Incremental			50-Year Total
	Construction Year 1-2	Reallocation Year 3-8	Stabilization Year 9-50		Construction Year 1-2	Reallocation Year 3-8	Stabilization Year 9-50	
Direct	(\$1.2)	(\$0.6)	(\$0.4)	(\$21.3)	(29.3)	(15.6)	(9.3)	(536.5)
Indirect	(\$0.3)	(\$0.1)	(\$0.1)	(\$5.0)	(1.7)	(0.9)	(0.5)	(29.4)
Induced	(\$0.6)	(\$0.3)	(\$0.2)	(\$11.0)	(4.8)	(2.5)	(1.5)	(86.6)
Total	(\$2.0)	(\$1.1)	(\$0.6)	(\$37.3)	(35.8)	(19.0)	(11.3)	(652.5)

Note: 1. Economic output figures in 2010 dollars.
2. Direct impacts based on data provided by the FR/EIS lead engineer, indirect and induced impacts calculated by the IMPLAN model.
3. Total employment represents the total number of employment person-years over the 50-year analysis period.
4. Figures may not add precisely due to rounding.

Source: BBC Research & Consulting.

Employment impacts are estimated at a loss of about 36 total jobs per year during the 2-year construction period, including direct, indirect and induced impacts. During the incremental reallocation period, job losses would total 19 jobs per year. After park and water management

⁸ The 2009 Market Assessment Study, completed by Corona Research, estimated park visit related spending per vehicle per visit within a 50-mile radius of Chatfield State Park (\$44.70), and an average 2.6 visitors per vehicle, thus per person spending is estimated to be \$17.19.

▲ stabilizes, job losses would total about 11 jobs per year. These economic output and employment losses are relatively minor when compared to the positive economic benefits of project construction and operation presented in Exhibit IV-2. No recreation related adverse economic impacts are associated with either Alternative 1 or 2.

The economic and employment impacts of Alternative 3 can be considered relatively insignificant (less than 1 percent) when compared to the Denver Metropolitan Area's \$150.8 billion metropolitan GDP⁹ and 1.2 million¹⁰ in employment in 2009.

⁹ Bureau of Economic Analysis. http://www.bea.gov/newsreleases/regional/gdp_metro/2009/pdf/gdp_metro0909.pdf

¹⁰ See Exhibit II-2 for Denver Metropolitan Area employment.

Recreation Economic Impacts—Alternative 4

Construction and operation of Alternative 4 will affect recreational activity at Chatfield State Park if recreational facilities are closed to accommodate construction activities. Reduced recreation use would affect recreation-related spending patterns and local economic activity resulting in adverse RED impacts.

In order to estimate visitation impacts associated with Alternative 4, visitation impacts from Alternative 3 were adjusted downward (less significant visitation loss). As discussed previously, the visitation loss estimates for Alternative 3 were derived from a survey of user groups conducted in spring 2009. No user group reactions to Alternative 4 were solicited at that time, so Alternative 4 visitation impacts represent an estimation of visitor response based on Alternative 3 data and not actual stated preference data.

Exhibits IV-8 through IV-10 on the following pages present projected visitation loss at Chatfield during three periods of the Proposed Reallocation Project, Alternative 4: (1) project construction; (2) the incremental reallocation period where reallocation is incomplete and water levels are perceived as low; and (3) after reallocation is complete and park management operations stabilize. Shaded figures in the exhibits show adjustments from Alternative 3 figures.

Adjustments to the survey for Alternative 4 visitation impacts are as follows:

- Trail uses, camping, model airplane enthusiasts and horseback riders reduce visitation by 75 percent of the Alternative 3 amount during construction, incomplete reallocation and stabilization. This figure is an estimate that is intended to adjust visitor response to represent a less significant degree of inundation, but still account for the overall disruption of park facilities and traffic flow.
- Gravel pond recreation users reduce visitation by half of the Alternative 3 amount during the construction period. The road adjacent to the site will have to be closed for a period, but impacts are less significant than Alternative 3.
- Hot air balloon visitation is unchanged by Alternative 4. The balloon launch site is not expected to be inundated and balloonists will likely use the park as they did before the proposed reallocation project.
- All other park users reduce visitation by the same degree as reported in the Alternative 3 survey. This includes boaters, anglers, wildlife viewers, picnickers and other special park uses. No adjustments were made to these visitation categories because water access impacts are similar between each alternative. Almost all picnic areas are affected similarly by both alternatives, and the wildlife viewing opportunities near the shoreline will be equally affected.

Exhibits IV-8 through IV-10 also present projected regional visitation recovery through substitute recreation sites. All substitute site data is obtained directly from survey responses and is the same data presented previously for Alternative 3.

Exhibit IV-8.
Chatfield State Park Visitor Response Construction Period — RED Alternative 4

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Construction	Visitors Lost Construction	Percent Recovered at Regional Alt Site	Visitors Recovered at Regional Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	17.5%	14,628	81.8%	11,966
Bicycling on Trail	204,372	28.3%	57,837	80.0%	46,270
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	4.9%	637	25.0%	159
Personal Interpretation	2,570	17.5%	450	81.8%	368
Non-Personal Interpretation	10,083	17.5%	1,765	81.8%	1,444
Environmental Education	1,244	17.5%	218	81.8%	178
CAMPING	94,758	15.0%	14,214	81.8%	11,627
GRAVEL POND USES:					
Canoeing and Kayaking	414	1.8%	7	50.0%	4
Long-Distance Swim Training	9,400	1.8%	169	50.0%	85
Open Water Swim	16,300	1.8%	293	50.0%	147
Shore Fishing	2,497	1.8%	45	50.0%	23
Primary Picnicking, Gravel Ponds	3,350	1.8%	60	50.0%	30
Water Rescue Dog Training	230	1.8%	4	50.0%	2
Scuba diving	3,628	1.8%	65	50.0%	33
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.7%	2,010	70.0%	1,407
Other Motorcraft Use	68,156	3.7%	2,522	70.0%	1,765
Other Non-Motorcraft Use	43,545	3.7%	1,611	70.0%	1,128
Jet Skiing	29,856	3.7%	1,105	70.0%	774
Water Skiing	44,164	3.7%	1,634	70.0%	1,144
FISHING:					
Ice Fishing at Reservoir	2,300	11.0%	253	83.3%	211
Shore Fishing at Reservoir	32,340	11.0%	3,557	83.3%	2,963
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	33.3%	-
Flying Model Airplanes	15,570	7.5%	1,168	25.0%	292
Dog Tracking	1,764	100.0%	1,764	16.7%	295
Search and Rescue Dog Training	100	100.0%	100	16.7%	17
View Birds / Wildlife; Photography	8,806	59.3%	5,222	66.7%	3,483
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	25.0%	-
Horseback Riding, not in trail counts	36,590	4.9%	1,793	25.0%	448
SUBTOTAL, NON-SIGHTSEERS:	943,046		132,825		102,390
SIGHTSEEING	721,102		101,565		78,293
Total 2007 Visitation	1,664,148	Total Visitors Lost	234,390	Total Visitors Lost After	53,707
		<i>Construction</i>	<i>14.1%</i>	<i>Regional Substitution</i>	<i>3.2%</i>

Source: BBC Research & Consulting.

Exhibit IV-9.
Chatfield State Park Visitor Response Incremental
Reallocation Period (Years 1–5 after Construction) RED Alternative 4

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Inc. Reallocation	Visitors Lost Inc. Reallocation	Percent Recovered at Regional Alt Site	Visitors Recovered at Regional Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	11.1%	9,279	81.8%	7,590
Bicycling on Trail	204,372	10.9%	22,277	80.0%	17,822
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	2.6%	338	25.0%	85
Personal Interpretation	2,570	11.1%	285	81.8%	233
Non-Personal Interpretation	10,083	11.1%	1,119	81.8%	915
Environmental Education	1,244	11.1%	138	81.8%	113
CAMPING	94,758	7.5%	7,107	81.8%	5,814
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	50.0%	-
Long-Distance Swim Training	9,400	0.0%	-	50.0%	-
Open Water Swim	16,300	0.0%	-	50.0%	-
Shore Fishing	2,497	0.0%	-	50.0%	-
Primary Picnicking, Gravel Ponds	3,350	0.0%	-	50.0%	-
Water Rescue Dog Training	230	0.0%	-	50.0%	-
Scuba diving	3,628	0.0%	-	50.0%	-
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.5%	1,901	70.0%	1,331
Other Motorcraft Use	68,156	3.5%	2,385	70.0%	1,670
Other Non-Motorcraft Use	43,545	3.5%	1,524	70.0%	1,067
Jet Skiing	29,856	3.5%	1,045	70.0%	732
Water Skiing	44,164	3.5%	1,546	70.0%	1,082
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	83.3%	-
Shore Fishing at Reservoir	32,340	0.0%	-	83.3%	-
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	33.3%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	16.7%	295
Search and Rescue Dog Training	100	100.0%	100	16.7%	17
View Birds / Wildlife; Photography	8,806	42.7%	3,760	66.7%	2,508
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	25.0%	-
Horseback Riding, not in trail counts	36,590	2.6%	951	25.0%	238
SUBTOTAL, NON-SIGHTSEERS:	943,046		75,213		57,639
SIGHTSEEING	721,102		57,512		44,074
Total 2007 Visitation	1,664,148	Total Visitors Lost	132,725	Total Visitors Lost after	31,012
		<i>Incremental Reallocation</i>	8.0%	<i>Regional Substitution</i>	1.9%

Source: BBC Research & Consulting.

Exhibit IV-10.
Chatfield State Park Visitor Response
Stabilization Period (6+ Years after Construction) RED Alternative 4

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Stabilization	Visitors Lost Stabilization	Percent Recovered at Regional Alt Site	Visitors Recovered at Regional Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	6.4%	5,350	81.8%	4,376
Bicycling on Trail	204,372	8.2%	16,759	80.0%	13,407
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	2.6%	338	25.0%	85
Personal Interpretation	2,570	6.4%	164	81.8%	134
Non-Personal Interpretation	10,083	6.4%	645	81.8%	528
Environmental Education	1,244	6.4%	80	81.8%	65
CAMPING	94,758	0.0%	-	81.8%	-
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	50.0%	-
Long-Distance Swim Training	9,400	0.0%	-	50.0%	-
Open Water Swim	16,300	0.0%	-	50.0%	-
Shore Fishing	2,497	0.0%	-	50.0%	-
Primary Picnicking, Gravel Ponds	3,350	0.0%	-	50.0%	-
Water Rescue Dog Training	230	0.0%	-	50.0%	-
Scuba diving	3,628	0.0%	-	50.0%	-
SWIMMING/SWIM BEACH	50,235	0.0%	-	100.0%	-
SURFACE WATER RECREATION:					
Boat Fishing	54,318	0.0%	-	70.0%	-
Other Motorcraft Use	68,156	0.0%	-	70.0%	-
Other Non-Motorcraft Use	43,545	0.0%	-	70.0%	-
Jet Skiing	29,856	0.0%	-	70.0%	-
Water Skiing	44,164	0.0%	-	70.0%	-
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	83.3%	-
Shore Fishing at Reservoir	32,340	0.0%	-	83.3%	-
PICNICKING					
Group Picnicking	10,000	10.0%	1,000	50.0%	500
Non-Group Primary Picnicking, Lake	4,270	10.0%	427	50.0%	214
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	33.3%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	16.7%	295
Search and Rescue Dog Training	100	100.0%	100	16.7%	17
View Birds / Wildlife; Photography	8,806	36.7%	3,232	66.7%	2,156
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	25.0%	-
Horseback Riding, not in trail counts	36,590	2.6%	951	25.0%	238
SUBTOTAL, NON-SIGHTSEERS:	943,046		30,810		22,015
SIGHTSEEING	721,102		23,559		16,834
Total 2007 Visitation	1,664,148	Total Visitors Lost	54,369	Total Visitors Lost after	15,520
		<i>Stabilization</i>	<i>3.3%</i>	<i>Regional Substitution</i>	<i>0.9%</i>

Source: BBC Research & Consulting.

Regional Economic Impacts—Recreation—Alternative 4

Implementation of Alternative 4 would result in a reduction of recreation related expenditure in the region, which would generate a negative impact to the regional economy, as local residents and out of region visitors recreate and spend outside the study area. BBC applied a similar IMPLAN modeling framework to Alternative 4 as was used for modeling Alternative 3. The following exhibit shows the process for calculating direct economic impacts of construction-related recreation losses at Chatfield State Park.

Exhibit IV-11. Direct Regional Recreation Spending Loss, Alternative 4

Note:

Regional Spending per person obtained from Colorado State Parks Visitation survey, See Section II, page 6-7 for more discussion.

Source:
BBC Research & Consulting.

	Recreation Analysis Period		
	Construction	Incremental Reallocation	Stabilization
Annual Regional Visitation Loss	53,707	31,012	15,520
Regional Spending (Per person per Visit)	\$ 17.19	\$ 17.19	\$ 17.19
Annual Direct Economic Impact (2010 Dollars)	\$ 923,223	\$ 533,096	\$ 266,789

Direct economic impacts are calculated by multiplying the annual expected visitation loss after regional substitution sites are considered by regional spending per person, obtained from Colorado State Parks 2009 Market Assessment Study.¹¹ The resulting annual figures represent lost spending in the regional economy as a result of project construction and subsequent water management practices. These figures are then input directly into the IMPLAN model to calculate the associated indirect and induced economic impacts. Results of the IMPLAN modeling process are presented in terms of economic output and employment.

A summary of the regional economic impacts of construction of each alternative is presented in Exhibit IV-12 on the following page, which shows economic impacts by year, as well as 50-year total values. Alternative 4 is expected to reduce economic output in the region by about \$28.0 million over 50 years, which includes the direct impact of the project (a loss of \$16.0 million) and the resulting indirect and induced impacts, which total an additional loss of \$12.1 million.

¹¹ The 2009 Market Assessment Study, completed by Corona Research, estimated park visit related spending per vehicle per visit within a 50-mile radius of Chatfield State Park (\$44.70), and an average 2.6 visitors per vehicle, thus per person spending is estimated to be \$17.19.

Exhibit IV-12.
Regional Economic Impacts, Recreation, Alternative 4,
Chatfield Reallocation Project

Impact/Year	Output (2010 \$Million)				Employment (Annual Jobs)			
	Construction Year 1-2	Incremental		50-Year Total	Construction Year 1-2	Incremental		50-Year Total
		Reallocation Year 3-8	Stabilization Year 9-50			Reallocation Year 3-8	Stabilization Year 9-50	
Direct	(\$0.9)	(\$0.5)	(\$0.3)	(\$16.0)	(23.2)	(13.4)	(6.7)	(401.5)
Indirect	(\$0.2)	(\$0.1)	(\$0.1)	(\$3.8)	(1.3)	(0.8)	(0.4)	(23.8)
Induced	(\$0.5)	(\$0.3)	(\$0.1)	(\$8.3)	(3.8)	(2.2)	(1.1)	(65.9)
Total	(\$1.6)	(\$0.9)	(\$0.5)	(\$28.0)	(28.3)	(16.4)	(8.2)	(491.2)

- Note:
1. Economic output figures in 2010 dollars.
 2. Direct impacts based on data provided by the FR/EIS lead engineer, indirect and induced impacts calculated by the IMPLAN model.
 3. Total employment represents the total number of employment person-years over the 50-year analysis period.
 4. Figures may not add precisely due to rounding.

Source: BBC Research & Consulting.

Employment impacts are estimated at a loss of about 28 total jobs per year during the 2-year construction period, including direct, indirect and induced impacts. During the incremental reallocation period, job losses would total 16 jobs per year. After park and water management stabilizes, job losses would total about 8 jobs per year. These economic output and employment losses are relatively minor when compared to the positive economic benefits of project construction and operation presented in Exhibit IV-2.

The economic and employment impacts of Alternative 3 can be considered relatively insignificant (less than 1 percent) when compared to the Denver Metropolitan Area's \$150.8 billion metropolitan GDP¹² and 1.2 million¹³ in employment in 2009.

¹² Bureau of Economic Analysis. http://www.bea.gov/newsreleases/regional/gdp_metro/2009/pdf/gdp_metro0909.pdf

¹³ See Exhibit II-2 for Denver Metropolitan Area employment.

SECTION V.
Other Social Effects

SECTION V.

Other Social Effects (OSE)

This section presents the OSE analysis for the Proposed Reallocation Project. The OSE analysis has been prepared in accordance with the methodology described in Section I of this report. In recently released guiding documentation, the USACE defines social effects broadly:

Social effects, in a general sense, refers to how the constituents of life that influence personal and group definitions of satisfaction, well-being, and happiness are affected by some condition or proposed intervention.¹

In practice, OSE is a form of catchall report for impacts that are germane to specific project effects, but not considered in RED or other associated USACE studies. In this application, BBC considers Reallocation Project impacts on State Parks and concessionaire revenue as the main subject of the OSE report. In addition, the OSE analysis offers a qualitative discussion of impacts and benefits of all four alternatives considered in the FR/EIS.

This section presents a quantification of impacts of Alternative 3 and Alternative 4 on direct State Parks and concessionaire revenue. It is followed by a qualitative discussion of impacts and benefits of each of the four alternatives in the FR/EIS.

Colorado State Parks and Concessionaire Revenue Impacts—Alternative 3

Construction and operation of the proposed alternative will affect recreational activity at Chatfield State Park if recreational facilities are closed to accommodate construction activities. Reduced recreation use would affect revenue generation for Colorado State Parks and the marina and equestrian concessionaires that operate facilities in the park.

Visitation loss and substitution. Estimates of visitation loss were calculated using the same survey instrument used to calculate recreation loss for the RED analysis. See Section IV for a description of the survey process. For the purposes of estimating lost revenue to State Parks, only site substitution at other State Parks obtained from the survey were considered when assessing the amount of visits recovered at substitute recreation sites. Accordingly, the overall reduction of recreation realized by State Parks is higher than regional recreation losses, because some recreators will use regional recreation sites outside the State Parks system. State Parks has indicated that nearby substitute parks, especially Cherry Creek State Park, reach capacity during summer weekends. Substitute site capacity was not evaluated as part of this analysis and it is assumed that nearby parks can absorb displaced Chatfield recreation.

The results of the survey yield a total annual loss at Chatfield State Park of about 292,700 visitors or 18 percent during construction, about 157,000 visitors or 9 percent during incremental reallocation and about 68,500 visitors or 4 percent after operations stabilize. After State Parks site substitution is

¹ Handbook on Applying “Other Social Effects” Factors in Corps of Engineers Water Resources Planning, Institute for Water Resources, December 2009.

considered, regional visitation loss is substantially less: about 188,500 visitors or 11 percent during construction, about 91,000 visitors or 6 percent during incremental reallocation and about 48,900 visitors or 3 percent after operations stabilize.

Survey respondents were only asked to state their visitation responses to the effects of the proposed alternative (Alternative 3). There will be no recreation impacts at Chatfield State Park associated with Alternatives 1 or 2.

Exhibits V-1 through V-3 present projected visitation loss at Chatfield during three periods of the Proposed Reallocation Project: (1) project construction; (2) the incremental reallocation period where reallocation is incomplete and water levels are perceived as low; and (3) after reallocation is complete and park management operations stabilize.²

² Please see Section I, page 4 for a description of the phases of the Storage Reallocation Project.

Exhibit V-1.
Chatfield State Park Visitor Response
Construction Period (State Parks Substitution Only) Alternative 3

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Construction	Visitors Lost Construction	Percent Recovered at St. Parks Alt Site	Visitors Recovered at St. Parks Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	23.3%	19,477	27.3%	5,317
Bicycling on Trail	204,372	37.7%	77,048	30.0%	23,114
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	6.5%	845	0.0%	-
Personal Interpretation	2,570	23.3%	599	27.3%	164
Non-Personal Interpretation	10,083	23.3%	2,349	27.3%	641
Environmental Education	1,244	23.3%	290	27.3%	79
CAMPING	94,758	20.0%	18,952	27.3%	5,174
GRAVEL POND USES:					
Canoeing and Kayaking	414	3.7%	15	0.0%	-
Long-Distance Swim Training	9,400	3.7%	348	0.0%	-
Open Water Swim	16,300	3.7%	603	0.0%	-
Shore Fishing	2,497	3.7%	92	0.0%	-
Primary Picnicking (non-group)	3,350	3.7%	124	0.0%	-
Water Rescue Dog Training	230	3.7%	9	0.0%	-
Scuba diving	3,628	3.7%	134	0.0%	-
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.7%	2,010	50.0%	1,005
Other Motorcraft Use	68,156	3.7%	2,522	50.0%	1,261
Other Non-Motorcraft Use	43,545	3.7%	1,611	50.0%	806
Jet Skiing	29,856	3.7%	1,105	50.0%	553
Water Skiing	44,164	3.7%	1,634	50.0%	817
FISHING:					
Ice Fishing at Reservoir	2,300	11.0%	253	33.3%	84
Shore Fishing at Reservoir	32,340	11.0%	3,557	33.3%	1,184
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	35.7%	1,572	0.0%	-
Flying Model Airplanes	15,570	10.0%	1,557	25.0%	389
Dog Tracking	1,764	100.0%	1,764	0.0%	-
Search and Rescue Dog Training	100	100.0%	100	0.0%	-
View Birds / Wildlife; Photography	8,806	59.3%	5,222	44.4%	2,319
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	0.0%	-
Horseback Riding, not in trail counts	36,590	6.5%	2,378	0.0%	-
SUBTOTAL, NON-SIGHTSEERS:	943,046		165,864		59,034
SIGHTSEEING	721,102		126,828		45,140
Total 2007 Visitation	1,664,148	Total Visitors Lost	292,692	Total Visitors Lost after	188,518
		Construction	17.6%	St. Parks Substitution	11.3%

Source: BBC Research & Consulting.

Exhibit V-2.
Chatfield State Park Visitor Response Incremental
Reallocation Period (Year 1-5 after Construction) Alternative 3

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss	Visitors Lost	Percent Recovered at	Visitors Recovered at
		Inc. Reallocation	Inc. Reallocation	St. Parks Alt Site	St. Parks Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	14.8%	12,371	27.3%	3,377
Bicycling on Trail	204,372	14.5%	29,634	30.0%	8,890
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	3.5%	455	0.0%	-
Personal Interpretation	2,570	14.8%	380	27.3%	104
Non-Personal Interpretation	10,083	14.8%	1,492	27.3%	407
Environmental Education	1,244	14.8%	184	27.3%	50
CAMPING	94,758	10.0%	9,476	27.3%	2,587
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	0.0%	-
Long-Distance Swim Training	9,400	0.0%	-	0.0%	-
Open Water Swim	16,300	0.0%	-	0.0%	-
Shore Fishing	2,497	0.0%	-	0.0%	-
Primary Picnicking (non-group)	3,350	0.0%	-	0.0%	-
Water Rescue Dog Training	230	0.0%	-	0.0%	-
Scuba diving	3,628	0.0%	-	0.0%	-
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.5%	1,901	50.0%	951
Other Motorcraft Use	68,156	3.5%	2,385	50.0%	1,193
Other Non-Motorcraft Use	43,545	3.5%	1,524	50.0%	762
Jet Skiing	29,856	3.5%	1,045	50.0%	523
Water Skiing	44,164	3.5%	1,546	50.0%	773
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	33.3%	-
Shore Fishing at Reservoir	32,340	0.0%	-	33.3%	-
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	0.0%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	0.0%	-
Search and Rescue Dog Training	100	100.0%	100	0.0%	-
View Birds / Wildlife; Photography	8,806	42.7%	3,760	44.4%	1,669
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	0.0%	-
Horseback Riding, not in trail counts	36,590	3.5%	1,281	0.0%	-
SUBTOTAL, NON-SIGHTSEERS:	943,046		88,992		37,413
SIGHTSEEING	721,102		68,048		28,608
Total 2007 Visitation	1,664,148	Total Visitors Lost	157,040	Total Visitors Lost after	91,019
		<i>Incremental Reallocation</i>	<i>9.4%</i>	<i>St. Parks Substitution</i>	<i>5.5%</i>

Source: BBC Research & Consulting.

Exhibit V-3.
Chatfield State Park Visitor Response
Stabilization Period (6+ Years after Construction) Alternative 3

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Stabilization	Visitors Remaining Stabilization	Percent Recovered at St. Parks Alt Site	Visitors Recovered at St. Parks Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	8.5%	7,105	27.3%	1,940
Bicycling on Trail	204,372	10.9%	22,277	30.0%	6,683
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	3.5%	455	0.0%	-
Personal Interpretation	2,570	8.5%	218	27.3%	60
Non-Personal Interpretation	10,083	8.5%	857	27.3%	234
Environmental Education	1,244	8.5%	106	27.3%	29
CAMPING	94,758	0.0%	-	27.3%	=
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	0.0%	-
Long-Distance Swim Training	9,400	0.0%	-	0.0%	-
Open Water Swim	16,300	0.0%	-	0.0%	-
Shore Fishing	2,497	0.0%	-	0.0%	-
Primary Picnicking (non-group)	3,350	0.0%	-	0.0%	-
Water Rescue Dog Training	230	0.0%	-	0.0%	-
Scuba diving	3,628	0.0%	-	0.0%	=
SWIMMING/SWIM BEACH	50,235	0.0%	-	100.0%	=
SURFACE WATER RECREATION:					
Boat Fishing	54,318	0.0%	-	50.0%	-
Other Motorcraft Use	68,156	0.0%	-	50.0%	-
Other Non-Motorcraft Use	43,545	0.0%	-	50.0%	-
Jet Skiing	29,856	0.0%	-	50.0%	-
Water Skiing	44,164	0.0%	-	50.0%	=
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	33.3%	=
Shore Fishing at Reservoir	32,340	0.0%	-	33.3%	=
PICNICKING					
Group Picnicking	10,000	10.0%	1,000	50.0%	500
Non-Group Primary Picnicking, Lake	4,270	10.0%	427	50.0%	214
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	0.0%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	0.0%	-
Search and Rescue Dog Training	100	100.0%	100	0.0%	-
View Birds / Wildlife; Photography	8,806	36.7%	3,232	44.4%	1,435
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	0.0%	=
Horseback Riding, not in trail counts	36,590	3.5%	1,281	0.0%	=
SUBTOTAL, NON-SIGHTSEERS:	943,046		38,822		11,095
SIGHTSEEING	721,102		29,685		8,484
Total 2007 Visitation	1,664,148	Total Visitors Lost	68,507	Total Visitors Lost after	48,928
		Stabilization	4.1%	St. Parks Substitution	2.9%

Source: BBC Research & Consulting.

Colorado State Parks Revenue Loss—Alternative 3

On-site State Parks revenue per visitor presented in Section II is applied to non-substituted visitation loss estimates derived from the survey to calculate State Parks revenue loss. Exhibit V-4 displays a 50-year projection of annual revenue loss at Chatfield Reservoir during the construction, incremental reallocation and stabilization periods.

**Exhibit V-4.
Colorado State Parks
Projected Revenue Loss,
Alternative 3**

Source:
BBC Research & Consulting.

	Annual Visitation Loss	Parks Revenue Per Visitor	Annual Revenue Loss
Construction			
Year 1-2	188,518	\$ 1.15	\$ 216,796
Incremental Reallocation			
Year 3-7	91,019	\$ 1.15	\$ 104,672
Stabilization			
Year 8-50	48,928	\$ 1.15	\$ 56,267
50-year Total	2,936,035	-	\$ 3,376,440

The largest decrease in visitation and corresponding reduction in revenue is during construction. State Parks is projected to lose about \$217,000 in annual revenue during project construction and about half of that amount during the incremental reallocation period (\$107,000). Revenue losses during stabilization are estimated at about \$57,000 per year. The 50-year total lost revenue is nearly \$3.4 million.

Concessionaire Revenue Loss—Alternative 3

The Chatfield Marina and Chatfield Livery are privately owned businesses operating within the park under a concessionaire agreement. A decrease in park visitation would also affect concessionaire revenue. Interviews were held with the proprietors of the marina and horse stables to determine current sources of revenue. Additional information concerning concessionaire operations was obtained from Chatfield State Park staff.

Chatfield Marina. Main revenue sources at Chatfield Marina include slip rentals, boat rentals and boat storage. Secondary sources of marina revenue are Seagull’s restaurant, a small grocery store and other sundry sales. In addition to an annual fee of \$5,000, Chatfield receives an additional portion of gross revenue each year from the marina. In 2008, State Parks received \$54,640 or 4.7 percent of Marina revenue.

The largest source of revenue for the Marina is slip rentals, comprising 68 percent of revenue. Following slip rentals are dry storage (16 percent), restaurant, grocery and sundry sales (13 percent), and boat rentals (3 percent). Exhibit V-5 below displays 2008 marina revenue earned and the reduction over the course of the construction period.

Exhibit V-5.
Marina Revenue Impacts

Revenue Source	Current Revenue	Percent Revenue Reduction	Revenue Loss at Marina	Reduced revenue During Construction
Slip Rentals	\$800,000	30.4%	\$243,200	\$556,800
Dry Storage	\$192,000	0.0%	\$0	\$192,000
Rentals	\$30,000	3.6%	\$1,080	\$28,920
Mixed Additional Revenue	\$149,000	3.6%	\$5,364	\$143,636
Total Revenue	\$1,171,000	21.3%	\$249,644	\$921,356
Annual fee (2008)	\$5,000			\$5,000
Annual Revenue to Chatfield	\$59,640			\$47,991
Total Revenue Loss (State Parks)		\$ 11,649		
Total Revenue Loss (Concessionaire)		\$ 249,644		

Note: Mixed additional includes: Restaurant, sundry and miscellaneous revenue.

Source: BBC Research & Consulting and Chatfield State Park.

Based on the preliminary construction schedule, the Marina will be closed for nearly six months over the course of the construction period. Nine weeks of closure fall within the peak boating season from mid-April through mid-October. The nine weeks of closure, or about 30 percent of the peak season, are assumed to generate no slip rental revenue. During year two of the construction period, slip rental revenue at the Marina is estimated to be reduced by 30 percent. Interviews with the marina proprietor indicated that they expect to offer a discounted slip rental during the shortened season of the first year of construction.

Assuming visitation directly correlates with boat rentals and restaurant/sundry business; both rental and additional retail revenue are reduced by the same percentage as the reduction in surface water recreation visitation reported in the survey. The marina owners indicated that dry storage will continue regardless of construction or water levels, therefore, there is no estimated reduction in dry storage. Overall, the Marina will experience an estimated \$249,600 decrease in total gross revenue over the construction period.

About 4 out of the 9 weeks of closure is expected to occur in Year 2 of construction and the remaining 5 weeks in Year 3 of construction.³ As such, about 44 percent, or \$109,800 of lost marina revenue is expected to occur in Year 2. The remaining 56 percent, or \$139,800 of lost marina revenue is expected to occur in Year 3 of construction.

Chatfield Livery. The Chatfield Livery at Chatfield generates revenue from horse boarding, guided horse rides and riding lessons. In addition to a small annual fee of \$500, the horse stables pay State Parks an additional portion of gross revenue. In 2008, the stables paid Chatfield \$7,918 or 6.7 percent of gross revenue. Exhibit V-6 below displays the current revenue at the stables and the reduction over the course of the construction period.

³ See Section III, page 5 for construction schedule. Marina closure is expected during construction at Marina Point and South Ramp areas.

Exhibit V-6.
Chatfield Livery Revenue Impacts

Revenue Source	Current Revenue	Percent Revenue Reduction	Revenue Loss at Stables	Reduced revenue During Construction
Boarding	\$58,690	41.7%	\$24,454	\$34,236
Rides, Lessons, Other	\$58,690	6.5%	\$3,815	\$54,875
Total Horse Stable Revenue	\$117,380	24.1%	\$28,269	\$89,111
Annual fee (2008)	\$500			\$500
Revenue to Chatfield	\$8,418			\$4,582
Total Revenue Loss (State Parks)		\$ 3,836		
Total Revenue Loss (Concessionaire)		\$ 28,269		

Note: Rides and Rentals include: Horseback trail rides, Hayrack rides, Pony rides, Day camps, and Adult riding sessions.
Source: BBC Research & Consulting and Chatfield State Park.

Located due east of the horse stables, the Catfish Flats and Fox Run picnic areas will be closed for a total of 5 months (or 20 weeks) over the course of the construction period. Assuming construction disturbance at the horse stables from these adjacent facilities makes boarding horses impractical, approximately 5 months of revenue from boarding will potentially be lost.

Assuming visitation directly correlates with horse rides and rentals, revenues are reduced by the same percentage as the reduction in horseback visitation reported in the survey. Overall, the horse stables will experience an estimated \$28,300 total decrease in gross revenue over the construction period.

About 12 out of the 20 weeks of closure is expected to occur in Year 2 of construction and the remaining 8 weeks in Year 3 of construction.⁴ As such, about 60 percent, or about \$17,000 of lost horse stable revenue is expected to occur in Year 2. The remaining 40 percent, or about \$11,300 of lost horse stable revenue is expected to occur in Year 3 of construction.

These reductions in revenue affect the marina and horse stables during construction only. Once the construction is finished, revenues at these concessionaires are expected to recover to levels experienced before construction assuming access to these facilities is available.

Summary of Revenue Impacts—Alternative 3

State Parks concessionaires are estimated to lose about \$277,900 in total revenue over the construction period. About \$126,800 in revenue losses is expected to occur in Year 2 of construction and the remaining \$151,100 in revenue loss is expected to occur in Year 3 of construction. After construction, the facilities will reopen and revenue is expected to recover. State Parks is expected to lose about \$3.4 million over the 50-year analysis period, including revenue associated with concessionaire agreements.

⁴ See Section III, page 5 for construction schedule. Stable closure is expected during construction at the Catfish Flats and Fox Run areas.

Colorado State Parks and Concessionaire Revenue Impacts—Alternative 4

Construction and operation of Alternative 4 will affect recreational activity at Chatfield State Park if recreational facilities are closed to accommodate construction activities. Reduced recreation use would affect revenue generation for Colorado State Parks and concessionaires that operate facilities in the park.

Visitation loss and substitution. Estimates of visitation loss were calculated using the same survey and subsequent adjustments used to calculate recreation loss for Alternative 4 in the RED analysis. See Section IV for a description of visitation loss estimates associated with Alternative 4. Site substitution factors applied to Alternative 4 visitation loss estimates are derived directly from the visitation survey. Substitution factors are the same as presented in Exhibits V-1 through V-3 for Alternative 3.

The results of the survey adjustments yield a total annual loss at Chatfield State Park of about 234,400 visitors or 14 percent during construction, about 132,700 visitors or 8 percent during incremental reallocation and about 54,400 visitors or 3 percent after operations stabilize. After State Parks site substitution is considered, visitation loss is substantially less: about 145,600 visitors or 9 percent during construction, about 73,500 visitors or 4 percent during incremental reallocation and about 38,700 visitors or 2 percent after operations stabilize.

Exhibits V-7 through V-9 present projected visitation loss at Chatfield during three periods of the Proposed Reallocation Project: (1) project construction; (2) the incremental reallocation period where reallocation is incomplete and water levels are perceived as low; and (3) after reallocation is complete and park management operations stabilize.⁵

⁵ Please see Section I, page 4 for a description of the phases of the Storage Reallocation Project.

Exhibit V-7.
Chatfield State Park Visitor Response
Construction Period (State Parks Substitution Only) Alternative 4

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Construction	Visitors Lost Construction	Percent Recovered at St. Parks Alt Site	Visitors Recovered at St. Parks Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	17.5%	14,628	27.3%	3,993
Bicycling on Trail	204,372	28.3%	57,837	30.0%	17,351
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	4.9%	637	0.0%	-
Personal Interpretation	2,570	17.5%	450	27.3%	123
Non-Personal Interpretation	10,083	17.5%	1,765	27.3%	482
Environmental Education	1,244	17.5%	218	27.3%	60
CAMPING	94,758	15.0%	14,214	27.3%	3,880
GRAVEL POND USES:					
Canoeing and Kayaking	414	1.8%	7	0.0%	-
Long-Distance Swim Training	9,400	1.8%	169	0.0%	-
Open Water Swim	16,300	1.8%	293	0.0%	-
Shore Fishing	2,497	1.8%	45	0.0%	-
Primary Picnicking (non-group)	3,350	1.8%	60	0.0%	-
Water Rescue Dog Training	230	1.8%	4	0.0%	-
Scuba diving	3,628	1.8%	65	0.0%	-
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.7%	2,010	50.0%	1,005
Other Motorcraft Use	68,156	3.7%	2,522	50.0%	1,261
Other Non-Motorcraft Use	43,545	3.7%	1,611	50.0%	806
Jet Skiing	29,856	3.7%	1,105	50.0%	553
Water Skiing	44,164	3.7%	1,634	50.0%	817
FISHING:					
Ice Fishing at Reservoir	2,300	11.0%	253	33.3%	84
Shore Fishing at Reservoir	32,340	11.0%	3,557	33.3%	1,184
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	0.0%	-
Flying Model Airplanes	15,570	7.5%	1,168	25.0%	292
Dog Tracking	1,764	100.0%	1,764	0.0%	-
Search and Rescue Dog Training	100	100.0%	100	0.0%	-
View Birds / Wildlife; Photography	8,806	59.3%	5,222	44.4%	2,319
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	0.0%	-
Horseback Riding, not in trail counts	36,590	4.9%	1,793	0.0%	-
SUBTOTAL, NON-SIGHTSEERS:	943,046		132,825		50,337
SIGHTSEEING	721,102		101,565		38,490
Total 2007 Visitation	1,664,148	Total Visitors Lost	234,390	Total Visitors Lost after	145,563
		Construction	14.1%	St. Parks Substitution	8.7%

Source: BBC Research & Consulting.

Exhibit V-8.
Chatfield State Park Visitor Response Incremental
Reallocation Period (Year 1-5 after Construction) Alternative 4

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Inc. Reallocation	Visitors Lost Inc. Reallocation	Percent Recovered at St. Parks Alt Site	Visitors Recovered at St. Parks Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	11.1%	9,279	27.3%	2,533
Bicycling on Trail	204,372	10.9%	22,277	30.0%	6,683
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	2.6%	338	0.0%	-
Personal Interpretation	2,570	11.1%	285	27.3%	78
Non-Personal Interpretation	10,083	11.1%	1,119	27.3%	305
Environmental Education	1,244	11.1%	138	27.3%	38
CAMPING	94,758	7.5%	7,107	27.3%	1,940
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	0.0%	-
Long-Distance Swim Training	9,400	0.0%	-	0.0%	-
Open Water Swim	16,300	0.0%	-	0.0%	-
Shore Fishing	2,497	0.0%	-	0.0%	-
Primary Picnicking (non-group)	3,350	0.0%	-	0.0%	-
Water Rescue Dog Training	230	0.0%	-	0.0%	-
Scuba diving	3,628	0.0%	-	0.0%	-
SWIMMING/SWIM BEACH	50,235	25.0%	12,559	100.0%	12,559
SURFACE WATER RECREATION:					
Boat Fishing	54,318	3.5%	1,901	50.0%	951
Other Motorcraft Use	68,156	3.5%	2,385	50.0%	1,193
Other Non-Motorcraft Use	43,545	3.5%	1,524	50.0%	762
Jet Skiing	29,856	3.5%	1,045	50.0%	523
Water Skiing	44,164	3.5%	1,546	50.0%	773
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	33.3%	-
Shore Fishing at Reservoir	32,340	0.0%	-	33.3%	-
PICNICKING					
Group Picnicking	10,000	50.0%	5,000	50.0%	2,500
Non-Group Primary Picnicking, Lake	4,270	50.0%	2,135	50.0%	1,068
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	0.0%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	0.0%	-
Search and Rescue Dog Training	100	100.0%	100	0.0%	-
View Birds / Wildlife; Photography	8,806	42.7%	3,760	44.4%	1,669
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	0.0%	-
Horseback Riding, not in trail counts	36,590	2.6%	951	0.0%	-
SUBTOTAL, NON-SIGHTSEERS:	943,046		75,213		33,575
SIGHTSEEING	721,102		57,512		25,673
Total 2007 Visitation	1,664,148	Total Visitors Lost	132,725	Total Visitors Lost after	73,477
		Incremental Reallocation	8.0%	St. Parks Substitution	4.4%

Source: BBC Research & Consulting.

Exhibit V-9.
Chatfield State Park Visitor Response
Stabilization Period (6+ Years after Construction) Alternative 4

	Visitation 2007	Projected Visitors Lost		Projected Visitors Recovered	
		Annual Percent Loss Stabilization	Visitors Remaining Stabilization	Percent Recovered at St. Parks Alt Site	Visitors Recovered at St. Parks Alt Site
TRAIL USES:					
Hiking / Jogging / Walking	83,591	6.4%	5,350	27.3%	1,461
Bicycling on Trail	204,372	8.2%	16,759	30.0%	5,028
Dog Exercise Area	88,636	0.0%	-	0.0%	-
Equestrian Trail Use	13,007	2.6%	338	0.0%	-
Personal Interpretation	2,570	6.4%	164	27.3%	45
Non-Personal Interpretation	10,083	6.4%	645	27.3%	176
Environmental Education	1,244	6.4%	80	27.3%	22
CAMPING	94,758	0.0%	-	27.3%	-
GRAVEL POND USES:					
Canoeing and Kayaking	414	0.0%	-	0.0%	-
Long-Distance Swim Training	9,400	0.0%	-	0.0%	-
Open Water Swim	16,300	0.0%	-	0.0%	-
Shore Fishing	2,497	0.0%	-	0.0%	-
Primary Picnicking (non-group)	3,350	0.0%	-	0.0%	-
Water Rescue Dog Training	230	0.0%	-	0.0%	-
Scuba diving	3,628	0.0%	-	0.0%	-
SWIMMING/SWIM BEACH	50,235	0.0%	-	100.0%	-
SURFACE WATER RECREATION:					
Boat Fishing	54,318	0.0%	-	50.0%	-
Other Motorcraft Use	68,156	0.0%	-	50.0%	-
Other Non-Motorcraft Use	43,545	0.0%	-	50.0%	-
Jet Skiing	29,856	0.0%	-	50.0%	-
Water Skiing	44,164	0.0%	-	50.0%	-
FISHING:					
Ice Fishing at Reservoir	2,300	0.0%	-	33.3%	-
Shore Fishing at Reservoir	32,340	0.0%	-	33.3%	-
PICNICKING					
Group Picnicking	10,000	10.0%	1,000	50.0%	500
Non-Group Primary Picnicking, Lake	4,270	10.0%	427	50.0%	214
SPECIAL USES					
Hot Air Ballooning	4,404	0.0%	-	0.0%	-
Flying Model Airplanes	15,570	0.0%	-	25.0%	-
Dog Tracking	1,764	100.0%	1,764	0.0%	-
Search and Rescue Dog Training	100	100.0%	100	0.0%	-
View Birds / Wildlife; Photography	8,806	36.7%	3,232	44.4%	1,435
EQUESTRIAN USE:					
Horseback Riding - Spring Gulch	2,548	0.0%	-	0.0%	-
Horseback Riding, not in trail counts	36,590	2.6%	951	0.0%	-
SUBTOTAL, NON-SIGHTSEERS:	943,046		30,810		8,881
SIGHTSEEING	721,102		23,559		6,791
Total 2007 Visitation	1,664,148	Total Visitors Lost	54,369	Total Visitors Lost after	38,697
		Stabilization	3.3%	St. Parks Substitution	2.3%

Source: BBC Research & Consulting.

Colorado State Parks Revenue Loss—Alternative 4

On-site State Parks revenue per visitor presented in Section II is applied to non-substituted visitation loss estimates derived in the preceding tables to calculate State Parks revenue loss. Exhibit V-10 displays a 50-year projection of annual revenue loss at Chatfield Reservoir during the construction, incremental reallocation and stabilization periods for Alternative 4.

Exhibit V-10. Colorado State Parks Projected Revenue Loss, Alternative 4

Source:
BBC Research & Consulting.

	Annual Visitation Loss	Parks Revenue Per Visitor	Annual Revenue Loss
Construction			
Year 1-2	145,563	\$ 1.15	\$ 167,397
Incremental Reallocation			
Year 3-7	73,477	\$ 1.15	\$ 84,499
Stabilization			
Year 8-50	38,697	\$ 1.15	\$ 44,502
50-year Total	2,322,482	-	\$ 2,670,854

The largest decrease in visitation and corresponding reduction in revenue is during construction. State Parks is projected to lose about \$167,000 in annual revenue during project construction and about half of that amount during the incremental reallocation period (\$84,500). Revenue losses during stabilization are estimated at about \$44,500 per year. The 50-year total lost revenue is nearly \$2.7 million.

Concessionaire Revenue Loss—Alternative 4

Chatfield Marina. Under Alternative 4, the Chatfield Marina will be fully inundated and will require relocation, which is similar to Alternative 3. While no construction schedule projection has been completed specific to Alternative 4, it is estimated that the construction period will be similar to Alternative 3, thus revenue loss at the Chatfield Marina is expected to be the same as Alternative 3. Under Alternatives 3 and 4, Chatfield Marina is expected to experience total reduced revenue of \$249,600 over the construction period. About 44 percent, or \$109,800 of lost marina revenue is expected to occur in Year 2. The remaining 56 percent, or \$139,800 of lost marina revenue is expected to occur in Year 3 of construction.

See page V-6 and V-7 for a more detailed discussion of impacts on the Chatfield Marina.

Chatfield Livery. Under Alternative 4, most facilities at the Catfish Flats and Fox Run picnic areas will be inundated, which is similar to Alternative 3. Assuming construction disturbance at these facilities is similar between alternatives, it is estimated that revenue loss at the Chatfield Livery under Alternative 4 is expected to be the same as Alternative 3. Under Alternatives 3 and 4, Chatfield Livery is expected to experience total reduced revenue of \$28,300 over the construction period. See page V-7 and V-8 for a more detailed discussion of impacts on the Chatfield Livery. About 60 percent, or about \$17,000 of lost horse stable revenue is expected to occur in Year 2. The remaining 40 percent, or about \$11,300 of lost horse stable revenue is expected to occur in Year 3 of construction.

Summary of Revenue Impacts—Alternative 4

State Parks concessionaires are estimated to lose about \$277,900 in total revenue over the construction period. About \$126,800 in revenue losses is expected to occur in Year 2 of construction and the remaining \$151,100 in revenue loss is expected to occur in Year 3 of construction. After construction, the facilities will reopen and are expected to recover. State Parks is expected to lose about \$2.7 million over the 50-year analysis period, including revenue associated with concessionaire agreements.

Other Social Effects—Reallocation Alternatives 3 and 4

The impacts of the Proposed Reallocation Project on State Parks, concessionaires and regional economy have been quantified in the preceding sections, but there are other, less tangible impacts of the Proposed Reallocation Project. There is an estimated 500 acres of upland and riparian habitat that will be inundated as a result of the Proposed Reallocation Project. Consequentially, the wetland ecosystem surrounding the reservoir will be altered for many years.

The ecosystem has a value, often called existence or intrinsic value, which is not quantified by this study. For example, some people may value the existence of a diverse set of species or habitats regardless if they directly use or derive personal enjoyment from the species or habitat. The existence of these habitats may have an option value, such as the possibility of using it for some future purpose. The habitat may have a bequest value, i.e., people may value the ability to leave pristine habitat to for their descendants to enjoy. Habitat loss will be somewhat less in Alternative 4 than in Alternative 3.

The habitat and the park itself also contribute to the value of residential property in the area. There are several subdivisions near Chatfield State Park that command some premium in value associated with close proximity to open space and water based recreation opportunities. Adjacent property values may be temporarily affected by the Reallocation Project, although other market factors may outweigh the effects of the project. Property value and ecosystem value impacts would likely be very similar in Alternative 3 and Alternative 4.

Chatfield State Park is one of a handful of state parks that are self supporting, i.e., producing more in revenue than is spent in operating expenditure. The net revenue of Chatfield State Park and the other self sufficient state parks are collected in the parks general fund and allocated in the following fiscal year towards all park operating budgets. The Proposed Reallocation Project will have an effect on the entire State Parks system because the net revenue generated at Chatfield supports park operations across the state. The extent of State Parks revenue losses may be somewhat less under Alternative 4 than under Alternative 3.

The following paragraphs summarize information presented in Chapters 1 through 5 of the Chatfield Storage Reallocation Feasibility Report/EIS.

The Reallocation Project will not affect the primary flood control functionality of Chatfield Reservoir in either Alternative 3 or 4, thus there are no associated public safety concerns. The reallocation project would not affect one racial, ethnic or income group disproportionately, thus there are no known environmental justice concerns associated with the project.

Under Alternative 4, there is continued reliance on non-tributary groundwater and downstream gravel pond storage facilities to supplement the more modest storage in Chatfield Reservoir relative to

Alternative 3. Non-tributary groundwater is a non-renewable resource that will eventually be depleted. Non-tributary groundwater becomes increasingly more expensive to obtain, because more wells are required to deliver comparable flows. This increasing expense will likely be passed on to consumers by the water users. Alternative 4 is the second most expensive alternative to construct behind Alternative 1. Alternative 3 is the least expensive alternative to construct and implement and would likely have the least impact on consumer water rates and fees.

The project's main objective is to provide a relatively convenient and low-cost means to supplement regional water storage. Chatfield Reservoir can provide storage in an already existing facility, which can provide savings to the proponent water users. Chatfield Reservoir is located "on-channel" and thus will not require significant construction of water diversion or delivery pipelines. Use of Chatfield for water storage will help lessen regional dependence on non-tributary groundwater, which is a non-renewable water source. A dependable water supply is important for regional economic development and continued regional prosperity.

In general, recreation-related impacts are a temporary negative impact associated with a project than has long-term positive benefits to the water users and Front Range citizens who will receive water from the project.

Other Social Effects—No Action Alternatives 1 and 2

Under Alternatives 1 and 2, there would be no impacts on water level or water management practices at Chatfield Reservoir. Accordingly, there would be no impact to habitat or recreation uses at Chatfield State Park, and thus no social impacts at the park. In general, Alternatives 1 and 2 represent a status quo scenario, where water users would continue use of current water sources and current and planned storage methods.

Alternative 1. Under Alternative 1, the water users would obtain surface water storage at the proposed Penley Reservoir site, just south of Chatfield Reservoir in Douglas County. Penley Reservoir is in an early planning stage and may likely be developed whether the Reallocation Project occurs or not. No public use is currently envisioned at Penley Reservoir, although no final determination has been made. Alternative 1 requires construction of more significant diversion and delivery infrastructure than any other alternative, which may contribute to a higher cost of water to consumers through increased rates and fees. Alternative 1 is the most expensive of the alternatives to construct and implement and would likely cause the largest impact on rates and fees charged to consumers.

Under Alternative 1, water users would also procure storage in downstream gravel pits, which are located on private land and generally do not allow for public use. Downstream gravel pits are already used for storage by Denver Metro Area water utilities; continued use does not present any social effects.

Alternative 2. Under Alternative 2, the water users would continue their dependence on non-tributary ground water, which is a non-renewable resource that is becoming increasingly expensive to obtain. As groundwater supply is depleted, it requires more wells and pumping facilities to deliver water to users; this situation will only intensify as regional population and demand for water grows. As the price of water delivery rises, it is passed on to consumers in each of the water users' service

area. Alternative 2 is less expensive to construct and implement than Alternatives 1 and 4, but more expensive than Alternative 3.

The continued use of non-tributary groundwater, in the long-term, is not a sustainable solution to increased water demand in the Denver Metropolitan area, although there are no known immediate social effects associated with the use of groundwater and downstream gravel pits associated with this Alternative.

Environmental Justice

Executive Order 12898 defines Federal agency responsibilities regarding environmental justice as:

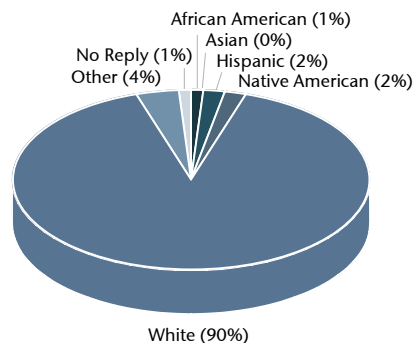
To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marian islands.⁶

Given this definition, there are no characteristics of any alternative considered in this analysis that would affect minority or low-income populations in the Denver Metropolitan Area disproportionately. The no action alternatives (Alternatives 1 and 2) represent a continuation of present storage practices and the potential construction of a reservoir (Penley Reservoir) that is not proposed to be located near any current residences or businesses.

There are no long term environmental justice concerns related to either of the reallocation alternatives (Alternatives 3 and 4) given the temporary disturbance of recreation facilities, in-kind replacement of facilities and the presence of ample substitution sites for recreation. Exhibit V-11 shows the race of Chatfield users, obtained from a market assessment study completed in 2009.

Exhibit V-11. Chatfield State Park User Race and Ethnicity, 2009

Source:
Colorado State Parks Marketing
Assessment, 2009, Corona Research.



Chatfield State Park users are about 90 percent white, 2 percent Hispanic, 2 percent Native American and 4 percent “Other”. The market assessment did not provide data on user income.

⁶ Federal Register Volume 59, Number 32. February 16, 1994. <http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf>

APPENDIX A.
Chatfield State Park
2007 Visitation by Recreation Activity

APPENDIX A.

Chatfield State Park

2007 Visitation by Recreation Activity

The following table shows 2007 visitation by recreation use. These data form the basis for recreation visitation loss calculations in Section IV and Section V.

Exhibit A-1.
Chatfield State Parks Primary Activities Visitor Data, 2007

	Annual Visitation		Annual Visitation
Total Chatfield State Parks Visitors	1,664,146	Primary Activities (continued)	
Trail Users:		Other Motorcraft Use	68,156
Bike/Walk-in (Deer/Plum Creek Entrance Stations)	14,108	Canoeing and Kayaking at Gravel Ponds	414
C-470 East Trail (Dog Training)	111,428	Other Non-motorcraft Use	43,545
C-470 West Trail	74,346	Long-Distance Swim Training at Gravel Ponds	9,400
Greenway	115,710	Swim Beach Use	50,235
Trailmark	47,445	Shore Fishing at Gravel Ponds	2,497
Water Board Road	22,867	Shore Fishing at Reservoir	32,340
Total	385,904	Ice Fishing at Reservoir	2,300
Primary Activities		Primary Picnicking at Gravel Ponds	3,350
Group Camping	16,047	Other Primary Picnicking (Non-group)	4,270
Camping — Electrical	69,033	Wildlife Viewing/Nature Observation/Photography	8,806
Camping — Basic	9,678	Horseback Riding — Spring Gulch	2,548
Group Picnic — Marina Point	2,640	Horseback Riding — State Parks (Not in Trail Counts)	36,590
Group Picnic — Riverside	2,040	Other Trail Use — State Parks (Not in Trail Counts)	3,700
Group Picnic — Heronry Overlook	3,520	Hot-Air Balloons	4,404
Group Picnic — Fox Run	1,800	Model Airplanes	15,570
Personal Interpretation	2,570	Water Dog Training at Gravel Ponds	230
Non-Personal Interpretation	10,083	Dog Tracking	1,764
Environmental Education	1,244	Dog Search & Rescue	100
Boat Fishing	54,318	Scuba Diving	3,628
Water Skiing	44,164	Open Water Swim	16,300
Jet Skiing	29,856	Sightseeing (Participating in no other activities)	721,102
		Total	1,278,242

Source: Colorado State Parks.

APPENDIX B.
Visitor Survey Instrument

Appendix B. **Recreation Preferences Survey Instrument**

The following page shows the survey instrument used at the April 16, 2009 recreation user group presentation to gauge visitor response to the Reallocation Project.

Chatfield Reallocation Questionnaire on Recreation Preferences

Primary Recreation Activity

1. What is your primary recreation activity at Chatfield State Park? _____

2. How many days do you use the park for your primary activity...
...during May through September? _____ Weekdays
_____ Weekend Days

...during October through April? _____ Weekdays
_____ Weekend Days

3. Will you use the park for your primary activity during the construction period? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

4. Will you use the park for your primary activity 1 to 5 years after the construction period, when water levels are low? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

5. Will you use the park for your primary activity when water levels return to normal? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

6. Where will you go instead of Chatfield for your primary recreation activity? _____

(please specify the name of the park or recreation area)

If no substitute is available, please specify reason why: _____

Other Recreation Activity 1

1. What is another recreation activity you participate in at Chatfield State Park? _____

2. How many days do you use the park for this activity...
...during May through September? _____ Weekdays
_____ Weekend Days

...during October through April? _____ Weekdays
_____ Weekend Days

3. Will you use the park for this activity during the construction period? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

4. Will you use the park for this activity 1 to 5 years after the construction period, when water levels are low? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

5. Will you use the park for this activity when water levels return to normal? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

6. Where will you go instead of Chatfield for this recreation activity? _____

(please specify the name of the park or recreation area)

If no substitute is available, please specify reason why: _____

Other Recreation Activity 2

1. What is another recreation activity you participate in at Chatfield State Park? _____

2. How many days do you use the park for this activity...
...during May through September? _____ Weekdays
_____ Weekend Days

...during October through April? _____ Weekdays
_____ Weekend Days

3. Will you use the park for this activity during the construction period? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

4. Will you use the park for this activity 1 to 5 years after the construction period, when water levels are low? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

5. Will you use the park for this activity when water levels return to normal? Yes No

If yes, will you decrease the amount of days at the park? Yes No
By how many days? _____ days

6. Where will you go instead of Chatfield for this recreation activity? _____

(please specify the name of the park or recreation area)

If no substitute is available, please specify reason why: _____

