

Appendix E

RECREATION BENEFITS

E-1: Implementation of Unit Day Value Methodology

E-2: List of Substitute Recreation Sites

APPENDIX E-1

Implementation of Unit Day Value Methodology

The criteria in ER-1105-2-100 for selecting procedures for evaluating National Economic Development (NED) recreation benefits were followed to determine the appropriate methodology for this analysis. The Unit Day Value (UDV) method was selected to evaluate recreation benefits for the following reasons: a regional model was not available; specialized recreation activities from a national perspective were not affected; estimated annual visits affected did not exceed 750,000; and expected costs did not exceed 25 percent of expected total project cost.

The UDV method for estimating recreation benefits relies on expert or informed opinion and judgement to approximate the average willingness to pay of users of the NSBL&D project. ER 1105-2-100 provides guidelines for assigning points and their conversion to dollar value for evaluating recreation.

1. Unit Day Value of General Recreation and Fishing

The guidelines for assigning points to general recreation include five criteria: (1) the quality of the recreation experience as affected by congestion; (2) availability of substitute areas in terms of travel time; (3) carrying capacity determined by level of facility development; (4) accessibility as affected by road and parking conditions; and (5) environmental quality based on aesthetics. An individual site, which in this case is the NSBL&D study area, is rated on a 100-point scale. The total possible points that can be assigned to each criterion are as follows: (1) Recreation Experience – 30; (2) Availability of Opportunity – 18; (3) Carrying Capacity – 14; (4) Accessibility – 18; and (5) Environmental – 20.

The conversion of points to dollar value for general recreation is expressed in two activity categories: (1) general recreation and (2) general fishing and hunting. Hence, points are estimated and expressed in the same manner. General recreation includes boating, canoeing, kayaking and jet skiing. General fishing includes fishing from the lock, banks and boat.

Table 1 of this appendix illustrates the points for general recreation assigned to each criterion and its associated judgement factor.

Table 1
Points and Unit Day Values
General Recreation and Fishing

Criteria	General Recreation	General Fishing
(1) Recreation Experience	Several general activities Points = 10 out of 30	Several general activities Points = 10 out of 30
(2) Availability of Opportunity	Several within 1 hour travel time: a few within 30 minute travel time Points = 3 out of 18	Several within 1 hour travel time: a few within 30 minute travel time Points = 3 out of 18
(3) Carrying Capacity	Adequate facilities to conduct activity without deterioration of the resource or activity experience Points = 8 out of 14	Adequate facilities to conduct activity without deterioration of the resource or activity experience Points = 8 out of 14
(4) Accessibility	Good access, high standard road to site: good access within site Points = 18 out of 18	Good access, high standard road to site: good access within site Points = 18 out of 18
(5) Environmental	Outstanding aesthetic quality; no factors exist that lower quality Points = 20 out of 20	Outstanding aesthetic quality; no factors exist that lower quality Points = 20 out of 20
Total Points	59	59
Conversion to Unit Day Value	\$6.29/Visit	\$6.97/Visit

2. Recreational Use Estimates and Benefit Calculations

Use estimates of the NSBL&D and its pool for water dependent, general recreation activities were determined for general recreation by expert and informed judgements and opinions and rental data (canoeing and kayaking). General fishing use estimates were determined based on DNR Creel Surveys.

2.1. General Recreation

2.1.1. Use Estimation

General recreation includes pleasure boating, canoeing kayaking, and jet skiing. Recreational use is measured by annual visits. A visit consists of one person on a day trip. Annual visits to the NSBL&D study area “with the NSBL&D project”, assumes transfer of ownership or reauthorization, for water dependent, general recreation are summarized in Table 2. Annual visits to the NSBL&D study area “without the NSBL&D project”, assumes complete removal of the project via deauthorization, for water dependent, general recreation are summarized in Table 3.

Table 2
Annual Visits to the NSBL&D Study Area
“With the NSBL&D Project”
General Recreation Activities

Recreation Category	Annual Visits
<i>General Recreation</i>	
• Pleasure Boating	30,000
• Canoeing/Kayaking	3,000
• Jet Skiing	15,000
<i>Total</i>	<i>48,000</i>

Table 3
Annual Visits to the NSBL&D Study Area
“Without the NSBL&D Project”
General Recreation Activities

Recreation Category	Annual Visits
<i>General Recreation</i>	
• Pleasure Boating	9,000
• Canoeing/Kayaking	2,000
• Jet Skiing	6,000
<i>Total</i>	<i>17,000</i>

“Without the NSBL&D project”, there is a loss in the depth and width and an increase in the velocity of the river within the NSBL&D study area. These conditions may make traversing the river more difficult. In addition, some boat docks and ramps would need to be adjusted for continued use.

There are several substitute sites within an hour drive and a few within an half-hour drive of the NSBL&D study area that offer the same types of general recreation opportunities.

As a result, it is estimated that approximately 65 percent or 31,000 of the general recreation visits would be transferred to another substitute location outside the NSBL&D area or no longer exists at all.

It is more likely that these activities would be transferred rather than not exists since there are several substitute sites within an hour drive of the NSBL&D study. Therefore, it is assumed that only 5 percent of the visits that no longer exist within the NSBL&D study area are lost “without the NSBL&D project”. Hence, 95 percent of these visits transfer to a substitute site. As the distance traveled to partake in the same recreational experience increases, there is an expected decrease in the number of visits. It is assumed that there will be a 5 percent decrease in visits transferred to a nearby substitute location. Table 4 summarizes the above information.

Table 4
Total Recreation Visits Lost or Transferred
General Recreation

Visits Lost Within the NSBL&D Area Without the NSBL&D Project	Visits Lost to the Nation Without the NSBL&D Project (5% of 31,000)	Visits Transferred to a Substitute Location (95% of 31,000)	Decrease in Transferred Visits Due to Increased Travel Distance
31,000 (65%)	1,550	29,450	
	+1,473	-1,473	1,473 (5%)
TOTAL	3,023	27,977	

2.1.2. Benefits/Benefits Foregone

The benefits to the nation for general recreation activities in the NSBL&D study area with the NSBL&D project equal the visits lost to the nation “without the NSBL&D project” times the UDV. Annual visits lost to the nation “without the NSBL&D project” (3,023) times \$6.29 per visit equals \$19,015. Table 4 summarizes the benefits “with the NSBL&D project” and benefits foregone “without the NSBL&D project” for general recreation.

Table 4
Benefits/Benefits Foregone
General Recreation Activities

	“With NSBL&D Project”	“Without NSBL&D Project”
Annual Visits Lost to the Nation	3,023	3,023
Dollar Value/Visit	\$6.29	\$6.29
Benefit/Benefit Foregone	\$19,015	-\$19,015

It appears highly likely based on conversations with representatives of the Augusta Metropolitan Convention and Visitors Bureau, Inc. and Augusta Port Authority that a riverboat would come back to Augusta with a reliable project.

Augusta, Georgia, once had a riverboat from the late 1980’s up to 1995. The boat accommodated up to 300 people per trip. It conducted 4 trips on the weekend and 2 trips on the weekday. The owner of the riverboat once said that the weekend trips were always full. If there were 300 people on a weekend trip and approximately 100 people on a weekday trip, then 1,400 people per week are estimated to travel on a riverboat. This equates to 78,000 people riding the riverboat annually.

An additional 78,000 visits are expected annually with the return of a riverboat as a result of a dependable project. Since this is a higher quality and unique experience and not common to the region, the value of a trip for an individual is expected to be higher than other types of pleasure boating. The UDV for an individual to take one trip on a riverboat touring through the NSBL&D is estimated at approximately \$22.00. With a reliable project, approximately an additional \$1,700,000 in

benefits could be produced from riverboat cruises through the lock. The total benefit “with the project” is estimated at \$1,719,015.

2.2. Fishing

The NSBL&D project provides an excellent point of access for fishing opportunities on the Savannah River. It is particularly an excellent access point for those fishing for anadromous species, especially American shad. It is where most anadromous species concentrate due to the obstruction of the NSBL&D.

2.2.1. Use Estimation

A South Carolina Department of Natural Resources (SCDNR) Creel Survey estimated 126,666 angler hours from February through June 1999. More specifically, anglers fishing for American shad spent 32,496 angler hours. Anglers were counted as they exited one of three access points: the NSBL&D, Butler Creek Boat Ramp and Butler Creek. It is estimated that the average angler spends 3 hours of effort per day. Therefore, angler visits per this five-month American shad season is estimated at 42,222 of which 10,832 angler visits were spent fishing for American shad.

A 1998 SCDNR Creel Survey was conducted from February through June at the same access points as the 1999 creel survey. During this period, the lock was closed for repairs and there were high water surface elevations permitting shad to pass over the sill of the dam. This survey estimated 43,062 angler hours of effort of which 2,609 were spent fishing for American shad. Therefore, without access to the NSBL&D, it is estimated that there would be 14,354 total angler visits during this five-month period of which 870 were spent fishing for American shad.

The difference in angler visits with access to the lock wall versus without access to the lock wall is 27,868. It represents a loss of 66 percent of total angler visits from February through June. Angler visits targeted toward American shad in 1998 represent 8 percent of angler visits targeted for American shad in 1999.

Decreases in visits attributed to anglers targeting American shad was identified by examining the percentage of visits targeted for American shad of the total visits in 1998 versus 1999. In 1998, there were 870 visits attributed to fishing for American shad of 14,354 total visits. The percentage of angler visits to fish for American shad of the total visits was 6 percent. In 1999, there were 10,832 visits attributed to fishing for American shad of 42,222 total visits. The percentage of angler visits to fish for American shad of the total visits was 26 percent. The loss in angler visits to fish for American shad with the lock access closed was 20 percent.

Data from the 1998 creel survey indicated that the majority of angling effort targeted toward American shad when lock access was not available was by boat. There was an insignificant population of bank anglers targeting American shad. Boating anglers have other opportunities and lost visits at the NSBL&D are expected to be easily transferable to nearby substitute locations. There are several substitute sites outside of the NSBL&D study area within an hour drive, some are as close as 100 yards downstream, some are 10 to 30 miles outside of the study area and some are within the 20-mile NSBL&D study area.

Anglers that fish from the lock and target American shad are not expected to have other substitute opportunities. Therefore, it was concluded that 20 percent of the total angling effort or visits targeted toward American shad were lost and directly related to the closure of the lock.

It is assumed that angler’s targeting residence species will continue to have angling opportunities resulting in no loss to annual visits. Anglers that target striped bass, an anadromous species, from the lock have other opportunities but additional travel time would be required. Since there are other opportunities for anglers targeting striped bass, it is estimated that only approximately another 5 percent of total angler visits would be lost without the convenience of the lock for access.

Total annual loss in recreational fishing visits to the nation without the project is estimated at approximately 25 percent of the 1999 creel survey estimate of 42,222 annual visits or 10,555 annual visits.

2.2.2. Benefits

The annual benefits to the nation for recreational fishing in the NSBL&D study area with the NSBL&D project equal the visits lost to the nation without the NSBL&D project (10,555) times the UDV (\$6.97). Annual benefits attributed to recreational fishing in the NSBL&D study area are estimated at \$73,568. Table 4 summarizes the recreational fishing benefits with the NSBL&D project and benefits foregone without the NSBL&D project.

**Table 4
Benefits/Benefits Foregone
Recreational Fishing**

	With NSBL&D Project	Without NSBL&D Project
Annual Visits Lost to the Nation	10,555	10,555
Dollar Value/Visit	\$6.97	\$6.97
Benefit/Benefit Foregone	\$73,568	-\$73,568

2.3. Total Water-Dependent, General Recreation Benefits

**Table 5
Total Benefits/Benefits Foregone
Water-Dependent, General Recreation**

General Recreation Category	With NSBL&D Project	Without NSBL&D Project
General	\$19,015	-\$19,015
Fishing	\$73,568	-\$73,568
Riverboat	\$1,700,000	\$0
Total Benefit/Benefit Foregone	\$1,792,583	\$92,583

General recreation and fishing exist at this time, hence benefits and benefits forgone are included in the analysis. A riverboat cruise does not exist at this time, therefore additional future benefits would result only from a repaired and reliable structure. Since there is not a riverboat at this time, it would not result in benefits foregone without the NSBL&D project.

Total annual benefits for water dependent recreation with a transfer of ownership or reauthorization of the project is estimated at \$1,792,583. With a complete removal of the project from the river and deauthorization, benefits foregone are estimated at \$92,583 for water dependent, general recreation.

APPENDIX E-2

List of Substitute Recreation Sites Within an Hour Drive of the NSBL&D

a. J. Strom Thurmond Lake Areas:

West Dam Day Use

Lake Springs Day Use

Clarks Hill Park Day Use

Below Dam SC Day Use

Mistletoe State Park, GA

b. Lake Olmsted

c. Magnolia Springs State Park

d. Redcliffe Plantation Historical Park

e. Aiken State Park