

APPENDIX E
Economic Analysis

WAPPINGERS LAKE
WAPPINGERS FALLS, NEW YORK
APRIL 1993

ECONOMIC ANALYSIS

1.0 INTRODUCTION

1.1 GENERAL Wappingers Lake is located in the Village of Wappingers Falls, Dutchess County, New York. The lake was created in the early part of the century by damming Wappinger Creek, a relatively small tributary of the Hudson River, in order to supply industry with needed power. With the decline of Wappingers Falls as an industrial site, the Village of Wappingers Falls purchased the lake and dams. The largest in the county, 88 acres, Wappingers Lake is open to the public for limited recreational activities (boating, fishing, etc.). Approximately 90% of the lake shore is privately owned, while public parks comprise the remaining shoreline. Veterans Memorial Park, 5.5 acres, Canale Memorial Park, 8.0 acres, as well as a private boat rental facility provide access to the lake. Property owners around the lake's 3.3 miles of shoreline have private access.

1.2 SCOPE As sediments have accumulated over time, the lake has become shallower. Sedimentation has caused a reported depth of 10-20 to be reduced to a present depth of 3-6 feet. Shallower depths allow for warmer water temperatures in summer which result in algal blooms and dense aquatic plant growth. Residents of the Village complain of an unpleasant odor, and consider the lake to be "polluted". The current condition of the lake limits recreation.

2.0 ANALYSIS

2.1 GENERAL Should the current situation continue, the lake will become unsuitable for any recreational use. As a result, the recreational benefits the lake provides will vanish. In order to quantify this loss, the unit-day method for estimating recreational benefits was applied. This method is outlined in Planning Guidance ER 1105-2-100, dated 28 December 1990. This analysis will focus on recreational benefits because they are the only benefits.

2.1 IDENTIFICATION Recreation benefit sources identified in this analysis include: boating and swimming (General Recreation), as well as fishing (General Fishing/Hunting). It is important to distinguish here between boating and fishing. Fishing is conducted while boating, however, the activities have been separated here for the purpose of analysis. Those who boat in order to fish are considered to be fishing, not boating. Conversely, those boating, and not fishing, are considered boaters. Table 1 displays this division of boating activity. The ratio of boaters to fishers was provided by local sources.

2.2 CALCULATION OF USAGE With this information, it is possible to approximate usage for these activities. Multiplication of the number of persons per day engaged in boating alone, 77 (see Table 1), by the number of days per year spent boating on the lake, 200, yields the total number of person-days spent boating, 15,400. Similarly, the number of swimmers per day, 250, as reported locally, multiplied by the number of days in the season, 100, results in 25,000 person-days. Thus, the Boating/Swimming General Recreation category totals 40,400 person-days of usage. A similar calculation is performed for those fishing (see Table 1), and 17,010 person-days is the result. It is important to note that these usage estimates assume that the lake has been restored to a more pristine condition, and indicate average use, not peak. Data gathered locally indicates such usage prevailed before sedimentation levels began to limit recreation at the lake.

2.3 ASSIGNING POINTS The unit-day method for estimating recreational benefits requires that point values be assigned to each recreational activity in question based upon specific criteria. Table 6-29 from Planning Guidance ER 1105-2-100, dated 28 December 1990, enumerates these criteria. Points are assigned in this analysis as follows:

Guidelines for Assigning Points for General Recreation

<u>Criteria</u>	<u>Assigned Points</u>	
	Boating/ Swimming	Fishing
Recreation Experience	3	0
Availability of Opportunity	3	3
Carrying Capacity	4	5
Accessibility	10	10
Environmental	6	6
	----- 26	----- 24

Next, these point totals are converted to unit dollar values. Through interpolation of data presented in Revised Table 6-28 (FY 1993) of the Planning Guidance, a point value of 26 yields a General Recreational Value of \$3.41 (boating/swimming), while a point value of 24 results in a General Fishing/Hunting Value of \$4.23 (fishing).

3.0 BENEFITS

3.1 ANNUAL BENEFITS In order to estimate recreational benefits, the dollar values listed above are now multiplied by the number of respective person-days calculated earlier. Table 2 displays this calculation. Thus, were the lake restored to a condition like that which had existed before the sedimentation problem began, total annual benefits of \$209,600 would be realized.

3.2 BENEFIT-COST RATIO The cost of the proposed restoration totals \$5,000,000. At the current government discount rate, 8 1/4 %, the annual cost, over a 50 year project life, is \$420,500. As a result, the benefit-cost ratio, with annual benefits of \$209,600, is 0.5 to 1. The benefits quantified here are recreational benefits only, and, according to current Corps policy, are considered low-priority.

TABLE 1

Wappingers Lake Reconnaissance Study
Wappingers Falls, New York

UNIT-DAY VALUE METHOD FOR ESTIMATING RECREATIONAL USAGE

Source: ER 1105-2-100, Table 6-29

BOATING ACTIVITY						
	Quantity of X Boats	Trips per Day	X	Persons per Boat	=	Persons per Day
Rental	20	3		2		120
Private	10	1		2		20
Total	30					140
Boating Only			55%			77
Fishing Only			45%			63
Total Boating			100%			140

BOATING / SWIMMING					
	Persons per Day	X	Length of Season (Days)	=	Person Days
Boating	77		200		15,400
Swimming	250		100		25,000
Total					40,400

FISHING					
	Persons per Day	X	Length of Season (Days)	=	Person Days
	63		270		17,010

TABLE 2

Wappingers Lake Reconnaissance Study
Wappingers Falls, New York

UNIT-DAY VALUE METHOD FOR ESTIMATING RECREATIONAL BENEFITS

Source: ER 1105-2-100, Table 6-29

<u>Boating/Swimming</u>	
Points:	26
General Recreational Value:	\$3.41

<u>Fishing</u>	
Points:	24
General Fishing/Hunting Value:	\$4.23

RECREATIONAL BENEFITS		
<u>BOATING / SWIMMING</u>		
Person Days	General Recreational Value	Benefits
40,400	\$3.41	\$137,602
<u>FISHING</u>		
Person Days	General Fishing/Hunting Value	Benefits
17,010	\$4.23	\$72,020
TOTAL ANNUAL BENEFITS		\$209,623