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STATEMENT OF  
HENRY ESCHWEGE, DIRECTOR  
COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION

BEFORE THE  
SUBCOMMITTEE ON ENVIRONMENT, ENERGY, AND NATURAL RESOURCES  
HOUSE COMMITTEE ON GOVERNMENT OPERATIONS  
ON THE  
CORPS OF ENGINEERS' BENEFIT-COST COMPUTATION FOR  
THE STONEWALL JACKSON LAKE PROJECT

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

WE ARE HERE TODAY TO DISCUSS INFORMATION WHICH WE DEVELOPED AT YOUR REQUEST ON THE CORPS OF ENGINEERS' (CORPS) BENEFIT-COST COMPUTATION FOR THE STONEWALL JACKSON LAKE PROJECT.

TO MEET THE TIMEFRAME ESTABLISHED BY THIS SUBCOMMITTEE, WE MADE A LIMITED ANALYSIS OF THE BENEFIT-COST COMPUTATION AND WE ONLY OBTAINED COMMENTS FROM OFFICIALS INVOLVED WITH THE PROJECT RATHER THAN FORMAL, OFFICIAL CORPS COMMENTS. ALSO, WE CONCENTRATED OUR EFFORTS ON BENEFITS AND MADE ONLY A BRIEF ANALYSIS OF COSTS. WITHIN THESE LIMITATIONS WE HAVE SEVERAL OBSERVATIONS, BUT WE CANNOT RENDER AN OVERALL OPINION AS TO THE ACCURACY OF THE CORPS' BENEFIT-COST ANALYSIS.

BACKGROUND

THE STONEWALL JACKSON LAKE PROJECT, AUTHORIZED IN 1966, IS A MULTIPURPOSE PROJECT BEING BUILT BY THE CORPS IN LEWIS COUNTY, WEST VIRGINIA. THE PROJECT IS TO PROVIDE FLOOD PROTECTION, WATER QUALITY CONTROL, AREA REDEVELOPMENT, WATER SUPPLY, AND RECREATION BENEFITS. ALTHOUGH ORIGINALLY ESTIMATED TO BE COMPLETED IN 1976



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AT A COST OF \$34.5 MILLION, COMPLETION IS CURRENTLY ESTIMATED FOR 1987 AT A COST OF \$189 MILLION. AS OF JULY 1981, ABOUT \$40.5 MILLION HAD BEEN SPENT PRIMARILY ON ENGINEERING, DESIGN, ACQUISITION AND CLEARING OF LAND, AND HIGHWAY AND UTILITY RELOCATIONS. ACTUAL CONSTRUCTION OF THE DAM HAD NOT BEEN STARTED.

IN 1966, WHEN THE PROJECT WAS AUTHORIZED, THE INITIAL BENEFIT-COST RATIO WAS 1.7 TO 1. DURING THE 1970'S THE CORPS MADE ANNUAL PRICE LEVEL AND SELECTED BENEFIT AND COST ADJUSTMENTS WHICH CAUSED THE RATIO TO FLUCTUATE, BUT GENERALLY IT WAS AROUND 1.3 TO 1. THE CORPS' COMPUTATION FOR FISCAL YEAR (FY) 1982 SHOWS A TOTAL BENEFIT-TOTAL COST RATIO OF 1.07 TO 1. HOWEVER, SINCE FY 1980, THE CORPS ONLY REPORTS IN ITS ANNUAL BUDGET REQUEST A REMAINING BENEFIT-REMAINING COST RATIO, WHICH FOR FY 1982 IS ESTIMATED TO BE 1.53 TO 1. THE ATTACHED APPENDIX SHOWS THE BENEFITS AND COSTS USED IN ARRIVING AT THIS RATIO.

BASED ON OUR REVIEW, WE HAVE OBSERVATIONS CONCERNING EACH PROJECT BENEFIT--RECREATION, WATER QUALITY, FLOOD CONTROL, WATER SUPPLY, AND AREA REDEVELOPMENT.

#### RECREATION

RECREATION BENEFITS ACCOUNT FOR \$1.19 MILLION, OR 15 PERCENT OF THE AVERAGE ANNUAL BENEFITS. THE DETERMINATION OF RECREATIONAL BENEFITS FOR STONEWALL JACKSON INVOLVED A NUMBER OF FACTORS. BASICALLY THE CORPS DETERMINED THE PER CAPITA USE BASED ON COMPARABLE PROJECTS; POPULATION WITHIN THE MARKET AREA OF STONEWALL JACKSON; FUTURE POPULATION GROWTH WITHIN THE MARKET AREA; AND THE PER DAY VALUE OF A RECREATIONAL VISIT.

THE PER CAPITA USE ESTIMATE (NUMBER OF TIMES AN INDIVIDUAL IN A CERTAIN GEOGRAPHIC AREA WOULD USE THE PROJECT EACH YEAR) WAS BASED ON 1964 TO 1969 DATA FROM A CALIFORNIA AND A KANSAS RESERVOIR RATHER THAN SIMILAR EXISTING RESERVOIRS IN WEST VIRGINIA. CORPS OFFICIALS SAID THAT THEY CHOSE NOT TO USE THE WEST VIRGINIA RESERVOIRS AS A BASIS FOR COMPARISON BECAUSE SATISFACTORY VISITATION DATA WAS NOT AVAILABLE WHEN THE RECREATION BENEFITS WERE COMPUTED IN 1971. THE CORPS HAS NOT UPDATED PER CAPITA USE RATES TO REFLECT MORE RECENT 1970 TO 1979 INFORMATION FOR THE TWO RESERVOIRS USED FOR COMPARISON. UPDATED INFORMATION WOULD INDICATE A LOWER PROJECTED ATTENDANCE FOR STONEWALL JACKSON.

THE CORPS DID UPDATE RECREATIONAL BENEFITS IN THE FY 1974 CONGRESSIONAL BUDGET PRESENTATION BY REDEFINING THE MARKET AREA COVERED BY STONEWALL JACKSON. AS A RESULT, THE AVERAGE ANNUAL BENEFITS INCREASED FROM \$479,000 TO APPROXIMATELY \$1.2 MILLION. THE CORPS EXPLAINED THAT NEW ROADS IN THE AREA AND A RESTUDY OF RECREATIONAL POTENTIAL MADE THE PROJECT ACCESSIBLE TO MORE VISITORS.

IN DETERMINING ANNUAL VISITATION, THE CORPS PROJECTED A STEADY INCREASE IN VISITATION THROUGH THE YEAR 2090--THE ANTICIPATED LIFE OF THE PROJECT. ALTHOUGH CORPS RECORDS SHOWED THAT POPULATION IN THE STONEWALL JACKSON AREA WOULD LEVEL OFF IN 2020, 33 YEARS AFTER THE PROJECT IS EXPECTED TO BE COMPLETED, THE CORPS CHOSE TO BASE ITS PROJECTION TO 2090 ON THE PLANNING EXPERIENCE OF THE WEST VIRGINIA DEPARTMENT OF NATURAL RESOURCES AND THE CORPS AT SIMILAR PROJECTS.

WHEN THE PROJECT'S RECREATIONAL BENEFITS WERE FIRST COMPUTED IN 1966, CORPS REGULATIONS PERMITTED AN OUTDOOR RECREATION VALUE RANGING FROM 50 CENTS TO \$1.50 PER VISITOR DAY. OUTDOOR RECREATION REPRESENTED 96 PERCENT OF THE PROJECT'S RECREATION BENEFITS. IN FY 1979, THE CORPS INCREASED THE VALUE FOR THE STONEWALL JACKSON PROJECT FROM \$1.25 TO \$1.50 PER DAY--THE MAXIMUM ALLOWABLE. FOR 21 PROJECTS UNDERWAY AT ABOUT THE SAME TIME, ONLY 3 USED THE MAXIMUM VALUE AND THE AVERAGE WAS 85 CENTS.

CORPS OFFICIALS SAID THAT THE METHODOLOGY FOR COMPUTING RECREATION BENEFITS IS AN "INEXACT SCIENCE" AND AS A RESULT THE ESTIMATES ARE JUDGMENTAL.

#### WATER QUALITY

THE CORPS CLAIMED WATER QUALITY BENEFITS OF \$3.92 MILLION, OR 47 PERCENT OF THE AVERAGE ANNUAL BENEFITS. THESE BENEFITS WERE COMPUTED BY DETERMINING THE LEAST COSTLY SINGLE PURPOSE RESERVOIR THAT WOULD PROVIDE THE STORAGE NEEDED FOR WATER QUALITY PURPOSES. THESE BENEFITS WERE BASED ON THE PREMISE THAT WATER RELEASED FROM THE DAM WILL DILUTE DOWNSTREAM POLLUTION CAUSED BY BOTH POINT AND NONPOINT SOURCES AND IMPROVE WATER QUALITY.

THIS METHOD WAS RULED OUT AS A SUBSTITUTE FOR POINT SOURCE POLLUTION CONTROL BY THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972 (PUBLIC LAW 92-500). THE ACT FURTHER PROVIDES THAT THE NEED, VALUE, AND IMPACT OF STORAGE FOR WATER QUALITY CONTROL SHALL BE DETERMINED BY THE ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY (EPA).

THE WATER QUALITY BENEFITS ARE BEING CHALLENGED IN U.S. DISTRICT COURT. THE PLAINTIFFS STATE THAT THE CORPS IS IN VIOLATION OF PUBLIC LAW 92-500 BY INCLUDING WATER QUALITY BENEFITS

WHICH HAVE NOT BEEN APPROVED BY EPA AND THAT THE BENEFITS ARE GROSSLY OVERSTATED. THE CORPS BELIEVES THAT THE PROJECT IS EXEMPT FROM THE ACT, AND EPA AGREES, BECAUSE THE PROJECT WAS FUNDED FOR CONSTRUCTION BEFORE PASSAGE OF THE ACT.

#### FLOOD CONTROL

FLOOD CONTROL BENEFITS ACCOUNT FOR \$2.39 MILLION, OR 29 PERCENT OF THE AVERAGE ANNUAL BENEFITS. THESE BENEFITS WERE DETERMINED BY ESTIMATING THE DAMAGE THAT WOULD BE PREVENTED AS A RESULT OF CONSTRUCTING THE DAM. WE FOUND THAT BENEFITS FOR THE AREAS OF WESTON AND CLARKSBURG, WEST VIRGINIA, WHERE 87 PERCENT OF THE FLOOD CONTROL BENEFITS ARE CLAIMED, ARE BASED ON A 1963 FLOOD DAMAGE SURVEY. THE REMAINING 13 PERCENT WAS BASED ON A 1939 SURVEY WHICH THE CORPS UPDATED IN 1973. ALTHOUGH FLOODING OCCURS IN WESTON NEARLY EVERY YEAR AND IN CLARKSBURG AND OTHER NEARBY AREAS REGULARLY, THE DAMAGE SURVEYS WERE NOT BASED ON ACTUAL FLOOD DAMAGE BUT ON ESTIMATED DAMAGE.

SINCE INITIALLY CALCULATING FLOOD CONTROL BENEFITS IN 1966, THE CORPS REDUCED THEM IN FY 1981 BY 4 PERCENT BASED ON REVISED HYDROLOGY DATA. ALSO, SINCE 1966 THE CORPS HAS ANNUALLY UPDATED THESE BENEFITS USING THE "ENGINEERING NEWS RECORD" CONSTRUCTION COST INDEX. THIS INDEX IS BASED ON A CONSTRUCTION COST FOR LABOR, STRUCTURAL STEEL, CEMENT, AND LUMBER IN 20 MAJOR CITIES. CORPS OFFICIALS AND WESTON RESIDENTS STATED THAT FLOODS OCCURRING IN WESTON RESULT IN DAMAGE TO HOUSEHOLD AND BUILDING CONTENTS, LOST WAGES, AND CLEANUP COSTS AS OPPOSED TO THE TYPE OF ITEMS MEASURED

BY THE CONSTRUCTION COST INDEX. THE CORPS ACKNOWLEDGED THAT THIS INDEX MAY NOT BE THE MOST APPROPRIATE TO USE AND IS STUDYING THE USE OF MORE SUITABLE INDEXES.

#### WATER SUPPLY

BENEFITS ATTRIBUTED TO INCREASED WATER SUPPLY FOR WESTON, WEST VIRGINIA, WERE VALUED AT \$106,000, OR 1 PERCENT OF THE AVERAGE ANNUAL BENEFITS. IN 1977, WESTON GAVE ASSURANCE THAT IT WOULD PURCHASE THE ADDITIONAL WATER PROVIDED BY THE PROJECT, BUT AS OF AUGUST 1981 NO AGREEMENT HAD BEEN REACHED FOR SUCH SALE. IN AUGUST 1981, THE WATER COMPANY FOR WESTON ADVISED US THAT SUPPLIES WERE ADEQUATE FOR THE FORESEEABLE FUTURE EXCEPT DURING PERIODS OF DROUGHT.

#### AREA REDEVELOPMENT

AREA REDEVELOPMENT ACCOUNTS FOR \$673,000, OR 8 PERCENT OF THE AVERAGE ANNUAL BENEFITS. THESE BENEFITS ARE BASED ON WAGES AND SALARIES PAID EMPLOYEES FROM THE LOCAL AREA WHO HELP CONSTRUCT, OPERATE, AND MAINTAIN THE PROJECT AND WHO WOULD OTHERWISE BE UNEMPLOYED OR UNDEREMPLOYED. THE BENEFITS ATTRIBUTABLE TO OPERATIONS AND MAINTENANCE WILL CEASE 20 YEARS AFTER THE PROJECT IS ON LINE.

THE CORPS HAS CONTINUED TO CLAIM THE FULL \$673,000 EVEN THOUGH OVER 25 PERCENT, OR \$178,000, OF THESE BENEFITS HAVE ALREADY BEEN REALIZED. CORPS REGULATIONS REQUIRE THAT BENEFITS ALREADY REALIZED BE EXCLUDED UNDER THE CORPS' REMAINING BENEFIT-REMAINING COST CONCEPT. A CORPS OFFICIAL SAID THAT THIS MATTER WAS OVERLOOKED IN THE LATEST BENEFIT-COST RATIO AND THAT AREA REDEVELOPMENT BENEFITS SHOULD BE REDUCED BY ABOUT \$178,000.

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LET ME MAKE SEVERAL ADDITIONAL OBSERVATIONS CONCERNING THE  
CORPS' BENEFIT-COST CALCULATIONS.

--IN BUDGET REQUESTS SINCE FY 1980, THE CORPS HAS USED THE  
REMAINING BENEFIT-REMAINING COST METHOD TO COMPUTE ITS  
BENEFIT-COST RATIO FOR WATER PROJECTS. USING THIS METHOD,  
WHICH EXCLUDES COSTS SPENT TO DATE AND BENEFITS ALREADY  
REALIZED, THE CORPS SHOWS A BENEFIT-COST RATIO OF 1.53 TO  
1 IN ITS FY 1982 BUDGET REQUEST FOR STONEWALL JACKSON.  
ACCORDING TO CORPS RECORDS, IF THE FY 1982 RATIO HAD BEEN  
REPORTED ON THE BASIS OF TOTAL BENEFITS TO TOTAL COSTS, IT  
WOULD HAVE BEEN 1.07 TO 1.

--THE CORPS' BENEFIT-COST ANALYSIS FOR THIS PROJECT IS BASED  
ON THE FY 1969 INTEREST RATE OF 4 AND 5/8 PERCENT. THE  
USE OF THIS RATE IS CURRENTLY UNDER CHALLENGE IN U.S.  
DISTRICT COURT. THE PLAINTIFFS CONTEND THAT THE CORPS  
SHOULD BE USING A HIGHER RATE--EITHER THE CURRENT INTEREST  
RATE SPECIFIED BY LAW FOR WATER PROJECTS (7 AND 1/8 PERCENT  
AT THE TIME OF THE LAWSUIT IN FY 1980) OR THE FY 1977 RATE  
OF 6 AND 3/8 PERCENT WHEN THE LAST REQUIRED NON-FEDERAL COST  
SHARING ASSURANCES WERE PROVIDED. CORPS RECORDS SHOW THAT  
IF THE FY 1981 RATE OF 7 AND 3/8 PERCENT HAD BEEN USED,  
THE REMAINING BENEFIT-REMAINING COST RATIO WOULD BE 1.2 TO  
1 AND THE TOTAL BENEFIT-TOTAL COST RATIO WOULD BE 0.85 TO  
1.

--THE BENEFIT-COST RATIO DOES NOT INCLUDE \$26 MILLION IN ESTIMATED COSTS AND RELATED BENEFITS FOR HIGHWAY BETTERTMENTS AND RELOCATIONS. CORPS REGULATIONS STATE THAT SUCH BENEFITS ARE CONSIDERED AT LEAST EQUAL TO THE COSTS AND THEREFORE SHOULD BE OMITTED FROM THE BENEFIT-COST RATIO. OBVIOUSLY, A DETAILED ANALYSIS WOULD BE REQUIRED TO ACCURATELY DETERMINE THE BENEFITS OF HIGHWAY BETTERTMENTS AND RELOCATIONS. IT IS HIGHLY UNLIKELY THAT BENEFITS WOULD EXACTLY EQUAL COSTS.

MR. CHAIRMAN, THIS CONCLUDES MY STATEMENT. WE WILL BE PLEASED TO RESPOND TO YOUR QUESTIONS.

COMPONENTS OF THE CORPS'FISCAL YEAR 1982REMAINING BENEFIT-REMAINING COST RATIOFOR THE STONEWALL JACKSON LAKE PROJECT

| <u>AVERAGE ANNUAL BENEFITS</u> |                    | <u>PERCENT OF TOTAL</u> |
|--------------------------------|--------------------|-------------------------|
| WATER QUALITY                  | \$3,923,000        | 47                      |
| FLOOD CONTROL                  | 2,388,000          | 29                      |
| RECREATION                     | 1,190,000          | 15                      |
| AREA REDEVELOPMENT             | 673,000            | 8                       |
| WATER SUPPLY                   | 106,000            | 1                       |
| TOTAL                          | <u>\$8,280,000</u> | <u>100</u>              |

| <u>AVERAGE ANNUAL COSTS</u>   |                    |            |
|-------------------------------|--------------------|------------|
| INTEREST ON INVESTMENT        | \$4,526,000        | 82         |
| OPERATION AND MAINTENANCE     | 630,900            | 11         |
| NET LOSS OF LAND PRODUCTIVITY | 159,000            | 3          |
| MAJOR REPLACEMENTS            | 154,000            | 3          |
| AMORTIZATION                  | 50,000             | 1          |
| TOTAL                         | <u>\$5,519,900</u> | <u>100</u> |

CORPS BENEFIT-COST RATIO

1.53 TO 1