





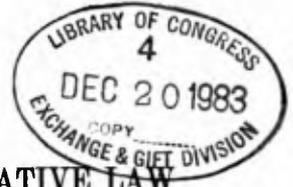


United States  
**JULY 1981 FLOODING IN THE  
LOWER SALT RIVER BASIN**

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**HEARING**  
BEFORE THE  
SUBCOMMITTEE ON ADMINISTRATIVE LAW  
AND GOVERNMENTAL RELATIONS  
OF THE  
COMMITTEE ON THE JUDICIARY  
HOUSE OF REPRESENTATIVES  
NINETY-EIGHTH CONGRESS  
FIRST SESSION  
ON



**H.R. 1059 and H.R. 1074**  
JULY 1981 FLOODING IN THE LOWER SALT RIVER BASIN

---

MAY 26, 1983

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**Serial No. 14**



Printed for the use of the Committee on the Judiciary

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U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1983

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# JULY 1981 FLOODING IN THE LOWER SALT RIVER BASIN

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THURSDAY, MAY 26, 1983

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON ADMINISTRATIVE LAW  
AND GOVERNMENTAL RELATIONS  
OF THE COMMITTEE ON THE JUDICIARY,  
*Washington, D.C.*

The subcommittee met, at 9:31 a.m., in room 2237 of the Rayburn House Office Building, Hon. Sam B. Hall, Jr. (chairman of the subcommittee) presiding.

Present: Representatives Hall, Mazzoli, and McCollum.

Staff present: William P. Shattuck, counsel; Wade James Harrison, assistant counsel; Dave Karmol, associate counsel; and Florence McGrady, legal assistant.

Mr. HALL. The Subcommittee on Administrative Law and Governmental Relations will come to order.

We have a rather full hearing this morning. We have other members of this subcommittee who will come in from time to time, but we will go ahead and commence the proceedings.

We are glad that all of you folks are here.

And we will start off the proceedings with the consideration of H.R. 1059 and H.R. 1074.

[Copies of H.R. 1059 and H.R. 1074 follow:]

98TH CONGRESS  
1ST SESSION

# H. R. 1059

To allow the adjudication of claims against the United States for damages arising from the activities of the Army Corps of Engineers at the Clarence Cannon Dam project on the Salt River in the State of Missouri.

---

## IN THE HOUSE OF REPRESENTATIVES

JANUARY 27, 1983.

Mr. VOLKMER introduced the following bill; which was referred to the Committee on the Judiciary

---

## A BILL

To allow the adjudication of claims against the United States for damages arising from the activities of the Army Corps of Engineers at the Clarence Cannon Dam project on the Salt River in the State of Missouri.

1       *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*  
3 That any person who suffered damage to crops or buildings  
4 on or after January 1, 1981, which damage was caused by  
5 the activities of the United States Army Corps of Engineers  
6 at the Clarence Cannon Dam project on the Salt River in the  
7 State of Missouri, shall be permitted to file a claim against

1 the United States in accordance with section 2 of this Act for  
2 money damages.

3 SEC. 2. (a) Notwithstanding section 1402(b) of title 28,  
4 United States Code, any action instituted under this Act shall  
5 be brought in the United States District Court for the East-  
6 ern District of Missouri.

7 (b) Notwithstanding the two-year time limitation of sec-  
8 tion 2401(b) of title 28, United States Code, an action under  
9 this Act shall be timely if it is instituted in the appropriate  
10 court within six months of the date of enactment of this Act.

11 SEC. 3. (a) For the purpose of actions instituted under  
12 this Act, section 3 of the Act approved May 15, 1928 (33  
13 U.S.C. 702c), and section 2680 of title 28, United States  
14 Code, are hereby waived, and the court shall consider such  
15 actions notwithstanding such sections.

16 (b) The court shall consider any action instituted under  
17 this Act notwithstanding any prior Federal agency action rel-  
18 ative to claims for damages.

98TH CONGRESS  
1ST SESSION

# H. R. 1074

For the relief of certain persons who suffered damages arising from the flood caused by the action of the United States Army Corps of Engineers on July 27, 1981, in lowering the top of a cofferdam on the Salt River in the State of Missouri.

---

## IN THE HOUSE OF REPRESENTATIVES

JANUARY 27, 1983

Mr. VOLKMER introduced the following bill; which was referred to the Committee on the Judiciary

---

## A BILL

For the relief of certain persons who suffered damages arising from the flood caused by the action of the United States Army Corps of Engineers on July 27, 1981, in lowering the top of a cofferdam on the Salt River in the State of Missouri.

1        *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*  
3 That the Secretary of the Treasury shall make payments, out  
4 of any money in the Treasury not otherwise appropriated, in  
5 accordance with the following table in full settlement of all  
6 claims of the persons listed in such table against the United  
7 States for damages arising from the flood caused by the

1 action of the United States Army Corps of Engineers on July  
 2 27, 1981, in lowering the top of a cofferdam at the Clarence  
 3 Cannon Dam project on the Salt River in the State of  
 4 Missouri:

	In the following amount:
Payments shall be made to:	
Dr. Ralph Hayden, 519 West Main, Bowling Green, Missouri 63334.....	\$91,143.00
Billy Moorhead and Nell Stout, R.R. 1, New London, Missouri 63459.....	34,222.00
Newton Griffith, R.R. 1, Box 126, New London, Missouri 63459.....	45,000.00
William E. Griffith, R.R. 1, Box 238, New London, Missouri 63459.....	29,790.00
Durward Sorrell, R.R. 1, Frankford, Missouri 63441.....	2,250.00
Dan Tucker, R.R. 1, Frankford, Missouri 63441.....	2,450.00
Clarence E. Epperson, R.R. 1, New London, Missouri 63459.....	30,814.00
Ralph D. Miller, R.R. 2, Box 12, Frankford, Missouri 63441.....	67,505.00
Herman E. Schindler, Box 45, Frankford, Missouri 63441..	11,200.00
Floyd Hamilton, R.R. 1, Box 16, Frankford, Missouri 63441.....	25,000.00
Harold Hamilton, R.R. 1, Box 17, Frankford, Missouri 63441.....	54,718.00
Alan G. Epperson, R.R. 1, Box 25, Frankford, Missouri 63441.....	27,290.00
Jimmie L. Adams, R.R. 1, Box 50, Frankford, Missouri 63441.....	26,600.00
Jackie L. Hamilton, R.R. 1, Box 286, New London, Missouri 63459.....	23,238.75
Dean Hamilton, R.R. 1, Box 286, New London, Missouri 63459.....	33,997.25
James W. Elliott, R.R. 1, Frankford, Missouri 63441.....	7,417.50
Joseph W. Yohn, R.R. 1, Frankford, Missouri 63441.....	2,800.00
David Briscoe, R.R. 2, New London, Missouri 63459.....	30,555.00
Jesse R. Ogle, R.R. 3, Box 115, New London, Missouri 63459.....	11,550.00
Bert W. Hyde, Box 482, New London, Missouri 63459.....	5,200.00
Joseph D. O'Keefe, 634 Sherwood Drive, St. Louis, Missouri 63119.....	14,062.50
James W. Woollen, R.R. 3, Box 109, New London, Missouri 63459.....	58,307.50
Flossie Griffen, 309 E. 2od St., New London, Missouri 63459.....	10,013.00
Mildred L. Hutcherson, Box 56, Frankford, Missouri 63441	11,500.00
Vyrl Pritchett, Box 97, Frankford, Missouri 63441.....	20,513.00
Ann Epperson and Hurley F. Daniels, R.R. 2, New London, Missouri 63459.....	3,500.00
Jim and Barbara Husler, R.R. 2, Box 279, New London, Missouri 63459.....	75,000.00

Payments shall be made to:	In the following amount:
Jerry Briscoe, R.R. 2, New London, Missouri 63459 .....	\$11,000.00
W. E. Alexander, 313 W. 4th, New London, Missouri 63459.....	19,525.00
Roger and Ray Moore, R.R. 2, Box 7, New London, Missouri 63459.....	36,420.00
Hurley F. Daniels, R.R. 2, New London, Missouri 63459 ...	15,000.00
Elliot B. Morris, R.R. 2, Box 275, New London, Missouri 63459.....	62,758.00
Thomas Dotson and Thomas Dotson, Jr., R.R. 2, New London, Missouri 63459 .....	21,045.00
W. R. Dotson, Jr., R.R. 2, Box 319, New London, Missouri 63459.....	43,470.00
Russell, Randy, and Brad Epperson, R.R. 2, New London, Missouri 63459.....	22,620.00
James L. Quinlin, R.R. 2, Box 273, New London, Missouri 63459.....	16,332.00
Richard Owen Epperson, R.R. 2, Box 310, New London, Missouri 63459.....	33,000.00
Mrs. Dorothy Fisher Pabst, R.R. 2, New London, Missouri 63459.....	14,979.84
Parham Farms, Inc., H.S. Parham, R.R. 2, New London, Missouri 63459.....	101,680.00
H. S. Parham, R.R. 2, New London, Missouri 63459.....	101,465.00
Charles F. Fuqua, R.R. 2, Box 154, New London, Missouri 63459 .....	18,400.00
Richard W. Fry, R.R. 1, Box 187, New London, Missouri 63459 .....	21,225.00
Edward B. Strobe, 301 West Street, New London, Missouri 63459 .....	21,225.00
George R. Birkhead, R.R. 2, New London, Missouri 63459 .....	94,680.00
Paul Wombles, Louisiana, Missouri 63353.....	16,000.00
Pike Graig Co., Inc., P.O. Box 550, Louisiana, Missouri 63353.....	232,190.52
Wilbur Glasecock, R.R. 1, Frankford, Missouri 63441 .....	36,000.00
Lindell Love, R.R. 2, Louisiana, Missouri 63353.....	125,500.00
Gordon Arthuad, R.R. 2, New London, Missouri 63459 .....	15,600.00
Kenneth Love, R.R. 2, Louisiana, Missouri 63353 .....	132,448.00
Kenneth Love/Leo Brown, Louisiana, Missouri 63353 .....	21,400.00
John M. Blackwell, R.R. 2, Box 234, Louisiana, Missouri 63353.....	41,720.00
R. D. Rule, 121 Dolbeare, Louisiana, Missouri 63353.....	8,150.80
Marion Love/Paul Rothermich, R.R. 2, Box 227, Louisiana, Missouri 63353 .....	72,000.00
Marion Mackey, Clarksville, Missouri.....	68,500.00
Charles Rowe/Jack Briscoe, 812 Sag Ct., Fort Wayne, Indiana .....	15,612.43
John Bray/C.W. Anderson, Louisiana, Missouri 63353 .....	110,281.00
James T. Griffith, R.R. 2, Box 236, Louisiana, Missouri 63353.....	26,200.00
Perry Rosenburg, R.R. 1, Frankford, Missouri 63441.....	10,929.00
Lesie McCormick/Lewis Todd, Louisiana, Missouri 63353 ..	6,870.00
Charles R. Bulomey, R.R. 2, Louisiana, Missouri 63353.....	11,760.00

Payments shall be made to:	In the following amount:
Mark Lemp and Bruce Lowenberg, P.O. Box 354, St. Louis, Missouri 63166 .....	\$17,710.00
Fred Naxera, III, Louisiana, Missouri 63353 .....	16,800.00
William Stoops, Louisiana, Missouri 63353 .....	5,000.00
Fry Farm, Inc., 1612 Georgia Street, Louisiana, Missouri 63353 .....	12,950.00
Leon Chapuis, R.R. 2, Louisiana, Missouri 63353 .....	126,635.00
Donald and Frances Kelly, Florissant, Missouri 63353 .....	28,600.00
William Sitton, Junior, R.R. 2, Box 235A, Louisiana, Missouri 63353 .....	7,000.00
Harriet Brock, Frankford, Missouri 63441 .....	5,040.00
Eddie Fisher, Frankford, Missouri 63441 .....	875.00
Okey McCormick, R.R. 2, Louisiana, Missouri .....	59,627.50
Droste Farms, No. 2 Chambers Road, St. Louis, Missouri 63137 .....	77,650.00
Leonard Bolomey, Frankford, Missouri 63441 .....	25,200.00
Roy Lamberson, Frankford, Missouri 63441 .....	20,790.00
Crayton Brown, Frankford, Missouri 63441 .....	3,600.00
Emmett Wright, Frankford, Missouri 63441 .....	11,200.00
Jimmie Lee Adams, Frankford, Missouri 63441 .....	5,600.00
Lloyd R. Weaver, Frankford, Missouri 63441 .....	27,240.00
John Bray, 620 N. Fourth Street, Louisiana, Missouri 63353 .....	89,850.00
Mrs. Roena V. Hack, R.R. 3, Box 79, New London, Missouri 63459 .....	1,900.00
Dan Steinmann, R.R. 3, Box 211, New London, Missouri 63459 .....	1,000.00
Lucille E. Moyers, R.R. 2, Center, Missouri 63436 .....	36,405.00
Charles W. and Virginia F. Lemon, R.R. 2, New London, Missouri 63459 .....	39,062.50
Charles V. and Charles W. Lemon, R.R. 1, New London, Missouri 63459 .....	89,562.50
Lloyd Shuek, R.R. 1, Hannibal, Missouri 63401 .....	7,000.00
Mrs. W. M. Watts, R.R. 2, Monroe City, Missouri 63436 .....	7,000.00
Jack Palmer, R.R. 1, Center, Missouri 63436 .....	35,000.00
Sandra A. Evans, 2915 Marsh Avenue, Hannibal, Missouri 63401 .....	13,383.00
Fannie Whaley, No. 4 Bier Lane, Hannibal, Missouri 63401 .....	10,000.00
Earl M. Rothfuss, R.R. No. 2, Monroe City, Missouri 63456 .....	9,493.75
W. Ann Fray, Box 176, Monroe City, Missouri 63456 .....	22,250.00
Larry Lennox, R.R. 1, Box 76, Perry, Missouri 63462 .....	2,632.00
Thomas LaRue, R.R. 3, New London, Missouri 63459 .....	1,462.00
Lester D. Lake, R.R. 2, Center, Missouri 63436 .....	3,000.00
Darrell L. Lennox, R.R. 2, Center, Missouri 63436 .....	3,288.00
James O. Hufford, R.R. 2, Center, Missouri 63436 .....	9,876.26
Mr. Jackie Blaek, R.R. 1, Center, Missouri 63436 .....	26,425.00
John W. Swank, R.R. 3, Box 125, New London, Missouri 63459 .....	1,800.00
Leon J. Woodford, R.R. 2, Center, Missouri 63436 .....	5,445.00
John A. Williams, RFD 3, New London, Missouri 63459 .....	10,000.00
Norinau Bright, RFD 2, Center, Missouri 63436 .....	33,900.00

Mr. HALL. The witnesses who are appearing in behalf of these bills are the Honorable Harold Volkmer, who is sponsor, Mr. John Hamilton of the Lower Salt River Basin Committee, and representing the Department of the Army, Mr. William J. Cronin, chief, Legislative Service Office, Director of Real Estate, Corps of Engineers.

Mr. Volkmer, we are very happy to have you with us this morning, and if you would proceed as you see fit.

**TESTIMONY OF HON. HAROLD L. VOLKMER, REPRESENTATIVE  
IN CONGRESS OF THE UNITED STATES FROM THE NINTH DIS-  
TRICT OF THE STATE OF MISSOURI, AND JOHN HAMILTON,  
VICE CHAIRMAN, LOWER SALT RIVER BASIN ASSOCIATION**

Mr. VOLKMER. Thank you very much, Mr. Chairman.

I again wish to thank you for the opportunity to present this legislation just as you did last year.

I would first like to say I have a written, prepared statement which I'd like to be made a part of the record.

Mr. HALL. It will be made a part of the record.

[Complete statement follows.]

## PREPARED STATEMENT OF HAROLD L. VOLKMER, MEMBER OF CONGRESS

Mr. Chairman, Members of the Subcommittee:

I thank you for the opportunity to testify today in behalf of H.R. 1059 and H.R. 1074. I will first briefly describe the events which led me to introduce these bills, and then discuss the legislation pending before this Subcommittee.

The Clarence Cannon Dam on the Salt River in Missouri is a project authorized by Congress in 1962. The project is currently expected to be completed in 1985.

Northeast Missouri experienced heavy rainfall in July, 1981, resulting in a water level which threatened the Cannon Dam construction site. The Corps of Engineers raised the level of a temporary cofferdam which had been built to hold water upstream from the construction site. The level of water in this reservoir continued to rise, and the Corps decided to notch the cofferdam, releasing a wall of water to flood the Salt River basin. The Corps felt this action was necessary to prevent destruction at the construction site and other damages downstream, but the action resulted in serious losses for farmers with land near the river.

The farmers who suffered these losses, some of whom are here today, filed claims for their damages with the Corps of Engineers. However, the Corps denied these claims, citing immunity sections in the United States Code along with a lack of negligence on their part.

At the request of the Lower Salt River Basin Association, I introduced a private relief bill last year for the benefit of those downstream farmers adversely affected by the floods. This Subcommittee held hearings on that bill, H.R. 5753, in June last year.

While the Subcommittee seemed sympathetic to the plight of these farmers, some members expressed reservations about appropriating large sums of money based only on the claims of the individuals involved. It was suggested that a District Court might be more capable of determining the validity of the individual claims, and that a waiver of the immunity clauses would allow this. Accordingly, I introduced a bill to waive the immunity sections cited by the code and grant jurisdiction to the United States District Court for the Eastern District of Missouri to hear these farmers' claims.

Both the private relief bill, H.R. 1074, and the immunity waiver, H.R. 1059, are pending before this Subcommittee. I will leave it up to your judgment as to which method of relief is better, but I strongly urge you to act as expeditiously as possible in providing the relief which these farmers deserve and need.

HAROLD L. VOLKMER  
8TH CONGRESSIONAL DISTRICT  
MISSOURI

2000 WASHINGTON HOUSE OFFICE BUILDING  
WASHINGTON, D.C. 20515  
(202) 225-2264

HOUSE COMMITTEE ON  
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HOUSE COMMITTEE ON  
SCIENCE AND TECHNOLOGY

JAMES S. SPURLING  
ADMINISTRATIVE ASSISTANT

LEE WIGGEL  
DISTRICT ADMINISTRATOR

Congress of the United States  
House of Representatives  
Washington, D.C. 20515

June 23, 1983

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WASHINGTON, MISSOURI 63000  
(314) 270-0001

The Hon. Sam B. Hall, Jr.  
Chairman  
Subcommittee on Administrative Law  
and Governmental Relations  
B351A Rayburn House Office Building  
Washington, D.C. 20515

Dear Mr. Hall:

I have received and reviewed the comments of the Corps of Engineers regarding H.R. 1059 and the operation of Cannon Dam.

In part, the Corps's comments state:

The Salt River below the dam has a capacity to sustain a flow of 12,000 cubic feet per second entirely within its banks. (Emphasis added.)

However, the Corps District Chief of the Hydrological and Hydraulics Branch, and the Corps District Real Estate Division have both concluded that a 12,000 cfs release would flood lands downstream from the dam, and for longer periods than would occur without the project. See the enclosed General Accounting Office report, Appendix I, pages 6-8.

It should also be pointed out the the Corps comments are based solely on the capacity of the Salt River banks for 30 miles downstream from the dam. All of the persons for whom I am seeking relief own land beyond this 30-mile point, and the Corps' comments for the record do not address the effect of a 12,000 cfs release on this land.

I am also enclosing a copy of a letter form the Lower Salt River Basin Association to the Hon. E. Clay Shaw, Jr., a member of the Subcommittee, refuting the Corps' allegation that the lands affected by the flooding were not suitable for farming before the dam project was begun.

With best wishes, I am

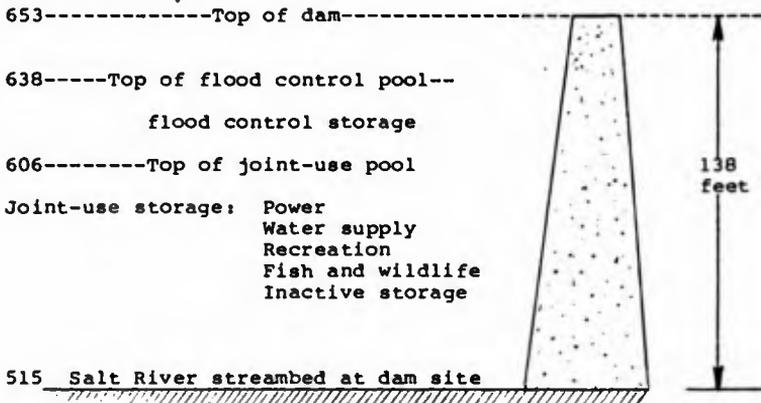
Sincerely,

*Harold L. Volkmer*  
Harold L. Volkmer  
Member of Congress

HLV/td

Profile of Water Storage at  
Clarence Cannon Dam and  
Mark Twain Lake

Elevation  
(feet above mean sea level)



Will hydropower operations  
cause downstream flooding?

Property owners below the Clarence Cannon Dam are concerned that their fields will be flooded, or access to them will be limited, when the Corps begins releasing water to generate power. Limiting access to fields, particularly during the planting and harvest seasons, would be a problem.

A 1967 Corps design memorandum for the project states that 12,000 cfs will be the maximum release for power generation. According to a hydrology study made by the St. Louis District in 1971, the Salt River channel will contain releases of 12,000 cfs without damage to downstream property. As a result, the Corps did not obtain easements or purchase any land below the re-regulation dam.

Corps officials informed property owners during an August 1979 public meeting that (1) maximum releases for power generation would be 12,000 cfs and (2) if the reservoir had been in operation during the period of record--1925 through 1973--a release of over 12,000 cfs would have occurred only once (1973). If the project had been in operation in 1973, the natural discharge of 107,000 cfs would have been reduced to 20,000 cfs for 2 days. Under natural conditions the flow would exceed 12,000 cfs an average of at least once a year.

However, in comparing water levels reported by downstream property owners with known discharges through the sluices at the construction site, the Corps subsequently determined that flows of 12,000 cfs might prevent access to fields. After further investigation, the District Chief of the Hydrological and Hydraulics Branch, Engineering Division, reported in January 1983:

--Recent field checks and contact with Salt River property owners have identified seven locations where 12,000-cfs releases might interfere with individual property owners rights of access. Most of these locations are low water field crossings of tributaries to the Salt River which are used by farmers to gain access to some of their fields. Complete data was not available for all seven locations, but enough is available to indicate that two of the seven locations will be considerably affected by flows of 12,000 cfs. These locations are also affected by flows of 12,000 cfs under natural conditions. The regulation of Cannon will cause such occasions to occur less frequently but for longer durations.

In a March 10, 1983, Memorandum of Opinion relative to one of the locations noted above, the District Real Estate Division concluded that the District has no liability for the intermittent flooding that may prevent access to the property or any authority to take remedial action. Specifically, the memorandum stated:

--A landowner maintained that releases from the project would back up a tributary of the Salt River and flood his crossing and limit access to a 40-acre field. The District's Engineering Division surveyed the crossing and concluded that a 12,000-cfs release would place about 3 to 4 feet of water on the crossing. The Corps further determined, based on a simulated operation of the project and about 50 years of data, that this situation would probably occur an average of 16 days a year. Without the project, this flow would be equaled or exceeded an average of 11 days a year.

--Releases from the project greater than about 5,000 cfs will flood the crossing. This flow would be equaled or exceeded an average of about 23 days a year with the project and about 30 days a year under natural conditions.

--The adverse effect is relatively minimal, and discussion with Engineering Division personnel indicates that the property will, overall, enjoy benefits from the project. The property fronts the Salt River for an estimated three-quarters of a mile, and operating the project will

keep very high waters from flooding any significant portion of the land. In addition, the project will provide water during droughts.

--It appears that while the creek on the property will, to a small degree, be adversely affected by the project, the total property will receive benefits from the project. Thus, it appears that there is very little injury in comparison with the greater benefits conferred. Based upon this, and assuming that the information with regard to detriments and benefits can be substantiated, in our opinion the property owner is entitled to no compensation.

According to District officials, the Memorandum of Opinion has been forwarded to the Lower Mississippi Valley Division office for its information.

COST AND SCHEDULE EXPERIENCE  
AND BENEFIT/COST DATA

In 1977 we reported<sup>1</sup> that the project was to be completed by June 1981 at a cost of \$232 million. We also reported that annual project benefits were estimated by the Corps to be \$1.30 for each \$1 of annual costs. The most recent estimates--October 1982--indicate that the project will be completed in September 1985 at a cost of \$308 million. The Corps' current estimates continue to indicate that the project will provide about \$1.30 in benefits for every \$1 in costs.

Cost experience

In October 1982, the Corps estimated the project would cost \$308.1 million--an increase of \$76.1 million since 1976, the latest data included in our 1977 report, and \$244.8 million since 1962 when the project was authorized. The following schedule shows the increase by project feature since 1962.

---

<sup>1</sup>"Clarence Cannon Dam and Reservoir: Cost, Schedule, and Safety Problems" (PSAD-77-131, July 18, 1977).



UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

MAY 25 1983

RESOURCES, COMMUNITY,  
AND ECONOMIC DEVELOPMENT  
DIVISION

B-211410

The Honorable Thomas F. Eagleton  
United States Senate

The Honorable Harold L. Volkmer  
House of Representatives

In response to your letters of August 5 and August 11, 1982, and subsequent discussions with your offices, we have obtained information on the Corps of Engineers' Clarence Cannon Dam and Mark Twain Lake related to the July 1981 flood. Specifically, you requested us to determine

- the status of lease agreements for agricultural lands between upstream lessees and the Corps and
- whether hydropower operations at the dam will cause flooding, as contended by downstream landowners, and the actions the Corps is taking or plans to take to address their concerns.

You also asked us to update the project's cost and schedule estimates and the benefit/cost ratio discussed in our 1977 report<sup>1</sup> and review actions taken by the Corps to implement our recommendation to improve its cost-estimating procedures.

The Clarence Cannon Dam and Mark Twain Lake (formerly the Clarence Cannon Dam and Reservoir; Joanna Dam and Reservoir) was authorized by the Flood Control Act of 1962 (Public Law 87-874). The project is under construction and is about 94 percent complete. Located in northeast Missouri on the Salt River, the project will provide flood protection to approximately 27,500 acres of land in the Salt River Basin, 58,000 kilowatts of hydroelectric power, recreation facilities for about 3.9 million visitors annually, and other fish and wildlife, water supply, and navigation benefits.

This letter summarizes our findings, which are discussed in more detail in the appendix.

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<sup>1</sup>"Clarence Cannon Dam and Reservoir: Cost, Schedule, and Safety Problems" (PSAD-77-131, July 18, 1977).

WHAT WERE THE EFFECTS OF  
THE JULY 1981 FLOOD AND THE  
STATUS OF LEASE AGREEMENTS?

In July 1981 the Corps raised the height of the cofferdam-- a temporary dam protecting the earthen portion of the main dam-- to prevent overtopping and possible dam failure and then, fearing a sudden collapse in the face of rising flood waters, cut a notch in the dam to release the water under more controlled conditions. Both of these actions resulted in flood damage. Raising the cofferdam flooded leased lands above the dam, and cutting the notch flooded property below the dam and caused extensive damage to the main dam.

In 1981 the Corps leased a total of 6,041 acres of land above the dam, not immediately needed for construction, for agricultural and grazing purposes. Leases were awarded to the highest bidders, provided the bids were above an established fair market rental value which took into consideration the possibility of flooding. The leases, signed by the lessees, pointed out the Government's non-liability in the event flooding occurred. A provision of the leases specifically stated:

"\* \* \* the United States shall not be responsible for damages \* \* \* arising from or incident to the flooding of the said premises by the Government or flooding from any other cause, or arising from or incident to any other Governmental activities and the lessee shall hold the United States harmless from any and all such claims."

Notwithstanding the above lease provisions, 16 persons leasing Corps land above the dam for agricultural purposes notified the Corps that their land had been flooded and requested compensation for damages. The Corps estimated that the losses on the leased land were about \$340,000. The Chief, Real Estate Division, advised the lessees that the Corps had no liability for the flood damage and no legal authority to make any restitution. Three of the lessees subsequently filed formal claims totaling about \$45,000. The Corps forwarded one of the claims to GAO for adjudication with the recommendation that the claim be denied because of the specific non-liability clause in the leases. On April 13, 1983, we disallowed the claim, stating that the terms of the lease specifically released the Government from responsibility for losses caused by flooding. The other two claims are being readied by the Corps for submission to GAO.

Another 171 property owners below the dam submitted damage claims totaling about \$5.2 million. The Corps denied these

claims, stating that the action taken was an exercise of the Corps' discretionary authority to control flood waters and that no negligence was involved. The claimants were informed that they could appeal the decision in the U.S. District Courts within 6 months of the denial. The Corps St. Louis District Counsel said that no claimants appealed the decision within the 6-month appeal period.

WILL HYDROPOWER OPERATION  
RESULT IN DOWNSTREAM FLOODING?

According to a 1971 Corps hydrology study, no flooding will occur downstream of the Cannon Dam due to normal operation of the dam. However, subsequent investigations made in response to concerns expressed by downstream property owners revealed that flows of 12,000 cubic feet per second (cfs)--the maximum flow needed to produce capacity power--might prevent access to some fields. Based on a simulated operation of the project and utilizing about 50 years of data for the Salt River, the 12,000 cfs releases would have occurred an average of 16 days a year. Under natural conditions, this flow would be equaled or exceeded an average of 11 days per year.

A Memorandum of Opinion prepared by the St. Louis District Office relative to one of the downstream properties has concluded that although some of the property is subject to intermittent flooding, there is very little injury in comparison with far greater benefits conferred by the project and therefore the Government has no liability for the damages. District officials said the opinion had been forwarded to their Division Office for its information.

COST, SCHEDULE, AND  
BENEFIT UPDATE

The latest Corps project construction cost estimate, made in October 1982, was \$308 million--\$76 million greater than the estimate included in our 1977 report. The reasons for this increase are revisions made because of additional or more current data, correction of errors or omissions, and award of contracts for amounts differing from Corps estimates (\$38 million); design changes (\$21 million); and price-level increases (\$17 million). The \$38 million increase includes \$7.4 million attributable to damage resulting from the 1981 flood and \$21.3 million due to increased contractor costs for construction delays.

In our 1977 report, we pointed out that (1) the District's estimating procedures were not adequate to assure that construction cost estimates were reasonable, (2) documentation for estimates was not available, and (3) allowances for contingencies

were excessive. We recommended that the Secretary of the Army have the Corps review and strengthen its cost-estimating procedures to develop more realistic cost estimates.

Since then, the Corps has revised its cost-estimating manuals emphasizing the need for complete documentation of cost estimates, including unit prices and materials quantities. Also added to the manuals was an allowance for future years' inflation in developing the estimates for the project.

However, we found that about 18 percent of the cost estimates prepared by the Corps St. Louis District in October 1981 for the Clarence Cannon Dam fiscal year 1983 budget request were not adequately documented and that contingencies exceeded Corps guidelines without adequate explanation. We discussed these conditions with the District Engineer, who said that future cost estimates would include appropriate documentation and that when contingencies exceed Corps guidelines, they would be fully explained.

The scheduled project completion date is now September 1985, 4 years later than the completion date we reported in 1977. The main causes of delays were the July 1981 flood, which caused extensive damage at the construction site; other adverse weather; design changes; and labor-management problems, including a strike.

In 1977, we reported that while both annual benefits and costs reported by the Corps had increased since the original project authorization in 1962, the ratio of benefits to costs in 1975 remained 1.3 to 1--that is, for every dollar spent on the project, the Corps estimates that \$1.30 in benefits will be realized. Since 1976, the benefit/cost ratio has ranged as low as 1.12 to 1 in 1977 but had returned to 1.3 to 1 in 1982. The major cause of the cost increases since 1976 was higher interest expenses. Benefit increases were largely attributable to hydroelectric power, flood control, and recreation benefits.

#### SCOPE AND METHODOLOGY

To obtain information related to the July 1981 flood, we reviewed laws and regulations on flood liability and real estate procurement and Corps records documenting the flood and subsequent damage claims. We interviewed (1) Corps real estate officials in its St. Louis District and Washington, D.C., headquarters offices, (2) Corps St. Louis District hydrologists, and (3) representatives of the Salt River Basin Committee--a group of landowners concerned about flooding below the dam. We reviewed studies and reports on the potential for flooding below the dam prepared by the St. Louis District office. Although we

examined and analyzed Corps hydrologic reports and charts, we did not verify the accuracy of the models, the data used to support them, or the conclusions reached by the Corps.

In order to update cost and schedule data, we reviewed Corps records dealing with the cost of construction and completion schedules and related costs, including reports, contract modifications, design memorandum, and Corps cost-estimating documents and manuals. At the time we began our field work, the most recent cost estimates available were those prepared in October 1981 for the fiscal year 1983 budget request. Consequently, we used these estimates in our detailed review. Subsequently, estimates for the fiscal year 1984 budget became available and are included in this report only to update the project's cost and completion date. We also analyzed changes in the project's benefit/cost ratio, developed by the Corps, since 1976. We interviewed St. Louis District Officials, including the officials of the Construction and Engineering Divisions, Contract Management and Supervision and Inspection Branches, and Estimating Section. We discussed actions taken in response to recommendations made in our 1977 report with officials from the Corps Engineering Division in Washington, D.C., but did not perform a detailed audit of the Corps' cost-estimating procedures.

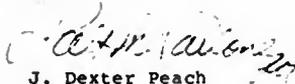
We made this review in accordance with generally accepted government audit standards.

#### AGENCY COMMENTS

In its May 20, 1983, comments, the Department of the Army concurred with the report findings. However, the Department wished to emphasize that (1) losses due to the release of water through the notch during the July 1981 flood were less than would have been experienced with the collapse of the cofferdam and (2) without the dam the flood of the magnitude experienced would also have damaged downstream property.

The Department also concurred with the need for proper documentation of cost estimates and commented that the Lower Mississippi Valley Division commander will furnish guidance to the District to reiterate the need for proper documentation of cost estimates and use of appropriate contingencies. However, the Department noted that the Corps' experience with cost estimating in this area has shown that a 25 percent contingency for projects prior to completion of plans and specifications is not excessive. Engineering judgment concerning the type of project, the stages of design, and the inherent unknowns associated with the project dictate the allowance used.

Copies of this report are being sent to the Director,  
Office of Management and Budget, the Secretaries of Defense and  
the Army, and other interested parties.



J. Dexter Peach  
Director

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ABBREVIATIONS

CFS	Cubic feet per second
GAO	General Accounting Office

INFORMATION ON THE CORPS OF ENGINEERS'  
CLARENCE CANNON DAM AND MARK TWAIN LAKE

JULY 1981 FLOODING  
PROBLEMS AT THE DAM

In July 1981 heavy rainfall resulted in flooding above and below the Clarence Cannon Dam being built by the Corps on the Salt River in northeast Missouri. In an attempt to contain the heavy rainfall, the Corps raised by 4 feet the height of a cofferdam. This action caused flooding of land, leased from the Corps, above the dam. Fearing an even higher flood crest which could cause a sudden collapse of the cofferdam and the attendant damages downstream, the Corps directed the contractor to cut a notch in the cofferdam to provide a more controlled release of the water. This action caused the flooding of private lands below the dam as well as considerable damage to the main dam structure.

The cofferdam--completed in August 1979--was designed to (1) divert the flow of the Salt River away from the earthen portion of the main dam and (2) protect this portion in the event of a flood during construction. Up to 30,000 cubic feet of water per second (cfs) is diverted into sluices through the nearly completed concrete portion of the main dam.

According to Corps St. Louis District officials, the cofferdam height was determined using Engineering Regulation 1110-2-2901. The regulation provides guidelines for making engineering judgments as to the degree of protection needed depending on estimates of the damages and the delay costs that could result from overtopping or flooding. Documents obtained from the district indicate that the factors used were

- risk of flooding,
- damage and delay costs which would result if the construction site was flooded,
- cofferdam construction cost, and
- cofferdam maintenance cost.

Based on an analysis of these factors, the cofferdam was built to withstand a flood having a frequency of occurrence of once in 10 years (574 feet above mean sea level) plus 3 feet.

Because of heavy rains in May 1981, the Corps directed the contractor to raise the cofferdam by 4 feet to 581 feet. From July 23 to July 28, 1981, heavy rains--9.29 inches at one recording station approximately 15 miles upstream from the dam--

fell in the Salt River Basin. Because the Corps predicted that the pool above the cofferdam would crest at 581.8 feet, it directed the contractor on July 26, 1981, to raise the cofferdam an additional 4 feet to an elevation of 585 feet. Raising the cofferdam resulted in flooding Corps-owned land leased for agricultural purposes above the dam.

On July 27 the Corps predicted, using National Weather Service rainfall and forecast data, that the crest of the pool would be 588.9 feet. The Corps decided that it was not feasible to raise the cofferdam to such a level. Fearing an overtopping or collapse of the cofferdam and the resulting destruction and possible loss of several bridges below the dam, the Corps, on July 27, directed the contractor to cut a notch in an area of the cofferdam considered to be more erosion resistant. District officials believed this would allow a slower and safer release of the impounded waters. The highest water elevation, 584.8 feet, was reached on July 28, 1981. Releasing the water through the notch resulted in extensive damage to downstream property and to the earthen portion of the main dam.

A Corps hydrologist told us that the July 1981 flood at the dam site approached a 50-year flood occurrence. The U.S. Geological Survey, Department of the Interior, based on data recorded about 28 miles downstream of the dam, estimated that the flooding at that point was equivalent to a 35-year occurrence. A Geological Survey hydrologist said that the cofferdam probably had little effect on the flooding downstream but may have slightly reduced the peak stage.

#### Flood damage to lands leased above the Cannon Dam

When constructing water resource projects the Corps purchases land necessary for permanent structures, the reservoir, and public access to both. Land not immediately needed for construction is leased for agricultural and grazing purposes. Leasing places the land into productive use and generates revenue which the Federal Government shares with counties to replace revenues lost by removal of lands from the tax roles. Under Corps policy, leases are awarded to the highest bidders provided the bids exceed the Corps' established fair market rental value. The Chief of the Real Estate Division, St. Louis District, said that the fair market rental value takes into consideration the possibility of flooding.

In 1981, the Corps issued three invitations for bids (IFB) on 6,860 acres of land above the Clarence Cannon Dam. Bids were received and leases totaling about \$210,000 were awarded on 6,041 acres. Each lease, signed by the lessee, contained the following provisions:

"\* \* \* the right is hereby reserved to the United States, \* \* \* to flood the leased premises whenever necessary, and the lessee shall have no claim for damages of any character on account thereof against the United States or any officer, agent, or employee thereof."

\* \* \* \* \*

"\* \* \* the United States shall not be responsible for damages \* \* \* arising from or incident to the flooding of the said premises by the Government or flooding from any other cause, or arising from or incident to any other Governmental activities and the lessee shall hold the United States harmless from any and all such claims."

According to Corps district officials, these provisions were placed in the leases to limit the Government's liability should flooding occur and to put the lessee on notice that the land was subject to flooding.

To provide the lessee limited protection against losses, rental fees in excess of \$1,000 could be paid in two installments. At the lessee's option, the lease could be terminated prior to the second installment due date. Four lessees exercised this option. Two terminated their leases prior to the due date, thus avoiding \$14,040 in lease payments. Two other lessees whose land had been flooded did not make second installment payments totaling \$1,779.

After the flood, 16 lessees requested compensation from the Corps, claiming that parts of their leased land had been flooded. Annual rental payments for the 4,400 acres they leased totaled about \$197,000. Most, however, did not indicate how much acreage was flooded or the dollar amount of loss incurred.

The Chief, Real Estate Division, responded that, although he sympathized with the lessees' problems, the Corps had neither legal liability for flood damage nor legal authority to renegotiate the leases or to make any other type of restitution. Because the Corps did not believe that it was liable for the flood damage, it did not survey the lands to assess actual damages. However, using topographical maps and recorded flood levels, the District estimated that about 2,400 acres were flooded and that rental and crop losses amounted to about \$340,000.

Despite the Corps' position, three lessees filed formal damage claims totaling about \$45,000 against the Corps. The Corps forwarded one of the claims to GAO for adjudication with a recommendation that the claims be denied because of the specific

nonliability clauses in the leases. The other two claims are being readied by the Corps for submission to GAO.

On April 13, 1983, we disallowed the claim, stating:

"Although the flooding of the land you leased may have been caused by raising the height of the cofferdam, this action did not create any liability on the part of the Government, since the terms of your lease specifically released the Government from responsibility for losses caused by flooding."

The letter disallowing the claim also cited a 1980 U.S. Court of Claims ruling that the Government did not have to pay damages on leased land when the terms of the lease gave the Government the right to flood the land when necessary.

Flood damages below  
the Cannon Dam

Releasing the impounded water through the notch in the cofferdam caused extensive damage to the partially completed embankment of the main dam as well as damage to privately owned lands downstream. The Corps estimated damage to the construction area at about \$7.4 million. In addition, claims totaling about \$5.2 million were filed by 171 property owners. However, the Corps made only limited investigations of these claims because it did not consider itself liable for the damages incurred. As of September 1982, the U.S. Army Claims Service denied these claims, citing the following reasons:

- The release of water represents the exercise of a discretionary function on the part of the U.S. Army Corps of Engineers and claims based thereon are not payable. (See 28 U.S.C. § 2680 (a).)
- The United States is not liable for damage caused by flood or flood waters at any place. (See 33 U.S.C. § 702 c.)
- There is no evidence of any negligence on the part of the Corps of Engineers.

The Claims Service, however, advised the claimants that if they were dissatisfied with the decision they could file suit under the Federal Tort Claims Act (28 U.S.C. § 2671-2680) in an appropriate United States District Court not later than 6 months from the date of the mailing of the denial. According to the Corps St. Louis District Counsel, no suits were filed to seek recovery within the 6-month appeal period.

WATER RELEASED FOR  
POWER GENERATION

The Clarence Cannon Dam hydroelectric power facilities include a re-regulation dam and pool and two turbine generators capable of producing 58,000 kilowatts (KW) of power. To generate this power, about 12,000 cfs will be released through the turbines. The purpose of the re-regulation dam, located 9.5 miles below the main dam, is to store part of the water released during power generation. This water will then be pumped back into the main reservoir when power is not being generated or when the flow of the river is not sufficient to maintain adequate water levels for continued power operation.

The 1979 draft Clarence Cannon Reservoir regulation manual sets forth conditions for releasing water for power generation. The Assistant Chief, Engineering Division, St. Louis District, said that the data in the manual should be considered very tentative because the Associated Electric Cooperative, contracted to purchase the power, has not submitted a schedule of power needs. In November 1982 the Chief, Engineering Division, requested the Cooperative to provide a preliminary power schedule showing a typical daily discharge fluctuation for power generation. As of April 7, 1983, the Cooperative had not responded. The Assistant Chief said that because the schedule of power needs could affect planned releases, the information is needed to complete the project's water control plan. He also said that until it is received, he did not wish to speculate on the impact the operating schedule would have on downstream releases.

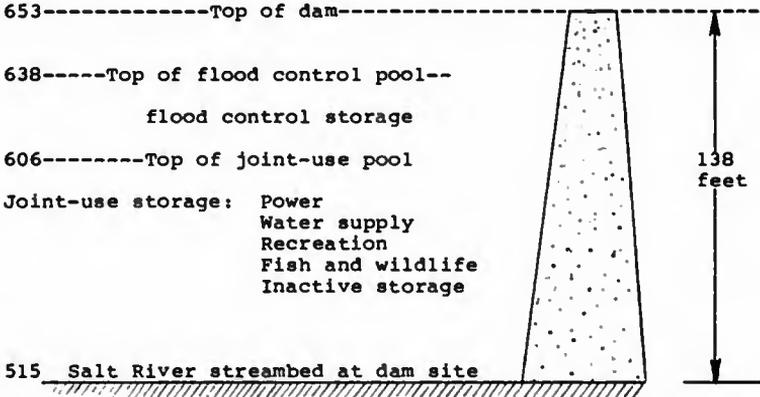
Under the draft operating procedures, however, the Corps estimates that, based on recorded hydrological data from 1925 through 1973, the reservoir water level will be at or below the top of the joint-use pool--elevation 606 feet--91 percent of the time. (See profile on next page.) During such times, releases from the re-regulation dam are expected to average 3,296 cfs. Whenever the reservoir water level is above elevation 606--about 9 percent of the time--water will not be pumped back from the re-regulation pool to the main reservoir because this would diminish the reservoir's flood control capability. At such times, releases from the re-regulation dam would be equal to the inflow into the re-regulation pool.

Releases from the Clarence Cannon Dam will also be affected by flows on the Mississippi River. If the Mississippi River is in flood stage, Clarence Cannon Dam releases may be restricted to reduce flows into the Mississippi.

Profile of Water Storage at  
Clarence Cannon Dam and  
Mark Twain Lake

Elevation

(feet above mean sea level)



Will hydropower operations  
cause downstream flooding?

Property owners below the Clarence Cannon Dam are concerned that their fields will be flooded, or access to them will be limited, when the Corps begins releasing water to generate power. Limiting access to fields, particularly during the planting and harvest seasons, would be a problem.

A 1967 Corps design memorandum for the project states that 12,000 cfs will be the maximum release for power generation. According to a hydrology study made by the St. Louis District in 1971, the Salt River channel will contain releases of 12,000 cfs without damage to downstream property. As a result, the Corps did not obtain easements or purchase any land below the re-regulation dam.

Corps officials informed property owners during an August 1979 public meeting that (1) maximum releases for power generation would be 12,000 cfs and (2) if the reservoir had been in operation during the period of record--1925 through 1973--a release of over 12,000 cfs would have occurred only once (1973). If the project had been in operation in 1973, the natural discharge of 107,000 cfs would have been reduced to 20,000 cfs for 2 days. Under natural conditions the flow would exceed 12,000 cfs an average of at least once a year.

However, in comparing water levels reported by downstream property owners with known discharges through the sluices at the construction site, the Corps subsequently determined that flows of 12,000 cfs might prevent access to fields. After further investigation, the District Chief of the Hydrological and Hydraulics Branch, Engineering Division, reported in January 1983:

--Recent field checks and contact with Salt River property owners have identified seven locations where 12,000-cfs releases might interfere with individual property owners rights of access. Most of these locations are low water field crossings of tributaries to the Salt River which are used by farmers to gain access to some of their fields. Complete data was not available for all seven locations, but enough is available to indicate that two of the seven locations will be considerably affected by flows of 12,000 cfs. These locations are also affected by flows of 12,000 cfs under natural conditions. The regulation of Cannon will cause such occasions to occur less frequently but for longer durations.

In a March 10, 1983, Memorandum of Opinion relative to one of the locations noted above, the District Real Estate Division concluded that the District has no liability for the intermittent flooding that may prevent access to the property or any authority to take remedial action. Specifically, the memorandum stated:

--A landowner maintained that releases from the project would back up a tributary of the Salt River and flood his crossing and limit access to a 40-acre field. The Districts' Engineering Division surveyed the crossing and concluded that a 12,000-cfs release would place about 3 to 4 feet of water on the crossing. The Corps further determined, based on a simulated operation of the project and about 50 years of data, that this situation would probably occur an average of 16 days a year. Without the project, this flow would be equaled or exceeded an average of 11 days a year.

--Releases from the project greater than about 5,000 cfs will flood the crossing. This flow would be equaled or exceeded an average of about 23 days a year with the project and about 30 days a year under natural conditions.

--The adverse effect is relatively minimal, and discussion with Engineering Division personnel indicates that the property will, overall, enjoy benefits from the project. The property fronts the Salt River for an estimated three-quarters of a mile, and operating the project will

keep very high waters from flooding any significant portion of the land. In addition, the project will provide water during droughts.

--It appears that while the creek on the property will, to a small degree, be adversely affected by the project, the total property will receive benefits from the project. Thus, it appears that there is very little injury in comparison with the greater benefits conferred. Based upon this, and assuming that the information with regard to detriments and benefits can be substantiated, in our opinion the property owner is entitled to no compensation.

According to District officials, the Memorandum of Opinion has been forwarded to the Lower Mississippi Valley Division office for its information.

COST AND SCHEDULE EXPERIENCE  
AND BENEFIT/COST DATA

In 1977 we reported<sup>1</sup> that the project was to be completed by June 1981 at a cost of \$232 million. We also reported that annual project benefits were estimated by the Corps to be \$1.30 for each \$1 of annual costs. The most recent estimates--October 1982--indicate that the project will be completed in September 1985 at a cost of \$308 million. The Corps' current estimates continue to indicate that the project will provide about \$1.30 in benefits for every \$1 in costs.

Cost experience

In October 1982, the Corps estimated the project would cost \$308.1 million--an increase of \$76.1 million since 1976, the latest data included in our 1977 report, and \$244.8 million since 1962 when the project was authorized. The following schedule shows the increase by project feature since 1962.

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<sup>1</sup>"Clarence Cannon Dam and Reservoir: Cost, Schedule, and Safety Problems" (PSAD-77-131, July 18, 1977).

<u>Annual cost estimates</u>			
----- (millions) -----			
<u>Project feature</u>	<u>1962</u>	<u>1976</u>	<u>1982</u>
Lands and damages	\$ 7.7	\$ 17.4	\$ 20.8
Relocation	15.5	77.8	56.8
Reservoirs	1.5	6.2	4.8
Dams	21.4	54.6	108.8
Fish and wildlife facilities	-	1.1	1.1
Powerplant	9.0	23.0	36.7
Roads, railroads, and bridges	0.1	2.4	1.7
Recreational facilities	0.8	15.5	22.2
Cultural resource preservation	-	-	1.6
Buildings, grounds, and utilities	0.3	1.1	2.9
Permanent operating equipment	0.2	1.9	2.9
Engineering and design	3.8	20.5	30.5
Supervision and administration	<u>3.0</u>	<u>10.5</u>	<u>17.3</u>
Total	<u>\$63.3</u>	<u>\$232.0</u>	<u>\$308.1</u>

The following table, based on information obtained from Corps documents supporting its annual appropriation requests, shows the Corps' reasons for project cost growth since our 1977 report.

<u>Reason for cost growth</u>	<u>Amount</u>	<u>Percent of total increase</u>
(millions)		
Post-contract award and other estimating adjustments	\$37.9	49.8
Design changes	21.1	27.7
Price-level increase	<u>17.1</u>	<u>22.5</u>
Total	<u>\$76.1</u>	<u>100.0</u>

Post-contract award and other estimating adjustments include all adjustments to cost estimates due to contracts awarded in amounts different from Corps estimates, contract overruns/underruns, changes to quantity estimates, correction of errors or omissions, and changes in unit prices not attributable to price-level increases. Significant adjustments since 1976 include:

- A 1977 decrease of \$15.9 million because Corps estimates were higher than the contracts awarded by the State Highway Department for relocations of five State highways.
- A 1977 increase of \$4.3 million because the previous estimate erroneously based the powerhouse cost on a structure to house one power unit instead of two power units as shown in the design memorandum.
- A 1979 increase of \$2.7 million for supervision, inspection, and administrative costs based on the revised project completion date.
- A 1981 increase of \$7.4 million due to the July 1981 flood which includes repairs to the main dam structure of \$5.2 million; repairs of \$0.1 million to the re-regulation dam; engineering and design work of \$1.4 million; and supervisor and administrative cost of \$0.7 million.
- 1981 and 1982 increases of \$21.3 million for estimated costs due contractors for Government-caused construction delays<sup>2</sup> from 1973 through mid-July 1981.

Design changes include any increases or decreases in cost due to design modifications or new designs. Significant revisions since 1976 include:

- A 1977 decrease of \$8.8 million. The Assistant Chief of the Design Branch said this decrease is an estimate of savings that resulted from a more economical bridge design used in relocating five State highways.
- A 1977 increase of \$1.2 million to provide additional utilities, roads, site work, and buildings for one of the recreation areas.
- A 1979 increase of \$6.5 million to prevent water seepage, including (1) \$3.4 million for grouting to fill crevices found in the rock that connects with the dam structure

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<sup>2</sup>Government-caused delays are attributable to design changes and conditions at the construction site not detected during tests made for the design of the project. In addition, weather delays and strikes occurring after the original contract completion date are included and are compensable if they result in additional contractor costs. Costs associated with such delays include escalation of labor and material costs, loss of efficiency due to disruption of work, performing work at a less favorable time, overtime, extended overhead, and increased equipment rental.

and (2) an increase of \$3.1 million for a concrete wall to cover a large crevice in the rock.

--A 1981 increase of \$1 million for engineering and design costs, including (1) costs associated with widening roads due to a reanalysis of traffic and (2) asphaltting the surface of two roads as stipulated in a court settlement during condemnation proceedings.

Price-level increases reflect the amount of commodities and services money will purchase in one period as against another. The Corps develops the current-year price level by (1) applying an industry index to construction costs, (2) obtaining current values for real estate, and (3) applying the Federal salary rate increases to the cost estimates for engineering and design, and supervision and administration. Beginning in October 1979, the Corps also included in its manuals a requirement to estimate future price-level increases through project completion. The inflation factor used is provided by the Office of Management and Budget. In total, price-level increases since 1976 were \$17.1 million.

District to provide better documentation for cost estimates

In our 1977 report on the Clarence Cannon Dam project, we pointed out that (1) the District's estimating procedures were not adequate to assure that construction cost estimates were reasonable, (2) documentation for estimates was not available, and (3) allowances for contingencies were excessive. We recommended that the Secretary of the Army have the Corps review and strengthen its cost-estimating procedures to develop more realistic cost estimates.

Since then, the Corps has revised its cost-estimating manuals and included a section emphasizing the need to fully document all cost estimates. The Planning and Design Stages manual requires supporting documentation for all major cost items, including the method of construction, items of major construction equipment, access, description of project features, assumptions used in developing the estimates, and sources of unit costs. The Government Estimate of Fair and Reasonable Cost to Contractor manual also requires supporting documentation for cost estimates used as a guide in awarding construction contracts and in negotiating modifications to awarded contracts. Both manuals state that an estimate shall be prepared on the basis of quantities and unit prices.

Contingency allowance guidelines are specified in the Corps' Planning and Design Stages manual. For awarded contracts, the suggested contingency allowance is 5 percent of the uncompleted portion of the contract. For projects not yet under

contract, the guidelines suggest a 10- to 20-percent allowance, depending upon the stage of completion of plans and specifications. Districts can deviate from the guidelines, but Army Regulation 11-2-240 requires a statement justifying such a deviation.

However, the Corps St. Louis District has continued to develop cost estimates and contingency allowances for the Clarence Cannon Dam project without adequate documentation. For example, the District was unable to provide documentation showing the quantities and the unit prices used in developing some of its cost estimates for the main dam. Specifically, of the \$40 million identified in the Corps' budget request for fiscal year 1983 as needed to complete the project, the District could not provide adequate documentation for about \$7.4 million (about 18 percent), as follows:

- \$4.7 million for costs attributable to Government-caused construction delays.
- \$1.3 million for engineering, design, supervision, and administration costs based on an analysis of remaining work.
- \$1.4 million in engineering cost included in the estimate of the effects of the July 1981 flood.

Some estimates for the Clarence Cannon Dam project presented in the Corps' budget request for fiscal year 1983 exceeded Corps guidelines without adequate explanations. For example:

- A \$5.8 million contingency on the awarded main dam contract. The Corps guidelines would have allowed \$1.5 million, or a difference of \$4.3 million.
- A \$1 million contingency on contracts to be awarded for relocating county roads. The Corps guidelines would have allowed about \$400,000, a difference of \$600,000.

The Program Development Officer said that the District's practice has been to exceed the Corps guidelines for contingency allowances on both awarded and unawarded contracts. However, the District could not document why this practice was established or provide justification for contingencies which exceeded the guidelines.

We discussed our concerns related to problems in documenting cost estimates and contingency allowances for the Clarence Cannon Dam project with the District Engineer and other District officials on January 28, 1983. In the course of the discussion, district officials commented that these problems were not limited to the Clarence Cannon Dam project but were district-wide

JUL 1 1983

**LOWER SALT RIVER BASIN ASSOCIATION**

P.O. Box 487 • New London, MO 63459

June 6, 1983

The Honorable E. Clay Shaw, Jr.  
The United States House of Representatives  
322 Cannon House Office Building  
Washington, D.C. 20515

Dear Mr. Shaw:

We want to express our appreciation for your time and consideration during our appearance before the Judiciary Committee in support of H.R. 1074 on May 26.

Following our testimony, the U.S. Army Corps of Engineers was called to testify. In response to one of your questions, we understood the Corps Spokesman to say, that the land in the Lower Salt River Basin was not suited for farming. I want to go on record stating that my family, as well as many of our neighbors, has been farming in the Salt River Basin for more than a century. Some of the most fertile land in Missouri lies in the Lower Salt River Basin. The U.S. Department of Agriculture records in Ralls County, Missouri will substantiate crop yields.

The only year, in which we sustained a total crop loss, was in 1981 when the Corps voluntarily breached a cofferdam at the Clarence Cannon Dam Project. The crop damage was considerable with Corps estimates of \$ 7,300,000.

Without passage of this legislation, we will be without recourse for damages caused by the Corps action. Therefore, we ask your support of this bill.

Sincerely yours,



John W. Hamilton  
Vice Chairman

JWH:cdh

cc: The Honorable Harold L. Volkmer  
The United States House of Representatives  
2465 Rayburn House Office Building  
Washington, D.C. 20515

(The information follows:)

Based on U.S. Geological Survey stream gaging information, it was determined that the flooding which occurred was virtually the same as would have occurred under natural conditions. The information shows that the inflow into the pool behind the cofferdam (70,000-75,000 cubic feet per second) was essentially the same as the flow measured at the gaging station below the dam (73,000 cubic feet per second).

Further, it is clear that the duration of flooding was also virtually the same as would have occurred under natural conditions. The observed water level was above flood stage for 8 days (July 26 to August 2). Based on computer simulations, it has been determined that the water level under natural conditions (without Clarence Cannon Dam or the cofferdam) would have been above flood stage for 7 days (July 24 to July 30).

The Salt River below the dam has a capacity to sustain a flow of 12,000 cubic feet per second entirely within its banks. A study of the 60 plus years of record at the New London gage (30 miles below the dam) indicates that water flows of 12,000 cubic feet per second have been reached at least once each year and have been at or above 12,000 cubic feet per second an average of 11 days each year. Except under the most extraordinary conditions, once Clarence Cannon Dam is operational, releases of water for flood control or hydropower generation below the re-regulation dam will be reached, but not exceeded, an average of 16 days per year.

Mr. VOLKMER. And this legislation arises out of the circumstances that occurred back in 1981. Those farmers who are below the Clarence Cannon Dam, Mark Twain Reservoir, the members of what was known as the Lower Salt River Basin Association. And I have with me today on my left, Mr. John Hamilton, who will speak for them today, and on my right, Mr. Tom Dotson, who is president of the association, and also in the audience is Mr. Harold Hamilton and Mr. Leon Chapuis, Clarence Epperson and Raymond Colliver, who have made the trip here to Washington today on behalf of this legislation.

H.R. 1074 is a companion to the legislation that was introduced last year, which was a private bill to provide compensation to those farmers who suffered damages as a result of the activity of the corps at Clarence Cannon Dam in 1981 in July with the breach of the cofferdam which permitted large amounts of water to proceed down below on the Salt River and cause approximately 5 million dollars' worth of damages.

The farmers have no access to justice, due to the fact of the immunity provision that is presently in the law that prevents them from being able to have their claims satisfied.

The other piece of legislation, H.R. 1059, would effectively waive that immunity and grant a period of 6 months from the time of enactment of the bill into law, to file claims in the U.S. District Court, Eastern District of Missouri, which has jurisdiction in that area, against the Corps, and permit the Federal district court and the court system to make a determination as to whether or not there was negligence and, second, if so, the amount of the damages.

Either piece of legislation is agreeable to me and to the members of the association, but I do believe that these farmers are entitled to some relief, rather than have to suffer all this damage themselves individually. And I would like to see the one or the other legislation move, and I believe that it is only in the name of justice that we're asking for this legislation.

May we proceed by having Mr. Hamilton make a short statement?

Mr. HALL. As you desire, Mr. Volkmer.

Mr. Hamilton, the spokesman for the Lower Salt River Basin.

Mr. HAMILTON. Thank you, Congressman Volkmer.

Mr. Chairman, members of the subcommittee. We thank you again for the opportunity to appear before you. We testified before this committee last June regarding damages sustained by landowners along the Salt River in the State of Missouri, and we're here to testify again in support of H.R. 1074 and H.R. 1059.

Last year when we testified for the bill 5753, a private relief bill, it was suggested during those hearings that a more appropriate avenue in seeking relief might be a bill waiving the immunity and allowing our damages to be adjudicated in court rather than before this committee. And we, as our Congressman has testified, really have no problem with either one. We are interested in some form of relief. We feel like that it is an injustice for these landowners to be singled out to bear the misjudgment and the misestimation on the part of the Corps of Engineers.

The Clarence Cannon Dam is a multipurpose reservoir in northeast Missouri. It was authorized by the Flood Control Act of October 1962. The primary purpose or justification for this project was flood control, that being stated as approximately 33 percent.

In July 1981, after a considerable rainfall, the corps found that they could no longer control water they had empounded above a temporary structure known as a cofferdam, and they felt that their only alternative was to notch it and release the water pressure above it.

This they feel was a discretionary decision on their part. We agree completely that they made an overt decision to flood the downstream landowners in lieu of attempting to maintain control of the water which they had taken control of.

We feel that the flood, this catastrophe was merely a symptom of what occurs on corps projects. There was a misjudgment and mis-engineering in the height of this cofferdam. Once they took control, we feel like they should be bound by the same laws that we are in private industry and private business, but you can't control that water and then later release it without being liable for the damages therefrom.

We also feel that their argument is rather hollow that building the cofferdam too high would be a waste of taxpayers' money. I wonder who they think we are. This really is getting to the real gut issue of this matter. Not only have they managed to waste the taxpayers' money through the normal legislative process, but they, in effect, are attempting to saddle us with \$5 million-plus in damages through their actions. They claim that these damages would have been the same whether or not the water had been released.

We feel by their own records, their own information, that this is not a valid conclusion. First of all, our crops had pretty much survived the first runoff, and never in the history of that valley had we had a complete crop failure until 1981. Nineteen hundred and eighty-one was the year which the corps began to control the water in that valley. But we had survived the first runoff. I'm not saying we did not have flood damage; we did, but we had never had a complete crop failure. Once they notched that dam, according to their own spokesman, the water raised another 6½ feet down that river. It set on our crops for an extended period of time.

We now have coined the phrase that we don't have flood control, but we now have controlled flooding. And what this means is, rather than having, according to their own information, 11 days a year of flow down the river of 12,000 cubic feet per second, under their management, we will have 16 days.

Now what we're concerned with is that the 11 days was a natural happening, and it occurred and varied with the fall of rainfall. In their case, they'll be able to make a decision as to when that happens. And we're really quite distrustful. Based on our experience with them thus far, we really question their ability to manage the water.

We feel that the time has really come to have them to operate in an environment similar to what all of us operate in. They should not enjoy the broad immunity which they claim. We say there is no economic rationale for this today. One way or another the mistakes have to be paid for, either through direct taxation or through the people along these projects. And we feel that it is unfair that any action of a Federal agency should not come under the scrutiny of the public or of the Congress, and we feel that this broad immunity that has been granted to them leads to irresponsibility and careless disregard for private property of those people affected by these projects.

It really goes beyond the individual damages which we have suffered on this project. It's one of general accountability. And the ability of a Federal agency to create such a tremendous adverse impact without the public or Congress knowing and then forcing those people that have been adversely affected to bear the cost of that, we feel this is unjust, it smacks close to one of taking our property without due process. If you will, a reverse condemnation practice.

For instance, we feel now that our land values have diminished. We have little or no marketability of that land in the Lower Salt River Valley.

So effectively, they can destroy the economic base of that valley and all of it legally, as we understand the law right now. We feel that when Congress approves funding for these projects and then leaves the interpretation of that enabling legislation to the Corps of Engineers without providing the affected parties any redress, that this is unconscionable.

Therefore, we're appealing to you today for a solution, whether this remedy be removal of sovereign immunity as a legal defense, whether it be the indemnification for the damages, we feel the corps must be responsible and accountable for their actions, and we ask your support for that.

If you have any questions, we'll be happy to attempt to answer them. We have submitted two statements, one in regard to H.R. 1074 and the other to 1059, and we ask that they may be made a part of the record.

Mr. HALL. They will be made a part of the record.

[Complete statements follow:]

TESTIMONY ON H.R. 1059  
ALLOWING ADJUDICATION OF CLAIMS FOR FLOOD DAMAGES

Submitted to the  
UNITED STATES HOUSE OF REPRESENTATIVES  
COMMITTEE ON THE JUDICIARY  
SUBCOMMITTEE ON ADMINISTRATIVE LAW AND GOVERNMENTAL RELATIONS

By

Thomas L. Dotson, Chairman  
John W. Hamilton, Vice-Chairman  
Harold W. Hamilton, Vice-Chairman  
Leon L. Chapuis, Secretary-Treasurer

LOWER SALT RIVER BASIN ASSOCIATION

May 26, 1983

## SUMMARY OF H. R. 1059

This bill provides for the adjudication of claims against the United States for damages arising from the activities of the U. S. Army Corps of Engineers at the Clarence Cannon Dam and Reservoir Project on the Salt River in the State of Missouri.

In July, 1981, the Corps voluntarily breached a cofferdam releasing a flood of waters from above the Clarence Cannon Dam. The damages were considerable with Corps' estimates of over \$7 million.

The Corps claims the damages would have been the same whether or not they had released water from behind the cofferdam. The landowners believe, however, that the Corps was negligent in failing to build the cofferdam high enough to hold back the water impounded. The landowners filed damage claims but were denied compensation because the Corps is not liable for damages caused by flooding at any of their projects (33 U.S.C. 702 c).

The issue goes beyond specific damages to individuals, it becomes one of general accountability and the ability of a federal agency to create such tremendous adverse impacts without being responsible to those people affected by the project.

H. R. 1059 would give damaged landowners access to the U. S. District Courts for adjudication of their claims.

Mr. Chairman, Members of the Subcommittee:

When we testified before this Committee in June, 1982, regarding the damages sustained by landowners along the Salt River in the State of Missouri, it was suggested that a bill giving these landowners standing in federal district court might be a more appropriate avenue in seeking relief. Therefore, H. R. 1059 was introduced by Mr. Volkmer to allow the adjudication of claims against the United States for damages arising from the activities of the Army Corps of Engineers at the Clarence Cannon Dam Project.

The Corps of Engineers is currently building the Clarence Cannon Dam, a multi-purpose reservoir, in Northeast Missouri. In July, 1981, the Corps voluntarily breached the cofferdam to relieve water pressure from heavy rains that threatened its collapse. The cropland and crop damage was considerable with Corps estimates of over \$7 million.

The Corps claims the damages would have been the same whether or not they had released water from behind the cofferdam. The landowners believe, however, that the Corps was negligent in failing to build the cofferdam high enough to hold back anticipated flood waters. Also, our crops had generally survived the first runoff. After the Corps notched the cofferdam, flood waters raised another six and one-half

feet down the Salt River according to a Corps spokesman. The controlled release of flood waters did not in any way mitigate our crop damage. In fact, the controlled release caused the water to set on the cropland longer than if there had been no dam.

Landowners were told they could file applications seeking compensation from the Corps for damages. Claims amounting to \$5,156,140.64 were filed. The claims were denied because the Corps is not liable for damages caused by flooding at any of their projects (33 U.S.C. 702 c). The stated rationale for this broad immunity was that the cost of flood control projects would be very great, and that Congress did not want the costs of flood damages added to these costs. We do not believe the actions of any federal agency should escape public or congressional scrutiny. Congress certainly does not intend for our lands to be taken from us without due process. The instant case is a perfect example of what an immunity doctrine leads to -- irresponsibility and careless disregard for the property of the people affected by the projects.

The issue therefore goes beyond the individual damages to specific persons. It becomes one of general accountability and the ability of a federal agency to create such tremendous adverse impacts without informing the public or Congress, and then forcing those adversely affected to bear the cost of the consequences while they go on to other

projects where they can operate with a similar lack of accountability if it is not required here.

Based on our actual experience with the U. S. Army Corps of Engineers and reported downstream flooding and erosion problems at two other Corps projects in Missouri, we believe Congress should exercise more control over this Agency.

Congress approves funding for a project, then leaves the interpretation of the enabling legislation to the Corps of Engineers, without providing any redress for damages by the Corps actions.

Thus, we are appealing to the legislative process for a solution. Whether the remedy is removal of sovereign immunity as a legal defense, the indemnification for damages, it is imperative that Agencies be responsible and accountable for their actions. Therefore, we ask your support of this bill.

We thank the Subcommittee for holding hearings on this crucial matter and for the opportunity to testify. We will be happy to answer any questions you may have.

Mr. Chairman, Members of the Subcommittee:

We are here today to ascertain if Congress is going to permit one of their agencies, the U. S. Army Corps of Engineers, to single us out to bear a \$5 million plus burden for their actions at the Clarence Cannon Dam and Reservoir Project in July, 1981. We thank you for the opportunity to bring this injustice to your attention and believe the time has come for Congress to exercise more control over the activities of the U. S. Army Corps of Engineers.

The Clarence Cannon Dam and Reservoir Project was authorized by Congress in the Flood Control Act of October, 1962 at an estimated cost of \$63,300,000.<sup>1</sup> The authorization cites multiple benefits for the area. Following is that tabulation:

Flood Control	33%
Hydropower	26%
Recreation	31%
Water Supply	3%
All Other	<u>7%</u>
Total	100% <sup>2</sup>

Although flood control is cited as the primary benefit to be derived from the project, it is interesting to note that all recreational facilities were completed on schedule and operating as of August, 1980.<sup>3</sup> On the other hand, the Corps has managed to keep the dam construction going for more than a decade with

a current estimated completion date of July 30, 1984 and an estimated cost of 4 to 5 times the original estimate.<sup>4</sup> As a comparison, the Bagnell Dam in Southern Missouri, three times larger than the Cannon Dam was completed on schedule in 18 months nearly a half century ago.<sup>5</sup>

Gentlemen, on July 27, 1981 the U. S. Army Corps of Engineers, exercising a discretionary function on their part, breached a cofferdam on the Salt River releasing a flood of water from above the Clarence Cannon Dam. As a direct result of the Corps action our crops and land were inundated for almost a week, sufficient to destroy all crops and erode our soil.

Corps spokesman, Captain Glenn Petirna, said when the dam is complete, flood water could actually top the concrete portion of the dam and would not cause failure.<sup>6</sup> Why then was the cofferdam, (a temporary structure) not constructed to a height sufficient to control the water until the permanent dam was ready for operation? Col. Robert J. Dacey, District Engineer, U. S. Army Corps of Engineers, response was, "That's an economic decision. You get out your crystal ball and you try and decide what kind of floods you might encounter in the next few years. You don't waste the taxpayers' money by building a cofferdam that would be too high. No, I don't think based on the information available at the time, that they skimped on it. It is just unfortunate that we have had rains in excess of anything we thought we would have during the construction period".<sup>7</sup> Since when does the Corps of Engineers

operate by a crystal ball? We the landowners and operators, must live by our economic decisions. What taxpayers is Col. Dacey referring to? Are not the landowners, in the lower Salt River Basin, taxpayers? Considering the \$5,000,000+ damage to downstream landowners (taxpayers), it is ironic that Col. Dacey would speak of economics, wasting taxpayers' money or prudence in design.

Because of that decision do you think it will be more of an expense to the taxpayers? Colonel Dacey's response was "Tough question, and that's one we'll know after we're done. Cause we can go back and look at what the cost would have been had we built it at a higher level and what the costs are that we actually incur to go back in now and replace the cofferdam and repair the damage that will be done to the earthen fill part of the dam".<sup>8</sup>

It is well settled in American Jurisprudence that once a person takes control of surface water and/or impounds same you cannot later release it upon your neighbors without being liable for any damages caused therefrom.

In the instant case, the Corps contends among other things, that the notching of the cofferdam was their only alternative.<sup>9</sup> It was feared without releasing water from behind the cofferdam, it might give way suddenly, sending a wall of water down the Salt River and into the construction site of the nearly finished main dam. Actual experience does not indicate their fear was well founded. In fact, a hydrologist

for the U. S. Geological Survey indicated the flow of the Salt River at New London, Missouri peaked at 77,300 c.f.s. while the Corps had estimated the flow would reach 150,000 to 200,000 c.f.s. This was not the first time the cofferdam had been threatened. In May, 1981 the cofferdam was raised to 581.0 MSL due to high water.<sup>10</sup> If one was talking prudent design, the near disaster in May should have alerted the Corps to the possible danger. Additionally, by the Corps' own records, the flood in April, 1973 would have indicated the flood potential on the Salt River.

The Corps' contention that damage would have been the same with or without the cofferdam does not hold up under scrutiny.<sup>11</sup> Our crops downstream had generally survived the first runoff (See Exhibit 1). After the Corps cut through the cofferdam, flood waters raised another six and one-half feet down the Salt River (See Exhibit 2), according to a Corps spokesman.<sup>12</sup> The controlled release of flood waters did not in any way mitigate our crop damage. In fact, the controlled release caused the water to set on the crop land longer than if there had been no dam.<sup>13</sup>

It has been seen, then, that the Corps of Engineers completed the recreational facilities on schedule, while delaying the completion of the dam at least four times, at a cost of four to five times the original estimate. Such delays led to a catastrophe. Even the effect of these delays could have been averted by prudent design of a cofferdam height sufficient to

hold back the water impounded. But as a result of misjudgment the Corps created a disastrous situation in which they chose to flood downstream cropland instead of risking the dam itself.

Landowners were told they could file applications seeking compensation from the Corps for damages. Claims amounting to \$5,156,140.64 were filed.<sup>14</sup> To date all claims we have knowledge of have been denied for the following reasons:

- (a) The release of water represents the exercise of a discretionary function on the part of the U. S. Army Corps of Engineers. A claim based thereon is not payable. See 28 U.S.C. 2680 (a).
- (b) The United States is not liable for damage caused by flood or flood waters at any place. See 33 U.S.C. 702 c.
- (c) There is no evidence of any negligence on the part of the Corps of Engineers.<sup>15</sup>

Further, we have been advised by legal counsel that no action can be maintained against the United States in this matter.

Therefore, in view of the Corps' negligence and careless disregard for our property, and the bar to liability imposed by 33 U.S.C. 702 c, we ask you to provide relief for those damaged by:

- (a) Passage of H. R. 1074 and/or,
- (b) Removal of sovereign immunity as a legal defense giving landowners standing in federal district court.

Mr. Chairman, Members of the Subcommittee, we consider this matter critical to the continuance of farming in the Lower Salt River Basin. All of us here today are

second, third or fourth generation farmers in the Salt River Valley and we are disturbed and distrustful of the Corps' actions.

We are aware of the deplorable track record of the U. S. Army Corps of Engineers in the State of Missouri. It is one of contempt, defiance, and coverup toward the electorate as well as our elected officials. Two examples come to mind, the Meramec Dam Project and the Truman Dam. The latter has been described by Senator Danforth of Missouri as a calamity.<sup>16</sup> The Truman Dam, like the Cannon Dam, is another Corps project involving flood control, hydropower, recreation, etc. It, to, has been one of delays, cost overruns and failure to meet projected benefits. As stated in the Hearings on the Truman Dam in July, 1980, "The project was to be completed in 1971. It is still not completed, and it will never meet its promise even after the Corps' attempts to mitigate the downstream damage threatened by the power generation". The GAO also noted that the Corps' management of Truman land acquisition was a textbook case of government waste.<sup>17</sup>

In the case of the Meramec Dam Project, even after a public referendum showing a majority of voters against the project, Corps officials attempted to continue some if not all facets of the project.<sup>18</sup>

As far as we know, the Corps has not even disclosed the damages to the Cannon Dam from their breaking the cofferdam.

We are just not sure if the U. S. Army Corps of Engineers is accountable to anyone. We suspect this is another Corps project that would show a negative total benefit/cost ratio if current high interest rates were considered.

Again, we thank the Subcommittee for holding hearings on this critical problem and for the opportunity to testify. We will be happy to answer any questions you may have.

(Exhibit 1)



Before Corps' Breach of Cofferdam  
Photo Taken of the Thomas L. Dotson Farm, 7/27/81

(Exhibit 2)



After Corps' Breach of Cofferdam  
Photo Taken of the Thomas L. Dotson Farm, 7/30/81

## FOOTNOTES

1. Public Law 87-874, October 23, 1962, p. 1189-1190.
2. Minutes of Public Meeting on Downstream Releases, Clarence Cannon Dam and Reservoir, U. S. Army Corps of Engineers, October 18, 1979, p. 4.
3. Letter from Colonel Robert J. Dacey, U. S. Army Corps of Engineers, June 10, 1982, p. 1 and 2.
4. St. Louis Post-Dispatch, August 2, 1981, Sec. E, p. 1, Col. 1.
5. Bagnell News, Published by Union Electric, 1981, p. 7.
6. Interview with Captain Glenn Petirna, WGEM News, August 3, 1981.
7. Interview with Colonel Robert J. Dacey, WGEM News, July 27, 1981.
8. Ibid.
9. The Louisiana Press-Journal, August 20, 1981, p. 1, Col. 6.
10. Letter from Colonel Robert J. Dacey, June 10, 1982.
11. Letter from Colonel Robert J. Dacey, U. S. Army Corps of Engineers, January 22, 1982, p. 1.
12. The Louisiana Press-Journal, August 20, 1981, p. 1, Col. 6.
13. Ibid.
14. H.R. 5753, March 8, 1982.
15. Letter from Joseph H. Rouse, U. S. Army Claims Service, Office of the Judge Advocate General, May 10, 1982, p. 1.
16. The Bowling Green Times, July 9, 1980, p. 11, Col. 4.
17. Ibid., Col. 6.
18. St. Louis Post-Dispatch, August 5, 1981, Sec. A, p. 10, Col. 1.

Mr. VOLKMER. In closing, I would just like to say I agree with John to the extent that a governmental agency should not be able to be shielded from the public for acts of negligence. Even though the corps has denied any negligence in this activity, I think it is a sufficient question that there should be an adjudication determination on that issue. I personally feel that, like I said before, that these people should have some way, a right of redress or at least an attempt to do so. Right now, they're completely frustrated and have no redress at all. No place to go.

Mr. HALL. Thank you, Congressman Volkmer. And I want to thank you for your assistance in this matter. I know that you appeared before this committee last year. We didn't have time to complete it prior to the end of the session, and you have continued to talk to me about the bill and you certainly have been diligent in working not only with this committee but with those in your district, and we appreciate that very much.

Mr. VOLKMER. Thank you very much.

Mr. HALL. Thank you for your testimony this morning.

Mr. VOLKMER. Thank you.

Mr. HALL. Mr. Hamilton, the flood occurred in July 1981.

Mr. HAMILTON. Yes.

Mr. HALL. When did this project start?

Mr. HAMILTON. It's my understanding that the groundbreaking took place in 1968, actual construction begun in 1970.

Mr. HALL. Was this the first temporary dam that the corps had ever constructed that they notched in this case?

Mr. HAMILTON. It's my understanding that this is the first temporary dam that they ever notched.

Mr. HALL. And what caused the amount of water to accumulate behind that dam in July 1981?

Mr. HAMILTON. We had an abnormal rainfall—I don't have the exact figures—was a part of it, but to understand a little bit of the purpose of this cofferdam, this was a temporary earthen structure immediately upstream from the main dam. Its intended purpose was to shield the main dam, the main earthen dam while it was being built to allow the water to run through rather than being totally impounded. There was three openings in the base of the concrete portion of the dam that allows approximately 28,000 cubic feet per second to flow through. During a period of flood, of course, this would not carry all the water. In fact, the maximum flow in the 1973 flood, which is the record flood, has been reported to be 107,000 cubic feet per second.

So you can see that those sluices would not allow for the flow through. Why it was engineered in such a fashion to impound any water is a question we have. Why three sluices, why not five, or why not one?

Mr. HALL. What was the height of this dam that they notched?

Mr. HAMILTON. The height of it before notching was 585 feet mean sea level, and they notched it back, I understand, to 581 feet, about a 4- to 4½-foot notch.

Mr. VOLKMER. A little before this time in July, it had been at 581, and they raised it to 585, anticipating that they thought that that would be sufficient, and then when the rains continued, then they notched it in anticipation—it was their feeling that if they

didn't notch it, that the waters would overflow it, and so they notched it to permit the water to go through, rather than have it come through naturally.

Mr. HALL. If the corps people had not notched the dam, would there have been any material difference in the damage that was sustained by the landowners?

Mr. HAMILTON. We feel that there would not have been any material difference. In fact, this is a question that perhaps needs to be adjudicated also, is whether or not the notch even had to be made. It's my understanding, the highest the water ever got was 583 feet, 583.9. They had a height of 585. I think it's still an open question as to whether or not it had to be notched.

Mr. HALL. Were the landowners downstream from the dam notified prior to the notching of the dam?

Mr. HAMILTON. They were not notified as far as the decisionmaking process was concerned. There were some announcements on the radio that the dam might be breached, and when the decision was made, all the landowners were contacted to evacuate whatever would be in the flood plain, but we had no part of the decision.

Mr. HALL. How many days or hours prior to the notching was notification given that it, in all likelihood, would be done?

Mr. HAMILTON. I believe the critical days were the 25th through July 27, 1981, and they actually notched it on the 27th.

Mr. HALL. Were any suits brought in Federal court by any of the landowners involved in these bills to try to restrain or obtain a temporary restraining order against the corps for what they had planned to do?

Mr. HAMILTON. No; there was not an injunction or anything sought. I believe that question was asked once before. This happened to be a weekend, and I believe we would have had to go to St. Louis to have effected this, and it was not done; no.

Mr. HALL. Now what was the date of the flooding? July—

Mr. HAMILTON. July 27 was the day they notched it.

Mr. HALL. July 27. You say you were notified on of June 28?

Mr. HAMILTON. No; no, June 25, they began to have announcements on the radio that there may be a possibility—

Mr. HALL. June 25.

Mr. HAMILTON. July. July 25; I'm sorry. It's all that weekend. July 25. They notched it on the 27th.

Mr. HALL. All right. OK. I thought you said June.

Mr. HAMILTON. I may have. I'm sorry.

Mr. HALL. All right. Thanks.

Well, did anyone make any efforts, so far as you know, to try to get a temporary restraining order?

Mr. HAMILTON. I don't believe so.

Mr. HALL. Are all of the persons listed in these bills claiming relief from flooding all downstream from the dam?

Mr. HAMILTON. Yes.

Mr. HALL. And you state that claims totaling \$5,156,000 have been filed with the Corps of Engineers as a result of this flood. Is this the total amount claimed under this H.R. 1059?

Mr. HAMILTON. I believe it's claimed under 1074.

Mr. VOLKMER. 1074.

Mr. HALL. 1074?

Mr. HAMILTON. Yes.

Mr. HALL. What percentage of this loss was cropland, crops or real or cattle, if you know?

Mr. HAMILTON. That would be difficult. The majority of it would be crops. There was some land damages and there was some building damage.

Mr. VOLKMER. There was some structural damage.

Mr. HALL. Had this coffer—would this dam have been sufficient in the years before 1981? At the time it had been constructed?

Mr. HAMILTON. Not in 1973, in my understanding, it would not have been sufficient.

Mr. HALL. The long list of claims that are listed in these bills, if you know, have they all been verified for accuracy as to amounts?

Mr. HAMILTON. Independent of the landowners and the committee members, I would say not.

Mr. HALL. For instance, I'm looking on page 2 of H.R. 1074, where you start listing the names of people, beginning with a Dr. Ralph Hayden, 519 West Main, Bowling Green, Mo., in the amount of \$91,143. At the end of that page it's Jim and Barbara Husler, Rural Route 2, Box 279, New London, Mo. In between, you have some rather large amounts. The two that I mentioned, Dr. Hayden and Jim and Barbara Husler, do you know whether that \$91,000 figure or the \$75,000 figure is a verifiable figure?

Mr. HAMILTON. Yes; I would say it could be verified. In fact, the manner in which these claims were put together was, as indicated in the record, the corps did suggest that landowners could make application for compensation for damages. Those were made on approved corps forms, and I'm sure that each one of them was unique. In other words, in the ones that I'm specifically familiar with, normally the way that they were figured was the crops times the number of acres that was flooded times a market value, would be one figure. That would be a crop figure. Then whether or not there were levees that were affected, would be the cost of repair or replacement of that levee.

Mr. HALL. Did the corps ever disagree with the amount of the claims submitted?

Mr. HAMILTON. To my knowledge, they did not. They were all denied, based on the general immunity.

Mr. VOLKMER. But the corps did initially initiate the idea of filing claims with the corps, then as soon as people started to do it, they denied them. These figures were taken from those claim forms the people themselves had filled out.

The corps estimate of this damage was over \$7 million, its own estimate.

Mr. HALL. Yes; I notice in section 702(c) of 33 United States Code—and I may not be able to give an interpretation of this—this language:

No liability of any kind shall attach to or rest upon the United States for any damage from or by floods or flood waters at any place, provided, however, that if in carrying out the purposes of certain sections, 702(a) and others of this title, it shall be found that upon any stretch of the banks of the Mississippi River, it is impracticable to construct levees, either because such construction is not economically justified or because such construction would unreasonably restrict the flood channels and lands in such stretch of the river or subject it to overflow and damages, which are not now overflowed or damaged by reason of the construction of levees on the

opposite banks of the river, it shall be the duty of the Secretary of the Army and the Chief of Engineers to institute proceedings on behalf of the United States Government to acquire the absolute ownership of the land so subjected to overflow and any damages or floodage rights over such lands.

Do you know whether or not any proceedings were ever brought by the corps to obtain these lands through eminent domain proceedings?

Mr. VOLKMER. No; none that I know of. No; nothing below the dam.

Except for—I may correct myself there. Except for the reregulation dam, which is another dam to pump water. They're going to pump water back to the main dam for purposes of generating electricity. In that area, the area of the reregulation dam, they acquired land by voluntary and eminent domain, in order for that flooding. But as far as the landowners that are contained in here, in this land, as far as I know, and I know of no attempt by the corps to acquire. In fact, in discussions with the corps, it's my, you know, opinion, from their discussions that they feel that they have no right to acquire any of this land below the dam or even for flood easement for, you know, periodic flooding, they have no right to do so.

We have problems with private access roads that will be flooded, things like that, and they feel that they have no right even to correct that.

Mr. HALL. Has there been any flooding since 1981?

Mr. VOLKMER. December 1982, April 1982, and May—I mean April 1983 and May 1983.

Mr. HALL. Over these same lands?

Mr. VOLKMER. Basically, yes.

Mr. HALL. All right.

The gentleman from Massachusetts, Mr. Frank is recognized.

Mr. FRANK. No questions.

Mr. HALL. The gentleman from Florida.

Mr. McCOLLUM. Is there any flood insurance, crop insurance, that might in any way cover the the damages sustained by the folks involved, not necessarily from the negligence of the corps, but from just general flood or crop loss?

Mr. VOLKMER. It's my understanding that the Federal crop insurance cannot be obtained in this area.

Mr. DOTSON. The crop insurance, Federal crop insurance has scheduled us under 5 of their—they have a rating of 1, 2, 3, 4, and 5—which is a high rating, on part of this land, which would run into \$20 to \$30 an acre to insure the property. It's the highest rate insurance that they sell. And that just came into effect this year.

Mr. HAMILTON. Prior to that there was none.

Mr. McCOLLUM. There was none at the time of this flooding, in other words.

Mr. DOTSON. It was unavailable.

Mr. McCOLLUM. Thank you very much. I have no further questions, Mr. Chairman.

Mr. HALL. Thank you. We're going to have a vote on to approve the journal, so we will recess for the next 15 minutes, and we'll come back at that time.

Mr. VOLKMER. Do you want us back?

Mr. HALL. No; we will not need any additional testimony from you, Mr. Volkmer, or your group. We would, of course, want the corps to stay for their part.

Thank you very much. So we'll be back in about 15 minutes.

[Brief recess.]

Mr. HALL. The subcommittee will come to order.

Mr. Cronin, you may proceed.

**TESTIMONY OF WILLIAM J. CRONIN, CHIEF, LEGISLATIVE SERVICES OFFICE, DIRECTORATE OF REAL ESTATE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, ACCOMPANIED BY JACK R. NIEMI, P.E., CHIEF, ENGINEERING DIVISION, U.S. ARMY ENGINEER DISTRICT, ST. LOUIS, MO.**

Mr. CRONIN. Good morning, Mr. Chairman. I am William J. Cronin, Chief of the Legislative Services Office of the Directorate of Real Estate, Office of the Chief of Engineers, Department of the Army.

I am accompanied by Mr. Jack Niemi, who is Chief of Engineering Division of our St. Louis District Office, the office charged with the responsibility for the Clarence Cannon project.

I have been designated to present to you on behalf of the Army its views on H.R. 1059, 98th Congress, a bill to allow the adjudication of claims against the United States for damages arising from the activities of the Army Corps of Engineers at the Clarence Cannon project on the Salt River in the State of Missouri.

The bill provides private relief for individuals damaged from flooding at the project. Specifically, it authorizes any persons who suffered damages to crops or buildings on or after January 1, 1981, which were caused by the activities of the Corps of Engineers at the project to file a claim with the U.S. District Court for the Eastern District of Missouri within 6 months of the date of enactment of the bill.

It also provides for the waiver of the Government's immunity from tort liability for purposes of such actions and empowers the court to consider any claims filed, regardless of any prior Federal agency action on the claim.

The Department of the Army opposes the bill.

The Clarence Cannon Dam and Mark Twain Lake project is located in northeast Missouri and is currently under construction.

I have here—and Mr. Niemi will point out—an aerial photograph of the flooded conditions that took place on the weekend of July 25 to 27, 1981.

Prior to the time of the events hereinafter outlined, the concrete portion of the main dam had been completed, and work was underway in the area on which the earthen portion of the dam was to be constructed.

To protect this area from the flow of the Salt River, a cofferdam had been constructed just upstream of the worksite to divert the flow through the concrete portion. The cofferdam was designed to contain a flood having an average recurrence interval of once every 10 years.

The top of the cofferdam was established at 577 feet mean sea level. In the spring of 1981, however, heavy rains caused a sharp

rise in the water level behind the cofferdam up to 572.1 feet mean sea level. The height of the cofferdam was then raised to 581 feet.

In July 1981, further heavy rains again caused a significant rise in the water level, causing an emergency situation during the weekend of July 25 to 26, 1981, at which time the height of the cofferdam was raised to 585 feet.

By Monday morning, July 27, it was predicted that the water would crest at 588.9 feet. However, it was not feasible to raise the cofferdam to contain a pool of water at that height.

It was feared that the cofferdam would be overtopped and fail and that the resulting surge would likely cause widespread damage downstream, including the possible destruction of several bridges.

On July 27, 1981, to prevent or mitigate such a catastrophe, it was decided to cut a notch in the cofferdam to prevent its failure by allowing a slower and less damaging release of the impounded waters.

The highest water level was 584.9 feet, which was reached on July 28, 1981, before the water began to drop.

This release of water downstream led to claims by persons who suffered damages. However, the failure to make this downstream release of water would have resulted in much more severe flood damage.

Prior to these events, the cofferdam did impound water which inundated upstream areas, including areas leased for agricultural purposes. Agricultural crops on these lease areas were damaged.

The degree of damages to homes and buildings downstream is not known; however, the flooding which occurred was virtually the same as would have occurred under natural conditions.

The Army opposes the bill because it would waive the governmental immunity from liability for flood damages in the instant situation. There is express statutory governmental immunity from tort liability of any kind for any damages from or by floods or flood waters in any place, as is set forth in 33 U.S.C., section 702(c).

The leading case interpreting this tort immunity is *National Manufacturing Company v. U.S.*, an eighth circuit case in 1954, wherein the court stated that the rationale for the broad immunity was that the cost of the flood control works would be very great and that Congress did not want the cost of flood damages added to these costs.

A later enactment of the Federal Tort Claims Act did not change this immunity, citing *Taylor v. U.S.* in the fifth circuit, 1979.

The very purpose of the statute creating the governmental immunity was to relieve the United States of liability of any kind in just this situation where there were damages suffered.

Enactment of a bill to circumvent the bar to liability would establish a precedent whereby similar bills would be introduced every time there is a flood during construction of a flood control project. There is no rationale for singling out the instant situation for supporting payment for damages.

Further, the bill appears to authorize claims by lessees of Government land. We have specifically opposed coverage of Government lessees for the following reasons:

The agricultural leases provide the Government has the right to flood the leased premises whenever necessary, and the lessee shall

have no claim for damages of any character or on account thereof against the United States or any officer, agent, or employee.

They further provide that the United States is not responsible for damages to property or injuries to persons arising from the use and occupation of the premises or for damages to the property of the lessee arising from the flooding of the premises by the Government or flooding from any other cause, and the lessee shall hold the United States harmless from any and all such claims.

The Court of Claims has held that maintenance of high water levels in a flood control reservoir does not entitle lessees to damages where under the plain language of the lease it was the right of the Government to flood the leased premises whenever necessary in order to carry out its flood control responsibilities, citing *Eldon v. U.S.* in the Court of Claims, 1980.

This concludes my statement, Mr. Chairman. I will be happy to answer any questions you may have on this matter.

[The complete statement follows:]

STATEMENT

BY

WILLIAM J. CRONIN

CHIEF, LEGISLATIVE SERVICES OFFICE

DIRECTORATE OF REAL ESTATE

OFFICE, CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY

ON

H. R. 1059, A BILL "TO ALLOW  
THE ADJUDICATION OF CLAIMS AGAINST  
THE UNITED STATES FOR DAMAGES ARISING  
FROM THE ACTIVITIES OF THE  
ARMY CORPS OF ENGINEERS AT THE  
CLARENCE CANNON DAM PROJECT ON THE  
SALT RIVER IN THE STATE OF MISSOURI."

BEFORE

SUBCOMMITTEE ON ADMINISTRATIVE LAW AND GOVERNMENTAL RELATIONS

COMMITTEE ON THE JUDICIARY

HOUSE OF REPRESENTATIVES

FIRST SESSION, 98TH CONGRESS

MAY 26, 1983

Mr. Chairman and Members of the Committee:

I am William J. Cronin, Chief of the Legislative Services Office, Directorate of Real Estate, Office of the Chief of Engineers, Department of the Army. I have been designated to present to you, on behalf of the Department of the Army, its views on H. R. 1059, 98th Congress, a bill "To allow the adjudication of claims against the United States for damages arising from the activities of the Army Corps of Engineers at the Clarence Cannon Dam project on the Salt River in the State of Missouri."

The bill provides private relief for individuals damaged from flooding at the Clarence Cannon Dam project. Specifically, it authorizes any person who suffered damage to crops or buildings, on or after January 1, 1981, which were caused by the activities of the Corps of Engineers at the project, to file a claim with the U.S. District Court for the Eastern District of Missouri within 6 months of the date of enactment of the bill. It also provides for the waiver of the Government's immunity from tort liability for purposes of such actions and empowers the court to consider any claims filed, regardless of any prior Federal agency action on the claim.

The Department of the Army opposes the bill.

Clarence Cannon Dam and Mark Twain Lake Project is located in northeast Missouri and is currently under construction.

Prior to the time of the events hereinafter outlined, the concrete portion of the main dam had been completed and work was underway in the area on which the earthen portion of the dam was to be constructed. To protect this area from the flow of the Salt River, a cofferdam had been constructed

just upstream of the worksite to divert the flow through the concrete portion. The cofferdam was designed to contain a flood having an average recurrence interval of once every 10 years. The top of the cofferdam was established at 577 feet mean sea level (msl).

In the spring of 1981, however, heavy rains caused a sharp rise in the water level behind the cofferdam, up to 572.1 feet msl. The height of the cofferdam was then raised to 581 feet.

In July 1981, further heavy rains again caused a significant rise in the water level, causing an emergency situation during the weekend of July 25-26, 1981, at which time the height of the cofferdam was raised to 585 feet. By Monday morning, July 27, it was predicted that the water would crest at 588.9 feet. However, it was not feasible to raise the cofferdam to contain a pool of water at that height. It was feared that the cofferdam would be overtopped and fail, and that the resulting surge would likely cause widespread damage downstream, including the possible destruction of several bridges.

On July 27, 1981, to prevent or mitigate such a catastrophe, it was decided to cut a notch in the cofferdam to prevent its failure by allowing a slower and less damaging release of the impounded waters. The highest water level, 583.9 feet, was reached on July 28, 1981, before the water began dropping. This release of water downstream led to claims by persons who suffered damages. However, the failure to make this downstream release of water would have resulted in much more severe flood damage.

Prior to these events, the cofferdam did impound water which inundated upstream areas, including areas leased for agricultural purposes. Agricultural crops on these lease areas were damaged.

The degree of damage to homes and buildings downstream is not known. However, the flooding which occurred was virtually the same as would have occurred under natural conditions.

The Army opposes the bill because it would waive the Governmental immunity from liability for flood damages in the instant situation. There is express statutory Governmental immunity from tort liability "of any kind ... for any damages from or by floods or flood waters at any place ..." (33 U.S.C. Sec. 702c (1976)).

The leading case interpreting this tort immunity is National Mfg. Co. v. U.S., 210 F.2d 263 (8th Cir. 1954), wherein the court stated that the rationale for the broad immunity was that the cost of the flood control works would be very great, and that Congress did not want the costs of flood damages added to those costs. Later enactment of the Federal Tort Claims Act did not change the immunity. Taylor v. U.S., 590 F.2d 263 (5th Cir. 1979).

The very purpose of the statute creating the Governmental immunity was to relieve the United States of liability "of any kind" in just this situation - where there were damages suffered. Enactment of a bill to circumvent the bar to liability would establish a precedent whereby similar bills would be introduced every time there is a flood during construction of a flood control project. There is no rationale for singling out the instant situation for supporting payment for damages.

Further, the bill appears to authorize claims by lessees of Government land. We specifically oppose coverage of Government lessees for the following reason.

The agricultural leases provide that the Government has the right to flood the leased premises whenever necessary, and the lessee shall have no claim for damages of any character on account thereof against the United States or any officer, agent, or employee.

They further provide that the United States is not responsible for damages to property or injuries to persons arising from the use and occupation of the premises, or for damages to the property of the lessee arising from the flooding of the premises by the Government, or flooding from any other cause, and the lessee shall hold the United States harmless from any and all such claims.

The Court of Claims has held that maintenance of high water levels in a flood control reservoir does not entitle lessees to damages, where, under the plain language of the lease, it was the right of the Government to flood the leased premises whenever necessary in order to carry out its flood control responsibilities. Eldon v. U.S. 617 F.2d 254 (Ct.Cl. 1980).

This concludes my statement, Mr. Chairman, and I shall be happy to answer questions you may have on this matter.

Mr. CRONIN. If I may say, Mr. Chairman, we expect to have our written departmental reports up to you next week. We would request that the record remain open so they can become a part thereof.

Mr. HALL. It will be done so that can be made a part of the record.

[Information was furnished:]

DEPARTMENT OF THE ARMY  
WASHINGTON, D.C. 20310

14 JUN 1983

Honorable Sam B. Hall, Jr.  
Chairman, Subcommittee on  
Administrative Law and Governmental Relations  
Committee on the Judiciary  
House of Representatives  
Washington, D.C. 20515

Dear Mr. Chairman:

Reference is made to your request to the Secretary of the Army for the views of the Department of the Army on H. R. 1059, 98th Congress, a bill "To allow the adjudication of claims against the United States for damages arising from the activities of the Army Corps of Engineers at the Clarence Cannon Dam Project on the Salt River in the State of Missouri."

The general purpose of the bill is to provide private relief for individuals who sustained damages from flooding at the Clarence Cannon Dam project. Specifically, the first section of the bill authorizes any person who suffered damage to crops or buildings, on or after January 1, 1981, caused by the activities of the Corps of Engineers at the Clarence Cannon Dam project to file a claim against the United States for money damages. Section 2(a) of the bill provides jurisdiction to hear the claims to the U. S. District Court for the Eastern District of Missouri. Section 2(b) of the bill provides that a claim will be timely filed if it is instituted within six months of the date of enactment of the bill, notwithstanding the two year statute of limitations of 28 U.S.C. Section 2401(b). Section 3(a) provides for the waiver of 33 U.S.C. Section 702c and 28 U.S.C. Section 2680 for purposes of actions instituted under the bill. Section 3(b) provides that the district court will consider any claim for damages instituted under the bill, regardless of any prior Federal agency action relative to the claim.

The Department of the Army opposes the bill.

The Clarence Cannon Dam and Mark Twain Lake Project was authorized by the Flood Control Act of October 23, 1962, Public Law 87-874. The project is located in northeast Missouri and is currently under construction. Dam closure was originally planned for December 1982.

Prior to the events hereinafter described, the concrete portion of the main dam structure had been essentially completed and work was underway in the area on which the earthen portion of the dam was to be constructed. In order to protect this area from the flow of the Salt River, a cofferdam had been constructed just upstream of the worksite to divert the flow of the Salt River through the concrete portion of the dam. The cofferdam was designed in accordance with Corps design policy to contain a flood having an average recurrence interval of once every 10 years, plus 3 feet. Accordingly, the top of the cofferdam was originally established at 577 feet National Geological Vertical Datum (NGVD), a height considered adequate at the time.

Due to an unusually wet spring, the ground throughout the basin was saturated. The normal rainfall for May at the Hannibal Recording Station is 4.2 inches. During May 1981, the Hannibal Station recorded 9.8 inches. The excessive May rainfall caused a sharp rise in the water level behind the cofferdam. On May 21, 1981, the water level was 572.1 feet NGVD. The dam contractor was directed to raise the height of the cofferdam 4 feet to 581 feet NGVD.

In July 1981, further heavy rains fell in the basin. Based on historical records, the normal July rainfall is 4.2 inches, as recorded at the Hannibal Recording Station which is located 20 miles northeast of the dam. During July 1981, the Hannibal Station recorded 18.9 inches of rainfall. During the period July 23-28, 1981, the Paris Station (15 miles upstream of the dam) recorded 9.3 inches of rainfall.

The heavy July rains following the heavy May rains caused almost total runoff in the Salt River basin above the project. On July 25-26, 1981, the water behind the cofferdam was rising at a rate of 4 inches per hour. During

the period July 25-27, the total increase in water level behind the dam was approximately 15 feet. The rise in water level caused an emergency situation, and on July 26, the height of the cofferdam was raised another 4 feet to 585 feet NGVD.

By Monday morning, July 27, it was predicted, based on National Weather Service rainfall and forecast data, that the water level in the pool would crest at 588.9 feet, approximately 4 feet over the top of the cofferdam. The Corps decided that it was not feasible to raise the cofferdam to such a level.

Based on the prediction that the cofferdam would be topped by 4 feet of water, it was feared that the cofferdam would collapse, resulting in destruction downstream, including the possible loss of several bridges. On July 27, the Government's contractor was directed to cut a notch in an area of the cofferdam considered to be erosion resistant. It was believed that this would allow a slower and safer release of the impounded waters. The highest water elevation, 584.8 feet, was reached on July 28, 1981.

Releasing the water through the notch resulted in extensive damage to crops downstream and to the earthen portion of the main dam. In our judgment, however, it is clear that the failure to make this measured release of water would have resulted in much more severe flood damage.

In summary, as a result of unusual spring and summer rainfall, it was necessary to cut a notch in the cofferdam. This notch, in the nature of an emergency spillway, allowed the release of waters impounded behind the cofferdam. The release of water caused downstream flood damage, primarily loss of agricultural crops.

Prior to this, the cofferdam did impound water which inundated certain areas, including certain lease areas, upstream of the main dam site. As a result, agricultural crops on these lease areas were damaged.

Because the area was not declared a Federal disaster area, the Federal Emergency Management Agency did not request the Corps to estimate damages in the area. Therefore, the degree of damage to homes, buildings, and crops is not known.

However, based on U. S. Geological Survey gaging information, it was determined that the flooding which occurred was virtually the same as would have occurred under natural conditions. This information shows that the inflow into the pool behind the cofferdam was essentially the same as the flow measured at the gaging station below the dam. It is further clear that the duration of flooding was also virtually the same as would have occurred under natural conditions. The observed water level during the July 1981 flood event was above flood stage for 8 days. Based on computer simulations, it has been determined that the water level under natural conditions would have been above flood stage for 7 days.

The Department of the Army opposes the bill because the essence of the bill is to waive the express Governmental immunity from liability for flood damages in the instant situation when there is no rationale for singling out this particular flood event.

There is express Governmental immunity from tort liability "of any kind ... for any damages from or by floods or flood waters at any place ..." This immunity provision was first adopted as Section 3 of the Flood Control Act of 1928. Act of May 15, 1928, Ch. 569, Sec. 3, 45 Stat. 535 (codified at 33 U.S.C. Sec. 702c (1976)). The Act originally applied only to the flood control projects on the Mississippi River but was extended to other geographical areas by the Flood Control Act of 1936. Act of June 22, 1936, Ch. 688, Sec. 1, 8, 49 Stat. 1570, 1596 (codified at 33 U.S.C. Sec. 701a, 701e (1976)).

The leading case interpreting this tort immunity is National Mfg. Co. v. U. S., 210 F.2d 263 (8th Cir. 1954). In it, the court stated that the rationale for the broad immunity was that the cost of the flood control works would be very great, and that Congress did not want the costs of flood damages added to those costs. 210 F.2d 270. National Mfg. Co. has often been cited as an absolute bar to federal liability for damages from floods or flood waters. It is similarly well settled that later enactment of the Federal Tort Claims Act, 28 U.S.C. Sec. 1345(b) and 2671 et seq., did not change the immunity. Taylor v. U.S., 590 F.2d 263 (5th Cir. 1979); National Mfg. Co.

Consequently, the very purpose of the statute creating the Governmental immunity was to relieve the United States of liability "of any kind" in just this situation - where there were damages suffered. Enactment of H. R. 1059 to circumvent the bar to liability imposed by 33 U.S.C. Sec. 702c would establish a precedent. Should this bill be enacted, we would expect similar bills to be introduced every time there is a flood during or following construction of a flood control project. There is no rationale for singling out the instant situation for supporting payment for damages. Accordingly, we oppose the bill.

Further, the bill as drafted appears to authorize claims by lessees of Government land. We specifically oppose coverage of Government lessees for the following reason.

Each of the leases at the project contains the following two provisions:

Paragraph 7

That the right is hereby reserved to the United States, its officers, agents, and employees, to enter upon the said premises at any time and for any purposes necessary or convenient in connection with river and harbor and flood control work, to remove timber therefrom and to flood the leased premises whenever necessary, and the lessee shall have no claim for damages of any character on account thereof against the United States or any officer, agent, or employee thereof.

Paragraph 8

That the United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the use and occupation of the said premises, or for damages to the property of the lessee, or for injuries to the person of the lessee, or for damages to the property or injuries to the person of the lessee's officers, agents, servants, or employees, or others who may be on said premises at their invitation or the invitation of any one of them arising from or

incident to the flooding of the said premises by the Government, or flooding from any other cause, or arising from or incident to any other Governmental activities, and the lessee shall hold the United States harmless from any and all such claims.

(Underscoring added).

Accordingly, under the plain language of the leases there is no Government liability to the lessees. The Court of Claims has held that maintenance of high water levels in a flood control reservoir does not entitle lessees to damages, where, under the plain language of the lease, it was the right of the Government to flood the leased premises whenever necessary in order to carry out its flood control responsibilities. Elden v. U.S., 617 F.2d 254 (Ct. Cl. 1980). Consequently, with respect to claims by lessees, even if the bill was enacted the United States would likely rely on the exculpatory clauses in the leases as a defense to liability.

Also, we note that, although the intent of the bill presumably is to provide compensation for damages sustained as a result of flooding in July, and possibly May, of 1981, the bill as drafted authorizes claims for damages suffered on or after January 1, 1981 and continuing until 6 months after the date of enactment.

For these reasons, the Department of the Army opposes the bill.

The enactment of this bill will cost approximately \$5.2 million.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Subcommittee.

Sincerely,



William R. Gianelli  
Assistant Secretary of the Army  
(Civil Works)

DEPARTMENT OF THE ARMY  
WASHINGTON, D. C. 20310

14 JUN 1983

Honorable Sam B. Hall, Jr.  
Chairman, Subcommittee on  
Administrative Law and  
Governmental Relations  
Committee on the Judiciary  
House of Representatives  
Washington, D. C. 20515

Dear Mr. Chairman:

Reference is made to your request to the Secretary of the Army for the views of the Department of the Army on H. R. 1074, 98th Congress, a bill "For the relief of certain persons who suffered damages arising from the flood caused by the action of the United States Army Corps of Engineers on July 27, 1981, in lowering the top of a cofferdam on the Salt River in the State of Missouri."

The general purpose of the bill is to provide private relief for individuals who sustained damages from flooding at the Clarence Cannon Dam project. Specifically, the bill directs the Secretary of the Treasury to make payments out of any money in the Treasury not otherwise appropriated, to persons named in the bill, in full settlement of all claims against the United States for damages arising from the July 1981 flood at the Clarence Cannon Dam. The bill further provides that no amount in excess of 10 percent of any payment authorized in the bill shall be paid in attorney's fees and provides a fine for violation of the attorney's fees provision.

The Department of the Army opposes the bill.

The Clarence Cannon Dam and Mark Twain Lake Project was authorized by the Flood Control Act of October 23, 1962, Public Law 87-874. The project is located in northeast Missouri and is currently under construction. Dam closure was originally planned for December 1982.

Prior to the events hereinafter described, the concrete portion of the main dam structure had been essentially completed and work was underway in the area on which the earthen portion of the dam was to be constructed. In order to protect this area from the flow of the Salt River, a cofferdam had been constructed just upstream of the worksite to divert the flow of the Salt River through the concrete portion of the dam. The cofferdam was designed in accordance with Corps design policy to contain a flood having an average recurrence interval of once every 10 years, plus 3 feet. Accordingly, the top of the cofferdam was originally established at 577 feet National Geographical Vertical Datum (NGVD), a height considered adequate at the time.

Due to an unusually wet spring, the ground throughout the basin was saturated. The normal rainfall for May at the Hannibal Recording Station is 4.2 inches. During May 1981, the Hannibal Station recorded 9.8 inches. The excessive May rainfall caused a sharp rise in the water level behind the cofferdam. On May 21, 1981, the water level was 572.1 feet NGVD. The dam contractor was directed to raise the height of the cofferdam 4 feet to 581 feet NGVD.

In July 1981, further heavy rains fell in the basin. Based on historical records, the normal July rainfall is 4.2 inches, as recorded at the Hannibal Recording Station which is located 20 miles northeast of the dam. During July 1981, the Hannibal Station recorded 18.9 inches of rainfall. During the period July 23-28, 1981, the Paris Station (15 miles upstream of the dam) recorded 9.3 inches of rainfall.

The heavy July rains following the heavy May rains caused almost total runoff in the Salt River basin above the project. On July 25-26, 1981, the water behind the cofferdam was rising at a rate of 4 inches per hour. During the period July 25-27, the total increase in water level behind the dam was approximately 15 feet. The rise in water level caused an emergency situation, and on July 26, the height of the cofferdam was raised another 4 feet to 585 feet NGVD.

By Monday morning, July 27, it was predicted, based on National Weather Service rainfall and forecast data, that the water level in the pool would crest at 588.9 feet, approximately 4 feet over the top of the cofferdam. The Corps decided that it was not feasible to raise the cofferdam to such a level.

Based on the prediction that the cofferdam would be topped by 4 feet of water, it was feared that the cofferdam would collapse, resulting in destruction downstream, including the possible loss of several bridges. On July 27, the Government's contractor was directed to cut a notch in an area of the cofferdam considered to be erosion resistant. It was believed that this would allow a slower and safer release of the impounded waters. The highest water elevation, 584.8 feet, was reached on July 28, 1981.

Releasing the water through the notch resulted in extensive damage to crops downstream and to the earthen portion of the main dam. In our judgment, however, it is clear that the failure to make this measured release of water would have resulted in much more severe flood damage.

In summary, as a result of unusual spring and summer rainfall, it was necessary to cut a notch in the cofferdam. This notch, in the nature of an emergency spillway, allowed the release of waters impounded behind the cofferdam. The release of water caused downstream flood damage, primarily loss of agricultural crops.

Prior to this, the cofferdam did impound water which inundated certain areas, including certain lease areas, upstream of the main dam site. As a result, agricultural crops on these lease areas were damaged.

Because the area was not declared a Federal disaster area, the Federal Emergency Management Agency did not request the Corps to estimate damages in the area. Therefore, the degree of damage to homes, buildings, and crops is not known.

However, based on U. S. Geological Survey gaging information, it was determined that the flooding which occurred was virtually the same as would have occurred under natural conditions. This information shows that the inflow into the pool behind the cofferdam was essentially the same as the flow measured at the gaging station below the dam. It is further clear that the duration of flooding was also virtually the same as would have occurred under natural conditions. The observed water level during the July 1981 flood event was above flood stage for 8 days. Based on computer simulations, it has been determined that the water level under natural conditions would have been above flood stage for 7 days.

The Department of the Army opposes the bill because the essence of the bill is to waive the express Governmental immunity from liability for flood damages in the instant situation when there is no rationale for singling out this particular flood event.

There is express Governmental immunity from tort liability "of any kind ... for any damages from or by floods or flood waters at any place ..." This immunity provision was first adopted as Section 3 of the Flood Control Act of 1928. Act of May 15, 1928, Ch. 569, Sec. 3, 45 Stat. 535 (codified at 33 U.S.C. Sec. 702c (1976)). The Act originally applied only to the flood control projects on the Mississippi River but was extended to other geographical areas by the Flood Control Act of 1936. Act of June 22, 1936, Ch. 688, Sec. 1, 8, 49 Stat. 1570, 1596 (codified at 33 U.S.C. Sec. 701a, 701e (1976)).

The leading case interpreting this tort immunity is National Mfg. Co. v. U. S., 210 F.2d 263 (8th Cir. 1954). In it, the court stated that the rationale for the broad immunity was that the cost of the flood control works would be very great, and that Congress did not want the costs of flood damages added to those costs. 210 F.2d 270. National Mfg. Co. has often been cited as an absolute bar to federal liability for damages from floods or flood waters. It is similarly well settled that later enactment of the Federal Tort Claims Act, 28 U.S.C. Sec. 1345(b) and 2671 et seq., did not change the immunity. Taylor v. U. S., 590 F.2d 263 (5th Cir. 1979); National Mfg. Co.

Consequently, the very purpose of the statute creating the Governmental immunity was to relieve the United States of liability "of any kind" in just this situation - where there were damages suffered. Enactment of H. R. 1074 to circumvent the bar to liability imposed by 33 U.S.C. Sec. 702c would establish a precedent. Should this bill be enacted, we would expect similar bills to be introduced every time there is a flood during or following construction of a flood control project. There is no rationale for singling out the instant situation for supporting payment for damages. Accordingly, we oppose the bill.

The enactment of this bill will cost approximately \$5.2 million.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Subcommittee.

Sincerely,

*William R. Gianelli*

William R. Gianelli  
Assistant Secretary of the Army  
(Civil Works)

Mr. CRONIN. Thank you, sir.

Mr. HALL. Any testimony from you, sir?

Mr. NIEMI. No, sir.

Mr. HALL. The picture that you show, which shows the dam that was notched, when was that dam built and completed?

Mr. NIEMI. The cofferdam, sir?

Mr. HALL. Yes.

Mr. NIEMI. The cofferdam was built in 1979.

Mr. HALL. Is this the first time that dam had ever been notched because of floodwaters backing up above that dam?

Mr. NIEMI. Yes, sir.

Mr. HALL. Were any damage claims submitted from people or entities upstream from the cofferdam?

Mr. CRONIN. The answer is yes, Mr. Chairman.

Mr. HALL. Were those claims paid?

Mr. CRONIN. No, sir, they would be denied on the basis that the provisions of the lease authorized us to flood and that they had no claim for damages as a result of those floods.

Mr. HALL. Was the same type lease entered into for those people upstream as it was for those people downstream from that dam?

Mr. CRONIN. Mr. Chairman, we had no leases downstream. What we are talking about in our lessees are lands that we have purchased for the Clarence Cannon Dam project and that were available for lease to former owners or to those who would be interested in bidding for a lease, so that agricultural use of the lands might continue during the construction period and for such period thereafter as the lands might be available, but the lands—since we purchased them for flood control purposes, the lands are subject to being flooded.

So we write into each lease the provision that we have that right to flood and that there is no—there would be no claim for damages on their part.

Mr. HALL. Well, did you have leases from any of the people—and I won't call their names, because you have copies of these bills where they are listed.

Mr. CRONIN. Yes.

Mr. HALL. Did you have leases of any kind from any of the people who have filed these claims that amount to approximately \$5 million?

Mr. CRONIN. Would you excuse me, please?

Mr. HALL. Why don't you just have that gentleman come up here with you? It might make it simpler.

Mr. CRONIN. If any of these individuals below have leases, those leases are of lands above the dam and within the project area. We have not granted agricultural leases for lands which we acquired downstream.

Mr. HALL. Were there any lands acquired by eminent domain below the dam that was notched?

Mr. CRONIN. We have a reregulating dam 9½ miles downstream. I am not certain, but we may have acquired lands incident to the pool that would be created there.

Mr. HALL. Have you made any determination of the \$5 million that is alleged to be owing that would fit in with the leases that

you have that says that a lessee will not be able to collect damages?

Mr. CRONIN. Since we don't have a lease covering any properties downstream, there wouldn't be such a provision.

Mr. HALL. Well, the case that you mentioned in the statement that you make: "The bill appears to authorize claims by lessees of Government land. We specifically oppose coverage of Government leases for the following reason."

Mr. CRONIN. Yes.

Mr. HALL [quoting]. Agricultural leases, provided the Government has the right to flood the leased premises whenever necessary, and the lessee shall have no claim for damages of any character on account thereof against the United States or any officer, agent, employee.

That is dealing with the property upstream from the dam, is it not?

Mr. CRONIN. That is right.

Mr. HALL. Well, how do you claim that that provision would cover people who own land downstream if you did not have a lease from those people downstream from the dam?

Mr. CRONIN. No; here we are talking—and perhaps I should clarify that, Mr. Chairman—we are saying that the lease provision, and the bar under the lease provision, applies only to lands which we have leased upstream, which we—

Mr. HALL. Well, that has nothing to do with what we are talking about here, does it?

Mr. CRONIN. We consider that the bill covers both situations.

Mr. HALL. You are saying that the second bill would cover what I am talking about here?

Mr. CRONIN. We consider that H.R. 1059 applies both downstream and upstream.

Mr. HALL. All right. Do you have any pictures that show or that might show where these people's land is located downstream from that cofferdam dam?

Mr. NIEMI. Yes, sir, we do. During the flooding event, we hired an aerial photography firm to fly the entire stretch of the river downstream to its confluence with the Mississippi, and we do have those aerial photographs.

Mr. HALL. Do you have those with you?

Mr. NIEMI. I have some examples of those with me, sir.

Mr. HALL. Are they large enough for us to see? Are they still in negative form?

Mr. NIEMI. No, sir, they are 10 inches by 10 inches, sir.

Mr. HALL. Well, have you checked—"you" meaning the Department—have you checked to make a determination if all of the claims submitted which were turned down by the corps were actually flooded when this dam was notched?

Mr. CRONIN. No; we did not, Mr. Chairman.

Mr. HALL. Well, how did you know to turn them down if you didn't?

Mr. CRONIN. We asserted the statutory immunity.

The provision with respect to filing a claim is a procedural matter. This is the way that individuals who feel they have been damaged have a means of asserting their claims.

Mr. HALL. Does the corps have a fund for the administrative settlement of any type of flood claim?

Mr. CRONIN. I am not aware of any; no. Because of the immunity, Mr. Chairman, I don't think we do have such a fund.

Mr. HALL. Well, did the actions of the corps in this instance cause the damages that are claimed?

Mr. NIEMI. No, sir. We believe that the cofferdam, had we not breached it intentionally, would have overtopped naturally by almost 4 feet, and a natural breach would have occurred, causing extensive flooding downstream greater than which actually occurred.

Mr. HALL. Well, do you have any evidence that would indicate that had that not been breached it would have gone over the top of that cofferdam dam?

Mr. NIEMI. Yes, sir, we have a computer simulation model which is based upon rainfall, which we were using at that time, which gave us the indication that the water would have gone about 4 feet over the top of the existing cofferdam.

Mr. HALL. And you are stating that whether you notched it or not the same type of damage downstream would have occurred either way?

Mr. NIEMI. Yes, sir.

Mr. HALL. How many flood damage claims were filed with the corps in 1981?

Mr. CRONIN. I would like to provide that for the record, Mr. Chairman.

Mr. HALL. Will you do that?

[The information follows:]

A total of 175 flood damage claims were filed as a result of the July 1981 flood on the Salt River.

Three of the claims were filed by upstream lessees of Government property for damages from flooding due to impounding of waters on Government land upstream of the cofferdam and within the project area, all of which resulted from the raising of the height of the cofferdam. The Department of the Army referred these claims to the General Accounting Office (GAO), the agency empowered by statute to settle all claims against the United States. Thus far, the GAO has denied one of the claims and the other two are pending.

The remaining 172 claims were tort claims for damages to private lands downstream of the dam resulting from the flood. Of these, 171 were referred to the U.S. Army Claims Service, and all were denied. One is still being processed.

Mr. HALL. Now—

Mr. CRONIN. You are talking about the Clarence Cannon Dam?

Mr. HALL. Yes, yes.

Mr. NIEMI. As the results of this.

Mr. HALL. When you say that the lessee—and this is an interesting position you are taking—you say that the lessees are not entitled to make any type of recovery because of the provision of the lease.

Has any determination been made by the corps as to how much lessee damage of the \$5 million could be calculated?

Mr. CRONIN. It is my understanding, Mr. Chairman, that none of the \$5.2 million, which is the sum of the damages stated in H.R. 1074—it is my understanding that none of those apply to lands upstream within the project area. These apply to downstream areas.

Mr. HALL. Well, when you have a project like this, and assuming that it can be shown that you were negligent in the way you built that dam, the one that you notched, and assuming that even though discretion was used it was improper discretion in the manner in which you built that dam, and let's assume that large amounts of lands have been inundated of which you had no lease at all. There has been no condemnation. There has been no taking of land.

Is it the corps' position that under no circumstances, under no stretch of the imagination, that any people downstream would ever be entitled to damages?

Mr. CRONIN. Mr. Chairman, our position is that the project was built in a reasonable and prudent manner in accordance with the authorization of Congress for the purpose of controlling damaging floods on the Salt River.

The previous testimony indicated that there were subsequent floods, which only emphasizes the need for the Clarence Cannon Dam project. The construction of the dam in stages is a reasonable and prudent attempt to control water coming downriver during construction time.

The cofferdam, as indicated by Mr. Niemi, was constructed to withstand an average 10-year flood which was considered reasonable and prudent. As a result of the heavy rains, it was determined then to increase the height of the dam—first, in May 1981, increase it 4 feet to 581-foot level, and then in July to increase it to 585-foot level.

It was not feasible to build it any higher. Therefore, with the inflow into the reservoir, a reasonable and prudent decision was made, in our judgment, to mitigate damages by cutting a notch into the cofferdam to allow water to be evacuated from the impounded area.

It is a judgment made on the best information that was available, carefully thought out. If there were not a structure in place during the rains of May 2, July 1981, the river were free, there would be the same amount of water going downstream, if not more.

Mr. HALL. I have exceeded my time. So the gentleman from Florida, Mr. Shaw.

Mr. SHAW. Thank you, Mr. Chairman. What was the condition of the land downstream before the dam was constructed, from a water standpoint in the river?

Mr. NIEMI. Before the cofferdam was intentionally breached, we were releasing about 30,000 cubic feet per second through the concrete portion of the dam.

The channel capacity downstream, of a nondamaging nature is about 12,000 cubic feet per second. So some flooding of low-lying areas was occurring before the cofferdam was breached.

Mr. SHAW. What would happen—let's even go back further than that—what was the condition of the land before anything was constructed in the river?

Mr. NIEMI. I am not sure I understand your question, sir.

Mr. SHAW. Well, if everything that the Corps of Engineers had put in the river to control the flow of water were removed, would the land in question have been flooded any?

Mr. NIEMI. Yes, sir. The inflow to the reservoir during this event in July 1981 was approximately 72,000 cubic feet per second.

Mr. SHAW. OK, so the construction on the river itself is the only thing that made it possible to be able to even farm downstream, is that correct?

Mr. NIEMI. Yes, sir.

Mr. SHAW. I have no further questions.

Mr. HALL. If you say that the downstream damage would have occurred, whether you had the notched dam or not, that indicates to me that there was some negligence by somebody in the past that didn't build a proper dam without having to find the necessity of building another dam to try to stop that water.

Mr. NIEMI. Are you addressing the design criteria for the cofferdam, sir?

Mr. HALL. Yes.

Mr. NIEMI. The cofferdam was designed for an approximate 10-year frequency flooding event with 3 feet of freeboard.

Mr. HALL. Only 10 years?

Mr. NIEMI. Yes, sir.

Mr. HALL. Isn't that a rather short period of time in your design criteria of these dams?

Mr. NIEMI. The cofferdam is a temporary structure, intended to control the flow of water during the time of construction, and based upon the economics, the topography, the conditions of the area—the height of that cofferdam is based upon those factors.

Mr. HALL. When was this project originally authorized? You say in 1955?

Mr. CRONIN. 1962, Mr. Chairman.

Mr. HALL. 1962?

Mr. CRONIN. Yes, sir.

Mr. HALL. And this took place nearly 20 years later?

Mr. CRONIN. From authorization, yes.

Mr. HALL. Well, when was the design criteria agreed upon for the cofferdam that only said it would hold for a period of 10 years?

Mr. NIEMI. During the design procedure for the dam, which would have been in the very early 1970's. Construction on this portion of the project, the damming of the river, was initiated in the early 1970's.

Mr. HALL. Had there been any in-depth studies made by the corps prior to this study that we are talking about now that would have indicated that a 10-year period of time was not the proper expanse of time to use in constructing this dam?

Mr. NIEMI. Engineering studies were made, sir, to determine the appropriate height of the cofferdam, considering the economics and flood frequencies and so on. The flooding event that we are speaking of in July 1981 was about a 50-year recurrence event, sir, expected to occur once in every 50 years.

Mr. HALL. You don't deny that the damages that have been alleged were suffered by these people?

Mr. NIEMI. I can't speak to the amount, sir, but, yes, I am sure that damages were suffered.

Mr. HALL. Has any study been made by the corps to verify the \$5 million figure?

Mr. CRONIN. No, sir.

Mr. HALL. Don't you think that should have been done in line with these bills that are pending here and you knew you were going to be asked that question?

Mr. CRONIN. Normally speaking, if FEMA had declared—if a national emergency had been declared and FEMA had notified us and requested us, we would have then performed the damage estimates, but since no emergency was declared we did not perform those.

Mr. HALL. You don't think that a claim for \$5 million is an emergency for the people who have suffered the damages?

Mr. CRONIN. We are talking in terms of an emergency declared by the President. We would have no authority to do it, absent such a determination, Mr. Chairman.

Mr. HALL. Was any request ever made to do a study by the corps?

Mr. CRONIN. I beg your pardon, sir?

Mr. HALL. Was any request ever made of FEMA to authorize you to make such a study?

Mr. CRONIN. I am not aware of one, sir.

Mr. HALL. Yes.

Mr. HARRISON. It has been testified that most of the damage downstream from the dam was to cropland, and normally farmers plant crops in river bottom land, and it has been stated here by the proponents of the bill that this land on the river bottom was subject to flooding before any dam was even built approximately 11 days out of the year.

That means that on the average of any year for 11 days some or part of their crops would be under water.

They also are concerned that on this occasion, the occasion of the notching of the cofferdam and potentially on future occasions, that water will pond up behind this dam and be released gradually so that their crops will be under water for a longer period of time at any given flood.

And it is this time period that is critical because a crop can stand water for a short period of time, a couple or 3 days, but anything longer than that is going to drown it.

Now, if that is true, then because you are building this dam, you are essentially taking some bottom land out of production, because if your dam is going to allow water in excess of 12,000 cubic feet per second to go down, it is going to take some cropland out of production.

Mr. CRONIN. I will ask Mr. Niemi.

Mr. NIEMI. When the project is completed and placed into operation, the releases downstream, including flood control releases, would be limited to a maximum of the nondamaging release of 12,000 cubic feet per second.

Mr. HARRISON. OK, that is for the future.

Mr. NIEMI. It is.

Mr. HARRISON. But for this time, at least for this time, their crops were kept underwater probably for longer than they would had the dam not been there. Is that correct?

Mr. CRONIN. I don't have the answer to that question. We can furnish that for the record.

Mr. HARRISON. OK.

[The information follows:]

Based on U.S. Geological Survey stream gaging information, it was determined that the flooding which occurred was virtually the same as would have occurred under natural conditions. The information shows that the inflow into the pool behind the cofferdam (70,000-75,000 cubic feet per second) was essentially the same as the flow measured at the gaging station below the dam (73,000 cubic feet per second).

Further, it is clear that the duration of flooding was also virtually the same as would have occurred under natural conditions. The observed water level was above flood stage for 8 days (July 26 to August 2). Based on computer simulations, it has been determined that the water level under natural conditions (without Clarence Cannon dam or the cofferdam) would have been above flood stage for 7 days (July 24 to July 30).

The Salt River below the dam has a capacity to sustain a flow of 12,000 cubic feet per second entirely within its banks. A study of the 60 plus years of record at the New London gage (30 miles below the dam) indicates that water flows of 12,000 cubic feet per second have been reached at least once each year and have been at or above 12,000 cubic feet per second an average of 11 days each year. Except under the most extraordinary conditions, once Clarence Cannon Dam is operational, releases of water for flood control or hydropower generation below the re-regulation dam will be reached, but not exceeded, an average of 16 days per year.

Mr. SHAW. I think this point expanded on the point that I was trying to make a few minutes ago, and I think that this is some information that I would want before I reach a decision on this particular question.

This is a very important part, from my standpoint, on the question before us.

Mr. HALL. You will make that information available for the record.

Mr. CRONIN. We certainly will, Mr. Chairman; yes.

Mr. HALL. We will leave the record open for—how much time will you need?

Mr. CRONIN. Will next week be satisfactory?

Mr. HALL. We will keep the record open for .10 days from today for that information to be supplied.

Mr. CRONIN. Thank you.

Mr. HALL. All right. Thank you very much for your testimony.

Mr. Volkmer, you have something else to say?

Mr. VOLKMER. I would like to, if I could briefly say, we have just today got a preliminary copy of the GAO report on Cannon Dam, and I would like to submit that as a part of the record, which does show that even with the 12,000 cubic foot per second that the dam would be flooded 16 days a year, which is 5 days more than if you didn't have the dam.

That is in the GAO report.

Mr. HALL. The GAO report will be made a part of the record if you will furnish it to the committee.

Mr. VOLKMER. I will furnish a copy today.

[The complete statement follows:]



UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

MAY 25 1983

RESOURCES, COMMUNITY,  
AND ECONOMIC DEVELOPMENT  
DIVISION

B-211410

The Honorable Thomas P. Eagleton  
United States Senate

The Honorable Harold L. Volkmer  
House of Representatives

In response to your letters of August 5 and August 11, 1982, and subsequent discussions with your offices, we have obtained information on the Corps of Engineers' Clarence Cannon Dam and Mark Twain Lake related to the July 1981 flood. Specifically, you requested us to determine

--the status of lease agreements for agricultural lands between upstream lessees and the Corps and

--whether hydropower operations at the dam will cause flooding, as contended by downstream landowners, and the actions the Corps is taking or plans to take to address their concerns.

You also asked us to update the project's cost and schedule estimates and the benefit/cost ratio discussed in our 1977 report<sup>1</sup> and review actions taken by the Corps to implement our recommendation to improve its cost-estimating procedures.

The Clarence Cannon Dam and Mark Twain Lake (formerly the Clarence Cannon Dam and Reservoir; Joanna Dam and Reservoir) was authorized by the Flood Control Act of 1962 (Public Law 87-874). The project is under construction and is about 94 percent complete. Located in northeast Missouri on the Salt River, the project will provide flood protection to approximately 27,500 acres of land in the Salt River Basin, 58,000 kilowatts of hydroelectric power, recreation facilities for about 3.9 million visitors annually, and other fish and wildlife, water supply, and navigation benefits.

This letter summarizes our findings, which are discussed in more detail in the appendix.

<sup>1</sup>"Clarence Cannon Dam and Reservoir: Cost, Schedule, and Safety Problems" (PSAD-77-131, July 18, 1977).

WHAT WERE THE EFFECTS OF  
THE JULY 1981 FLOOD AND THE  
STATUS OF LEASE AGREEMENTS?

In July 1981 the Corps raised the height of the cofferdam-- a temporary dam protecting the earthen portion of the main dam-- to prevent overtopping and possible dam failure and then, fearing a sudden collapse in the face of rising flood waters, cut a notch in the dam to release the water under more controlled conditions. Both of these actions resulted in flood damage. Raising the cofferdam flooded leased lands above the dam, and cutting the notch flooded property below the dam and caused extensive damage to the main dam.

In 1981 the Corps leased a total of 6,041 acres of land above the dam, not immediately needed for construction, for agricultural and grazing purposes. Leases were awarded to the highest bidders, provided the bids were above an established fair market rental value which took into consideration the possibility of flooding. The leases, signed by the lessees, pointed out the Government's non-liability in the event flooding occurred. A provision of the leases specifically stated:

"\* \* \* the United States shall not be responsible for damages \* \* \* arising from or incident to the flooding of the said premises by the Government or flooding from any other cause, or arising from or incident to any other Governmental activities and the lessee shall hold the United States harmless from any and all such claims."

Notwithstanding the above lease provisions, 16 persons leasing Corps land above the dam for agricultural purposes notified the Corps that their land had been flooded and requested compensation for damages. The Corps estimated that the losses on the leased land were about \$340,000. The Chief, Real Estate Division, advised the lessees that the Corps had no liability for the flood damage and no legal authority to make any restitution. Three of the lessees subsequently filed formal claims totaling about \$45,000. The Corps forwarded one of the claims to GAO for adjudication with the recommendation that the claim be denied because of the specific non-liability clause in the leases. On April 13, 1983, we disallowed the claim, stating that the terms of the lease specifically released the Government from responsibility for losses caused by flooding. The other two claims are being readied by the Corps for submission to GAO.

Another 171 property owners below the dam submitted damage claims totaling about \$5.2 million. The Corps denied these

claims, stating that the action taken was an exercise of the Corps' discretionary authority to control flood waters and that no negligence was involved. The claimants were informed that they could appeal the decision in the U.S. District Courts within 6 months of the denial. The Corps St. Louis District Counsel said that no claimants appealed the decision within the 6-month appeal period.

WILL HYDROPOWER OPERATION  
RESULT IN DOWNSTREAM FLOODING?

According to a 1971 Corps hydrology study, no flooding will occur downstream of the Cannon Dam due to normal operation of the dam. However, subsequent investigations made in response to concerns expressed by downstream property owners revealed that flows of 12,000 cubic feet per second (cfs)--the maximum flow needed to produce capacity power--might prevent access to some fields. Based on a simulated operation of the project and utilizing about 50 years of data for the Salt River, the 12,000 cfs releases would have occurred an average of 16 days a year. Under natural conditions, this flow would be equaled or exceeded an average of 11 days per year.

A Memorandum of Opinion prepared by the St. Louis District Office relative to one of the downstream properties has concluded that although some of the property is subject to intermittent flooding, there is very little injury in comparison with far greater benefits conferred by the project and therefore the Government has no liability for the damages. District officials said the opinion had been forwarded to their Division Office for its information.

COST, SCHEDULE, AND  
BENEFIT UPDATE

The latest Corps project construction cost estimate, made in October 1982, was \$308 million--\$76 million greater than the estimate included in our 1977 report. The reasons for this increase are revisions made because of additional or more current data, correction of errors or omissions, and award of contracts for amounts differing from Corps estimates (\$38 million); design changes (\$21 million); and price-level increases (\$17 million). The \$38 million increase includes \$7.4 million attributable to damage resulting from the 1981 flood and \$21.3 million due to increased contractor costs for construction delays.

In our 1977 report, we pointed out that (1) the District's estimating procedures were not adequate to assure that construction cost estimates were reasonable, (2) documentation for estimates was not available, and (3) allowances for contingencies

were excessive. We recommended that the Secretary of the Army have the Corps review and strengthen its cost-estimating procedures to develop more realistic cost estimates.

Since then, the Corps has revised its cost-estimating manuals emphasizing the need for complete documentation of cost estimates, including unit prices and materials quantities. Also added to the manuals was an allowance for future years' inflation in developing the estimates for the project.

However, we found that about 18 percent of the cost estimates prepared by the Corps St. Louis District in October 1981 for the Clarence Cannon Dam fiscal year 1983 budget request were not adequately documented and that contingencies exceeded Corps guidelines without adequate explanation. We discussed these conditions with the District Engineer, who said that future cost estimates would include appropriate documentation and that when contingencies exceed Corps guidelines, they would be fully explained.

The scheduled project completion date is now September 1985, 4 years later than the completion date we reported in 1977. The main causes of delays were the July 1981 flood, which caused extensive damage at the construction site; other adverse weather; design changes; and labor-management problems, including a strike.

In 1977, we reported that while both annual benefits and costs reported by the Corps had increased since the original project authorization in 1962, the ratio of benefits to costs in 1975 remained 1.3 to 1--that is, for every dollar spent on the project, the Corps estimates that \$1.30 in benefits will be realized. Since 1976, the benefit/cost ratio has ranged as low as 1.12 to 1 in 1977 but had returned to 1.3 to 1 in 1982. The major cause of the cost increases since 1976 was higher interest expenses. Benefit increases were largely attributable to hydroelectric power, flood control, and recreation benefits.

#### SCOPE AND METHODOLOGY

To obtain information related to the July 1981 flood, we reviewed laws and regulations on flood liability and real estate procurement and Corps records documenting the flood and subsequent damage claims. We interviewed (1) Corps real estate officials in its St. Louis District and Washington, D.C., headquarters offices, (2) Corps St. Louis District hydrologists, and (3) representatives of the Salt River Basin Committee--a group of landowners concerned about flooding below the dam. We reviewed studies and reports on the potential for flooding below the dam prepared by the St. Louis District office. Although we

examined and analyzed Corps hydrologic reports and charts, we did not verify the accuracy of the models, the data used to support them, or the conclusions reached by the Corps.

In order to update cost and schedule data, we reviewed Corps records dealing with the cost of construction and completion schedules and related costs, including reports, contract modifications, design memorandum, and Corps cost-estimating documents and manuals. At the time we began our field work, the most recent cost estimates available were those prepared in October 1981 for the fiscal year 1983 budget request. Consequently, we used these estimates in our detailed review. Subsequently, estimates for the fiscal year 1984 budget became available and are included in this report only to update the project's cost and completion date. We also analyzed changes in the project's benefit/cost ratio, developed by the Corps, since 1976. We interviewed St. Louis District Officials, including the officials of the Construction and Engineering Divisions, Contract Management and Supervision and Inspection Branches, and Estimating Section. We discussed actions taken in response to recommendations made in our 1977 report with officials from the Corps Engineering Division in Washington, D.C., but did not perform a detailed audit of the Corps' cost-estimating procedures.

We made this review in accordance with generally accepted government audit standards.

#### AGENCY COMMENTS

In its May 20, 1983, comments, the Department of the Army concurred with the report findings. However, the Department wished to emphasize that (1) losses due to the release of water through the notch during the July 1981 flood were less than would have been experienced with the collapse of the cofferdam and (2) without the dam the flood of the magnitude experienced would also have damaged downstream property.

The Department also concurred with the need for proper documentation of cost estimates and commented that the Lower Mississippi Valley Division commander will furnish guidance to the District to reiterate the need for proper documentation of cost estimates and use of appropriate contingencies. However, the Department noted that the Corps' experience with cost estimating in this area has shown that a 25 percent contingency for projects prior to completion of plans and specifications is not excessive. Engineering judgment concerning the type of project, the stages of design, and the inherent unknowns associated with the project dictate the allowance used.

Copies of this report are being sent to the Director, Office of Management and Budget, the Secretaries of Defense and the Army, and other interested parties.

*J. Dexter Peach*  
J. Dexter Peach  
Director

C o n t e n t s

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ABBREVIATIONS

CFS	Cubic feet per second
GAO	General Accounting Office

INFORMATION ON THE CORPS OF ENGINEERS'CLARENCE CANNON DAM AND MARK TWAIN LAKEJULY 1981 FLOODING  
PROBLEMS AT THE DAM

In July 1981 heavy rainfall resulted in flooding above and below the Clarence Cannon Dam being built by the Corps on the Salt River in northeast Missouri. In an attempt to contain the heavy rainfall, the Corps raised by 4 feet the height of a cofferdam. This action caused flooding of land, leased from the Corps, above the dam. Fearing an even higher flood crest which could cause a sudden collapse of the cofferdam and the attendant damages downstream, the Corps directed the contractor to cut a notch in the cofferdam to provide a more controlled release of the water. This action caused the flooding of private lands below the dam as well as considerable damage to the main dam structure.

The cofferdam--completed in August 1979--was designed to (1) divert the flow of the Salt River away from the earthen portion of the main dam and (2) protect this portion in the event of a flood during construction. Up to 30,000 cubic feet of water per second (cfs) is diverted into sluices through the nearly completed concrete portion of the main dam.

According to Corps St. Louis District officials, the cofferdam height was determined using Engineering Regulation 1110-2-2901. The regulation provides guidelines for making engineering judgments as to the degree of protection needed depending on estimates of the damages and the delay costs that could result from overtopping or flooding. Documents obtained from the district indicate that the factors used were

- risk of flooding,
- damage and delay costs which would result if the construction site was flooded,
- cofferdam construction cost, and
- cofferdam maintenance cost.

Based on an analysis of these factors, the cofferdam was built to withstand a flood having a frequency of occurrence of once in 10 years (574 feet above mean sea level) plus 3 feet.

Because of heavy rains in May 1981, the Corps directed the contractor to raise the cofferdam by 4 feet to 581 feet. From July 23 to July 28, 1981, heavy rains--9.29 inches at one recording station approximately 15 miles upstream from the dam--

fell in the Salt River Basin. Because the Corps predicted that the pool above the cofferdam would crest at 581.8 feet, it directed the contractor on July 26, 1981, to raise the cofferdam an additional 4 feet to an elevation of 585 feet. Raising the cofferdam resulted in flooding Corps-owned land leased for agricultural purposes above the dam.

On July 27 the Corps predicted, using National Weather Service rainfall and forecast data, that the crest of the pool would be 588.9 feet. The Corps decided that it was not feasible to raise the cofferdam to such a level. Fearing an overtopping or collapse of the cofferdam and the resulting destruction and possible loss of several bridges below the dam, the Corps, on July 27, directed the contractor to cut a notch in an area of the cofferdam considered to be more erosion resistant. District officials believed this would allow a slower and safer release of the impounded waters. The highest water elevation, 584.8 feet, was reached on July 28, 1981. Releasing the water through the notch resulted in extensive damage to downstream property and to the earthen portion of the main dam.

A Corps hydrologist told us that the July 1981 flood at the dam site approached a 50-year flood occurrence. The U.S. Geological Survey, Department of the Interior, based on data recorded about 28 miles downstream of the dam, estimated that the flooding at that point was equivalent to a 35-year occurrence. A Geological Survey hydrologist said that the cofferdam probably had little effect on the flooding downstream but may have slightly reduced the peak stage.

Flood damage to lands leased  
above the Cannon Dam

When constructing water resource projects the Corps purchases land necessary for permanent structures, the reservoir, and public access to both. Land not immediately needed for construction is leased for agricultural and grazing purposes. Leasing places the land into productive use and generates revenue which the Federal Government shares with counties to replace revenues lost by removal of lands from the tax roles. Under Corps policy, leases are awarded to the highest bidders provided the bids exceed the Corps' established fair market rental value. The Chief of the Real Estate Division, St. Louis District, said that the fair market rental value takes into consideration the possibility of flooding.

In 1981, the Corps issued three invitations for bids (IFB) on 6,860 acres of land above the Clarence Cannon Dam. Bids were received and leases totaling about \$210,000 were awarded on 6,041 acres. Each lease, signed by the lessee, contained the following provisions:

"\* \* \* the right is hereby reserved to the United States, \* \* \* to flood the leased premises whenever necessary, and the lessee shall have no claim for damages of any character on account thereof against the United States or any officer, agent, or employee thereof."

\* \* \* \* \*

"\* \* \* the United States shall not be responsible for damages \* \* \* arising from or incident to the flooding of the said premises by the Government or flooding from any other cause, or arising from or incident to any other Governmental activities and the lessee shall hold the United States harmless from any and all such claims."

According to Corps district officials, these provisions were placed in the leases to limit the Government's liability should flooding occur and to put the lessee on notice that the land was subject to flooding.

To provide the lessee limited protection against losses, rental fees in excess of \$1,000 could be paid in two installments. At the lessee's option, the lease could be terminated prior to the second installment due date. Four lessees exercised this option. Two terminated their leases prior to the due date, thus avoiding \$14,040 in lease payments. Two other lessees whose land had been flooded did not make second installment payments totaling \$1,779.

After the flood, 16 lessees requested compensation from the Corps, claiming that parts of their leased land had been flooded. Annual rental payments for the 4,400 acres they leased totaled about \$197,000. Most, however, did not indicate how much acreage was flooded or the dollar amount of loss incurred.

The Chief, Real Estate Division, responded that, although he sympathized with the lessees' problems, the Corps had neither legal liability for flood damage nor legal authority to renegotiate the leases or to make any other type of restitution. Because the Corps did not believe that it was liable for the flood damage, it did not survey the lands to assess actual damages. However, using topographical maps and recorded flood levels, the District estimated that about 2,400 acres were flooded and that rental and crop losses amounted to about \$340,000.

Despite the Corps' position, three lessees filed formal damage claims totaling about \$45,000 against the Corps. The Corps forwarded one of the claims to GAO for adjudication with a recommendation that the claims be denied because of the specific

nonliability clauses in the leases. The other two claims are being readied by the Corps for submission to GAO.

On April 13, 1983, we disallowed the claim, stating:

"Although the flooding of the land you leased may have been caused by raising the height of the cofferdam, this action did not create any liability on the part of the Government, since the terms of your lease specifically released the Government from responsibility for losses caused by flooding."

The letter disallowing the claim also cited a 1980 U.S. Court of Claims ruling that the Government did not have to pay damages on leased land when the terms of the lease gave the Government the right to flood the land when necessary.

Flood damages below  
the Cannon Dam

Releasing the impounded water through the notch in the cofferdam caused extensive damage to the partially completed embankment of the main dam as well as damage to privately owned lands downstream. The Corps estimated damage to the construction area at about \$7.4 million. In addition, claims totaling about \$5.2 million were filed by 171 property owners. However, the Corps made only limited investigations of these claims because it did not consider itself liable for the damages incurred. As of September 1982, the U.S. Army Claims Service denied these claims, citing the following reasons:

- The release of water represents the exercise of a discretionary function on the part of the U.S. Army Corps of Engineers and claims based thereon are not payable. (See 28 U.S.C. § 2680 (a).)
- The United States is not liable for damage caused by flood or flood waters at any place. (See 33 U.S.C. § 702 c.)
- There is no evidence of any negligence on the part of the Corps of Engineers.

The Claims Service, however, advised the claimants that if they were dissatisfied with the decision they could file suit under the Federal Tort Claims Act (28 U.S.C. § 2671-2680) in an appropriate United States District Court not later than 6 months from the date of the mailing of the denial. According to the Corps St. Louis District Counsel, no suits were filed to seek recovery within the 6-month appeal period.

WATER RELEASED FOR  
POWER GENERATION

The Clarence Cannon Dam hydroelectric power facilities include a re-regulation dam and pool and two turbine generators capable of producing 58,000 kilowatts (KW) of power. To generate this power, about 12,000 cfs will be released through the turbines. The purpose of the re-regulation dam, located 9.5 miles below the main dam, is to store part of the water released during power generation. This water will then be pumped back into the main reservoir when power is not being generated or when the flow of the river is not sufficient to maintain adequate water levels for continued power operation.

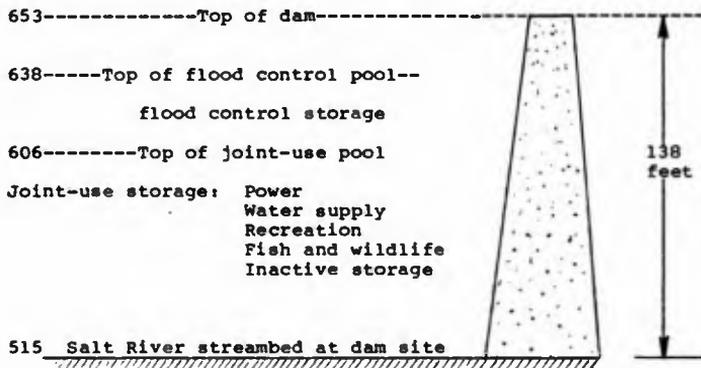
The 1979 draft Clarence Cannon Reservoir regulation manual sets forth conditions for releasing water for power generation. The Assistant Chief, Engineering Division, St. Louis District, said that the data in the manual should be considered very tentative because the Associated Electric Cooperative, contracted to purchase the power, has not submitted a schedule of power needs. In November 1982 the Chief, Engineering Division, requested the Cooperative to provide a preliminary power schedule showing a typical daily discharge fluctuation for power generation. As of April 7, 1983, the Cooperative had not responded. The Assistant Chief said that because the schedule of power needs could affect planned releases, the information is needed to complete the project's water control plan. He also said that until it is received, he did not wish to speculate on the impact the operating schedule would have on downstream releases.

Under the draft operating procedures, however, the Corps estimates that, based on recorded hydrological data from 1925 through 1973, the reservoir water level will be at or below the top of the joint-use pool--elevation 606 feet--91 percent of the time. (See profile on next page.) During such times, releases from the re-regulation dam are expected to average 3,296 cfs. Whenever the reservoir water level is above elevation 606--about 9 percent of the time--water will not be pumped back from the re-regulation pool to the main reservoir because this would diminish the reservoir's flood control capability. At such times, releases from the re-regulation dam would be equal to the inflow into the re-regulation pool.

Releases from the Clarence Cannon Dam will also be affected by flows on the Mississippi River. If the Mississippi River is in flood stage, Clarence Cannon Dam releases may be restricted to reduce flows into the Mississippi.

Profile of Water Storage at  
Clarence Cannon Dam and  
Mark Twain Lake

Elevation  
(feet above mean sea level)



Will hydropower operations  
cause downstream flooding?

Property owners below the Clarence Cannon Dam are concerned that their fields will be flooded, or access to them will be limited, when the Corps begins releasing water to generate power. Limiting access to fields, particularly during the planting and harvest seasons, would be a problem.

A 1967 Corps design memorandum for the project states that 12,000 cfs will be the maximum release for power generation. According to a hydrology study made by the St. Louis District in 1971, the Salt River channel will contain releases of 12,000 cfs without damage to downstream property. As a result, the Corps did not obtain easements or purchase any land below the re-regulation dam.

Corps officials informed property owners during an August 1979 public meeting that (1) maximum releases for power generation would be 12,000 cfs and (2) if the reservoir had been in operation during the period of record--1925 through 1973--a release of over 12,000 cfs would have occurred only once (1973). If the project had been in operation in 1973, the natural discharge of 107,000 cfs would have been reduced to 20,000 cfs for 2 days. Under natural conditions the flow would exceed 12,000 cfs an average of at least once a year.

However, in comparing water levels reported by downstream property owners with known discharges through the sluices at the construction site, the Corps subsequently determined that flows of 12,000 cfs might prevent access to fields. After further investigation, the District Chief of the Hydrological and Hydraulics Branch, Engineering Division, reported in January 1983:

--Recent field checks and contact with Salt River property owners have identified seven locations where 12,000-cfs releases might interfere with individual property owners rights of access. Most of these locations are low water field crossings of tributaries to the Salt River which are used by farmers to gain access to some of their fields. Complete data was not available for all seven locations, but enough is available to indicate that two of the seven locations will be considerably affected by flows of 12,000 cfs. These locations are also affected by flows of 12,000 cfs under natural conditions. The regulation of Cannon will cause such occasions to occur less frequently but for longer durations.

In a March 10, 1983, Memorandum of Opinion relative to one of the locations noted above, the District Real Estate Division concluded that the District has no liability for the intermittent flooding that may prevent access to the property or any authority to take remedial action. Specifically, the memorandum stated:

--A landowner maintained that releases from the project would back up a tributary of the Salt River and flood his crossing and limit access to a 40-acre field. The District's Engineering Division surveyed the crossing and concluded that a 12,000-cfs release would place about 3 to 4 feet of water on the crossing. The Corps further determined, based on a simulated operation of the project and about 50 years of data, that this situation would probably occur an average of 16 days a year. Without the project, this flow would be equaled or exceeded an average of 11 days a year.

--Releases from the project greater than about 5,000 cfs will flood the crossing. This flow would be equaled or exceeded an average of about 23 days a year with the project and about 30 days a year under natural conditions.

--The adverse effect is relatively minimal, and discussion with Engineering Division personnel indicates that the property will, overall, enjoy benefits from the project. The property fronts the Salt River for an estimated three-quarters of a mile, and operating the project will

APPENDIX I

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keep very high waters from flooding any significant portion of the land. In addition, the project will provide water during droughts.

--It appears that while the creek on the property will, to a small degree, be adversely affected by the project, the total property will receive benefits from the project. Thus, it appears that there is very little injury in comparison with the greater benefits conferred. Based upon this, and assuming that the information with regard to detriments and benefits can be substantiated, in our opinion the property owner is entitled to no compensation.

According to District officials, the Memorandum of Opinion has been forwarded to the Lower Mississippi Valley Division office for its information.

COST AND SCHEDULE EXPERIENCE  
AND BENEFIT/COST DATA

In 1977 we reported<sup>1</sup> that the project was to be completed by June 1981 at a cost of \$232 million. We also reported that annual project benefits were estimated by the Corps to be \$1.30 for each \$1 of annual costs. The most recent estimates--October 1982--indicate that the project will be completed in September 1985 at a cost of \$308 million. The Corps' current estimates continue to indicate that the project will provide about \$1.30 in benefits for every \$1 in costs.

Cost experience

In October 1982, the Corps estimated the project would cost \$308.1 million--an increase of \$76.1 million since 1976, the latest data included in our 1977 report, and \$244.8 million since 1962 when the project was authorized. The following schedule shows the increase by project feature since 1962.

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<sup>1</sup>"Clarence Cannon Dam and Reservoir: Cost, Schedule, and Safety Problems" (PSAD-77-131, July 18, 1977).

APPENDIX I

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<u>Annual cost estimates</u>			
----- (millions) -----			
<u>Project feature</u>	<u>1962</u>	<u>1976.</u>	<u>1982</u>
Lands and damages	\$ 7.7	\$ 17.4	\$ 20.8
Relocation	15.5	77.8	56.8
Reservoirs	1.5	6.2	4.8
Dams	21.4	54.6	108.8
Fish and wildlife facilities	-	1.1	1.1
Powerplant	9.0	23.0	36.7
Roads, railroads, and bridges	0.1	2.4	1.7
Recreational facilities	0.8	15.5	22.2
Cultural resource preservation	-	-	1.6
Buildings, grounds, and utilities	0.3	1.1	2.9
Permanent operating equipment	0.2	1.9	2.9
Engineering and design	3.8	20.5	30.5
Supervision and administration	<u>3.0</u>	<u>10.5</u>	<u>17.3</u>
Total	<u>\$63.3</u>	<u>\$232.0</u>	<u>\$308.1</u>

The following table, based on information obtained from Corps documents supporting its annual appropriation requests, shows the Corps' reasons for project cost growth since our 1977 report.

<u>Reason for cost growth</u>	<u>Amount</u>	<u>Percent of total increase</u>
	(millions)	
Post-contract award and other estimating adjustments	\$37.9	49.8
Design changes	21.1	27.7
Price-level increase	<u>17.1</u>	<u>22.5</u>
Total	<u>\$76.1</u>	<u>100.0</u>

Post-contract award and other estimating adjustments include all adjustments to cost estimates due to contracts awarded in amounts different from Corps estimates, contract overruns/underruns, changes to quantity estimates, correction of errors or omissions, and changes in unit prices not attributable to price-level increases. Significant adjustments since 1976 include:

- A 1977 decrease of \$15.9 million because Corps estimates were higher than the contracts awarded by the State Highway Department for relocations of five State highways.
- A 1977 increase of \$4.3 million because the previous estimate erroneously based the powerhouse cost on a structure to house one power unit instead of two power units as shown in the design memorandum.
- A 1979 increase of \$2.7 million for supervision, inspection, and administrative costs based on the revised project completion date.
- A 1981 increase of \$7.4 million due to the July 1981 flood which includes repairs to the main dam structure of \$5.2 million; repairs of \$0.1 million to the re-regulation dam; engineering and design work of \$1.4 million; and supervisor and administrative cost of \$0.7 million.
- 1981 and 1982 increases of \$21.3 million for estimated costs due to contractor delays<sup>2</sup> from 1973 through mid-July 1981.

Design changes include any increases or decreases in cost due to design modifications or new designs. Significant revisions since 1976 include:

- A 1977 decrease of \$8.8 million. The Assistant Chief of the Design Branch said this decrease is an estimate of savings that resulted from a more economical bridge design used in relocating five State highways.
- A 1977 increase of \$1.2 million to provide additional utilities, roads, site work, and buildings for one of the recreation areas.
- A 1979 increase of \$6.5 million to prevent water seepage, including (1) \$3.4 million for grouting to fill crevices found in the rock that connects with the dam structure

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<sup>2</sup>Government-caused delays are attributable to design changes and conditions at the construction site not detected during tests made for the design of the project. In addition, weather delays and strikes occurring after the original contract completion date are included and are compensable if they result in additional contractor costs. Costs associated with such delays include escalation of labor and material costs, loss of efficiency due to disruption of work, performing work at a less favorable time, overtime, extended overhead, and increased equipment rental.

and (2) an increase of \$3.1 million for a concrete wall to cover a large crevice in the rock.

--A 1981 increase of \$1 million for engineering and design costs, including (1) costs associated with widening roads due to a reanalysis of traffic and, (2) asphaltting the surface of two roads as stipulated in a court settlement during condemnation proceedings.

Price-level increases reflect the amount of commodities and services money will purchase in one period as against another. The Corps develops the current-year price level by (1) applying an industry index to construction costs, (2) obtaining current values for real estate, and (3) applying the Federal salary rate increases to the cost estimates for engineering and design, and supervision and administration. Beginning in October 1979, the Corps also included in its manuals a requirement to estimate future price-level increases through project completion. The inflation factor used is provided by the Office of Management and Budget. In total, price-level increases since 1976 were \$17.1 million.

District to provide better  
documentation for cost estimates

In our 1977 report on the Clarence Cannon Dam project, we pointed out that (1) the District's estimating procedures were not adequate to assure that construction cost estimates were reasonable, (2) documentation for estimates was not available, and (3) allowances for contingencies were excessive. We recommended that the Secretary of the Army have the Corps review and strengthen its cost-estimating procedures to develop more realistic cost estimates.

Since then, the Corps has revised its cost-estimating manuals and included a section emphasizing the need to fully document all cost estimates. The Planning and Design Stages manual requires supporting documentation for all major cost items, including the method of construction, items of major construction equipment, access, description of project features, assumptions used in developing the estimates, and sources of unit costs. The Government Estimate of Fair and Reasonable Cost to Contractor manual also requires supporting documentation for cost estimates used as a guide in awarding construction contracts and in negotiating modifications to awarded contracts. Both manuals state that an estimate shall be prepared on the basis of quantities and unit prices.

Contingency allowance guidelines are specified in the Corps' Planning and Design Stages manual. For awarded contracts, the suggested contingency allowance is 5 percent of the uncompleted portion of the contract. For projects not yet under

contract, the guidelines suggest a 10- to 20-percent allowance, depending upon the stage of completion of plans and specifications. Districts can deviate from the guidelines, but Army Regulation 11-2-141 requires a statement justifying such a deviation.

However, the Corps St. Louis District has continued to develop cost estimates and contingency allowances for the Clarence Cannon Dam project without adequate documentation. For example, the District was unable to provide documentation showing the quantities and the unit prices used in developing some of its cost estimates for the main dam. Specifically, of the \$40 million identified in the Corps' budget request for fiscal year 1983 as needed to complete the project, the District could not provide adequate documentation for about \$7.4 million (about 18 percent), as follows:

- \$4.7 million for costs attributable to Government-caused construction delays.
- \$1.3 million for engineering, design, supervision, and administration costs based on an analysis of remaining work.
- \$1.4 million in engineering cost included in the estimate of the effects of the July 1981 flood.

Some estimates for the Clarence Cannon Dam project presented in the Corps' budget request for fiscal year 1983 exceeded Corps guidelines without adequate explanations. For example:

- A \$5.8 million contingency on the awarded main dam contract. The Corps guidelines would have allowed \$1.5 million, or a difference of \$4.3 million.
- A \$1 million contingency on contracts to be awarded for relocating county roads. The Corps guidelines would have allowed about \$400,000, a difference of \$600,000.

The Program Development Officer said that the District's practice has been to exceed the Corps guidelines for contingency allowances on both awarded and unawarded contracts. However, the District could not document why this practice was established or provide justification for contingencies which exceeded the guidelines.

We discussed our concerns related to problems in documenting cost estimates and contingency allowances for the Clarence Cannon Dam project with the District Engineer and other District officials on January 28, 1983. In the course of the discussion, district officials commented that these problems were not limited to the Clarence Cannon Dam project but were district-wide

problems. Subsequently, the District Engineer directed his staff to (1) provide justification when deviating from the contingency allowance guidelines and (2) adequately document future cost estimates.

#### Schedule experience

The current estimated completion date is September 1985, about 4 years later than reported in our 1977 report. Although contract modifications which may grant the contractor additional time are still pending, issued contract modifications and the July 1981 flood report show delays totaling 46.4 months since 1976. The following table summarizes the reasons for the delay and the amount of time attributed to each reason.

<u>Reason for delay</u>	<u>Delay (in months)</u>
Adverse weather conditions (including the 1981 flood)	25.6
Design changes	10.4
Strikes and other labor management problems	4.6
Scheduling problems	3.6
Unanticipated site conditions	<u>2.2</u>
Total	<u>46.4</u>

The primary project feature affected by these delays is the main dam structure. The construction of the main dam began in 1970 and was 67 percent complete in January 1977. The District Engineer said that as of December 31, 1982, the main dam was 99 percent complete.

#### Current benefit/cost ratio

Benefits and costs have fluctuated since our 1977 report but generally have increased. The 1975 benefit/cost ratio, the latest included in that report, was 1.3 to 1. Since then, the benefit/cost ratio has ranged from 1.12 to 1 in 1977 to 1.3 to 1 in 1982. Benefits have increased about 48 percent since 1976 with hydroelectric power, flood control, and recreation accounting for 90 percent of this increase.

<u>Annual benefit estimates</u>			
----- (000 omitted) -----			
<u>Type of benefit</u>	<u>1962</u>	<u>1976</u>	<u>1982</u>
Hydroelectric power	\$1,090	\$4,673	\$6,168
Flood control	1,318	4,289	6,523
Recreation	1,380	2,513	4,422
Fish and wildlife	262	319	381
Water supply	105	407	671
Navigation	3	9	21
Redevelopment (note a)	-	399	515
Advanced replacement of bridges (note b)	-	65	92
<b>Total</b>	<b>\$4,158</b>	<b>\$12,674</b>	<b>\$18,793</b>

a/The Corps added redevelopment benefits in 1974.

b/The Corps added benefits for advanced replacement of bridges in 1976.

In general, benefits increase because of either price-level changes of commodities and services money will purchase in one period or changes in the basic assumption or methodology used to calculate the benefit.

Cost, as used in the benefit/cost ratio, is the average annual cost over the 100-year life of the project. Included is interest, amortization, operation and maintenance costs, replacement costs, and loss of productivity of land needed for the project. The increase (77 percent) in average annual costs since 1976 is due largely to increased interest expense brought about by an increase in the total cost of the project from \$232 million to \$308 million. Overall, average annual costs have increased 41 percent during this period.

The average annual benefits and costs and the corresponding benefit/cost ratios between 1962 and 1982 are shown below.

<u>Annual benefit/cost estimates</u>			
----- (000 omitted) -----			
	<u>1962</u>	<u>1976</u>	<u>1982</u>
Benefits	\$4,158	\$12,674	\$18,793
Costs	3,142	10,353	14,630
<b>Benefit/cost ratio</b>	<b>1.3:1</b>	<b>1.2:1</b>	<b>1.3:1</b>

Mr. VOLKMER. The other thing I would like to point out, in 1973 we had the largest flood that we ever had in the Mississippi Valley area, the Salt River and Mississippi at my hometown Hannibal, and the crops lost in 1973 was less than the crop loss in 1981 when it flooded.

Mr. HALL. All right.

Mr. VOLKMER. I think that is very important. In other words, this land is subject to flooding sometimes, but the natural flooding in the past, as has been brought out, the water comes up and then goes back down, and what occurred in 1981 is that the water stayed and stayed and stayed, and the crops were drowned.

Mr. HALL. Thank you very much. Thank you, gentlemen, for your part in this testimony.

Mr. CRONIN. Thank you, Mr. Chairman.

[Whereupon, at 10:55 a.m., the hearing in the above matter was concluded.]

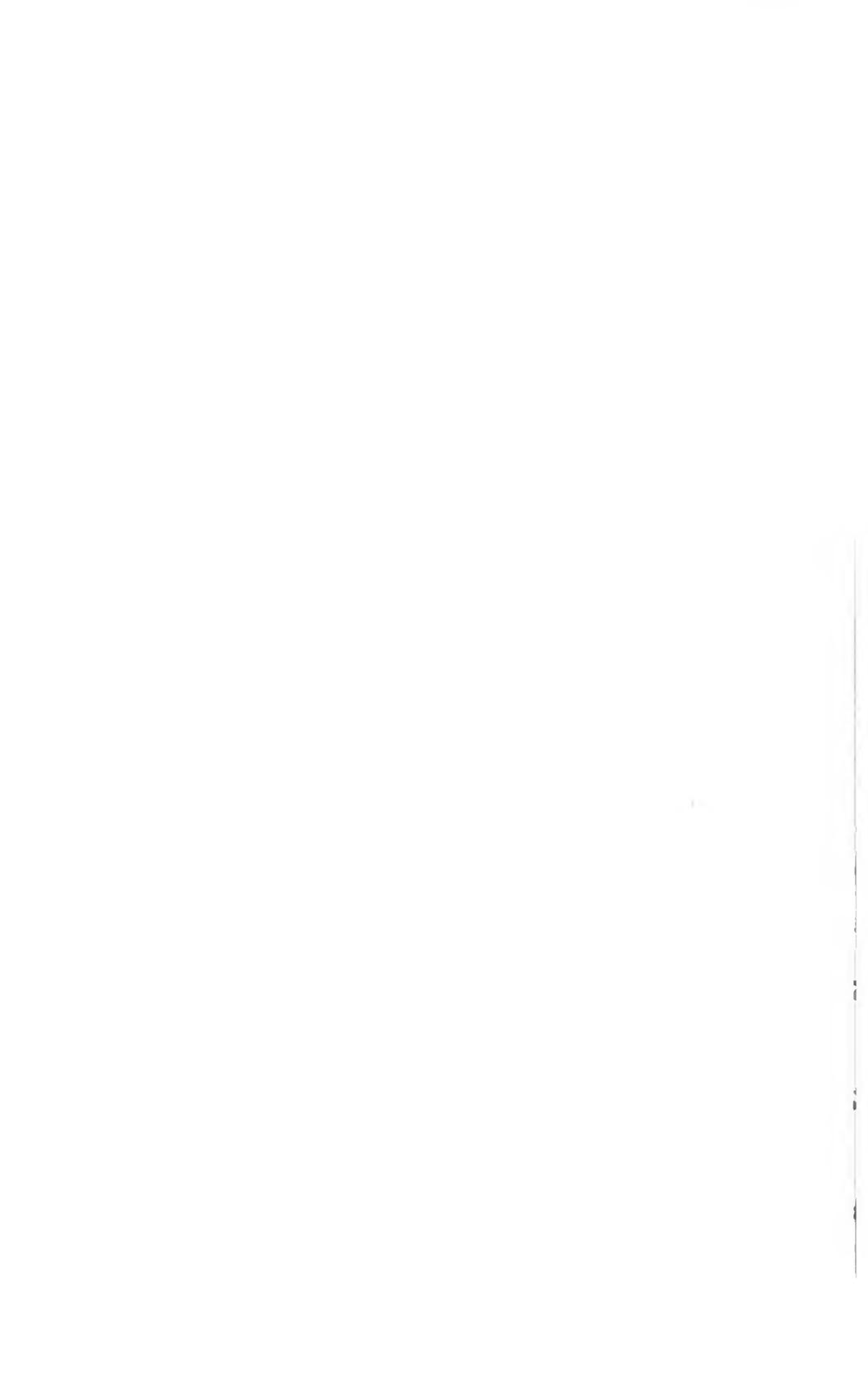


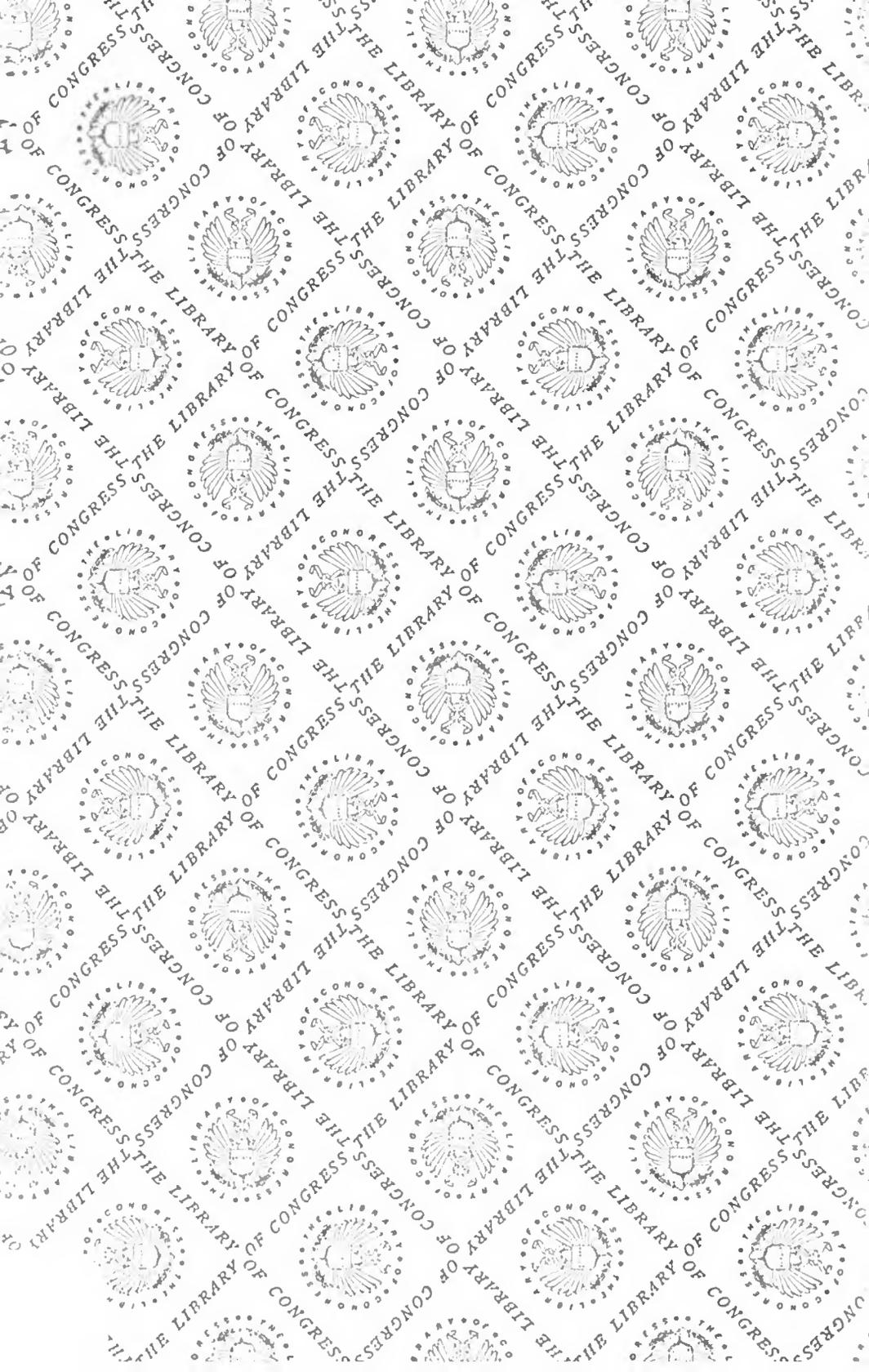


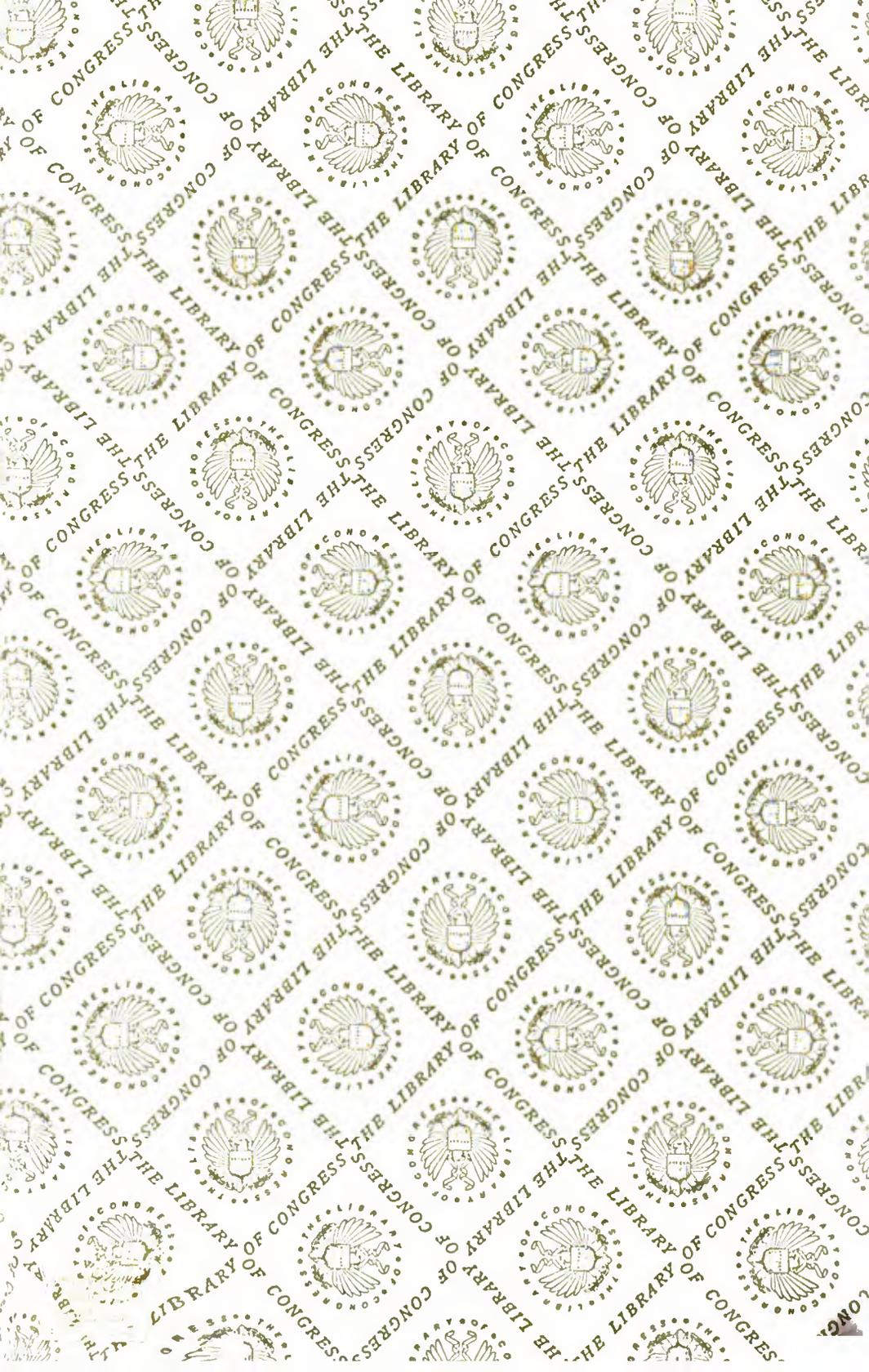












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