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BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Federal Involvement In The Mount St. Helens Disaster: Past Expenditures And Future Needs

The Congress appropriated about \$946 million to 12 Federal agencies in response to the May 1980 eruption of Mount St. Helens, but the appropriations language did not earmark the funds for the disaster. GAO found that 6 of the 12 agencies had overestimated their Mount St. Helens needs--by about \$560 million--and had used or were planning to use the excess funds for other purposes. At the same time, five other agencies had exhausted their disaster funds and had to reprogram funds, obtain additional appropriations, or suspend Mount St. Helens recovery work.

If the Congress desires to tighten control over appropriations for specific major disasters in the future, GAO is recommending that it either place limitations or controls in appropriations language or designate a lead agency to coordinate the sharing and use of the funds.

In July 1981 the Corps of Engineers reported that about \$1.9 billion in economic losses would occur if no further river dredging and other recovery work were performed around Mount St. Helens. GAO's analysis showed that the Corps' estimate of economic losses was greatly overstated. In May 1982 the President directed that the Corps make a study of the long-term dredging problem and reassess its future funding needs for Mount St. Helens recovery. GAO is recommending that the Corps use more realistic damage and cost assumptions in reassessing future needs and, until that study is complete, that the Congress approve funds only for emergency or other immediately needed maintenance work for dredging and flood control related to the Mount St. Helens disaster.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report discusses how existing appropriations practices used to fund relief programs for major disasters such as Mount St. Helens could hamper recovery from future catastrophic disasters. It contains recommendations on ways the Congress could tighten control over appropriations for major disasters in the future. It also contains recommendations to the Secretary of the Army and the Congress on long-range funding needs for Mount St. Helens recovery.

This review was undertaken to examine into problems related to the Mount St. Helens disaster, particularly those of lingering congressional and public controversy. The objective was to determine whether the experiences gained could be useful to the Federal Government in dealing with future major disasters.

We are sending copies of this report to the Director, Office of Management and Budget; the heads of the Federal departments and agencies that participated in the Mount St. Helens recovery efforts; the Governors and congressional delegations of Idaho, Oregon, and Washington; interested congressional committees, subcommittees, and individual Members of Congress; and other interested parties.

A handwritten signature in cursive script that reads "Charles A. Bowles".

Comptroller General
of the United States



D I G E S T

In May 1980 the President declared the State of Washington and part of Idaho major disaster areas following the catastrophic eruption of Mount St. Helens. The blast killed an estimated 60 persons and destroyed or severely damaged 150 square miles of forest land and numerous homes, bridges, roads, and other property. A series of less damaging eruptions occurred in the weeks and months following the initial blast--the most recent series beginning on July 18, 1982. (See p. 1.)

Because of the large amount of money involved and the considerable public and congressional interest generated by the disaster, GAO reviewed the extent of Federal involvement in recovery work following the eruption.

The review disclosed that

--the appropriations practices used to provide Mount St. Helens relief funds could hamper recovery from future major disasters (see ch. 2) and

--the Corps of Engineers needs to use more realistic damage and cost assumptions in reassessing its estimates of future flood damages and funding for remaining Mount St. Helens recovery work (see ch. 3).

APPROPRIATIONS PRACTICES USED FOR
MOUNT ST. HELENS RELIEF COULD HAMPER
RECOVERY FROM FUTURE DISASTERS

Within weeks of the disaster, the Congress appropriated \$946 million in response to requests from 12 Federal agencies for cleanup and recovery funds. However, the appropriations language did not restrict the use of the funds to the Mount St. Helens disaster. (See pp. 9 to 10.)

GAO found that 6 of the 12 Federal agencies receiving funds had substantially overestimated their Mount St. Helens needs--by about

\$560 million--and had used or were planning to use the excess funds on other disasters around the country. At the same time, five other agencies had exhausted their disaster funds and had to reprogram funds from other activities, obtain additional appropriations, or suspend Mount St. Helens recovery work while attempting to obtain additional appropriations. (See pp. 17 to 21.)

If the Congress desires to restrict appropriated funds to specific major, unusual, or long-term disasters in the future, it needs to limit the use of the funds to the disaster for which they are being made available. To do so, GAO is recommending that the statutory appropriations language clearly spell out the intended use of the funds, the length of time the funds are to be committed for their intended use, and the disposition of any unused funds.

GAO is recommending that, if the Congress does not consider fund restrictions appropriate but believes that some control is needed, it designate a lead agency, such as the Federal Emergency Management Agency, to coordinate the use and, if necessary, the sharing of specific major disaster funds among the Federal agencies. (See p. 26.)

CORPS OF ENGINEERS' ESTIMATES OF
POTENTIAL FLOOD DAMAGES AND FUTURE
FUNDING NEEDS WERE OVERSTATED

GAO found that Corps of Engineers' information supporting its future funding needs significantly overstated both the probable effects of future flooding around Mount St. Helens and the resulting economic losses.

In July 1981 the Corps of Engineers' Portland District projected that future economic losses to the Pacific Northwest region would total about \$1.9 billion--mainly from destruction of vital interstate highway and railroad bridges--if no further dredging and other maintenance work were done on the Toutle-Cowlitz River Basin. To avoid the projected losses, the Corps proposed a 15-year maintenance program estimated to cost \$939 million. (See pp. 30 and 34.)

GAO's review showed that the Corps' assessment of the likelihood that the interstate highway and

railroad bridges will fail, and the cost to rebuild the bridges and reroute traffic if the bridges do fail, were significantly overstated because the Corps used unrealistic damage and cost assumptions.

Using highway and railroad officials' information for the above factors, GAO calculated that economic losses in the absence of river maintenance may be as much as \$400 million--but more likely will be only several million dollars--rather than the \$1.9 billion the Corps projects. (See pp. 38 to 42 and app. III.) Neither the Corps' nor GAO's estimates considered, however, the recent development of the Spirit Lake debris dam threat. (See ch. 4.)

In May 1982 the President directed that the Corps make a comprehensive study of measures to manage the long-term sediment threat and reassess its future funding needs for Mount St. Helens recovery. GAO is recommending that, in making its reassessment, the Corps use more realistic assumptions regarding the probability of highway and railroad bridge failure and the potential economic losses to the region if the bridges do fail. GAO is recommending that, until the Corps develops more reliable information on its long-range needs for Mount St. Helens recovery, the Congress approve funds only for emergency or other immediately needed maintenance work for dredging and flood control related to the Mount St. Helens disaster. (See p. 44 and 47.)

AGENCY COMMENTS

GAO received comments on a draft of this report from eight Federal departments and agencies, the State of Washington, and the Burlington Northern Railroad. The Departments of Commerce, Education, the Interior, and Transportation and the Burlington Northern Railroad generally concurred with or had no comment on the report's contents, conclusions, and recommendations.

The Federal Emergency Management Agency did not support the concepts of earmarking funds for specific disasters or for making it the lead agency to coordinate disaster fund sharing and use; the Department of Agriculture did not believe any lead agency is necessary. GAO

believes, however, that when the Congress appropriates funds specifically in response to a major disaster which has already occurred, additional safeguards may be needed to ensure that the funds are available for the disaster for which they were intended.

GAO disagrees with the Department of the Army's contention that the Corps of Engineers' July 1981, \$1.9 billion flood impact estimate was based on the best information available at the time and with the State of Washington's contention that the Corps' data is overemphasized in the GAO report. All of the specific comments received, and GAO's responses to them, are in appendixes IV to XIII.

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ABBREVIATIONS

ASCS	Agricultural Stabilization and Conservation Service
CDC	Centers for Disease Control
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FY	fiscal year
GAO	General Accounting Office
NOAA	National Oceanic and Atmospheric Administration
OWRT	Office of Water Research and Technology
SBA	Small Business Administration
SCS	Soil Conservation Service
USFS	U.S. Forest Service
USGS	U.S. Geological Survey

CHAPTER 1

INTRODUCTION

On March 27, 1980, Mount St. Helens, in the Cascade Mountain Range of southwestern Washington, erupted for the first time since 1857. The initial eruptions and steam venting, although relatively minor, were the first in the conterminous United States since the end of a series of eruptions of Lassen Peak in California that lasted from 1914 to 1917.

In the weeks following the initial activity, Mount St. Helens continued to stir with steam and ash venting, eruptions, and thousands of small earthquakes--typical volcanic activity. Atypically, however, a huge bulge began to form on the north flank of the mountain. The volcano's growth confused scientists and increased governmental and public concern. No one really knew what the bulge meant or when or how big the next eruption would be.

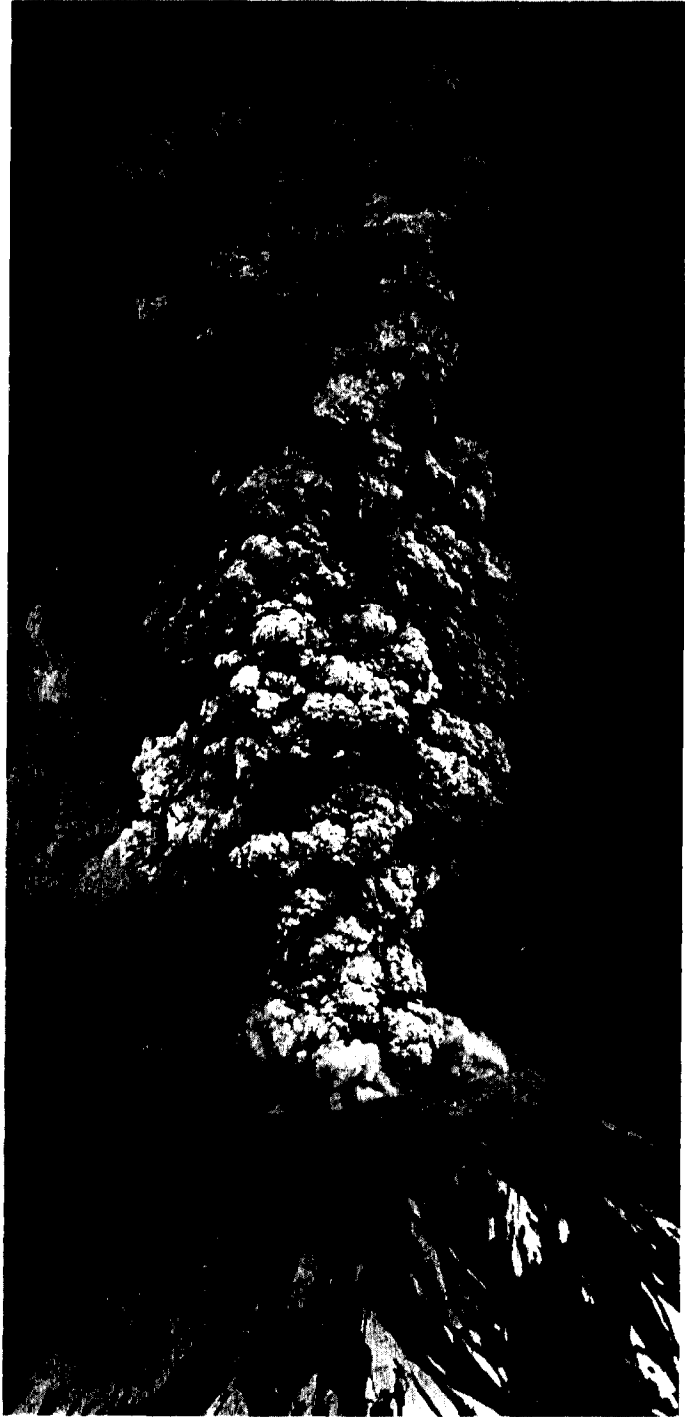
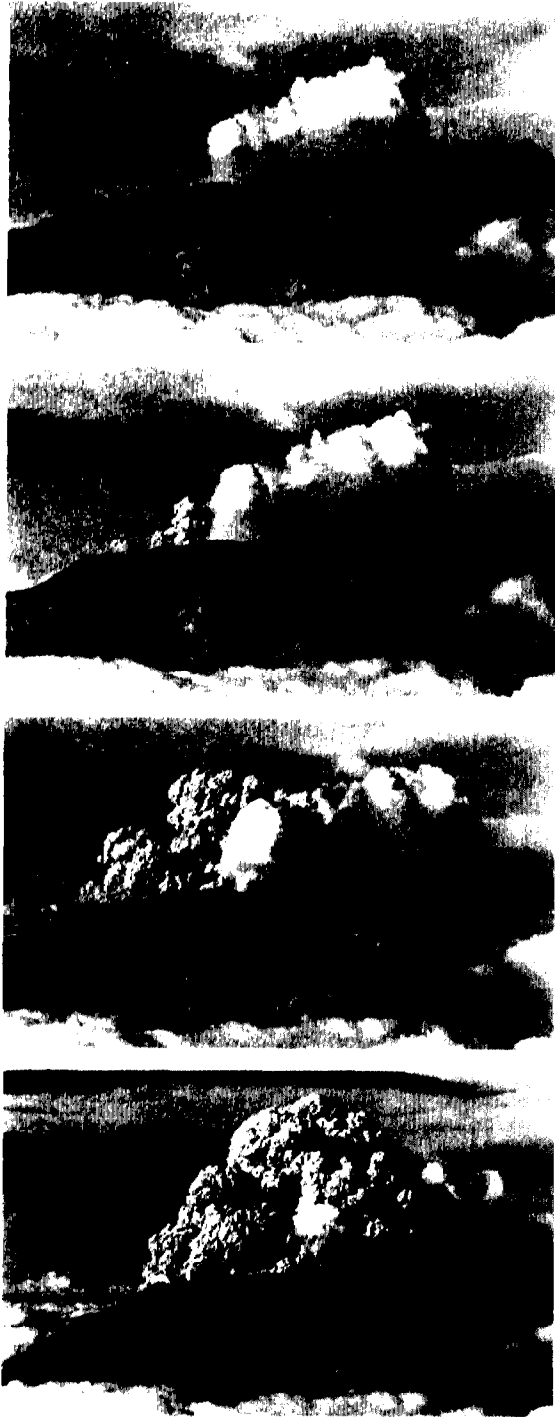
On May 18, 1980, Mount St. Helens itself provided the answers.

THE DISASTER

At 8:32 a.m. P.D.T. on Sunday, May 18, Mount St. Helens erupted catastrophically with a force estimated at 2,500 times the power of the atom bomb dropped on Hiroshima. Triggered by a Richter scale magnitude 5 earthquake, the bulge on the north side of the mountain collapsed in one of the largest landslides in recorded history, explosively releasing a tremendous buildup of gas and magma (molten rock) from within the mountain. The blast, which exploded sideways rather than upwards, tore off more than 1,300 feet of the mountain's crest and devastated everything in a path 16 miles long and 20 miles wide. (See photos on p. 2.)

A massive debris avalanche, estimated to contain 3 billion cubic yards of material from the top and center of the mountain, raced downhill, filling the valley of the North Fork Toutle River for more than 14 miles. The mudflows continued down the Toutle River, carrying millions of tons of sediment, logs, and debris into the Cowlitz and Columbia Rivers. Sediment deposits dangerously reduced the Cowlitz River's ability to carry water within its banks without flooding and blocked the Columbia River shipping channel for several days. (See map on p. 32.)

In addition to the mudfloods, the eruption blasted an estimated 400 million tons of material into the atmosphere in



Photos courtesy of *The Oregonian*, Portland, Ore., and *The Daily News*, Longview, Wash.

"Sunday morning, May 18, 1980. The day had dawned flawlessly—blue skies, still air, a warming sun. Suddenly, without warning, the entire northern half of Mount St. Helens' crater, reacting to a magnitude 5.0 earthquake, began to undulate in rippling vertiginous motion, eerily palpitating for a few seconds until, abruptly, the huge saggy mass of the mountain, including the entire peak, unhinged and plunged downslope like some great stricken ship, then losing all form, avalanched with increasing momentum in dense roiling confusion, burying the valley below with an oozy muddy surface that heaved like a cauldron. At the same instant, a blast of incredible force occurred along the lateral line of least resistance to the north, rocketing out billions of pounds of sublimated gas pressure from deep in the bowels of the mountain like a giant shaken champagne bottle with its top suddenly uncorked. Its summit now decapitated, Mount St. Helens hemorrhaged a dense gusher of pulverized ash, bubbly hot rock, and steamy gas into the sky, its ascending main plume carving a surrealistic contrail of volcanic grit as it ballooned upward into the stratosphere, while cauliflower heads of smokey black death bloomed from the maelstrom, blast after blast, clinging momentarily about the lowered peak like a cement thunderhead, then billowing out from the center in all directions at a prodigious rate as it consumed the mountain from view, transmogrifying the once-beautiful vision of tranquility into a vision of apocalyptic hell."

the form of a huge plume of powdery volcanic ash. The plume rose more than 12 miles high and drifted northeastward, depositing ash across thousands of square miles of eastern Washington, parts of Idaho, and eventually around the world. At Ritzville, Washington, over 150 miles away, the ash deposits were 3 to 4 inches deep.

Mount St. Helens, considered among the most beautiful and symmetrical of mountain cones, was transformed into a craggy geological amphitheater. In the aftermath, the effects of the cataclysm slowly began to unfold. According to press accounts, the eruption had

- killed as many as 60 people, with 35 confirmed dead and 25 missing and presumed dead;
- flattened about 150 square miles of timber (see photo on p. 8);
- buried about 20 miles of highway and about 18 miles of railroad under up to 6 feet of mud;
- destroyed or badly damaged 27 bridges (see photo on p. 88); and
- destroyed or heavily damaged about 200 homes.

A series of less damaging eruptions occurred in the weeks and months following the initial blast. The latest significant activity--an explosive eruption on March 19, 1982, and non-explosive eruptions on May 14 and July 18, 1982--demonstrate that the volcano is still active.

DISASTER DECLARATION

The magnitude and uniqueness of this natural disaster generated considerable governmental and public interest. Within several days after the May 18 eruption, President Carter visited the disaster site and localities heavily affected by volcanic ash and declared the State of Washington and part of Idaho as major disaster areas under the provisions of the Disaster Relief Act of 1974.

In July 1980, only weeks after the major eruption, the Congress passed a supplemental appropriations act which included \$946 million added in response to Federal agency requests and Appropriations Committee recommendations for Mount St. Helens relief and recovery aid. The additional funds were appropriated to 12 Federal agencies, the largest recipients being the Small Business Administration--\$430 million; the Corps of Engineers--\$215 million;

the Federal Highway Administration--\$125 million; and the Federal Emergency Management Agency--\$86 million. Some of the agencies, such as the Corps of Engineers and the Federal Highway Administration, used the funds themselves to conduct disaster response and recovery activities, such as dredging rivers, rebuilding roads and bridges, fighting forest fires, and making scientific studies. Other agencies, such as the Small Business Administration and the Federal Emergency Management Agency, used their funds to provide loans or grants to homeowners, farmers, businesses, local school districts, city and county governments, and others for cleanup, replacement of lost or damaged property, or reimbursement for economic losses such as loss of business activity or loss of income from future crops. (See app. I for detailed funding information on each of the 12 Federal agencies.)

SIMILARITIES TO AND DIFFERENCES FROM OTHER DISASTERS

In many respects the recovery following the Mount St. Helens eruption was typical of all major disasters. During the emergency period immediately following the eruption, there were extensive property damages, lives lost, dramatic and heroic search and rescue operations, costly cleanup and rebuilding, and people and organizations working together against the forces of nature. During the aftermath and recovery following the emergency period, the harmony often changed to charges of poor planning, inadequate response, incompetent personnel, inconsistent treatment, and unnecessary loss of life; disputes arose over eligibility for aid and reimbursements for damages; and accusations were made of inefficient, ineffective, and uneconomical actions. We did not review these problems in depth for the Mount St. Helens disaster because they have been covered in recent reports on other disasters. 1/

In other respects, the disaster was unique. The volcanic ash was a totally new phenomenon. No one knew what kind of damage it would cause or how to remove it. Many expected the worst and

1/"Poor Controls Over Federal Aid in Massachusetts After the 1978 Blizzard Caused Questionable Benefit Payments" (CED-81-4, Jan. 26, 1981).

"Requests for Federal Disaster Assistance Need Better Evaluation" (CED-82-4, Dec. 7, 1981).

"Improved Administration of Federal Public Disaster Assistance Can Reduce Costs and Increase Effectiveness" (GAO/CED-82-98, July 23, 1982).

anticipated severe damage to vast areas of farm and rangeland. As it turned out, the ash caused little harm and, in some cases, was even beneficial to vegetation. But the original fears about the volcanic ash and its damage potential had caused many Federal agencies to estimate their recovery costs on a "worst-case" basis, resulting in appropriations significantly higher than needed to respond to the disaster.

These circumstances led to considerable controversy over what the congressionally appropriated \$1 billion in Federal aid was intended for, where it actually was spent, and what should be done with the leftover funds. As of September 30, 1981, Federal agencies had used only about \$386 million on the recovery, less than half the \$946 million the Congress provided, but little or none of the surplus funds remained in agency disaster accounts. Our review of several matters relating to funding for the Mount St. Helens disaster is discussed in chapter 2.

Perhaps the most unique factors that set Mount St. Helens apart from other disasters are its continuing activity and uncertain future. By destroying most of the trees and other ground cover on the mountainside and filling nearby rivers with sediment, the initial eruption increased the area's flood potential for years to come, even if no further eruptions had occurred. By remaining active and continuing to erupt occasionally, the volcano represents an even greater source of concern and potential loss. The Corps of Engineers estimated that future flood-related damages would total about \$1.9 billion if sediment coming off the mountainside is not removed from the affected rivers. To minimize these damages, the Corps proposed a \$939 million, 15-year river dredging and maintenance program. Our review of aspects of that proposal is discussed in chapter 3.

OBJECTIVE, SCOPE, AND METHODOLOGY

This assignment was initiated under our basic legislative responsibilities and was made according to generally accepted Government auditing principles. Our primary objective in this review was to examine problems relating to the Mount St. Helens disaster, particularly those of lingering congressional and/or public concern and controversy, to determine whether the experiences gained could be useful to the Federal Government in dealing with future major or unusual disasters. Our review focused on the amount of Federal funds that were designated and used for the disaster and the amount of funds that will be needed in the future.

Our fieldwork was performed from October 1981 through February 1982. Because of the sizable amount of Federal funds appropriated in response to the disaster and the considerable public and

congressional interest in how the funds were spent, we reviewed the disaster fund activities of the 12 Federal agencies receiving funds in the fiscal year 1980 Supplemental Appropriations and Rescission Act. These agencies were the Agricultural Stabilization and Conservation Service, the U.S. Forest Service, and the Soil Conservation Service, Department of Agriculture; the National Oceanic and Atmospheric Administration, Department of Commerce; the Corps of Engineers, Department of the Army; the Department of Education; the Centers for Disease Control, Department of Health and Human Services; the U.S. Geological Survey and the Office of Water Research and Technology, Department of the Interior; the Federal Highway Administration, Department of Transportation; the Federal Emergency Management Agency; and the Small Business Administration.

At the Washington, D.C., headquarters and Pacific Northwest field offices of these agencies, we interviewed agency officials; examined records, reports, correspondence, and other files; and obtained detailed and summary financial information to determine (1) how much each agency actually spent on the disaster, (2) how much, if any, of the "Mount St. Helens appropriation" the agencies spent on other disasters, (3) how much, if any, Mount St. Helens money the agencies still have in their disaster accounts, and (4) how much additional money is needed for future Mount St. Helens recovery work. Since most of the financial information we obtained was generated by many different Federal agency computers, however, we could not readily evaluate the automatic data processing systems to assess the reliability and precision of the computer-generated data.

We reviewed the language of the Supplemental Appropriations and Rescission Act of 1980 (Public Law No. 96-304, July 8, 1980) and its supporting legislative history to determine the actual amount included in the appropriation as a result of the Mount St. Helens eruption, and to ascertain whether the agencies were permitted to spend these funds on other projects.

We also interviewed State and local officials, university researchers, and congressional staff members to obtain their views on the funds appropriated as a result of Mount St. Helens and on the need and availability of additional funds for recovery work. We also reviewed correspondence to and from Federal, State, and local officials, Members of Congress from the Pacific Northwest, and the President to obtain information on efforts to obtain initial and subsequent funding for Mount St. Helens recovery.

To review the Corps of Engineers' assessment of probable destruction of highway and railroad bridges, we obtained the opinions and pertinent correspondence of Federal, State, and

railroad company officials knowledgeable in engineering, bridge construction, and hydrology. Our review of the Corps' basic assumptions in quantifying the economic impact of bridge failure involved initially reviewing the reasonableness and accuracy of the major assumptions with knowledgeable Federal and State highway department and railroad company officials. After discovering serious discrepancies and questions regarding the Corps' assumptions and data, we reanalyzed and recalculated the probable economic impacts of bridge failure. Our analysis consisted of developing two scenarios, comprising low and high impacts, in order to bracket actual economic losses likely to result if the bridges fail.

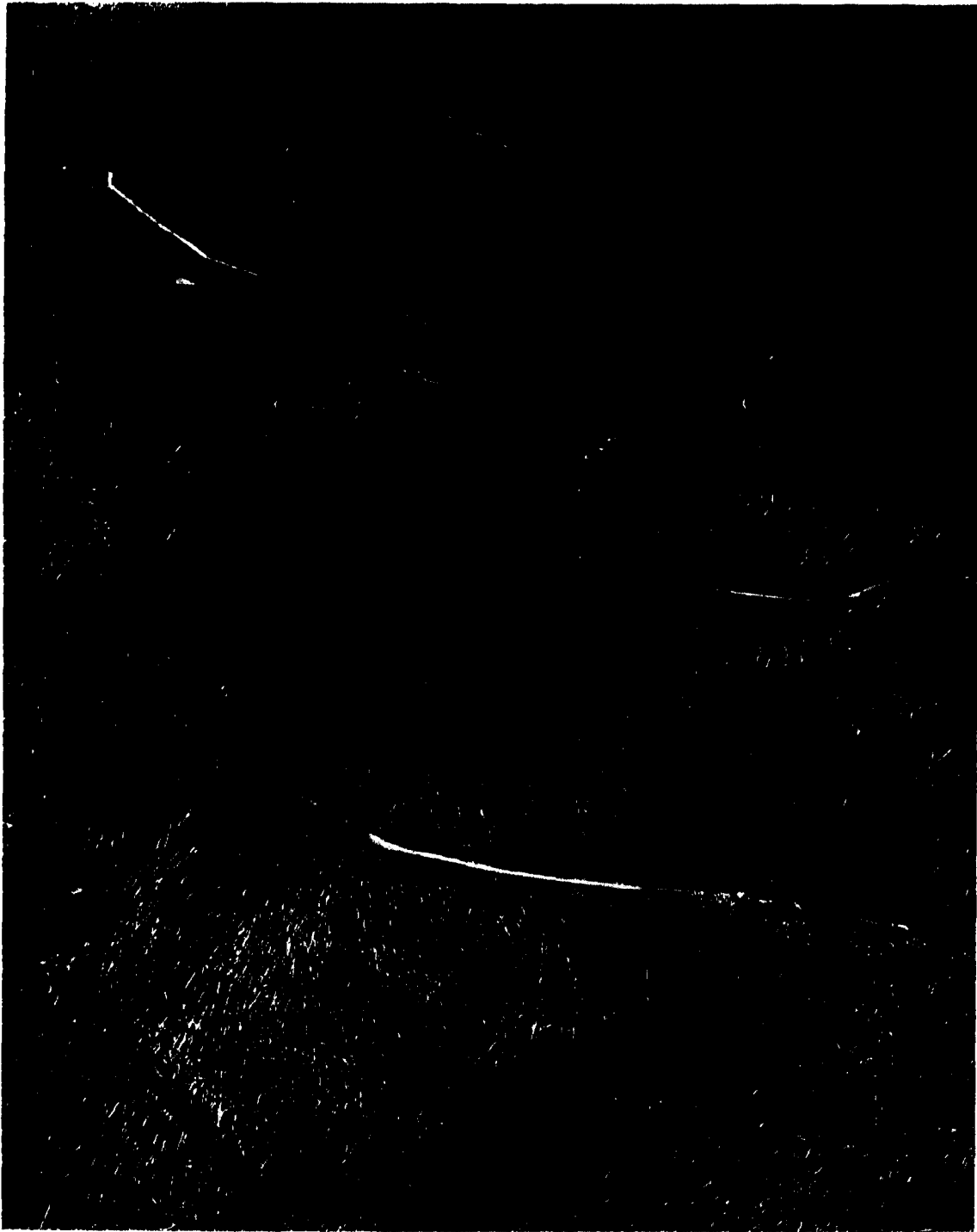


Photo courtesy of *The Daily News*, Longview, Wash.

"The shock wave from the eruption, focused like a rifle shot by the intact semi-circle of the crater, slammed northward across the miles of forest and up-country lakes, felling a billion board feet of timber like so many matchsticks."

CHAPTER 2

FUNDS APPROPRIATED IN RESPONSE TO MOUNT ST. HELENS

DISASTER WERE USED FOR OTHER PURPOSES

If the Congress intends to appropriate funds for a specific major disaster, it should clearly spell out such intent in its appropriations language. Otherwise, the funds can be used by Federal agencies for other disasters or purposes, which in turn could delay or hamper the relief efforts of the major disaster for which the funds were intended.

The Congress followed its longstanding practice of lump-sum funding in the fiscal year 1980 supplemental appropriations act when it made nearly \$1 billion available in response to the Mount St. Helens disaster. Generally the Congress funds Federal disaster relief programs in advance by making annual lump-sum appropriations to agencies' disaster accounts, without restricting or earmarking the use of the funds to specific disasters. Lump-sum funding allows agencies to shift funds and make necessary adjustments for unforeseen developments, such as funding unexpected disasters for which cost estimates cannot be accurately projected in advance.

Lump-sum, or nonrestrictive, funding is appropriate for routinely replenishing agency disaster accounts so that funds will be available to respond to unforeseen disasters as they occur in the future. However, when large amounts are appropriated in specific response to disasters which have already occurred, without explicit statutory language limiting how the funds may be used, agencies legally can use the funds for purposes other than the disaster for which they were intended. In addition, accounting for the use of surplus disaster funds is difficult, since agencies are permitted to combine funds appropriated in response to a specific disaster with their regular fiscal year disaster appropriations, and congressional oversight over disaster funding can be reduced or lost.

Our review of funding for the Mount St. Helens disaster showed that:

- The recipient Federal agencies and the President requested, and the House and Senate Appropriations Committees recommended, that Federal funds be made available specifically for Mount St. Helens relief.
- Because the appropriations act did not restrict the use of funds to Mount St. Helens work, agencies were free to use Mount St. Helens relief funds for other disasters or purposes.

--Less than half, or about \$386 million, of the \$946 million included in the appropriations act because of the Mount St. Helens eruption 1/ had been spent on that disaster.

--Most of the funds left over--about \$560 million--had not been set aside for future Mount St. Helens recovery needs but had been spent or were to be spent on other disasters or for other purposes. However, the exact amounts and uses of these surplus funds could not be determined because the funds had lost their identity.

These circumstances have created a lingering controversy as a result of the widely held belief by State and local officials and the general public in the disaster area that the Congress appropriated the funds specifically for Mount St. Helens aid, not for unrestricted use. Moreover, some officials have contended that the absence of restrictions in the appropriations language, which allowed agencies to use their "excess Mount St. Helens funds" elsewhere in the country rather than share them with other agencies involved with Mount St. Helens, particularly the Corps of Engineers, has hampered full recovery from the Mount St. Helens disaster.

However, our review showed that uncertainty exists about whether the lump-sum appropriations process used has in fact delayed or jeopardized full recovery from this disaster. As discussed in chapter 3, the Corps of Engineers needs to reduce significantly its projections of future flood damages and the amount of dredging and other flood control work it still needs to do as a result of the Mount St. Helens eruption. Until the Corps reevaluates its funding needs, we cannot determine for certain whether or to what extent additional Mount St. Helens recovery work actually needs to be done.

1/As we point out in this chapter, although the Congress did not appropriate funds specifically for the Mount St. Helens disaster, it did include funds in the fiscal year 1980 supplemental appropriations act because of the disaster. Therefore, in this report we refer to the disaster funds included in the act with such descriptions as "funds requested for Mount St. Helens," "funds justified for Mount St. Helens," "funds appropriated in response to Mount St. Helens," or "funds included as a result of Mount St. Helens." The funds cannot, however, be described as "funds appropriated for Mount St. Helens" since the appropriations act did not explicitly state that the funds were to be used for that disaster.

OVERVIEW OF FUNDING CONTROVERSY

In July 1980 the Congress responded to the Mount St. Helens disaster by appropriating \$946 million in disaster aid in the Supplemental Appropriations and Rescission Act of 1980 at the request of 12 Federal agencies involved in relief and recovery activities. At the time, this amount was generally considered to be the "first installment" or "downpayment" of Federal disaster assistance, since total recovery costs were expected to be much higher. Also, despite the fact that the appropriations act did not earmark or otherwise limit fund use to the Mount St. Helens disaster, many State and local officials believed that such restrictions did exist, or at least were intended.

As it turned out, recovery costs were greatly overestimated and the so-called "billion-dollar Mount St. Helens appropriation" was more than twice the amount actually spent. The widespread damage expected to be caused by the volcano--particularly crop damage--did not materialize. As of September 30, 1981, most of the agencies had completed the bulk of their recovery work and had spent only about \$386 million, leaving an apparent surplus of over \$560 million.

In spite of this apparent surplus, several Federal agencies, including the Corps of Engineers, ran out of their share of disaster funds and had to seek additional funds from other sources. In May 1981 a lack of funds caused the Corps to suspend most of the disaster recovery work it believed was needed. State and local officials, fearful of the massive flood damage the Corps predicted would occur in future years if it could not continue its work--dredging the volcanic sediment being deposited in nearby rivers--urged the Federal Government to make available to the Corps some of the presumed surplus Mount St. Helens funds. At the request of State and local officials, Members of Congress from the Pacific Northwest made several attempts to repool and reallocate some of the "surplus" funds to the Corps of Engineers so it could continue its long-range recovery work. The officials and some Members of Congress and their staffs believed that the funds had been restricted to Mount St. Helens use and therefore that leftover funds remained in the Federal agencies' accounts for that disaster.

As of mid-July 1982, however, efforts to obtain additional funding for the Corps' Mount St. Helens work from surplus or any other funds were largely unsuccessful. (See ch. 3 for an update on this matter.) The Federal agencies which received more in the 1980 supplemental appropriation than they needed for Mount St. Helens pointed out that the appropriation constituted neither a floor nor a ceiling on the amount the Congress intended to be

spent on the disaster. Officials of these agencies stated that they had spent all that was necessary for their part of the Mount St. Helens recovery effort and had used most of the leftover funds for other disasters, leaving little or no balance of "Mount St. Helens funds." The officials pointed out that they were permitted to do so because the Congress, in the 1980 supplemental appropriations act, did not explicitly state that the funds were for Mount St. Helens. Officials of some of these agencies further stated that they do not have the authority to transfer funds to the Corps or any other agency; that must be done legislatively.

Considerable public controversy developed over the congressional intent of the so-called "Mount St. Helens appropriation." State and local officials and the media, saying they were led to believe from congressional hearings and Appropriations Committee reports that the Congress intended its appropriation to be used for Mount St. Helens relief work, called for a public accounting of what was done with the "leftover" funds in the hope that some of these funds could be made available to the Corps of Engineers.

LEGISLATIVE HISTORY OF THE FISCAL YEAR
1980 SUPPLEMENTAL APPROPRIATIONS
AND RESCISSION ACT

The record of the Senate Appropriations Committee hearings on Mount St. Helens, the President's funding proposal, and the House and Senate Appropriations Committee reports all contain explicit language indicating that specific amounts of disaster funds were requested or recommended for Mount St. Helens relief in the Supplemental Appropriations and Rescission Act of 1980. However, the supplemental appropriations act as passed did not explicitly mention appropriations for the Mount St. Helens disaster. Rather, each agency receiving funds for the disaster cleanup was appropriated a lump sum (which for some agencies also included funds for other disasters) without restrictions on how funds were to be spent.

Senate Appropriations
Committee hearings

On June 10, 1980, 3 weeks after the initial volcanic eruption, the Senate Appropriations Committee held hearings on the Mount St. Helens disaster. As the table on p. 14 shows, 10 of the 12 Federal agencies which eventually received supplemental funds testified at these hearings and requested specific amounts--totaling nearly \$900 million--for Mount St. Helens relief activities. Five of the agencies also requested other funds, totaling nearly \$1.2 billion, for other disasters. Two agencies which eventually received disaster funds in the 1980 supplemental

appropriation, the Department of Education and the Department of Interior's Office of Water Research and Technology, did not testify or request funds at the Senate hearings.

President's proposal

On June 17, 1980, the President proposed that \$817.4 million be included for the Mount St. Helens disaster in the fiscal year 1980 supplemental appropriation. This proposal requested funds for only 8 of the 12 agencies which eventually received disaster appropriations. As shown in the following table, the amounts requested for three of the eight agencies included funds for other disasters as well as Mount St. Helens.

The House Appropriations Committee report

The June 11, 1980, House Appropriations Committee report on the fiscal year 1980 supplemental appropriation shows that the committee recommended that \$778.28 million be appropriated to seven agencies for the Mount St. Helens disaster. As shown in the following table, the report specified an amount to be allocated to each Federal agency involved in the relief operation. The committee report also included a summary table showing a total of \$784 million being recommended for Mount St. Helens aid, but that total included several million dollars which were identified in the text of the committee report with other disasters.

Agency	Amounts requested for Mount St. Helens		Amounts recommended for Mount St. Helens		FY 1980 supplemental appropriation pertaining to Mount St. Helens request or recommendation, per GAO analysis
	Senate Appropriations Committee hearings	President's proposal	House Appropriations Committee report	Senate Appropriations Committee report	
	----- (millions) -----				
Agricultural Stabilization and Conservation Service	\$ 15.50	a/\$ 20.00	\$ 15.50	a/\$ 20.00	\$ 15.50
Centers for Disease Control	0.61	-	-	0.60	0.60
Corps of Engineers	215.00	215.00	213.50	215.00	215.00
Department of Education	-	20.00	-	20.00	20.00
Federal Emergency Management Agency	86.00	86.00	86.00	86.00	86.00
Federal Highway Administration	100.00	-	-	125.00	125.00
U.S. Forest Service	25.00	25.00	25.00	25.00	25.00
U.S. Geological Survey	3.28	a/ 4.00	3.28	3.28	3.28
National Oceanic and Atmospheric Administration	0.50	-	-	0.50	0.50
Office of Water Research and Technology	-	-	-	3.00	2.00
Small Business Administration	430.60	a/ 1,165.00	412.00	430.00	e/430.00
Soil Conservation Service	<u>23.00</u>	<u>23.00</u>	<u>23.00</u>	<u>23.00</u>	<u>23.00</u>
Total	<u>\$899.49</u>	b/\$ <u>817.40</u>	c/ <u>\$778.28</u>	d/ <u>\$951.38</u>	<u>\$945.88</u>

a/Included an unspecified amount for other disasters as well as for Mount St. Helens.

b/Since the President's proposal included unspecified amounts for other disasters, this total for Mount St. Helens is based on a discussion in the Senate Appropriations Committee report.

c/The agency figures above are from the text of the House Appropriations Committee report. A summary table in the committee report showing \$784 million recommended for Mount St. Helens included \$4.5 million for the Agricultural Stabilization and Conservation Service and \$0.72 million for the U.S. Geological Survey which were attributed in the text to other disasters, and an additional \$0.50 million for the Corps of Engineers due to rounding.

d/The agency figures above are from the text of the Senate Appropriations Committee report. A summary table in the committee report, showing \$952.1 million recommended for Mount St. Helens, included \$0.72 million for the U.S. Geological Survey which was attributed in the text to other disasters.

e/Regarding the Small Business Administration's entire \$1.177 billion supplemental loan fund appropriation, the Conference report stated: "The conferees are agreed that none of these funds are reserved for any specific disasters, but are available for eligible disaster loan applicants in accordance with the provisions of the Small Business Act, as amended, and regulations of the Small Business Administration."

Senate Appropriations Committee report

The June 23, 1980, Senate Appropriations Committee report on the 1980 supplemental appropriation shows that the committee recommended \$951.38 million be appropriated for the disaster and, like the House committee, specified allocations to various Federal agencies. The committee report also included a summary table showing a total of \$952.1 million being recommended for Mount St. Helens aid. That amount, \$952.1 million, is the figure most commonly cited by Federal, State, and local officials and the press as the "Mount St. Helens appropriation" or "Mount St. Helens fund."

1980 Supplemental Appropriations
and Rescission Act

As shown in the last column in the table on page 14, our review showed that \$945.88 million attributable to the Mount St. Helens disaster was finally included in the supplemental appropriations act. This amount differs slightly from the so-called "\$952.1 million Mount St. Helens fund" because a somewhat lesser amount pertaining to the disaster was included in the appropriation for three of the agencies, as shown below:

	Per summary table in Senate Appropriations Committee <u>report</u>	Per GAO analysis of legislative <u>history</u>	<u>Difference</u>
	------(millions)-----		
Agricultural Stabilization and Conservation Service	\$20.00	\$15.50	\$4.50
U.S. Geological Survey (See footnote d on p. 14.)	4.00	3.28	.72
Office of Water Research and Technology	3.00	2.00	<u>1.00</u>
Total difference			<u>\$6.22</u>

For the first two agencies listed above, the differences are due to the fact that the summary table figures in the Senate appropriations report included a small amount of funds which were specifically justified by the agencies for other disasters at the earlier Senate Appropriations Committee hearings on Mount St. Helens and also were identified with those other disasters in the President's request and in the text of the House and

Senate Appropriations Committee reports. The amount for the Office of Water Research and Technology was amended from the Senate-recommended \$3 million to \$2 million by the House-Senate Conference Committee, as shown in its report of July 2, 1980. Officials of all three agencies agreed with these figures.

Thus, the 12 agencies received a total of \$945.88 million (\$952.1 million less \$6.22 million) in the 1980 supplemental appropriation as a result of Mount St. Helens rather than the more commonly cited figure of \$952.1 million. Further, as discussed below, the amounts appropriated were not "for" Mount St. Helens, but were for unrestricted disaster use.

Language in supplemental appropriations act did not restrict use of funds to Mount St. Helens

The appropriations act, unlike the Senate and House reports and the President's request, did not explicitly identify specific amounts for the Mount St. Helens disaster for any of the 12 Federal agencies receiving funds for the recovery effort. The Congress merely appropriated lump sums to the agencies' disaster and other accounts. The table on page 14 (last column) shows our analysis of the amounts associated with Mount St. Helens recovery in the appropriations act's legislative history. Officials of all 12 agencies receiving funds for Mount St. Helens agreed that their fund requests were associated with and justified on behalf of the disaster, but some agency officials did not agree that the funds were to be used only for Mount St. Helens.

The agencies with leftover funds stated that they have spent all they needed for their portion of the Mount St. Helens recovery effort and therefore are free to use the remaining funds on other disasters. State and local officials have taken a different position. These officials believe that the funds were appropriated for the disaster and should remain available for use as the congressional committees originally intended; that is, for future Mount St. Helens needs. These officials have asked the Congress to repool and reallocate the leftover funds so that any remaining disaster recovery work, primarily that of the Corps of Engineers, can be completed.

Our review showed that despite the clear indication from the legislative history that funds were being sought specifically for Mount St. Helens, the supplemental appropriations act as passed did not explicitly mention appropriations for the Mount St. Helens disaster. Rather, in accordance with longstanding practice, each of the agencies involved in the disaster cleanup was appropriated a lump sum (which also included funds for other

disasters for some agencies) without any language restricting expenditures to Mount St. Helens or any other disasters.

In situations such as this, we have consistently expressed the view that restrictions on an appropriation that appear in budget justifications and committee reports are not legally binding upon a department or agency unless they are included in the appropriations act itself. ^{1/} While the legislative history is not to be ignored, there is a clear distinction between imposing statutory restrictions or other legally binding conditions on an appropriation and specifying restrictions or conditions in a nonstatutory, nonbinding manner. The Congress has recognized that in most instances it is desirable to maintain executive flexibility to shift funds within a particular lump-sum appropriation account so that agencies can make necessary adjustments for such things as unforeseen developments, changing requirements, or incorrect estimates. When the Congress does not intend to permit agency flexibility but intends to impose a legally binding restriction on the agency's use of funds, it uses explicit statutory language.

In the case of the Mount St. Helens disaster, it is our view that since the Congress appropriated lump-sum amounts to the 12 Federal agencies without statutorily restricting the use of the funds, the Congress intended to grant these agencies flexibility to adjust their expenditures as needed. Therefore, the Federal agencies are not legally bound to spend any given amounts for the Mount St. Helens relief effort and may use their funds for other projects or disasters.

LESS THAN HALF THE FUNDS APPROPRIATED
IN RESPONSE TO MOUNT ST. HELENS WERE
SPENT ON THAT DISASTER

As of September 30, 1981, most of the 12 Federal agencies receiving funds in the 1980 supplemental appropriations had completed the bulk of their disaster recovery work and had spent a total of about \$385.8 million of these funds--less than half the \$945.88 million that our review showed the Congress made available in response to the disaster. In total, the agencies had about \$560 million "left over" from the appropriation, as the table below illustrates.

^{1/}LTV Aerospace Corporation, 55 Comp. Gen. 307 (1975); Newport News Shipbuilding and Drydock Company, 55 Comp. Gen. 812 (1975).

1980 Supplemental Appropriations Funds
Spent on Mount St. Helens
From July 8, 1980, through September 30, 1981

<u>Agency</u>	<u>Amount</u> <u>appropriated</u>	<u>Amount</u> <u>spent</u>	<u>Amount</u> <u>left over</u>
	----- (millions) -----		
Agricultural Stabilization and Conservation Service	\$ 15.50	\$ 3.34	\$ 12.16
Centers for Disease Control	0.60	0.60	-
Corps of Engineers	215.00	215.00	-
Department of Education	20.00	3.60	16.40
Federal Emergency Management Agency	86.00	34.03	51.97
Federal Highway Administration	125.00	22.00	103.00
U.S. Forest Service	25.00	25.00	-
U.S. Geological Survey	3.28	3.28	-
National Oceanic and Atmospheric Administration	0.50	0.50	-
Office of Water Research and Technology	2.00	2.00	-
Small Business Administration	430.00	65.87	364.13
Soil Conservation Service	<u>23.00</u>	<u>10.62</u>	<u>12.38</u>
Total	<u>\$945.88</u>	<u>a/\$385.84</u>	<u>\$560.04</u>

a/Does not include all the funds spent by these agencies on Mount St. Helens. (See next page.)

In our review of the disaster fund activities of the above 12 Federal agencies, we found that:

--Five agencies (listed in the table above with no leftover balance, except the Office of Water Research and Technology)

did not receive sufficient funds in the 1980 supplemental appropriation for their Mount St. Helens needs and had to either use funds from other agency programs or obtain additional funding.

--Six agencies (listed in the table above with a leftover balance) received more funds in the 1980 supplemental appropriation than they needed for Mount St. Helens.

--One agency, the Office of Water Research and Technology, used all its funds and had neither a shortfall nor a surplus of funds for its Mount St. Helens needs.

Some agencies received insufficient funding

Five agencies received insufficient funding in the 1980 supplemental appropriation to respond to Mount St. Helens needs and had to either use funds from other agency programs or obtain additional funding. As of the end of fiscal year 1981, these agencies had spent the following additional amounts on Mount St. Helens:

	<u>Additional funds and appropriations sources</u>			<u>Total</u>
	<u>FY 1980 regular</u>	<u>FY 1981 regular</u>	<u>FY 1981 supplemental</u>	
Centers for Disease Control	\$ 253,000	-	-	\$ 253,000
Corps of Engineers	31,700,000	-	\$28,500,000	60,200,000
U.S. Forest Service	-	-	20,027,000	20,027,000
U.S. Geological Survey	40,000	a/\$8,231,000	-	8,271,000
National Oceanic and Atmospheric Administration	-	170,700	-	170,700
Total	<u>\$31,993,000</u>	<u>\$8,401,700</u>	<u>\$48,527,000</u>	<u>\$88,921,700</u>

a/Includes \$105,000 in reimbursable funds from the U.S. Forest Service and the State of Washington.

All of these agencies, except the Centers for Disease Control, project that they will need additional funding for their Mount St. Helens programs beyond 1981. The Corps of Engineers projected a need for \$939 million for a 15-year river dredging program to continue work which it suspended in May 1981 because of a lack of funds. (Ch. 3, however, questions the Corps' need for that amount of funds.) Also, the Forest Service estimated that it needs an additional \$15 million for research, reconstruction, and timber sales; the Geological Survey stated that it needs \$5 to \$7 million a year for geologic and hydrologic monitoring and hazards delineation; and the National Oceanic and Atmospheric Administration informed us that it will need \$157,000 to \$185,000 a year to operate its Mount St. Helens flood warning network.

Some agencies had funds left over

Six agencies--the Agricultural Stabilization and Conservation Service, the Department of Education, the Federal Emergency Management Agency, the Federal Highway Administration, the Small Business Administration, and the Soil Conservation Service--received more funds in the 1980 supplemental appropriation than they needed for the Mount St. Helens disaster. These agencies received an aggregate of about \$699.5 million which they had justified for the disaster. As of September 30, 1981, however, these agencies had essentially completed their Mount St. Helens work and had spent only about \$139.5 million on the disaster, leaving a total of about \$560 million left over. (The amount of leftover funds for each agency is listed in the table on p. 18.)

According to agency officials, two primary reasons explain the large amount of leftover funds. First, because of the short time between the disaster and the need for cost information for the supplemental appropriation, the agencies were unable to conduct detailed damage assessments and develop accurate cost estimates. Second, because of the uniqueness of the disaster, especially the volcanic ash, no one really knew at the time of the deliberations on the appropriations how much the recovery would cost. For these reasons the agencies based their cost estimates on a "worst-case basis," believing it would be better to receive too much rather than too little funding for the disaster.

The Small Business Administration, for example, received the \$430 million it requested to respond to Mount St. Helens. As of the end of fiscal year 1981, however, it had disbursed only about \$66 million in loans to the disaster's victims. According to the agency's Acting Regional Administrator, region X, the agency overestimated its Mount St. Helens needs because, based on initial information, officials assumed that the volcanic ash might destroy all farm crops and the land would not be usable for a

considerable length of time. The official said that the agency had no history of dealing with this type of disaster and consequently its estimates were grossly overstated. This agency's leftover funds, about \$364 million, account for over half of the \$560 million left over.

According to officials at four of the six agencies with leftover funds, their agencies had either spent or expected to spend some additional amounts for Mount St. Helens activities beyond the end of fiscal year 1981. The total amount, however, was estimated to be less than \$14 million. (See app. I for details.) The other two agencies stated that they did not expect to spend any additional funds on the Mount St. Helens disaster.

MOST LEFTOVER FUNDS WERE SPENT OR
WILL BE SPENT ON OTHER DISASTERS

Our review of the disaster fund activities of the six agencies with leftover "Mount St. Helens funds" confirmed that, as one Federal Emergency Management Agency official stated, "* * * there is [not] a veritable mountain of money still available to those adversely affected by the eruption of Mount St. Helens * * *."

As of December 1981, only one agency, the Soil Conservation Service, was reserving its leftover funds--about \$10 million--for future Mount St. Helens needs in the event the volcano erupts again. A headquarters supervisory budget analyst said the agency eventually will have to decide what to do with the money if it is not needed for Mount St. Helens. He said the agency may either: (1) use the money for other disasters, (2) ask the Congress for authority to use the money for other agency needs, or (3) return the money to the Treasury. 1/

The other five agencies had either let their leftover funds expire and revert to the Treasury, had spent them for other disasters or purposes, or still had them available--but not earmarked--in their ongoing disaster accounts. As we pointed out above, the way in which the Congress made the appropriation permitted the agencies to use the leftover funds for other disasters or purposes.

1/On June 2, 1982, the President proposed deferring \$8,822,000 of Soil Conservation Service unobligated Mount St. Helens-related funds pending enactment of supplemental appropriations language transferring the funds to other accounts of the agency to be used for increased pay costs.

The Department of Education was the only agency which let a substantial portion of its leftover disaster funds expire and revert to the Treasury. In the 1980 supplemental appropriation, the Department of Education received \$20 million for disaster aid, to remain available until September 30, 1981. As of that expiration date, the agency had obligated only about \$3.6 million of those funds for Mount St. Helens. ^{1/} The Department had also spent about \$7 million of the appropriation for other disasters. (See app. I for a list of the other disasters.) On September 30, 1981, the Department let the remaining \$9.4 million expire as the agency did not need the funds for Mount St. Helens or other disasters.

The remaining four agencies with leftover disaster funds--the Agricultural Stabilization and Conservation Service, the Federal Emergency Management Agency, the Federal Highway Administration, and the Small Business Administration--either spent all or part of their leftover funds on other disasters or still had all or some of these funds remaining in their disaster accounts at the end of fiscal year 1981. However, officials of these agencies could not tell us, nor could we determine, specifically which disasters the Mount St. Helens leftover money had been used for or how much, if any, of the leftover funds still remained in their disaster accounts. There are two reasons for this.

First, since the Congress did not specify particular amounts for individual disasters in its appropriations language, the agencies did not establish a separate "Mount St. Helens fund" or otherwise earmark any portion of the 1980 supplemental appropriation for the Mount St. Helens disaster. Instead, the agencies combined their 1980 disaster fund supplemental appropriation with the funds they had in their disaster accounts at the time they received the new appropriation. Also, the lump-sum amount each of the four agencies received for its disaster fund in the 1980 supplemental appropriation included funds requested for other disasters, not just for Mount St. Helens, as shown in the following table:

^{1/}In addition to the \$3.6 million the Department of Education spent on Mount St. Helens from the 1980 supplemental appropriation, the agency spent \$1.5 million on Mount St. Helens from its 1980 regular appropriation. Thus, the agency spent a total of about \$5.1 million on the disaster.

<u>Agency</u>	<u>Funds received in 1980 supplemental appropriation</u>		<u>Total</u>
	<u>Pertaining to Mount St. Helens</u>	<u>Pertaining to other disasters</u>	
	----- (millions) -----		
Agricultural Stabilization and Conservation Service	\$ 15.5	\$ 4.5	\$ 20.0
Federal Emergency Management Agency	86.0	784.0	870.0
Federal Highway Administration	125.0	125.0	250.0
Small Business Administration	430.0	747.0	1,177.0

Second, as the table on page 25 shows, all four agencies received disaster fund appropriations for fiscal year 1981 which they combined with the carryover balances from the 1980 supplemental and prior appropriations. Similarly, the agencies combined their fiscal year 1982 disaster fund appropriations with their 1981 carryover balances.

As the table on page 25 also illustrates, without making arbitrary accounting assumptions, such as a first-in, first-out process or a last-in, first-out process, one cannot state conclusively which obligations come from which appropriations. Therefore, we could not determine, nor could agency officials tell us, which other disasters the leftover Mount St. Helens funds were used for, as the funds had lost their identity. Similarly, we could not determine how much, if any, of each agency's disaster fund balance on September 30, 1981, included "leftover" Mount St. Helens funds, as none of the agencies had set aside or otherwise earmarked their leftover Mount St. Helens funds.

In addition to the reduced ability to account for the use of funds which occurs when funds appropriated in response to a specific disaster are combined with other funds is the potential reduction or loss of congressional oversight on disaster funding. This effect is particularly felt when significant differences exist between the amounts made available and the amounts spent--that is, when large surpluses occur. Because supplemental disaster relief appropriations tend to be developed more quickly and receive less congressional scrutiny than regular appropriations, requests for supplemental funds make it possible for agencies to receive funding that might not have been appropriated

as readily under normal circumstances. In the case of Mount St. Helens, agencies obtained about \$560 million more than they needed and were free to spend those funds for other disasters or purposes without advance congressional review. While we neither specifically looked for nor found evidence that agencies were purposely inflating their requests or using their leftover funds for inappropriate purposes, in our opinion the magnitude of the leftover funds coupled with their loss of identity raise questions about whether the Congress would have authorized funds for all the purposes for which they were used.

Disaster Fund Summary for
Agencies with "Leftover"
Mount St. Helens Funds

	<u>Agricultural</u> <u>Stabilization</u> <u>and Conserva-</u> <u>tion Service</u>	<u>Federal</u> <u>Emergency</u> <u>Management</u> <u>Agency</u>	<u>Federal</u> <u>Highway</u> <u>Adminis-</u> <u>tration</u>	<u>Small</u> <u>Business</u> <u>Adminis-</u> <u>tration</u>
	----- (millions) -----			
Disaster fund balance, Sept. 30, 1979	\$ 8.07	\$ 19.69	\$ 6.62	\$ 827.97
FY 1980 regular appropriation	15.00	193.60	100.00	60.00
FY 1980 supplemental appro- priation	20.00	870.00	250.00	1,177.00
Other funding (net)	<u>-</u>	<u>-</u>	<u>-</u>	<u>674.79</u>
Total available in FY 1980	<u>\$43.07</u>	<u>\$1,083.29</u>	<u>\$356.62</u>	<u>\$2,739.76</u>
Disaster funds obligated in FY 1980:				
For Mount St. Helens	(1.32)	(13.71)	(14.73)	(13.26)
For other disasters	<u>(18.72)</u>	<u>(835.39)</u>	<u>(274.82)</u>	<u>(1,856.65)</u>
Total FY 1980 obligations	<u>(\$20.04)</u>	<u>(\$849.10)</u>	<u>(\$289.55)</u>	<u>(\$1,869.91)</u>
Disaster fund balance, Sept. 30, 1980	\$23.03	\$234.19	\$ 67.07	\$ 869.85
FY 1981 regular appropriation	10.00	358.45	100.00	325.00
Other funding (net)	<u>-</u>	<u>-</u>	<u>-</u>	<u>871.08</u>
Total available in FY 1981	<u>\$33.03</u>	<u>\$592.64</u>	<u>\$167.07</u>	<u>\$2,065.93</u>
Disaster funds obligated in FY 1981:				
For Mount St. Helens	(2.02)	(20.33)	(7.33)	(52.61)
For other disasters	<u>(7.89)</u>	<u>(208.64)</u>	<u>(132.08)</u>	<u>(1,688.87)</u>
Total FY 1981 obligations	<u>(\$ 9.91)</u>	<u>(\$228.97)</u>	<u>(\$139.41)</u>	<u>(\$1,741.48)</u>
Disaster fund balance, Sept. 30, 1981	23.12	363.67	27.66	324.45
FY 1982 regular appropriation	<u>8.80</u>	<u>301.69</u>	<u>100.00</u>	<u>640.00</u>
Total available for FY 1982	<u>\$31.92</u>	<u>\$665.36</u>	<u>\$127.66</u>	<u>\$964.45</u>

CONCLUSIONS

Legislative history shows that the Congress provided about \$946 million in response to the Mount St. Helens disaster in the 1980 supplemental appropriation. However, because the Congress did not specifically earmark the funds in its appropriations language, the agencies were not restricted to using the funds for Mount St. Helens. Our review showed that over half the funds which had been appropriated in response to Mount St. Helens were used or are to be used for other disasters or purposes, while some Mount St. Helens recovery work had to be suspended due to insufficient funds. Some officials contend that suspending the recovery work may lead to major floods and eventually higher recovery costs. (We question some of these contentions, however, in ch. 3.) Additionally, because nearly all the appropriated funds have been spent, or at least have not been set aside for the disaster, any future Mount St. Helens recovery work will have to be funded through additional appropriations or other legislative action.

RECOMMENDATIONS TO THE CONGRESS

If the Congress desires to restrict appropriated funds in the future to specific major, unusual, or long-term disasters, it needs to limit the use of the funds to the disaster for which they are being made available. To do so, we recommend that the statutory appropriations language clearly spell out the intended use of the funds, the length of time the funds are to be committed for their intended use, and the disposition of any unused funds.

If the Congress does not consider fund restrictions appropriate but believes that some control is needed, we recommend that it designate a lead agency, such as the Federal Emergency Management Agency, to coordinate the use and, if necessary, the sharing of specific major disaster funds among the Federal agencies.

AGENCY COMMENTS AND OUR EVALUATION

We requested and received written comments on a draft of this chapter from eight Federal departments and agencies. The Departments of the Army, Commerce, Education, the Interior, and Transportation generally concurred with or had no comments on our findings, conclusions, and recommendations or made only minor or correcting comments which we have incorporated in the report. However, the Federal Emergency Management Agency (FEMA), the Department of Agriculture, and the Small Business Administration (SBA) did not concur with all of our recommendations. (All agencies' specific comments and our responses to them are contained in apps. IV-XIII.)

FEMA stated that it does not support a concept of earmarking funds for specific disasters, since that practice could delay timely response to a crisis and add unnecessary complications when actual expenditures vary from initial assessments. FEMA believes that funds appropriated by the Congress should be available for any major disaster or emergency which might arise.

Neither the draft report nor this final report explicitly recommends that the Congress earmark funds for specific disasters. Rather, we point out that if the Congress wishes to make funds available for particular disasters (as our review of the legislative history of the Mount St. Helens appropriation shows was contemplated by the requesting Federal agencies, the President, and the House and Senate Appropriations Committees), or if it wishes to restrict the funds to the disaster, it needs to either place limitations or controls in appropriations language or designate a lead agency to coordinate fund use.

In fact, the report recognizes that the concept of earmarking funds is not appropriate when the Congress is routinely replenishing agency disaster accounts, such as the President's Disaster Relief Fund, to provide funds for unforeseen disasters which may occur in the future. In the case of Mount St. Helens, however, the disaster had already occurred and most of the agencies, including FEMA, were clearly justifying funds for that disaster, not others. If the agencies intended at the time of their requests to use some of the appropriations for disasters or purposes other than Mount St. Helens, we believe that these other actual or potential uses should have been disclosed so that the Congress could have had the opportunity to determine whether the intended uses were acceptable.

As it turned out, the excessive estimates coupled with the absence of restricting language in the appropriations act allowed the Federal agencies to use as much as \$560 million--over half the amount the Congress appropriated--for purposes other than the Mount St. Helens disaster for which the funds were explicitly requested. We believe that the magnitude of the surplus funds, and the reduced congressional oversight and agency accountability which resulted, justify the suggestion that the Congress consider whether it wishes to impose financial restrictions in future situations of similar circumstances.

FEMA also did not agree that it should be appointed to coordinate funding requests, approvals, and allocations to various agencies; it believed that that role is the responsibility of the Office of Management and Budget. However, our recommendation did not relate to funding requests, approvals, or allocations. Rather, our recommendation relates to the need for an agency to coordinate the use and, if necessary, the sharing of major disaster

funds among Federal agencies after their initial appropriation and allocation. While our recommendation does not point to FEMA as the only agency that could take the lead to coordinate funding (we use the phrase "a lead agency, such as FEMA"), we believe there is ample reason to consider FEMA as the appropriate lead agency in this case. FEMA was created in July 1979 under an executive reorganization which merged organizational elements of several Federal agencies to concentrate and improve Federal emergency management and assistance. In Reorganization Plan No. 3 of 1978, which called for consolidating emergency preparedness, mitigation, and response activities and establishing FEMA, the President's transmittal message to the Congress stated that the plan rested on several fundamental principles, of which the first was the lead-agency concept.

FEMA's current responsibilities include administration of disaster response and recovery assistance for State and local governments and coordination of disaster relief activities of other Federal agencies. FEMA can require other Federal agencies to provide disaster assistance with or without reimbursement to the agencies from the President's Disaster Relief Fund, and in many cases FEMA uses temporary staff of other Federal agencies. As FEMA is the President's disaster coordinating agency and administrator of the President's Disaster Relief Fund, we believe it is appropriate to recommend that the Congress consider FEMA as a potential lead agency to coordinate fund use for major disasters.

In a related comment, the Department of Agriculture stated its belief that a lead agency is not needed at all, although it did not express any reservations about our alternative recommendation that the Congress consider earmarking funds for certain disasters. As our report points out, when the Congress appropriates funds specifically in response to a major disaster, additional safeguards may be needed to ensure that the funds are available for the disaster for which they were intended. In our opinion, either alternative--funds restrictions or a lead agency--is a viable way of providing the additional safeguards.

FEMA also stated that our draft report tends to generalize on a unique situation, citing particularly the unknown threat posed by the volcanic ash which contributed greatly to the excessive cost estimates. We agree that the eruption of Mount St. Helens posed many unique problems, although we believe that any major disaster is likely to pose some problems not encountered previously. What we do not believe is unique to Mount St. Helens or any other major disaster is the tendency of Federal agency officials to make their disaster cost estimates on a "worst-case" basis. This practice generally leads to excessive estimates and, when funds are appropriated by the Congress in specific response

to a known disaster, to large surpluses, reduced accountability, and lessened or lost congressional oversight. It is for these reasons that we believe additional controls may be needed to ensure that the recovery needs of the specified disaster are reasonably satisfied.

Finally, SBA pointed out that the conference report on the Supplemental Appropriations and Rescission Act of 1980 contained language specifying that none of the disaster funds being appropriated to that agency, including the \$430 million it requested for the Mount St. Helens disaster, were to be reserved for any specific disaster. We agree, and have included the conference report language in this report. However, we believe that the magnitude of the surplus which occurred in the Mount St. Helens request--in SBA's case about \$365 million left over for other uses, or about 85 percent of its request--points up the need for additional controls on major disaster funding. SBA's surplus represented well over half the \$560 million total of leftover funds.

CHAPTER 3

CORPS OF ENGINEERS OVERESTIMATED

POTENTIAL FLOOD DAMAGES AND FUTURE FUNDING NEEDS

FOR MOUNT ST. HELENS

Immediately after the Mount St. Helens eruption in May 1980, the Corps of Engineers' Portland (Oregon) District began a massive rehabilitation project to dredge and restore the heavily damaged river system which drains the area surrounding the volcano. In total, the Corps spent about \$275 million from fiscal year 1980 and 1981 funds to remove an estimated 100 million cubic yards of sediment and do other maintenance work on the Toutle, Cowlitz, and Columbia Rivers.

Despite these large expenditures--the most by any Federal agency responding to the eruption--the Corps predicts that long-term, potentially devastating problems will continue to occur as a result of the original eruption. The Corps' principal concern centers on the threat of continued flooding on the Toutle and Cowlitz Rivers and its potential impact on life, property, and the area's economy.

CORPS OVERSTATED THE IMPACT OF CONTINUED FLOODING

The threat of continued flooding formed the Corps of Engineers' July 1981 comprehensive justification for a proposed \$939 million, 15-year river maintenance program to prevent damages and other economic losses which the Corps estimated at \$1.9 billion. Also, as discussed in chapter 2, the flood threat and the Corps' estimate of damages and losses have been cited frequently by State and local officials and the press in an effort to persuade the Administration and the Congress to provide additional dredging funds to the Corps. The Corps predicted that, if dredging and other river maintenance activities are not continued, key railroad and Interstate 5 highway bridges over the Toutle River will be destroyed in the mid-1980's because the Toutle and Cowlitz River channels will have filled with sediment and will flood from normal rainfalls.

Federal and State highway officials told us, however, that the bridges most likely will not be destroyed from normal flooding as the Corps predicted. If the bridges remain intact, our review shows that economic losses will be only a few million dollars. Even if the bridges are destroyed, our analysis shows that losses likely will be between about \$160 million and \$400 million rather than the \$1.9 billion predicted by the Corps. We believe that our analysis casts serious doubt on the Corps' information and raises questions on the amount of long-term funding the Congress should provide to the Corps for Mount St. Helens-related flood control work.

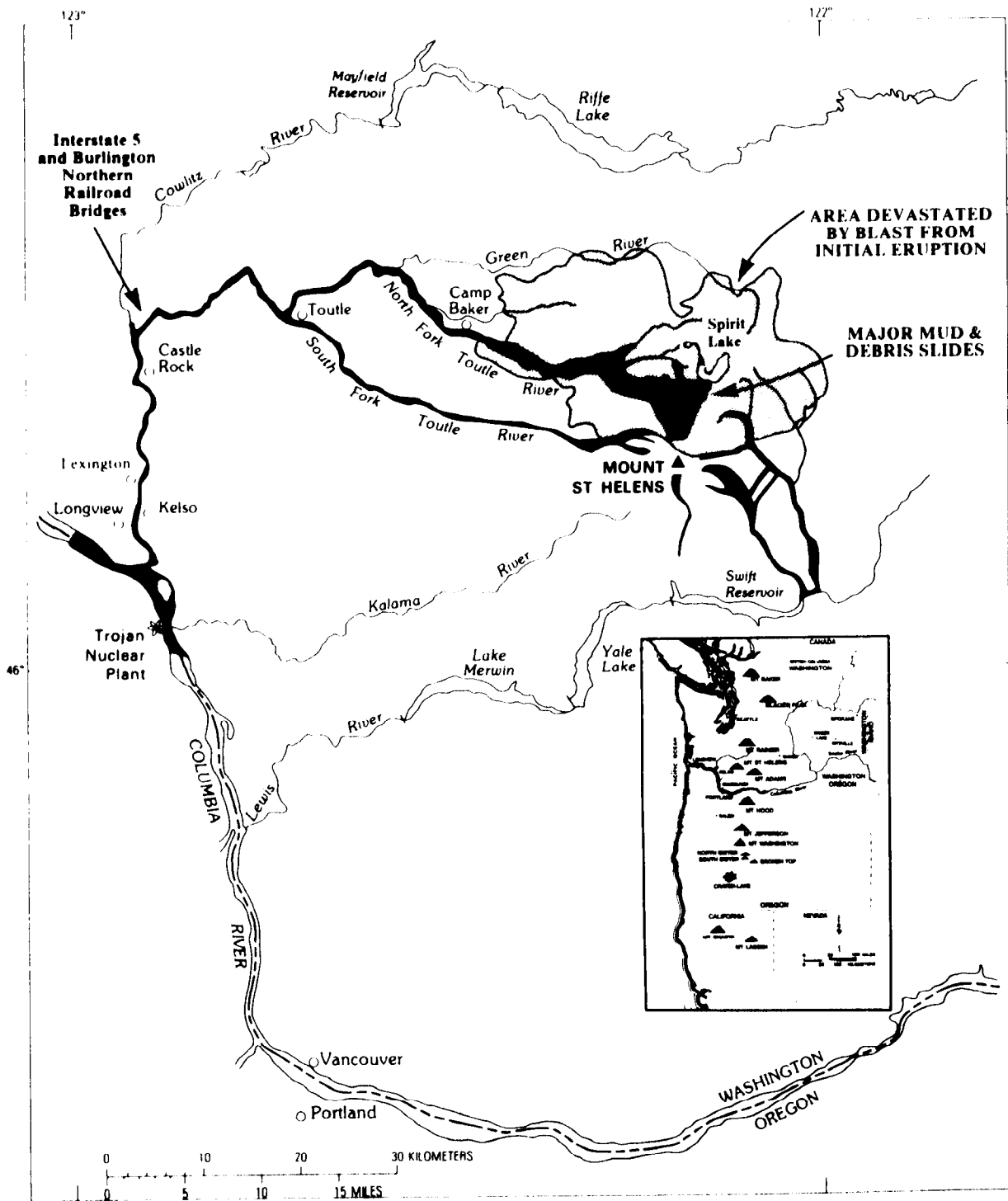
In December 1981 we notified the Corps of the preliminary results of our economic analysis. Two months later a Corps official testified at House Appropriations Committee hearings that the agency had recently reduced its estimates of sediment infill to the rivers and no longer believed that the Toutle River bridges were in immediate danger. Therefore, the Corps expected the economic impact of flood damages to be greatly reduced from its original \$1.9 billion estimate. The Corps had not, however, revised its calculations of impacts, determined the effect of the reduced estimates on its future work and funding needs, or notified the Congress of its new damage estimates and funding needs.

In May 1982 the President directed that the Corps make a study of the long-term dredging problem and reassess its future funding needs for Mount St. Helens recovery. In July 1982 the Congress appropriated \$18 million to the Corps specifically for dredging the Toutle and Cowlitz Rivers, but as of September 1982 the Corps was indicating that it did not intend to use the funds for that purpose because it did not then consider river dredging as an emergency need.

Background of problem

The May 18, 1980, eruption of Mount St. Helens displaced about 4 billion cubic yards of material. Most of the material formed mudflows and moved through the north and south forks of the Toutle River, the Cowlitz River, and into the Columbia River. An estimated 3 billion cubic yards was deposited in the upper 14 miles of the North Fork Toutle River and an estimated 215 million cubic yards ended up in other portions of the Toutle as well as the Cowlitz and Columbia Rivers. This material caused significant reductions in channel capacities of the rivers. For example, the Cowlitz River channel capacity at the community of Castle Rock was reduced from 70,000 cubic feet per second to 13,000 cubic feet per second, causing a flood equal to a 250-year flood level. 1/ (See map on p. 32.)

1/Flood level, or flood protection level, is defined as the frequency, in years, in which a flood of a given severity is likely to occur. Thus, a 250-year flood refers to a flood of such severity that it would normally be expected to occur at that location only once every 250 years. In statistical terms, such a flood would have a 0.004 probability of occurring in any given year. Similarly, a 10-year flood would be expected to occur, historically, once every 10 years and thus has a probability of occurring in any given year of 0.1, or 10-percent.



Location map of area near Mount St. Helens directly affected by the May 18, 1980 eruption. Inset shows Mount St. Helens and other volcanos in the Cascade Mountain Range along the Pacific Coast.

The Corps of Engineers' primary concern after the eruption was the threat of continued flooding resulting from the enormous amount of silt, logs, and other debris in the rivers and the significantly reduced channel capacities. To restore the Toutle-Cowlitz River Basin and reduce the threat of future flooding, the Corps spent about \$235 million through fiscal year 1982 to

- reestablish a flood control channel at 50,000 cubic feet per second for portions of the Cowlitz and Toutle Rivers;
- construct two debris-retaining structures--one each on the north and south forks of the Toutle River;
- construct eight sediment stabilization basins on the Toutle River;
- raise or extend four levee systems protecting the cities of Longview, Kelso, Lexington, and Castle Rock, Washington, to a 500-year flood level;
- place rock on the west bank of the Cowlitz River to protect State Highway 411 and sediment disposal areas; and
- construct outlet channels at Coldwater and South Castle Lakes.

Corps' analysis of threat

In addition to attacking the immediate problems created by the eruption--channel infill and flooding--the Corps of Engineers' Portland District looked at the future problems that would occur as ash, dirt, and other debris continue to wash into the rivers by rainfall and snowmelt. The Corps estimated that about 1 billion cubic yards of material will move downstream between 1982-96, and about 380 million cubic yards of this material, comprised of sand-sized particles, will flow through the Toutle River and eventually settle in the Cowlitz and Columbia Rivers. To better assess the exact nature of these future problems, the Corps used its Waterways Experiment Station and three private consultants to study, model, and forecast sediment deposition in the affected rivers.

The Corps' analysis concluded that huge quantities of material still exist on the mountainside and will be carried downstream with future high runoffs, filling in the river channels and causing a flood threat, unless the material is removed from the Toutle and Cowlitz Rivers or structures are put in place to trap it. According to the Corps' analysis, the debris avalanche can be expected to contribute about 35 million cubic yards of sediment annually for each of the next 5 years (1982-86). By

1987 and beyond, the debris avalanche is expected to produce decreasing amounts of sediment, and by 1996 sediment yield from the mountain will be at such a low rate that maintenance excavation in the Toutle and Cowlitz Rivers will no longer be required for flood control.

The following table summarizes the results of the Corps' July 1981 study and shows the quantities of sediment predicted to flow through the Toutle River and settle in the Cowlitz and Columbia Rivers from 1982 through 1996.

Estimate of Sediment Deposition

<u>Fiscal year</u>	<u>Sand yield to Cowlitz River</u>	<u>Sand deposition</u>	
		<u>Cowlitz</u>	<u>Columbia</u>
----- (million cubic yards) -----			
1982	35	15	20
1983	35	7	28
1984	35	6	29
1985	35	5	30
1986	35	4	31
1987	34	3	31
1988	33	2	31
1989	32	0	32
1990	29	- 2	31
1991	26	- 6	32
1992	21	- 8	29
1993	14	- 10	24
1994	9	- 8	17
1995	5	- 6	11
1996	<u>2</u>	- <u>2</u>	<u>4</u>
Total	<u>380</u>	<u>0</u>	<u>380</u>

Based on these sediment flow predictions, the Corps' Portland District developed and proposed a 15-year program to address the excavation needs caused by continued sediment deposition. The Corps estimated the program would cost \$939 million over the 15-year period.

Corps' analysis of "do-nothing" scenario

In conjunction with its sediment-flow study, the Corps issued a report in July 1981 entitled "Long-Term Program for Cowlitz and Toutle River Basins." This report analyzed the conditions and

predicted the events and subsequent economic losses to the region if the Corps took no further action to stabilize or remove sediment from the Toutle and Cowlitz Rivers (a so-called "do-nothing" scenario).

The Corps' analysis indicated that if no further action were taken, large volumes of debris could be expected to fill two debris-retaining structures on the Toutle River, which would probably fail by the winter of 1982-83. If they did fail, considerable damage would be done to these structures, to access roads, to timber company work roads, and to a fish facility.

Without the debris-retaining structures, the Corps predicts that during the next 15 years about 380 million cubic yards of sand-sized material will move downstream through the Toutle River to the Cowlitz and Columbia Rivers. The Burlington Northern Railroad bridge and the two interstate highway bridges near the mouth of the Toutle River will be destroyed as the rivers fill with sediment. The Corps believes the bridges will fail either from infill of the river channel forcing flood waters over the bridge approaches and against the bridges, from the effects of a meandering river attacking the bridge abutments, or a combination of the two.

The Corps' dredging program after the May 18, 1980, eruption left the cities of Longview, Kelso, Lexington, and Castle Rock, Washington, with levees providing a 500-year level of flood protection--better protection than before the eruption. However, if additional sediment entering the rivers is not removed, the protection will decrease as the river channels fill. The Corps predicts that, without funds to dredge, by 1989 the situation along the Cowlitz River will be much as it was on May 19, 1980, the day after the major eruption. The river channel will be substantially filled; existing levee systems around the populated areas of Castle Rock, Lexington, Longview, and Kelso will provide little or no flood protection; and virtually all unleveed areas will be subject to further damage. Because of the sediment-filled river, side drainages will be blocked, causing flooding and creating slope failures along the interstate highway corridor. Communities and farms, residences, commercial/industrial structures, power substations, storm drainage systems and other utilities, mobile homes, highways, and highway and railroad bridges--basically the entire area of the flood plain--could be inundated. Sediment that flows through the Cowlitz River will be deposited in the Columbia River or the ocean. Most material deposited in the Columbia River is expected to settle in the navigation channel and will have to be removed to keep the shipping lanes open.

Corps' assessment of economic impacts of doing nothing

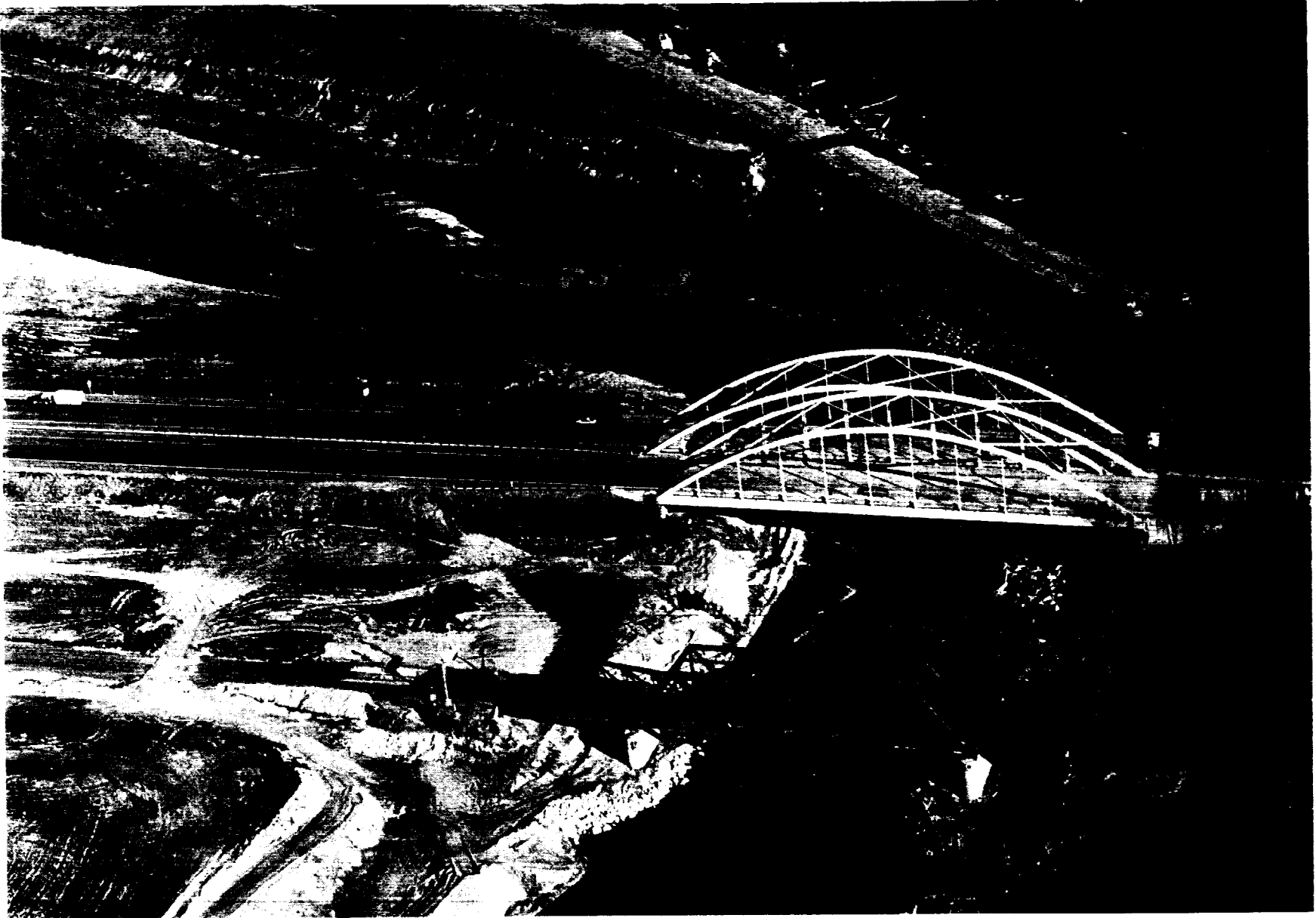
According to the Corps' analysis, severe economic impacts will occur if funds are not appropriated for further dredging and other flood control work along the Cowlitz and Toutle Rivers. These impacts will result from reduced levels of protection provided by the four major levees along the Cowlitz River, from reduced protection of unleveed areas along the Cowlitz River, and from an increased probability of severe damage to the main north-south interstate highway and railroad corridors. The following table summarizes the Corps' projected \$1.9 billion losses by year and type of loss.

Corps' Annual Damage Estimate
("Do-nothing" Scenario)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990-96</u>	<u>Total</u>
	----- (millions) -----									
Flood losses	\$ 3.8	\$ 4.8	\$ 6.6	\$ 7.6	\$ 8.8	\$ 9.6	\$ 11.3	\$ 11.3	\$ 39.6	\$ 103.4
Transportation losses	14.0	54.6	71.3	89.5	665.4	673.9	124.6	124.6	-	1,817.9
Total	<u>\$17.8</u>	<u>\$59.4</u>	<u>\$77.9</u>	<u>\$97.1</u>	<u>\$674.2</u>	<u>\$683.5</u>	<u>\$135.9</u>	<u>\$135.9</u>	<u>\$39.6</u>	<u>\$1,921.3</u>

As the table shows, over 95 percent of the total expected annual losses projected by the Corps through 1989 result from transportation losses--that is, from destruction of the railroad and Interstate 5 highway bridges and related facilities. These losses are estimated to total about \$1.8 billion, including both costs to reconstruct the bridges and economic losses resulting from rerouting traffic via less direct routes during reconstruction.

The Burlington Northern Railroad twin-track mainline and the two side-by-side Interstate 5 highway bridges cross the Toutle River near the confluence of the Cowlitz and Toutle Rivers. The mainline railroad tracks carry 40 to 45 trains daily, including 6 AMTRAK passenger trains, and about 100,000 tons of commerce. The Interstate 5 bridges have an average daily traffic count of about 26,000 vehicles. Interrupting transportation flow along these corridors would severely hurt the regional economy, since they form the key north-south link between Seattle-Tacoma, Washington, and Portland, Oregon. If no further dredging or



The Interstate 5 bridges and Burlington Northern Railroad bridge over the Toutle River.

Photo Courtesy of *The Daily News*, Longview, Wash.

maintenance is done, according to the Corps, the railroad bridge will be subject to damage yearly beginning in the winter of 1983-84. Total destruction of the bridge is predicted in 1985-86. The two Interstate 5 highway bridges were constructed at a slightly higher elevation and can therefore withstand higher flood levels. Even so, damage is expected annually beginning in the winter of 1983-84 and in 1986-87 the Interstate 5 bridges will be destroyed by normal yearly rainfalls and floods. (These Corps projections are shown in detail in app. II, p. 86.)

OUR EVALUATION OF THE CORPS' ECONOMIC ASSESSMENT

Our review showed that the Corps' projected \$1.9 billion in economic losses, primarily from destruction of the highway and railroad bridges, is greatly overstated because the Corps used inaccurate assumptions and data to estimate the economic impact of its "do-nothing" scenario. Our discussions with Federal and State highway officials also indicated that the bridges, particularly the highway bridges, are unlikely to be destroyed, further reducing the probable economic losses.

Economic impact if bridges do not fail

The Corps predicated its analysis and its funding program on the assumption that the railroad and two Interstate 5 bridges will be destroyed by normal flooding. However, State and Federal highway officials told us that these structures probably will not fail because they withstood the May 18, 1980, eruption and have been strengthened considerably since that event. (See app. II for details.) If the bridges survive, the only transportation-related losses which might result involve periodic bridge damage and loss of bank areas requiring additional riprap ^{1/} as was experienced during the May 18, 1980, eruption. In May 1980 about \$465,000 was spent to repair the bridges, and later \$790,000 was spent on riprap to protect the bridge abutments. Thus, if the bridges are not destroyed, the transportation losses should amount to only a few million dollars rather than the nearly \$2 billion estimated by the Corps.

Economic impact if bridges do fail

We also analyzed and recalculated the economic losses which would result if the bridges do fail as predicted by the Corps. We found that the Corps used inaccurate assumptions and data

^{1/}Loose, broken stones placed as a covering on a river bank to reduce erosion.

in making its analyses, particularly on the length of time vehicle and train traffic would have to be rerouted via costlier routes and the time and cost to reconstruct the bridges. These assumptions resulted in greatly overestimated losses from a "do-nothing" scenario. (See app. III for details, assumptions, and calculations of the Corps' and our analyses.)

The Corps' analysis predicts that, if no further dredging is done, the Burlington Northern Railroad bridge will fail during the winter of 1985-86 and the two Interstate 5 highway bridges will fail the following year. The Corps also predicts that the bridge failures and related flood losses will result in about \$1.9 billion of damages and economic losses to the area. These losses include costs to rebuild the destroyed structures, to reroute train commerce via more lengthy routes, to reroute car and truck traffic, and associated flood losses.

We analyzed these same factors and calculated the costs and economic losses, in a low and high range, which would result from bridge failure and flooding. Our low estimate predicts losses of \$166 million and our high estimate predicts losses of \$402 million, in contrast with the Corps' \$1.9 billion estimate. Both our and the Corps' analyses assume the bridges will fail; differences in several other major assumptions and data account for the considerable differences in economic estimates. 1/

The most significant and inaccurate assumption made by the Corps in estimating economic losses if the bridges fail is that no temporary bridges will be built and that all traffic will

1/Also, the Corps' analysis did not include the impact of sediment flow on maintaining the navigation channel in the Columbia River. In the absence of upstream dredging--on the Toutle and/or Cowlitz Rivers--sediment will continue to move downstream into the Columbia River. In May 1982 the Corps' District Engineer, Portland District, told us that recent monitoring data indicates that without upstream sediment removal, about 10 million cubic yards of material will be deposited in the Columbia River in both 1982 and 1983 (rather than the 20 and 28 million cubic yards estimated by the Corps in July 1981) and will cost about \$20 million annually to remove, over and above the cost of the Corps' routine, ongoing Columbia River dredging program. In addition, sediment disposal sites near the river will be depleted, resulting in increased costs to haul the dredged material to more distant sites. A complete analysis of all economic impacts would require including these Columbia River dredging costs in both the Corps' and our analyses.

have to be diverted to more distant and costlier routes for the entire highway and railroad bridge reconstruction periods of 2 and 4 years, respectively. This assumption does not realistically reflect what would happen if either or both bridges fail. According to State highway officials, a temporary highway bridge would be put in place in 2 to 4 weeks and traffic along the Interstate 5 corridor would move almost normally. Similarly, according to Burlington Northern Railroad officials, a temporary railway timber trestle would be constructed in about 10 days, allowing trains to continue using the north-south corridor until a permanent structure was rebuilt.

Second, the Corps' calculations assumed that all rerouting of highway traffic during the entire 2-year highway bridge reconstruction period would be over U.S. Highway 101, an 84-mile diversion from the direct route. However, State highway officials showed us their formal contingency plans to reroute highway traffic, for only a 2- to 4-week period until a temporary bridge is installed, via nearby existing highways that would add only 1 to 4 miles to the direct route. The 84-mile diversion via U.S. 101 would be used as a last resort only if all other roads in the local area were disrupted.

Third, the Corps assumed it would take 4 years to rebuild the railroad bridge about 4 feet higher and raise 25 miles of track at a cost of about \$125 million, while Burlington Northern Railroad officials estimate construction time at about 6 months, with only 1 mile of track needing to be raised, at a cost of about \$5.8 million. Union Pacific Railroad officials, principal users of the track, concurred with Burlington's time estimates and temporary fixes to restore traffic.

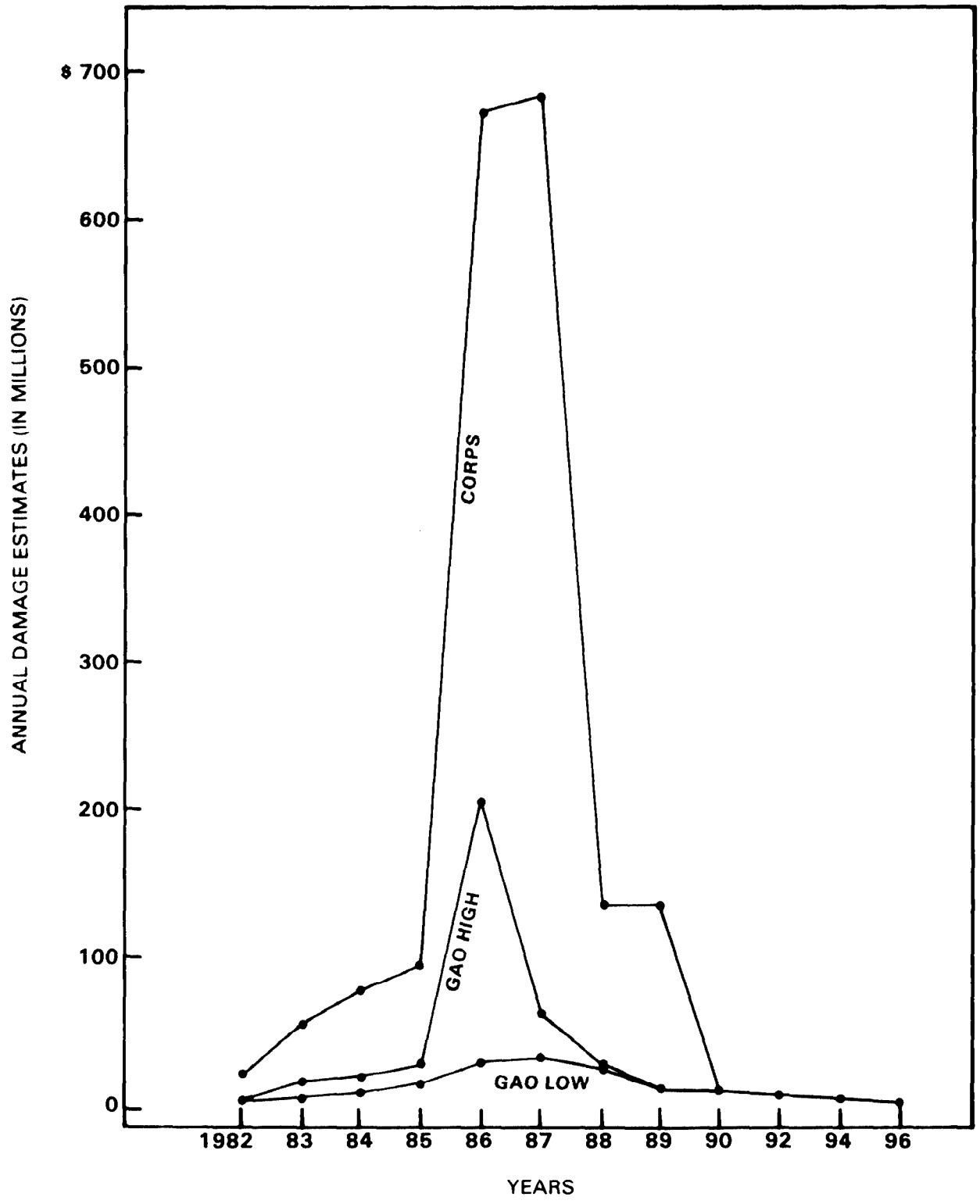
Fourth, the Corps assumed that AMTRAK would cease operating its six daily passenger trains for the 4-year bridge reconstruction period, with a net profit reduction of about \$660,000. Railroad officials, however, stated that AMTRAK could continue normal operations over the temporary bridge and should experience few delays and profit losses.

The following table summarizes the estimated economic impact resulting from transportation and flood losses as calculated by us and by the Corps. As shown, our analysis estimates the potential losses to lie between \$166 and \$402 million; the Corps estimates losses at \$1.9 billion. (The estimates are also shown in fig. 1 on p. 42 in graphic form and on p. 98 in greater detail.)

Comparison of Estimated Total Annual Economic Losses
GAO and Corps Analyses

	<u>GAO</u>		<u>Corps of</u>
	<u>Low</u>	<u>High</u>	<u>Engineers</u>
	----- (millions) -----		
1982	\$ 3.80	\$ 3.80	\$ 17.80
1983	5.85	10.40	59.40
1984	8.70	17.80	77.90
1985	10.75	24.40	97.10
1986	28.60	207.50	674.20
1987	30.35	61.30	683.50
1988	26.90	26.30	135.90
1989	11.60	11.30	135.90
1990-96	<u>39.60</u>	<u>39.60</u>	<u>39.60</u>
Total	<u>\$166.15</u>	<u>\$402.40</u>	<u>\$1,921.30</u>

FIGURE I
GAO AND CORPS ANNUAL DAMAGE ESTIMATES



Corps briefed on our evaluation
of its economic assessment

On December 1, 1981, we briefed the Corps' Portland District Engineer on the preliminary results of our economic analysis. We pointed out our belief that the Corps' analysis greatly overstated both the risk of damage and the potential losses.

On February 17, 1982, the Subcommittee on Energy and Water Development, House Committee on Appropriations, asked us to submit questions for its use in February 22 appropriations hearings on the Corps of Engineers. At the hearings, the subcommittee asked the Corps about projected sediment infill, anticipated bridge destruction, and resulting economic losses. The Corps' North Pacific Division Engineer responded that the agency had recently reevaluated its position and now believed (1) that sediment deposition will be substantially less than originally forecast, (2) that the Toutle River railroad and highway bridges are not in immediate danger, and (3) that the economic losses originally predicted by the Corps are greatly overstated. Among other questions, the division engineer was asked and responded:

- How does the Corps' estimate of sediment transport compare with other estimates? Response: The estimate compares favorably with other estimates but, based on more detailed studies, the Corps now concludes that up to 20 million cubic yards of material [instead of the originally predicted 35 million cubic yards] could settle in the Cowlitz and Columbia Rivers. This is almost one-third less than our previous estimate.
- Does the Corps still believe that the railroad and Interstate 5 bridges will be destroyed in view of measures to strengthen the structures and in contrast with State and Federal highway opinions? Response: Although the long-range integrity of the bridges, without further dredging, will depend on future weather conditions and the extent to which the significant remaining eruption deposits in the upper Toutle basin are carried down the river, the Corps currently feels that there is no imminent danger to the bridges.
- How do State highway and Burlington Northern Railroad plans to restore traffic movement to acceptable levels in weeks while permanent and improved structures are built affect the Corps' prediction of economic losses? Response: With the proposed plans, which were not in effect when our earlier projections were made, the estimate of economic loss would be greatly reduced.

PRESIDENTIALLY ORDERED STUDY OF
LONG-TERM SEDIMENT-TRANSPORT PROBLEMS

In conjunction with our finding that the Corps of Engineers had overestimated potential flood damages and future funding needs for Mount St. Helens, our draft report proposed that the Secretary of the Army direct the Chief of Engineers to recalculate future flood losses and reevaluate the need for and cost of additional dredging and other flood control work. We subsequently learned that on May 18, 1982, after several months of discussion within the Corps of Engineers and the Department of the Army, the President had directed the Secretary of Defense to have the Corps prepare a comprehensive long-term management plan that would include the reassessments we were proposing.

A comprehensive study of Mount St. Helens needs had been proposed as early as January 28, 1982, by the Assistant Secretary of the Army (Civil Works) in a letter to several members of the Washington State congressional delegation. The delegation members had earlier written the Director of the Office of Management and Budget about the need for additional Corps funds for Mount St. Helens recovery efforts. In his response, the Assistant Secretary stated that a transition must be made, in his view, from a posture of responding to the immediate emergency created by the May 18, 1980, eruption--an unforeseen situation for which the use of the Corps' Flood Control and Coastal Emergencies funds was appropriate--to a posture of systematically addressing the continuing threat posed by the remaining sediment in the Toutle River Basin. Therefore, in lieu of additional funding, the Assistant Secretary stated that he was proposing that the Corps make a year-long reconnaissance study of flood control and navigation problems resulting from the eruption. The study, which the Assistant Secretary believed offered the most hope of identifying a long-term solution to the Mount St. Helens problem, would assess costs, benefits, and environmental impacts of alternative solutions.

In his May 18, 1982, directive to the Secretary of Defense, the President stated that he had been advised that the huge deposits of sediment carried by runoff into the Toutle, Cowlitz, and Columbia Rivers had created a long-term problem that could increase flood hazards and impair navigation. Notwithstanding the millions of dollars already spent for emergency measures related to Mount St. Helens, according to the President, the Government must take steps to ensure that measures to manage the long-term threat are guided by a well-thought-out, comprehensive plan. The President, therefore, requested that the Corps prepare a comprehensive plan, within 18 months, to

- relate increases in flood hazards, as well as navigation, dredging, and other problems directly to projected movements of sediment;
- formulate alternative strategies for addressing these problems;
- evaluate the alternatives on the basis of engineering feasibility, economic merit, and environmental sensitivity; and
- recommend a program of management measures to deal with the flood and navigational problems and the resources required to solve the problems.

The Corps' so-called sediment-transport plan is to be sufficiently specific to permit detailed planning of individual program measures and is to recommend a division of responsibility, both as to implementation and funding, between Federal, State, and local entities. Finally, the President ordered that the Department of the Army coordinate the study with, and seek the assistance of, State, county, and affected local community officials, and Federal agencies possessing relevant data and expertise.

CONGRESSIONAL APPROPRIATION OF
\$18 MILLION FOR CORPS DREDGING

Our review also disclosed that, despite several efforts in 1981 and 1982 by Federal, State, and local officials, Members of Congress from the Pacific Northwest, and the media to encourage the Congress and the President to make additional dredging funds available to the Corps of Engineers, the efforts had met with little success. As of mid-July 1982, the Corps had not received funds to carry out the beginning stages of its proposed 15-year, \$939 million excavation program and consequently had only been able to monitor the situation.

On July 18, 1982, however, the Congress earmarked \$18 million for the Corps' use on the Cowlitz and Toutle Rivers. According to the Urgent Supplemental Appropriations Act of 1982 (Public Law No. 97-216), the Corps' appropriation was

"For an additional amount for 'Flood Control and Coastal Emergencies,' \$40,000,000, to remain available until expended: Provided, that \$18,000,000 of the funds provided shall be for flood control measures and features on the Cowlitz and Toutle Rivers in the State of Washington."

Despite the availability of the \$18 million for long-term dredging, the Corps does not intend to use the funds except for a flood emergency. According to local press accounts in mid-August 1982, a Corps headquarters official stated that the administration opposed spending the funds for dredging unless flooding appeared imminent. He stated that there was no plan to use the funds because the Corps did not see an emergency. Even though volcanic sediment from Mount St. Helens has been steadily filling the Cowlitz River after washing down from the Toutle River, the official said the sediment has not drastically reduced the river's ability to carry water. While there is local public concern that the river is as clogged as it was after the May 1980 eruption--with more than 45 million cubic yards of silt--the Corps believes that only about 12.5 million cubic yards has flowed into the river since the agency's dredging operations ended about May 1981. The press accounts also reported that members of the Washington State congressional delegation were trying to free the money, but the \$18 million was in a discretionary account that gave the Corps considerable leeway in deciding when and how to spend the money. The Corps official also reportedly stated that the Corps did regard the newly identified Spirit Lake flooding hazard as an emergency, and that some of the \$18 million might be used there if the President decided to declare the threat an emergency. (The President declared the Spirit Lake hazard an emergency on August 19, 1982--see ch. 4.)

A Federal Emergency Management Agency memorandum dated August 24, 1982, indicated that the Corps still did not consider the Toutle and Cowlitz River dredging situation as an emergency for which the use of the \$18 million was appropriate, even though the Congress provided the funds for that purpose. According to the document, the Corps held that before the volcano erupted, the Cowlitz River had only a 100-year flood protection level, while currently, without additional dredging, the river has a 250-year protection level.

In a conversation with a Corps headquarters official on September 21, 1982, we were told that the Corps still did not intend to use the \$18 million for dredging on the Toutle or Cowlitz Rivers, but that it had allocated \$11.5 million of the funds to help finance the interim emergency measures currently being undertaken to reduce the flood threat at Spirit Lake.

CONCLUSIONS

Our analysis showed that economic losses, in the absence of river maintenance, should be no more than about \$166 million to \$402 million even if the highway and railroad bridges fail--and only a few million dollars in the more likely event that they do not fail--rather than the \$1.9 billion estimated by the Corps of Engineers. We believe that our analysis casts serious doubt on the information the Corps used to support its future funding needs and raises questions on the amount of long-term funding the Congress should provide the Corps for Mount St. Helens-related flood control work.

We recognize that immediately following a severe disaster tremendous pressure is placed on Government agencies to provide estimates and assessments quickly and that a certain amount of data and methodology error can be expected. However, we believe that the nature and magnitude of the problems discussed in the report cast doubt on whether the Corps used reasonable safeguards to ensure that it developed accurate, reliable information.

The Corps indicated in February 1982 appropriations hearing testimony that it had recently reduced its estimate of sediment flow from the mountainside, but it had not calculated the specific impact of this change on potential flooding and probable bridge failure, on potential economic losses to the region, or on the need for and cost of additional dredging and flood control work. These revised calculations and the use of more realistic assumptions relating to the economic impacts of bridge failure should, however, be included in the May 1982 Presidentially directed study that the Corps is currently making.

RECOMMENDATION TO THE SECRETARY OF THE ARMY

In making the Presidentially directed study of long-term impacts and future funding needs for Mount St. Helens recovery, we recommend that the Secretary direct the Chief of Engineers to use more realistic assumptions relating to the probability of failure of the highway and railroad bridges over the Toutle River, and to the potential economic losses to the region if the bridges do fail.

RECOMMENDATION TO THE CONGRESS

Until the Corps of Engineers provides more reliable information on its long-range needs for Mount St. Helens recovery, we recommend that the Congress approve funds only for emergency or other immediately needed maintenance work for dredging and flood control related to the Mount St. Helens disaster.

AGENCY COMMENTS AND OUR EVALUATION

We requested and received written comments on a draft of this chapter from FEMA, the Department of the Army, the State of Washington, and the Burlington Northern Railroad. (All four organizations' specific comments and our responses to them are contained in apps. IV-VII.) The Railroad concurred with our calculations of the potential economic impacts of railroad bridge destruction. FEMA, the Army, and the State of Washington, however, believed that our assessment of the Corps' economic analysis failed to consider important cost and other factors. In addition, the Army believed that our assessment was based on hindsight and that the Corps' damage estimates might still prove to be valid.

Specifically, the Army contended that our cost estimates did not consider the possibility of traffic interruptions or damage to temporary structures during reconstruction of the highway and railroad bridges; the State contended that our report ignored potential flood damages to property other than the bridges. Neither of these assertions is true. Our analysis assumed that a temporary railroad bridge would be destroyed four times in 1986 during reconstruction of a permanent bridge, and our draft report included \$42 million of estimated costs in our high-impact scenario to cover those damages. We did not calculate costs for destruction of a temporary highway bridge because, according to a State highway official, the structure would be built in such a way as to minimize the possibility of damages. However, including costs for four assumed destructions of a temporary highway bridge in 1987 would add only about \$20 million to total projected highway delay and damage costs.

Regarding the State's comment that we ignored potential flood damages, our draft report contained a discussion of the flood potential and we included, in both our high and low calculations, the same \$103.4 million in estimated flood damages that the Corps used in its analysis.

Both FEMA and the State pointed out that our draft report did not evaluate the hazardous flood potential at Spirit Lake near Mount St. Helens. We agree. That hazard was not discovered until July 20, 1982, about a week after we sent our draft report to FEMA, the State, and other parties for comment and was not declared an emergency until August 19, 1982. This report has been revised to include a discussion of the new problem. (See ch. 4.)

The report has also been revised to recognize the Presidential order of May 18, 1982, asking the Secretary of Defense to have the Corps prepare a comprehensive plan of measures to manage the long-term flooding threat from Mount St. Helens, and to reassess its future funding needs. Because the President has directed the study to be made, we are withdrawing our draft report proposal for such a study. However, the Corps' comments on our draft report indicate that it may not yet fully understand the nature of the problems with its original analysis (see the Corps' comments and our responses in app. V, items #5 and #6). Therefore, we are recommending that in making its study, the Corps use the more realistic assumptions on the likelihood of Toutle River bridge failure, and the economic losses if the bridges do fail, which are discussed in this report. We are also recommending that until the Corps completes its study, the Congress should approve funds only for emergency or other immediately needed Mount St. Helens recovery work.

The Department of the Army and, in attached comments, the Corps of Engineers, contended that the Corps' July 1981 economic analysis was based on the best data available at the time; was known to be preliminary and should not have been considered authoritative; was a "worst-case" analysis; did not represent the official position of the Corps of Engineers; and, in any event, may still be valid. We strongly disagree with all of these assertions. As our draft report explained, in considerable detail, the problem with the Corps' analysis was not with its assumptions of the extent of physical damages that could occur from a lack of additional river dredging but with its assumptions and calculations of the "fixes" and economic costs that the physical damages would necessitate. Chief among these erroneous assumptions were (1) that in the event of bridge destruction no temporary bridges would be built, (2) that traffic would be rerouted via lengthy detours, and (3) that traffic would be rerouted for the entire bridge reconstruction periods. According to State highway department and railroad company officials, these assumptions were not realistic when the Corps made them, were not in accordance with standard industry practices, and could not be permitted to occur. Our review showed that the use of these assumptions led the Corps to overestimate potential damages and economic costs by about \$1.5 to \$1.8 billion.

The Corps' analysis, released 14 months after the May 1980 eruption of Mount St. Helens, was sent to, was reviewed by, and was well-known to both Department of the Army and Corps headquarters personnel. The Corps' estimate of several billion dollars of potential flood costs, and its estimated funding need of \$939 million to avoid the costs, were frequently cited and relied on by Federal, State, and local officials, Members of Congress, and the news media in their efforts to persuade the President and the Congress to make additional funds available to the Corps. The Corps' damage estimates, in fact, provided the primary support

for the Governor of Washington's March 26, 1982, funding request to the President and FEMA. The Corps' analysis was therefore perceived and used as an authoritative source, even if that had not been the Corps' or the Army's intention. Further, given the public prominence of the analysis, we believe the data would have been disavowed, or new studies ordered, if it did not reflect, at least for a period of time, the official position of the Corps of Engineers.

The State of Washington contended that our draft report overemphasized the Corps' estimates, and should not be used as the basis for influencing the Congress not to fund necessary Mount St. Helens emergency measures. That is not our intention. Rather, our objective is to inform the Congress that because of the changing nature of the Mount St. Helens threat, the uncertainty which has existed on the extent of further work and funds needed, and the significant problems in the Corps of Engineers' original analysis, it should be cautious and selective in approving funds for additional flood control or other measures until the Corps completes its Presidentially directed long-term study. The recent emergence of the Spirit Lake problem (see ch. 4) does not invalidate that conclusion. To the contrary, we believe it reinforces it.

CHAPTER 4

RECENT EVENTS: PRESIDENTIAL EMERGENCY

DECLARATION FOR SPIRIT LAKE DEBRIS DAM THREAT

On August 19, 1982, President Reagan declared an emergency in the State of Washington, at the State Governor's request, in an effort to avert a flood disaster threatened by a break in a volcanic debris barrier at Spirit Lake near Mount St. Helens. The President directed the Federal Emergency Management Agency to coordinate the Federal response to the Spirit Lake emergency, and authorized the use of the President's Disaster Relief Fund to assist in lowering the lake's level and lessening the flood threat.

The problem at Spirit Lake began within a few hours of the May 18, 1980, devastating eruption of Mount St. Helens. Shortly after an earthquake shook loose the north face of the volcano and touched off the explosive eruption, one of the largest avalanches in recorded history slid off the mountain. The landslide--chunks of rock and glacial ice, ground-up trees, and soil--filled the valley of the North Fork Toutle River just north of Mount St. Helens to depths as great as 600 feet. (See map on p. 32.)

The accumulated debris from the avalanche formed a barrier that sealed off Spirit Lake, blocking the lake's natural outlet to the Toutle River. Previously, Spirit Lake drained into the Toutle River, which joins the Cowlitz River near Castle Rock, Washington--at about the location of the Interstate 5 highway bridges and the Burlington Northern Railroad bridge--and subsequently drains into the Columbia River on the way to the Pacific Ocean.

Following the 1980 eruption, scientists and engineers projected that the debris blockage was solid enough to contain Spirit Lake for several years even though debris had raised the lake's level more than 200 feet. Without an outlet to the Toutle River, the lake has been rising gradually ever since, adding more than 50 feet since the eruption. Even so, emergency planners still believed until recently that the blockage was solid enough to contain the lake safely until 1985 or 1986, allowing the Government sufficient time to install or construct a controlled drainage outlet into the Toutle River to ease the water pressure and avoid a breach in the barrier.

During early summer 1982, however, evidence of massive and unexpected erosion of the barrier began to appear, producing fears that the blockage might breach sooner than expected. As a result, a Spirit Lake Flood Hazard Task Force, composed of

Federal agency and local government officials, was formed to make a technical assessment of the debris dam and, if warranted, make recommendations to minimize any hazards.

On July 20, 1982, the task force members visited the Spirit Lake debris dam and vicinity by helicopter and subsequently concluded that the debris barrier was eroding at an alarming rate, that the lake's water level could rise enough to overtop or burst the dam by May 1983, and that an uncontrolled breach could result in catastrophic flooding of two to four times the amount which occurred in May 1980. The task force recommended actions leading to construction of a controlled outlet for Spirit Lake in the summer of 1983 to lower the lake level and prevent a natural breach.

On August 2, 1982, the Governor of Washington declared a state of emergency regarding the threat of flooding from Spirit Lake. The Governor stated that, in terms of people, property, and economic impacts, an uncontrolled breach of the Spirit Lake debris dam could result both in a need to evacuate over 40,000 people within a matter of hours and in the potential damage or destruction of thousands of homes, commercial and industrial activities, transportation corridors, shipping channels, public utility facilities, and the area's tourism industry.

Simultaneously with his State declaration, the Governor requested the President to declare a Federal emergency under the Disaster Relief Act of 1974. Specifically, the Governor requested that FEMA, the Corps of Engineers, the Geological Survey, and the Forest Service work together to design and construct a controlled drainage outlet for Spirit Lake. The Governor also pointed out that, because the construction season could end with the onset of bad weather in November 1982 and not resume until April 1983, work to plan and install the controlled outlet should begin at once.

On August 19, 1982, after FEMA had assessed the threat and potential consequences and recommended to the President that the Governor's request be granted, the President determined that the situation posed a threat of a major disaster that warranted a declaration of an emergency. A Presidential declaration was therefore made on that date.

According to FEMA's assessment, interim measures were to be taken immediately to lower the lake level and reduce the threat, such as through the use of pipelines and pumping or siphoning. These measures were to be completed by October 31, 1982, to be effective. Although permanent measures to drain the outlet of

Spirit Lake into the Toutle River could be constructed during the summer of 1983, FEMA concluded that field investigations and design and engineering activities for that project also had to begin immediately because of the lead time needed for the complex project and the impending onset of winter.

Also, according to FEMA the Spirit Lake problem is not a part of the long-term sediment-transport problem that the President directed the Corps to study in May 1982. (See p. 44 above.) The agency's regional analysis of the Governor's Spirit Lake request emphasized that Federal officials

"* * * must be made aware that this is an entirely separate threat and totally unrelated to the sediment-transfer question."

On October 5, 1982, a Corps of Engineers Portland District official informed us that the Corps has awarded two contracts for interim measures to control the level of Spirit Lake. Under the first, the contractor is excavating and laying 3,800 feet of 5-foot diameter pipeline to connect Spirit Lake with the Toutle River. The work, at an estimated cost of \$3.1 million, is to be completed by October 30, 1982.

Under the second contract, the contractor is constructing a barge on Spirit Lake, to contain 16 pumps, that will pump a minimum capacity of 180 cubic feet per second through the pipeline. Emplacement work on that contract is also to be completed by October 30, 1982. Pump testing is to begin that day, and the pumping project is to become operational on November 5, 1982. Total contract cost is estimated at \$3.7 million.

The Corps official also told us that the lake level was currently at 3,460 feet above sea level. Under the pumping contract, the contractor will pump as much lake water as necessary (estimated at 60,000 acre-feet for the winter season) to maintain the lake level at or below 3,475 feet of elevation.

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The physical and financial aftermath of the Mount St. Helens disaster has continued to unfold in unexpected, sometimes dramatic, sometimes controversial, ways. Our followup evaluation of the Spirit Lake emergency has reinforced our view that (1) the Congress needs to consider additional funding controls to ensure that the recovery needs of a major or long-term disaster are adequately met

before funds are put to other uses and (2) the Congress should approve funds only for emergency or other immediately needed dredging and flood control work related to the Mount St. Helens disaster until the Corps completes its Presidentially directed study.

SUMMARY OF MOUNT ST. HELENS DISASTER FUNDING BY AGENCY

The following information, for the 12 Federal agencies which received disaster funds in the fiscal year 1980 supplemental appropriations, describes each agency's disaster program(s) and, where the data was available, discusses the funds received and spent for Mount St. Helens and other disasters and shows the overall status of the agency's disaster account(s) from fiscal year 1980 through the beginning of fiscal year 1982.

AGRICULTURAL STABILIZATION
AND CONSERVATION SERVICE

The Agricultural Stabilization and Conservation Service (ASCS), Department of Agriculture, through its Emergency Conservation Program, provides financial assistance on a cost-sharing basis to farmers and ranchers for rehabilitating farmland damaged by wind erosion, floods, hurricanes, or other natural disasters, and for emergency water conservation and enhancement measures during severe droughts. The need for disaster assistance is determined by ASCS county committees in consultation with the ASCS State committee.

Each year the Congress replenishes the emergency program account to a level considered adequate to meet anticipated disaster needs, normally \$10 million a year. This level is based on historical averages. If severe disasters occur, the agency may need to request supplemental funding.

In the 1980 supplemental appropriation, ASCS received \$20 million for its emergency program, including \$15.5 million which had been requested for Mount St. Helens and \$4.5 million requested for other specified disasters. As of September 30, 1981, ASCS had spent only about \$3.3 million of the appropriation on Mount St. Helens, as the following table shows.

ASCS Disaster Fund Expenditures on Mount St. Helens
From July 1980 Through September 30, 1981

<u>Program activity</u>	<u>Washington</u>	<u>Oregon</u>	<u>Idaho</u>	<u>Total</u>
Incorporation of volcanic ash	\$1,011,280	\$120,816	\$222,989	\$1,355,085
Crop debris removal	<u>1,936,203</u>	<u>45,067</u>	<u>-</u>	<u>1,981,270</u>
Total	<u>\$2,947,483</u>	<u>\$165,883</u>	<u>\$222,989</u>	<u>\$3,336,355</u>

The Acting State Executive Director, Washington State ASCS Office, estimated that another \$50,000 will be spent restoring land damaged by the volcano. He said that the agency is holding disaster funds in reserve for that purpose.

The Acting Director also said the agency overestimated the amount of disaster funds needed because the volcanic ash was not as damaging to crops as originally expected. Also, the ash did not have to be incorporated into the soil (plowed under) in the rangelands, thereby avoiding a large expense. He said that no one really knew at the time the estimates were made what effect the ash would have on crops, but everyone expected the worst.

As of September 30, 1981, ASCS had a balance of about \$23.1 million in its disaster fund. However, the Acting State Executive Director and a financial analyst in the Conservation and Environmental Protection Division, ASCS headquarters, told us the agency could not determine how much of this balance represents unspent "Mount St. Helens funds." They said there are two reasons for this: (1) the agency does not earmark specific portions of its appropriations for individual disasters (the \$15.5 million received was not set aside as "Mount St. Helens funds") and (2) the agency received \$10 million in the fiscal year 1981 regular appropriation for its disaster fund which was combined with carryover funds from the 1980 supplemental appropriation. The table below summarizes the appropriations made to and the obligations made from the agency's disaster fund during fiscal years 1980 and 1981.

ASCS Disaster Fund Summary
Fiscal Years 1980 and 1981

	(millions)
Fund balance (Sept. 30, 1979)	\$ 8.07
FY 1980 regular appropriation	15.00
FY 1980 supplemental appropriation	<u>20.00</u>
Total available for FY 1980	<u>\$43.07</u>
FY 1980 obligations:	
For Mt. St. Helens	(\$ 2.55)
For other disasters	(<u>17.49</u>)
	(<u>20.04</u>)
Balance, Sept. 30, 1980, carried forward to FY 1981	\$23.03
FY 1981 regular appropriation	<u>10.00</u>
Total available for FY 1981	<u>\$33.03</u>
FY 1981 obligations:	
For Mt. St. Helens	(\$2.02)
For other disasters	(<u>7.89</u>)
	(<u>9.91</u>)
Balance, Sept. 30, 1981, carried forward to FY 1982	\$23.12
FY 1982 regular appropriation	<u>8.80</u>
Total available for FY 1982	<u>\$31.92</u>

As the above table shows, ASCS received appropriations totaling \$45 million during fiscal years 1980 and 1981 and obligated a total of about \$30 million. Of these obligations, only about \$4.6 million ^{1/} were for Mount St. Helens and the remaining \$25.4 million were for other disasters. (See also the tables on pp. 59 and 60.) Without making arbitrary accounting assumptions, however, one cannot determine specifically how much of the 1980 supplemental appropriation was spent on other disasters

^{1/}This figure differs from the total figure (\$3,336,355) in the table on p. 55 because this figure represents obligations whereas the figure on p. 55 represents expenditures.

or how much was included in the disaster fund balance at the end of fiscal year 1981. As shown above, the agency carried over \$23.03 million from fiscal year 1980 and combined these funds with the \$10 million 1981 regular appropriation. Because of this, one cannot determine conclusively whether the fiscal year 1981 obligations came from the 1980 carryover balance or from the 1981 appropriation. For the same reason, the makeup of the \$23.12 million balance on September 30, 1981, cannot be precisely determined.

The following tables from ASCS records show the amount allocated to disasters, including Mount St. Helens, for a portion of fiscal year 1980 and for fiscal year 1981.

ASCS Disaster Fund Allocations
July 10, 1980, through September 30, 1980

<u>State</u>	<u>Type of disaster</u>	<u>Allocation amount</u>
Alabama	Hurricane	\$ 250,000
Arizona	Flood	300,000
Colorado	Flood	45,000
Florida	Flood	84,000
Georgia	Flood	100,000
Idaho	Mt. St. Helens	1,000,000
Illinois	Flood	200,000
Indiana	Tornado	55,000
Iowa	Flood	600,000
Louisiana	Flood	80,000
Michigan	Tornado	200,000
Missouri	Flood	150,000
Missouri	Drought	500,000
Montana	Drought	800,000
Nevada	Flood	30,000
New York	Flood	7,000
North Dakota	Drought	468,000
Ohio	Tornado	25,000
Ohio	Flood	146,500
Oklahoma	Tornado	50,000
Oklahoma	Drought	200,000
Oregon	Mt. St. Helens	250,000
Pennsylvania	Flood	6,000
South Dakota	Drought	550,000
Tennessee	Flood	200,000
Texas	Drought	500,000
Washington	Mt. St. Helens	2,500,000
West Virginia	Flood	10,000
Wisconsin	Flood	450,000
Wyoming	Flood	<u>50,000</u>
 Total		 <u>a/\$9,806,500</u>

a/This total differs from the FY 1980 obligation figure (\$20.04 million) in the table on p. 57 because this table lists allocations and covers the period July 10, 1980, through September 30, 1980, whereas the table on p. 57 lists obligations and covers all of FY 1980.

ASCS Disaster Fund Allocations
Fiscal Year 1981

<u>State</u>	<u>Type of disaster</u>	<u>Allocation amount</u>
Alabama	Flood	\$ 200,000
Colorado	Flood	5,500
Florida	Drought	251,000
Georgia	Flood	25,000
Illinois	Flood	202,500
Indiana	Flood	300,000
Iowa	Flood	438,500
Kansas	Flood	125,000
Kentucky	Flood	35,000
Maine	Flood	190,000
Massachusetts	Flood	25,000
Massachusetts	Tornado	20,000
Michigan	Flood	85,000
Minnesota	Flood	79,600
Missouri	Drought (1980)	495,000
Missouri	Flood	200,000
Montana	Drought (1980)	251,000
Montana	Drought (1981)	441,369
Montana	Flood	300,000
Nebraska	Drought	120,000
Nebraska	Flood	28,125
Nevada	Flood	316,000
Nevada	Drought (1981)	150,000
New Hampshire	Flood	15,000
New Jersey	Flood	54,400
New Mexico	Drought (1981)	125,000
North Carolina	Flood	75,000
North Dakota	Drought (1981)	300,000
Ohio	Flood	127,200
Pennsylvania	Flood	130,000
South Dakota	Drought (1980)	110,000
South Dakota	Drought (1981)	375,000
Tennessee	Flood, tornado	150,000
Texas	Drought (1980)	125,000
Utah	Wildfire	100,000
Vermont	Flood	55,000
Virginia	Drought (1981)	38,600
Washington	Mt. St. Helens	765,000
Wisconsin	Flood	374,000
Total		<u>a/\$7,202,794</u>

a/This total differs from the FY 1981 obligation figures (\$9.91 million) in the table on p. 57 because this table uses allocations whereas the table on p. 57 uses obligations.

CENTERS FOR DISEASE CONTROL

The Centers for Disease Control (CDC), an agency in the Department of Health and Human Services, has the lead responsibility within the Public Health Service for coordinating the response to emergencies or disasters. Under authority of the Public Health Services Act, CDC responds to requests for assistance from State and local health departments by providing medical, epidemiologic, laboratory, and other technical support in investigating the causes and interrupting the transmission of disease outbreaks. CDC's responsibilities include dealing with such diverse problems as communitywide epidemics of communicable diseases; outbreaks of infection and other diseases in hospitals and other institutions; environmental, radiologic, or toxic exposures; and climatic or geologic phenomena.

In response to the Mount St. Helens disaster, CDC monitored persons inhaling the ash-filled air to determine if they were experiencing health problems. CDC also initiated several short- and long-term studies on the health-related effects of the volcano.

CDC does not have an emergency fund to finance its disaster-response activities but must use resources from its ongoing operations. In cases of large disasters, CDC may have to seek supplemental funding.

In the 1980 supplemental appropriation, CDC received \$600,000 for its account. By September 30, 1981, the agency had spent all of these funds on Mount St. Helens and, in addition, had spent about \$253,000 on the disaster from its regular operating budget. CDC spent these funds on Mount St. Helens as follows:

Epidemiologic and laboratory work	\$432,000
Occupational safety and health studies	71,000
University of Washington-conducted studies	200,000
University of Oregon-conducted studies	<u>150,000</u>
Total	<u>\$853,000</u>

In the 1981 supplemental appropriation, CDC received an additional \$2 million to finance several multiyear studies of the long-term effects of the Mount St. Helens disaster. Therefore, CDC's total Mount St. Helens expenditures will be about \$2,853,000.

U.S. ARMY CORPS OF ENGINEERS

Following natural disasters, the Corps of Engineers, Department of the Army, performs various functions such as flood fighting, rescue work, and rehabilitation of flood control works damaged or destroyed by floods. For these flood control and coastal emergency activities, the Corps has an emergency fund which the Congress replenishes annually. In addition, the Corps provides technical assistance to the Federal Emergency Management Agency (FEMA) and conducts specific mission assignments requested by FEMA, such as debris and wreckage clearance and repair or replacement of public and nonprofit facilities. For these disaster relief and assistance activities, the Corps may be reimbursed by FEMA from the President's Disaster Relief Fund.

In response to the Mount St. Helens disaster, the Corps performed numerous flood control activities to protect communities along the Toutle and Cowlitz Rivers in the State of Washington from flood threats and conducted a major excavating program to reopen the Columbia River to navigation. In addition, the Corps provided technical assistance to FEMA.

To finance its Mount St. Helens activities, the Corps used three funding sources. For its flood control work on the Toutle and Cowlitz Rivers, the Corps used its Flood Control and Coastal Emergencies fund. For its work on the Columbia River, the Corps used its Operations and Maintenance, General funds. For the expenses incurred while assisting FEMA, the Corps was reimbursed by FEMA out of the Presidential Disaster Relief Fund.

In the 1980 supplemental appropriation, the Corps received \$170 million for its Flood Control and Coastal Emergencies account, the amount it requested for the Mount St. Helens disaster. The appropriation also contained \$70 million for the Corps' Operations and Maintenance account, which included \$45 million requested for Mount St. Helens and \$25 million for other purposes. Thus, the Corps received the entire \$215 million it requested to respond to Mount St. Helens.

As of the end of fiscal year 1981, the Corps had spent a total of about \$275 million for its Mount St. Helens recovery activities. This is about \$60 million more than the \$215 million it received in the 1980 supplemental appropriation. For its Mount St. Helens flood control activities, the Corps had spent about \$226.7 million as of September 30, 1981, or about \$56.7 million more than the \$170 million it received in the 1980 supplemental appropriation. The Corps used \$31.7 million from its fiscal year 1980 emergency fund appropriation and \$25 million from its fiscal year 1981 emergency fund appropriation.

For its Columbia River dredging activities, the Corps had spent about \$48.5 million as of September 30, 1981. This is about \$3.5 million more than the \$45 million the Corps received for this activity in the 1980 supplemental appropriation. The additional funds came from the 1981 supplemental appropriation.

(Ch. 3 discusses several aspects of the Corps' efforts to obtain additional financing to continue its flood control activities.)

DEPARTMENT OF EDUCATION

The Department of Education has two programs through which it provides aid to schools affected by disasters. Under one program, the Department provides assistance for the restoration or replacement of school facilities seriously damaged or destroyed by a major or pinpoint (local) disaster. Under the other program, the Department provides assistance for current expenditures and minor repairs to schools affected by disasters. For the Mount St. Helens disaster, the Department of Education provided assistance under the second program to schools affected by the disaster in Washington and Idaho.

According to the Education Department's Disaster Coordinator, Division of Impact Aid, the Congress usually replenishes the Department's disaster fund annually, which covers both of the above programs, and in recent years has replenished it to the \$12 million level. The official said the Department has the authority to reprogram operation and maintenance funds for disaster aid if necessary.

In the 1980 supplemental appropriation, the Department of Education received \$20 million for disaster activities, all of which had been justified for Mount St. Helens. The funds were to remain available until September 30, 1981. As of that expiration date, the Department had obligated nearly \$3.6 million of these funds on Mount St. Helens and about \$7.1 million on other disasters, as the following table shows. The remaining \$9.4 million was not used and expired on September 30, 1981.

In addition to the \$3.6 million from the 1980 supplemental appropriation, the Department's Disaster Coordinator, Division of Impact Aid, stated that the agency obligated another \$1.5 million on Mount St. Helens from the Department's 1980 regular appropriation. Therefore, the Department has obligated a total of about \$5.1 million in disaster assistance funds for schools affected by the Mount St. Helens disaster. The Department does not expect to spend any additional funds for this disaster.

Disposition of the Fiscal Year 1980
Supplemental Appropriation

FY 1980 supplemental appropriation		\$20,000,000
Obligations for Mount St. Helens:		
Washington	\$3,564,695	
Idaho	<u>13,217</u>	<u>3,577,912</u>
Balance		\$16,422,088
Obligations for other disasters:		
Alabama (Hurricane Frederick)	\$2,914,795	
Arkansas (severe storms and tornados)	113,240	
California (flooding)	7,600	
Illinois (severe storms, tornados, and flooding)	947,700	
Michigan (severe storms and flooding)	614,485	
Mississippi (severe storms, tornados, and flooding)	394,271	
Montana (severe storms and flooding)	115,238	
Nebraska (severe storms and tornados)	42,095	
Ohio (severe storms and flooding)	130,362	
Pennsylvania (severe storms and flooding)	141,295	
Texas (Hurricane Allen)	1,075,660	
West Virginia (severe storms and flooding)	168,123	
Wisconsin (severe storms and flooding)	17,445	
Wyoming (severe storms and tornados)	149,450	
American Samoa (typhoon)	82,774	
Mariannas Islands (Typhoon Dinah)	<u>147,662</u>	<u>7,062,195</u>
Unobligated balance (expired Sept. 30, 1981)		<u>\$9,359,893</u>

FEDERAL EMERGENCY MANAGEMENT AGENCY

In response to natural disasters, FEMA administers the President's Disaster Relief Program--a program authorized by the Disaster Relief Act of 1974 and designed to supplement the disaster recovery efforts and available resources of State and local governments and voluntary relief organizations.

When the President makes a disaster declaration, FEMA has authority to spend funds for disaster assistance from the President's Disaster Relief Fund. FEMA also can call upon other Federal agencies to provide disaster assistance from their own resources with or without reimbursement from the President's fund.

FEMA provides financial assistance from the President's Disaster Relief Fund to eligible individuals, State and local governments, and nonprofit organizations affected by a disaster. The disaster assistance available to individuals includes temporary housing, home repairs, temporary mortgage or rental payment assistance, disaster unemployment assistance, and individual and family grants.

FEMA's disaster assistance to State and local governments may include funding for debris removal; emergency protective measures; or repair or replacement of roads, streets, bridges, water-control facilities, and other public facilities. FEMA provides this assistance on a cost-sharing basis. For the Mount St. Helens disaster, the respective shares were set at 75 percent Federal and 25 percent State and local.

The Congress annually appropriates funds to the President's Disaster Relief Fund at levels based on projections of requirements furnished by FEMA. Supplemental appropriations are frequently required.

In the 1980 supplemental appropriation, the Congress appropriated \$870 million to FEMA for "Disaster Relief" to remain available until expended. The appropriation act itself did not contain specific amounts for individual disasters, but the act's legislative history shows that FEMA requested \$86 million for Mount St. Helens and the remainder for other disasters or purposes.

FEMA overestimated the amount of funds needed for its Mount St. Helens disaster assistance activities. As of September 30, 1981, it had obligated only about \$34 million for the disaster. The FEMA region X Director said several factors caused the agency's estimates to be high. First, the agency had to provide cost estimates before it had a chance to make accurate damage assessments.

Second, no one knew what kind of damage would result from volcanic ash. Finally, at the time the estimates were being prepared the disaster response responsibilities of all Federal agencies had not been clearly established. The Regional Director said that, because of these uncertainties, the natural tendency was to make projections on a "worst-case basis" to ensure that sufficient funding would be made available.

President's Disaster Relief Fund
Obligations Made for Mount St. Helens Disaster
July 1980 to December 1, 1981
(note a)

<u>Purposes</u>	<u>Washington</u>	<u>Idaho</u>	<u>Total</u>
Individual and family grants	\$ 500,000	\$ -	\$ 500,000
Public assistance	28,120,602	1,565,935	29,686,537
Temporary housing	330,000	-	330,000
Reimbursements to other Federal agencies:			
Corps of Engineers	717,000	185,000	902,000
Department of Labor	800,000	45,000	845,000
Department of Defense	371,496	-	371,496
Environmental Protection Agency	20,000	5,000	25,000
Federal Highway Administration	45,000	21,727	66,727
General Services Administration	1,200,000	107,000	1,307,000
U.S. Forest Service	60,000	-	60,000
National Institute of Mental Health	110,368	-	110,368
Water and Power Services	5,000	-	5,000
Total	<u>\$32,279,466</u>	<u>\$1,929,662</u>	<u>\$34,209,128</u>

a/July 1980 to December 3, 1981, for Idaho.

FEMA officials estimate that another approximately \$2 to \$3 million will be needed for Mount St. Helens activities, which will increase FEMA's total expenditures for the disaster to about \$36 to \$37 million. The additional \$2 to \$3 million will be used for community water systems on the Cowlitz River.

FEMA's Chief, Public Assistance Division, and its Assistant Budget Officer both said the remaining \$49 million (\$86 million less \$37 million) has not been reserved for future Mount St. Helens needs but may have been spent on other disasters. However, the officials said they could not determine which disasters the leftover funds may have been used for because the agency does not earmark its disaster fund appropriations for individual disasters but combines each appropriation with the carryover balance of previous appropriations to the fund, as the table below illustrates.

Summary of President's Disaster Relief Fund
Fiscal Years 1980 and 1981

	(millions)
Fund balance, Sept. 30, 1979	\$ 19.69
FY 1980 regular appropriation	193.60
FY 1980 supplemental appropriation	<u>870.00</u>
Total available for FY 1980	<u>\$1,083.29</u>
FY 1980 obligations:	
For Mount St. Helens	(\$ 13.71)
For other disasters	<u>(835.39)</u>
	<u>(849.10)</u>
Balance, September 30, 1980, carried over to FY 1981	\$234.19
FY 1981 regular appropriation	<u>358.45</u>
Total available for FY 1981	<u>\$592.64</u>
FY 1981 obligations:	
For Mount St. Helens	(\$ 20.33)
For other disasters	<u>(208.64)</u>
	<u>(228.97)</u>
Balance, September 30, 1981, carried over to FY 1982	\$363.67
FY 1982 regular appropriation	<u>301.69</u>
Total available for FY 1982	<u>\$665.36</u>

As the table shows, during fiscal years 1980 and 1981 FEMA received disaster fund appropriations totaling about \$1.4 billion and obligated a total of about \$1.1 billion. Of the obligations, about \$34 million was for Mount St. Helens and over \$1 billion was for other disasters. As of September 30, 1981, FEMA had a balance of about \$364 million in its disaster fund. Because the agency combined the carryover funds from 1980 with the 1981 appropriation, the agency could not determine how much, if any, of the balance at the end of fiscal year 1981 represents unspent Mount St. Helens funds.

From the time of the Mount St. Helens disaster declaration in May 1980 through the end of fiscal year 1981, 23 major disasters and 3 emergencies had been declared. These are listed in the table on the next page.

Disaster and Emergency Declarations
June 1980 through September 1981

<u>Date</u>	<u>Declaration State</u>	<u>Type</u>	<u>Total estimated fund requirement</u>
<u>Major disaster declarations:</u>			
June 4, 1980	Nebraska	Severe storms and tornados	\$ 6,803,023
July 24, 1980	Wisconsin	Severe storms and flooding	2,979,404
Aug. 11, 1980	Texas	Hurricane Allen	37,248,063
Aug. 15, 1980	W. Virginia	Severe storms and flooding	8,299,435
Aug. 19, 1980	Pennsylvania	Severe storms and flooding	3,980,413
Aug. 23, 1980	Ohio	Severe storms and flooding	3,004,060
Sept. 8, 1980	Michigan	Severe storms and flooding	8,998,736
Sept. 26, 1980	Texas	Tropical storm Danielle	561,211
Oct. 2, 1980	California	Levee break and flooding	4,278,673
Nov. 27, 1980	No. Marianas	Typhoon Dinah	2,142,672
Nov. 27, 1980	California	Brush and timber fires	10,581,639
Mar. 17, 1981	Kentucky	Sewer explosion	16,929,000
Mar. 24, 1981	Amer. Samoa	Typhoon Esau	1,268,083
Apr. 10, 1981	Alabama	Tornado	519,210
May 14, 1981	Alabama	Severe storms and flooding	3,524,561
May 27, 1981	Montana	Severe storms and flooding	4,959,379
June 15, 1981	Pennsylvania	Severe storms and flooding	5,008,505
June 16, 1981	Ohio	Severe storms, flooding, and tornados	1,374,573
June 30, 1981	Illinois	Severe storms, flooding, and tornados	3,117,276
July 18, 1981	Kansas	Severe storms, flooding, and tornados	3,637,400
Aug. 28, 1981	Nevada	Severe storms and flooding	225,000
Sept. 21, 1981	Texas	Severe storms and flooding	2,635,500
Sept. 29, 1981	Trust Terri- tories, Pa- cific Is.	Fire	<u>1,295,000</u>
Total major disasters			\$133,370,816
<u>Emergency declarations:</u>			
June 13, 1980	Pennsylvania	Severe storms and tornados	-0-
Sept. 20, 1980	Maine	Red tide—toxic algae	500,000
Oct. 19, 1980	New Jersey	Water shortage	<u>2,467,360</u>
Total emergencies			\$ <u>2,967,360</u>
Total major disasters and emergencies			<u>\$136,338,176</u>

FEDERAL HIGHWAY ADMINISTRATION

The Federal Highway Administration (FHWA), Department of Transportation, under its Emergency Relief Program, provides emergency funding assistance to State and local governments to repair or reconstruct Federal-aid highway system roads and bridges seriously damaged by natural disasters or catastrophic failures. The agency may also use emergency relief program funds for serious damages caused by disasters to roads on Federal lands such as national forests, national parks, or Indian reservations.

Federal disaster assistance provided under the emergency program is on a cost-sharing basis with the Federal share limited to 75 percent of eligible costs. The Secretary of Transportation may, however, increase the Federal share to 100 percent if found to be in the public interest. For the Mount St. Helens disaster, the Federal share was 100 percent.

The Congress authorizes FHWA to spend up to \$100 million each fiscal year for its emergency program. These funds are available for expenditure during the fiscal year in which they are authorized plus 2 additional fiscal years.

In the 1980 supplemental appropriation, the Congress increased FHWA's obligation authority for its emergency program by \$250 million (from \$100 million to \$350 million), to remain available until September 30, 1982. The act's legislative history shows that \$125 million of this appropriation was requested for Mount St. Helens. 1/

As it turned out, FHWA received significantly more than it needed for the Mount St. Helens disaster. As compared to the \$125 million appropriation, FHWA had obligated only about \$22 million for the disaster by the end of fiscal year 1981. FHWA estimates that its total obligations for Mount St. Helens as of the end of fiscal year 1982 will be about \$30 million. FHWA's Chief, Programs Branch, and its Washington Division Administrator both said the agency overestimated the amount of funds needed for Mount St. Helens because the cost of ash removal was not as high as originally expected and because some roads and bridges were not rebuilt as originally planned. The following table summarizes FHWA's Mount St. Helens obligations.

1/Although the Congress appropriated a total of not to exceed \$125 million which had been identified with Mount St. Helens, the agency originally estimated that it would need only about \$105 million for the disaster. This amount was increased to \$125 million in the budgetary process.

FHWA Obligations For Mount St. Helens
as of September 30, 1981

	<u>Road/bridge repair</u>	<u>Ash removal</u>	<u>Total</u>
Washington	\$13,408,810	\$7,141,145	\$20,549,955
Oregon	-	927,756	927,756
Idaho	-	463,833	463,833
Bureau of Indian Affairs	<u>-</u>	<u>119,512</u>	<u>119,512</u>
Total	<u>\$13,408,810</u>	<u>\$8,652,246</u>	<u>\$22,061,056</u>

In addition to the above obligations, an FHWA official estimated that approximately \$8.4 million will be needed for Mount St. Helens purposes in the State of Washington during fiscal year 1982. Thus, the agency expects to spend a total of about \$30.4 million on the Mount St. Helens disaster by the end of fiscal year 1982.

According to FHWA's Chief, Programs Branch, and a Programs Branch highway engineer, the agency has obligated all or part of the remaining approximately \$95 million (\$125 million less \$30 million) on other projects authorized under its emergency program. The officials said they could not determine which other projects the funds were used for because the agency did not earmark any of the money for Mount St. Helens. They said they also could not determine how much of the \$27.66 million balance at the end of fiscal year 1981 represents unobligated Mount St. Helens funds because the agency combined its fiscal year 1980 carryover funds with the \$100 million appropriated for the emergency program in the 1981 regular appropriation.

FHWA Emergency Relief Fund Summary
Fiscal Years 1980 and 1981

	(millions)
Fund balance, Sept. 30, 1979	\$ 6.62
FY 1980 regular appropriation	100.00
FY 1980 supplemental appropriation	<u>250.00</u>
Total available for FY 1980	<u>\$356.62</u>
FY 1980 obligations:	
For Mount St. Helens	(\$ 14.73)
For other disasters	<u>(274.82)</u>
	<u>(289.55)</u>
Balance, Sept. 30, 1980, carried forward to 1981	\$ 67.07
FY 1981 regular appropriation	<u>100.00</u>
Total available for FY 1981	<u>\$167.07</u>
FY 1981 obligations:	
For Mount St. Helens	(\$ 7.33)
For other disasters	<u>(132.08)</u>
	<u>(139.41)</u>
Balance, Sept. 30, 1981, carried forward to 1982	\$ 27.66
FY 1982 regular appropriation	<u>100.00</u>
Total available for FY 1982	<u>\$127.66</u>

U.S. FOREST SERVICE

The U.S. Forest Service, Department of Agriculture, unlike many other Federal agencies involved in Mount St. Helens recovery activities, does not have a disaster fund in which appropriated funds are held in reserve for disasters. Instead, the Forest Service has emergency funding authority which permits the agency to "borrow" funds from the Treasury to fight forest fires and rehabilitate burned-over forests. A Forest Service official said that the Congress annually appropriates sufficient funds to liquidate such obligations incurred by the Forest Service during the previous year but that this emergency funding authority does not extend to non-forest-fire disasters, such as the Mount St. Helens eruptions. For disasters other than forest fires, the Forest Service must use its existing appropriated funds. In cases of large disasters, the Forest Service may have to request supplemental appropriations as it did for the Mount St. Helens disaster.

In a sense, the Forest Service was more directly involved in the Mount St. Helens disaster than most other affected Federal agencies, because the mountain sits on Forest Service property--the Gifford Pinchot National Forest. The volcano's major eruption on May 18, 1980, caused considerable damage to Forest Service property and natural resources within the forest. The Forest Service estimates the total value lost at about \$134 million, primarily in downed timber.

In the 1980 supplemental appropriation, the Forest Service received \$113 million for "Forest Management, Protection, and Utilization," which included \$25 million which had been justified for Mount St. Helens.

In fiscal year 1981 the Forest Service received additional funding authority from the Congress for \$22.6 million to salvage timber from the disaster. Instead of receiving new funds, however, this second appropriation only authorized the Forest Service to reprogram funds from the Tongass National Forest in Alaska.

The Forest Service has accounted for the disposition of its two Mount St. Helens appropriations separately. The tables below summarize the obligations the agency made for Mount St. Helens purposes from the 1980 and 1981 supplemental appropriations.

Forest Service Obligations for Mount St. Helens
from the 1980 Supplemental Appropriation
as of September 30, 1981

	(millions)
FY 1980 supplemental appropriation	\$25.00
FY 1980 obligations for Mount St. Helens	(<u>11.56</u>)
Balance carried forward to FY 1981	\$13.44
FY 1981 obligations for Mount St. Helens	(<u>11.73</u>)
Balance carried forward to FY 1982	\$ <u>1.71</u>

As shown above, at the end of fiscal year 1981 the Forest Service had obligated about \$23.3 million of the \$25 million 1980 supplemental appropriation, leaving a balance of about \$1.7 million, which a Forest Service official said would be used for Mount St. Helens activities in fiscal year 1982.

During fiscal year 1981, the Forest Service also obligated for Mount St. Helens most of the \$22.6 million reprogramed from Tongass National Forest funds, as shown below.

Forest Service Obligations for Mount St. Helens
from the 1981 Supplemental Appropriation
as of September 30, 1981

	(millions)	
FY 1981 supplemental appropriation	\$22.61	
Transferred to Federal Highway Administration for timber salvage activities	(\$19.80)	
Obligations for Mount St. Helens in FY 1981	(<u>0.23</u>)	(<u>20.03</u>)
Balance carried forward to FY 1982	\$ <u>2.58</u>	

The Forest Service's Deputy Director, Program Development and Budget Division, said the above unobligated balance would also be used for Mount St. Helens activities in fiscal year 1982.

Thus, as shown in the tables above, the Forest Service received disaster spending authority totaling about \$47.6 million and obligated a total of about \$43.3 million of these funds for the Mount St. Helens disaster, leaving a total unobligated balance at the end of fiscal year 1981 of about \$4.3 million.

U.S. GEOLOGICAL SURVEY

According to its Acting Assistant Director for Programs, the U.S. Geological Survey, Department of the Interior, does not have a disaster assistance program or a disaster fund. However, the agency has been given the responsibility for warning State and local officials of impending geological hazards such as floods, landslides, and earthquakes. The Geological Survey also provides information and hazard warnings through its Volcano Hazards Program to Government and other disaster relief officials on possible impending eruptions and related hazards, such as mudflows, stream blockage-induced flooding, and forest fires.

Prior to the Mount St. Helens eruption, the Geological Survey's volcano program was directed primarily at the volcanos in Hawaii. The agency directed only modest efforts toward the volcanos in the Cascade Mountain Range in California, Oregon, and Washington, where Mount St. Helens and about 15 other active and dormant volcanos are located. (See map on p. 32.) According to agency officials, the funding level for the entire volcano program before the Mount St. Helens eruption was about \$1 million annually.

In response to the Mount St. Helens eruption, the agency reorganized its Volcano Hazards Program and greatly expanded its work related to Mount St. Helens and other volcanos in the Cascade Range. Funding for the volcano program was also increased dramatically. For example, during fiscal year 1981 the program's funding was increased to about \$12 million, of which \$7.6 million was for Mount St. Helens. In fiscal year 1982 about \$9.5 million was appropriated for the volcano program, and for fiscal years 1983-86 the agency plans to request about \$5 to \$7 million a year.

In the 1980 supplemental appropriation, the Congress appropriated \$8.6 million to the Geological Survey for "surveys, investigations, and research." Of this amount, \$3.28 million had been requested for Mount St. Helens and the remainder for other disasters and projects.

As of the end of fiscal year 1981, the agency had obligated a total of about \$11.55 million on Mount St. Helens. This included the \$3.28 million the agency requested for the disaster

from the 1980 supplemental appropriations and about \$8.27 million from its 1980 and 1981 regular appropriations, plus some minor funding from such sources as reimbursements from the U.S. Forest Service and the State of Washington. The Geological Survey spent these funds on the following activities:

Geological investigations (Mount St. Helens monitoring)	\$ 5,058,000
Hydrologic investigations (research and administrative support)	5,650,000
Mapping activities	<u>843,000</u>
Total	<u>\$11,551,000</u>

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

The National Weather Service, an agency in the National Oceanic and Atmospheric Administration (NOAA), Department of Commerce, does not have a disaster assistance program or a disaster fund. However, in disaster situations the National Weather Service is responsible for warning government officials and the general public of destructive events, natural and manmade.

The Mount St. Helens eruption was a unique disaster that presented a host of problems for the National Weather Service. In response to the disaster, the agency undertook such diverse activities as

- issuing frequent wind trajectory forecasts of the volcanic ash plume,
- advising air traffic controllers in the Northwest of the conditions and location of the volcanic ash plume so that aircraft could be rerouted to avoid the damaging ash,
- installing a NOAA weather radio system to cover the Mount St. Helens area,
- issuing flashflood warnings to communities along the rivers affected by the volcano, and
- monitoring sediment buildup in the Columbia River and issuing special forecasts as to when ship traffic could pass.

Also, because the mudflows resulting from the eruption drastically reduced the water-carrying capacities of the rivers and streams near Mount St. Helens, making them more susceptible to flooding, the agency installed a flood-warning system around the volcano. This system consists of numerous gauges that measure precipitation and river levels, and it continuously relays the data by radio telemetry to National Weather Service offices in the region. The system is augmented by computers that automatically monitor the network, collect data, and process the results for agency use in making flood forecasts and warnings.

In the 1980 supplemental appropriation, NOAA received \$1.5 million for "operations, research, and facilities," to remain available until expended. According to legislative history, \$500,000 of this appropriation was requested for the National Weather Service's Mount St. Helens activities and \$1 million for a NOAA LANDSAT satellite data gathering system.

Although the National Weather Service received the \$500,000 it requested for Mount St. Helens in the 1980 supplemental appropriation, the agency spent a total of \$670,700 on the disaster in fiscal years 1980 and 1981. The funds were used for the Mount St. Helens river and rainfall flood-warning network, including the NOAA weather radio station. The National Weather Service's Assistant to the Associate Director for Hydrology said that the agency did not receive any other appropriation for Mount St. Helens and that it used \$170,700 from its regular operating budget for the additional Mount St. Helens expenses.

NOAA also informed us that despite certain problems to date in obtaining funding for its hydrologic data collection and flood-warning system (see app. IX), it will need an additional \$157,000 in fiscal year 1982, \$185,000 in fiscal year 1983, and \$170,000 in each of fiscal years 1984 and 1985 to operate and maintain its network.

OFFICE OF WATER RESEARCH AND TECHNOLOGY

The Office of Water Research and Technology (OWRT), Department of the Interior, is an agency which conducts research, development, demonstration, training, and technology transfer programs to solve the Nation's water problems and to enhance its water resources. The agency conducts its programs by providing grants to 54 water research and technology institutes at universities and colleges in each State, Guam, Puerto Rico, the Virgin Islands, and the District of Columbia. OWRT also acts as the coordinating agency for water research in all Federal programs to avoid unnecessary duplication of research efforts and set

research priorities for meeting water needs. The agency does not have a disaster assistance program that provides aid to disaster victims.

OWRT's role in the Federal response to the Mount St. Helens disaster involved the award of grants and contracts to support research projects directed at solving water problems resulting from the volcanic eruption. OWRT also played a leading role in coordinating the water-related research efforts of other Federal agencies such as the Geological Survey, Corps of Engineers, and the Forest Service.

In the 1980 supplemental appropriation, OWRT received \$2 million for "salaries and expenses," to remain available until expended. ^{1/} According to OWRT's Assistant Director for Research and a Special Assistant to the Director, as of September 1981, the agency had obligated virtually all of the appropriation for Mount St. Helens, had not received any other appropriations for this disaster, and had not spent any other funds on it. As of September 30, 1981, OWRT had obligated the \$2 million supplemental appropriation as follows:

FY 1980 supplemental appropriation		\$2,000,000
Contracts and grants	\$1,792,212	
OWRT administrative support	<u>205,000</u>	<u>1,997,212</u>
Unobligated balance (Sept. 30, 1981)		\$ <u>2,788</u>

The OWRT Assistant Director for Research said the \$2,788 unobligated balance would be used for administrative and travel expenses to the Northwest in connection with Mount St. Helens research. With the exception of one contract with a private consultant in Oregon, the \$1.8 million in contracts and grants that OWRT awarded was to researchers at colleges and universities located in Idaho, Montana, Oregon, and Washington. In all, 22 research projects were funded, all pertaining to various water-related problems caused by the Mount St. Helens eruption.

^{1/}The Senate Appropriations Committee recommended \$3 million for OWRT for Mount St. Helens, but this was reduced to \$2 million by the House-Senate Conference Committee.

SMALL BUSINESS ADMINISTRATION

The Small Business Administration (SBA) provides loans to disaster victims who sustain either physical damage to their property or economic injury to their businesses. SBA's disaster loan program operates when a disaster declaration is made by either the President or the SBA Administrator.

For the Mount St. Helens disaster, SBA made both physical damage and economic injury loans. Physical damage loans cover the repair and replacement of such items as personal property, real estate, machinery, equipment, inventory, farm crops, and livestock. These loans are available to businesses, farmers, homeowners, renters, and certain nonprofit organizations.

Economic injury disaster loans are for nonphysical damage to businesses and provide working capital which allows businesses to make payments they could have made if the disaster had not occurred.

According to SBA's Director, Office of Disaster Programs, each year the Congress appropriates funds for SBA's disaster loan account in amounts estimated to be sufficient to cover the disaster loans expected to be disbursed during the year. When major disasters strike, such as Mount St. Helens, SBA may be required to seek supplemental appropriations.

In the 1980 supplemental appropriation, SBA received \$1.177 billion for its disaster loan fund without fiscal year limitation. Also, according to the report of the Committee of Conference, none of the funds were reserved for any specific disasters. This included the \$430 million that SBA had explicitly requested for Mount St. Helens needs.

Like many other agencies, SBA substantially overestimated the amount of disaster loan funds it would need for the Mount St. Helens disaster. As compared to the agency's estimate of about \$430 million, SBA disbursed, obligated, and loaned a total of only about \$65.7 million as of September 30, 1981. According to the Acting Regional Administrator, SBA region X, SBA overestimated its Mount St. Helens needs because, based on initial information, the agency assumed that the volcanic ash might have destroyed all farm crops and the land might not be usable for a considerable length of time. The official said that SBA had no history of dealing with this type of disaster and, as a consequence, the agency's estimates were grossly overestimated. The following table summarizes SBA's loans for the Mount St. Helens disaster.

SBA Disaster Assistance Loans
for Mount St. Helens
Fiscal Years 1980 and 1981
 (Expended, obligated, and loaned as of September 30, 1981)

<u>State</u>	<u>Physical loss</u>	<u>Economic injury</u>	<u>Total</u>
Washington	\$40,037,808	\$12,219,071	\$52,256,879
Oregon	6,178,400	4,129,600	10,308,000
Idaho	580,200	2,440,100	3,020,300
Montana	-	65,000	65,000
Total	<u>\$46,796,408</u>	<u>\$18,853,771</u>	<u>\$65,650,179</u>

According to SBA's Director, Office of Disaster Programs, the agency has not reserved the remaining approximately \$364 million (\$430 million less \$66 million) for future Mount St. Helens needs but has used the funds for other disasters or purposes. The official also said the agency does not earmark its appropriations for specific disasters but combines each appropriation with other funds in its disaster program account, and therefore it cannot specifically identify which disasters the unspent Mount St. Helens funds were used for. The following table summarizes SBA's disaster loan fund for fiscal years 1980 and 1981.

SBA Disaster Loan Fund Summary
Fiscal Years 1980 and 1981

		(millions)
Balance carried forward from FY 1979		\$ 827.97
FY 1980 regular appropriation		60.00
FY 1980 supplemental appropriation		1,177.00
Other funding (loan collections, etc.)	\$ 712.53	
Less: Funds transferred out (for salaries and expenses, etc.)	(<u>37.74</u>)	<u>674.79</u>
Total available for obligation in FY 1980		<u>\$2,739.76</u>
FY 1980 obligations:		
For Mount St. Helens	(\$ 13.26)	
For other disasters and purposes	(<u>1,856.65</u>)	(<u>1,869.91</u>)
Balance, Sept. 30, 1980, carried forward to FY 1981		\$ 869.85
FY 1981 regular appropriation		325.00
Other funding	\$ 886.34	
Less: Funds transferred out	(<u>15.26</u>)	<u>871.08</u>
Total available for obligation in FY 1981		<u>\$2,065.93</u>
FY 1981 obligations:		
For Mount St. Helens	(\$ 52.61)	
For other disasters and purposes	(<u>1,688.87</u>)	(<u>1,741.48</u>)
Balance, Sept. 30, 1981, carried forward to FY 1982		\$324.45
FY 1982 regular appropriation		<u>640.00</u>
Total available for obligation in FY 1982		<u>\$964.45</u>

As shown above, SBA had a total of about \$3.9 billion in appropriations and other funds available for its disaster loan fund during fiscal years 1980 and 1981 and obligated about \$3.6 billion from the fund, leaving an unobligated balance of about \$324 million at the end of fiscal year 1981. Of the obligations made during this period, about \$66 million was for Mount St. Helens and the remaining \$3.5 billion was for other disasters or purposes. Because the agency combined the fiscal year 1980 carryover balance (which included some unobligated Mount St. Helens funds) with the funds it received for its disaster loan program in fiscal year 1981, it could not determine how much, if any, of the 1981 fiscal year-end balance represents unobligated Mount St. Helens funds.

SOIL CONSERVATION SERVICE

In response to national disasters, the Soil Conservation Service (SCS), U.S. Department of Agriculture (USDA), administers the USDA Emergency Watershed Protection Program. The objective of the program is to provide Federal assistance for safeguarding lives and properties from floods and erosion and to eliminate or reduce hazards created by national disasters causing a sudden impairment of the watershed. Eligible recipients, including private and public landowners, may receive Federal assistance to cover up to 100 percent of the construction costs of the emergency measures taken.

According to the SCS Director of Financial Management and the Director of Budget Formulation, the Congress does not normally appropriate funds to SCS for its emergency program but authorizes the agency to use up to \$10 million in "Watershed and Flood Prevention Operations" funds annually for the program. They said that when large disasters such as Mount St. Helens occur, the agency may have to request supplemental appropriations.

In response to the Mount St. Helens disaster, SCS emergency activities included reseeding portions of the blast area, cleaning out and removing debris from numerous creeks and tributaries, and providing technical assistance to farmers and others affected by the disaster.

In the 1980 supplemental appropriation, the Congress appropriated \$3 million to SCS for "Conservation Operations," to remain available until September 30, 1981, and \$20 million for its "Watershed and Flood Prevention Operations" program, to remain available until expended. All funds for both programs had been requested for the Mount St. Helens disaster.

As of the end of fiscal year 1981, SCS had obligated about \$10.6 million of the \$23 million appropriated to the agency in the 1980 supplemental appropriation, all on Mount St. Helens activities. Of the \$3 million appropriated to SCS for Conservation Operations, the agency obligated about \$2.9 million for Mount St. Helens. The remaining balance, about \$100,000, was not used and expired at the end of fiscal year 1981. The table below summarizes SCS's Conservation Operations obligations.

SCS Obligations for Mount St. Helens
Conservation Operations
Fiscal Years 1980 and 1981

	<u>1980</u>	<u>1981</u>	<u>Total</u>
Idaho	\$ 12,605	\$ 131,730	\$ 144,335
Montana	27,799	88,452	116,251
Oregon	27,488	96,309	123,797
Washington	333,514	1,899,553	2,233,067
Midwest technical service center	-	19,987	19,987
West technical service center	<u>28,128</u>	<u>234,576</u>	<u>262,704</u>
Total	<u>\$429,534</u>	<u>\$2,470,607</u>	<u>\$2,900,141</u>

For its emergency watershed protection program, SCS obligated about \$7.7 million for Mount St. Helens-related activities as of the end of fiscal year 1981, leaving a balance of about \$12.3 million remaining from the \$20 million 1980 supplemental appropriation. The agency used its emergency funds for the following activities, all of which were undertaken in the State of Washington:

Technical assistance	\$ 891,137
Blast area seeding	1,985,820
Irrigation canal rehabilitation	2,957,892
Flood control	1,863,724
Fish passage cleanout	7,440
Miscellaneous purchase orders	<u>14,851</u>
Total	<u>\$7,720,864</u>

According to an SCS headquarters supervisory budget analyst, the agency may have to spend up to \$2 million more for stream cleaning and bank stabilization in the Mount St. Helens area in fiscal year 1982.

SCS overestimated the amount of funds it would need for the Mount St. Helens disaster by about \$10 million (\$23 million received, less \$13 million obligated and/or needed). According to the SCS Director of Financial Management, the agency overestimated for several reasons: (1) the uniqueness of the disaster and volcanic ash, (2) the short time period between the disaster and the 1980 supplemental appropriation, and (3) the continuous pressure from the Congress to provide cost estimates. The official said that the above factors forced the agency to make an "educated guess" without the benefit of good information from the field.

A headquarters supervisory budget analyst said the agency intends to reserve the remaining \$10 million for future Mount St. Helens needs in the event the volcano erupts again. The official said the agency will eventually have to decide on what to do with the money if it is not needed for Mount St. Helens. The agency can either (1) use the funds for other disasters, (2) ask the Congress for authority to redirect the funds for other agency programs, or (3) return the money to the U.S. Treasury. 1/

1/On June 2, 1982, the President proposed deferring \$8,822,000 of SCS unobligated Mount St. Helens-related funds, pending enactment of supplemental appropriations language transferring the funds to other SCS accounts to be used for increased pay costs.

AN ASSESSMENT OF THE CORPS OF ENGINEERS' DETERMINATION
THAT THE RAILROAD AND HIGHWAY BRIDGES
ACROSS THE TOUTLE RIVER WILL BE DESTROYED
WITHOUT FURTHER CORPS MAINTENANCE WORK

Soon after Mount St. Helens erupted, the Corps of Engineers began to analyze the movement of debris off the mountain and determined that significant amounts of sediment would fill the Toutle and Cowlitz Rivers, reducing river channels, increasing flooding, and ultimately destroying the railroad and Interstate 5 (I-5) highway bridges. Serious disagreement with this conclusion has persisted, however, among State and Federal highway officials, and questions have been raised about the probability of bridge failure as well as about the Corps' projection of economic losses which would result from bridge failure.

After tackling the immediate problems created by the May 18, 1980, eruption--channel infill and flooding--the Corps of Engineers' Portland District analyzed the future problems that might occur as ash, dirt, and other debris continue to wash into the Toutle and Cowlitz Rivers by rainfall and snowmelt. The Corps estimated that some 380 million cubic yards of sand-sized sediment would settle in the Cowlitz and Columbia Rivers between 1982-96 if the Corps were not provided funds to trap or remove the sediment before it entered these rivers. The Corps concluded that, if it took no action (a "do-nothing" posture), the Burlington Northern Railroad bridge and two Interstate 5 highway bridges would be destroyed and the surrounding cities would be subject to an increased threat of flooding. In total, the Corps predicted transportation and flood losses of about \$1.9 billion over the 1982-96 period, and therefore proposed a \$939 million, 15-year maintenance and dredging program to prevent the losses.

The damages and economic losses are predicated by the Corps primarily on the destruction of the railroad and I-5 highway bridges from normal rainfall and river flow. In its Advance Measures Report No. 10, dated July 1981, the Corps stated that if volcanic sediment is not removed from the rivers:

"The Burlington Northern-Union Pacific Railroad bridge and the two I-5 bridges near the mouth of Toutle River will fail. The bridges would either fail due to a perched [raised] river channel forcing flood flows over the approaches and against the bridge, or due to the effects of the meandering river attacking the bridge abutments, or a combination of the two mechanisms."

The bridges become increasingly susceptible to damage from flooding as the river channel fills with sediment over time. The

following table presents the probability of damage to the bridges as projected by the Corps:

		<u>Levels of Flood Protection in Years</u>									
		<u>(note a)</u>									
		<u>'81</u>	<u>'82</u>	<u>'83</u>	<u>'84</u>	<u>'85</u>	<u>'86</u>	<u>'87</u>	<u>'88</u>	<u>'89</u>	<u>'96</u>
											<u>(note b)</u>
Railroad											
bridge:											
Start of											
damage		71	10	1	1	1	1	1	1	1	500
Destruction		178	28	18	10	1	1	1	1	1	500+
I-5 bridges:											
Start of											
damage		83	14	1	1	1	1	1	1	1	500
Destruction		500	64	42	27	17	1	1	1	1	500+

a/Levels of flood protection equal probabilities of a flood severe enough to cause damage or destruction. For example, the Corps projects that the railroad bridge would be destroyed in 1983 from a flood severe enough to occur on the average of once every 18 years. Statistically, the probability of this occurring equals 1 divided by 18, or 0.055, or 5.5 percent. Years indicated represent the winter flooding season at the end of one year and beginning of the following year. For example, 1984 covers the winter season from the end of 1984 to the beginning of 1985.

b/The level of flood protection increases from 1 (no protection) in 1989 to about a 500-year or greater flood protection level in 1996. This results from natural scouring of the rivers during this period.

As shown in the above table, damages can be expected to both the railroad and I-5 bridges from normal rainfall in the winter of 1983-84 and destruction occurs in 1985 and 1986, respectively, from the same average rainfall or flood.

During the initial eruption in May 1980, the Toutle and Cowlitz Rivers and associated bridges were subjected to severe floods, with "waters" having a density of about 1.5. The floodwaters were heavily laden with sediment, ash, trees, and other material which increased the forces on the bridges substantially above that of normal floodwaters. The railroad and highway bridges sustained damage as a result of this event. The railroad

bridge was covered with material and required 1 month and \$280,000 to repair. However, traffic was restored over one of the bridges' two rail lines in 3 days. The highway bridges also sustained damages of about \$185,000 and required rerouting of southbound traffic for a few hours.

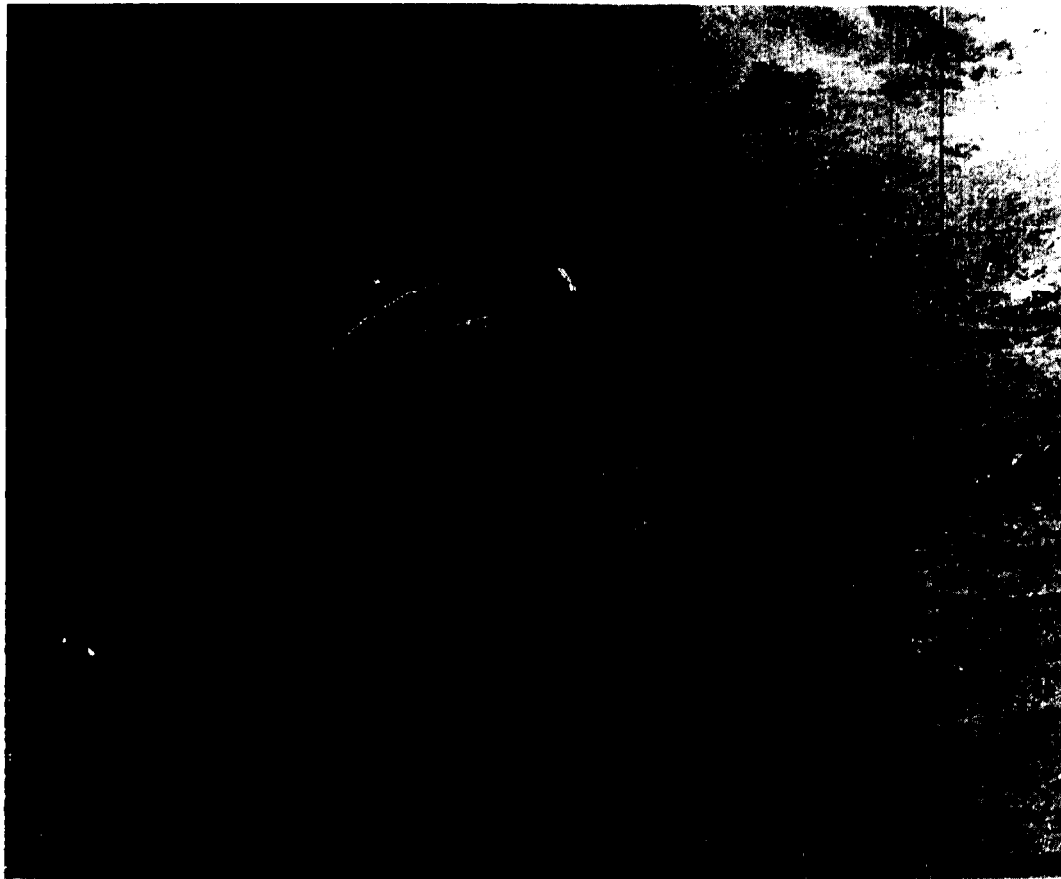
The I-5 bridges have been substantially strengthened since the May 18, 1980, eruption through modifications to resist anticipated lateral and uplift forces resulting from streamflows acting on the superstructures. The modifications were designed to allow the bridge to handle waters of 15 feet per second, a density of 1.5, with debris piled from 5 feet above the road surface to 5 feet below the bridge bottom.

A senior bridge operations engineer with the Washington State Department of Transportation, responsible for the inspection and condition of all Washington State bridges, told us that in May 1980 the I-5 bridges went through an extreme experience, survived, and are now stronger than before. He stated that it was difficult to envision the loss of the bridges. Also, the Federal Highway Administration, in a November 20, 1981, letter to the Federal Emergency Management Agency, commented:

"The bridges satisfactorily conveyed the flood of May 18, 1980. This flood was caused by the eruption of Mt. St. Helens and is by far the greatest flood known to occur on the Toutle River. The flood discharge was on the order of magnitude of approximately 3 times the previous maximum flood flow recorded in over 50 years of record. The probability of exceedance for the flood event has been estimated to be on the order of one in ten thousand."

Although extensive analysis has been made of the I-5 bridges, less has been done regarding the railroad bridge. Federal and State highway departments have done no analysis or planning for this bridge because it is not their responsibility. However, the Burlington Northern Railroad has examined the situation and presently believes a major flood might cause loss of a piece of the track to the north of the bridge rather than the bridge itself.

Thus, information from State highway and railroad officials indicates that under normal rainfall and river flow conditions, the I-5 and railroad bridges across the Toutle River are not likely to be destroyed as the Corps predicts.



Photos courtesy of *The Daily News*, Longview, Wash.

Fifty mph torrent of mud and fallen trees batters a Spirit Lake Highway bridge across the North Fork Toutle River on May 19, 1980. A short time later, the bridge is nearly lost from sight.

COMPARATIVE ECONOMIC ANALYSES: GAO AND CORPS
ASSESSMENTS OF THE ECONOMIC IMPACTS PREDICTED
TO RESULT FROM DESTRUCTION OF THE RAILROAD AND
HIGHWAY BRIDGES ACROSS THE TOUTLE RIVER

Both the Corps of Engineers and GAO estimates of economic loss and damage discussed in chapter 3 and summarized in the tables on pages 41 and 98 are based on the assumption that the Corps will do no further dredging or other maintenance work on the Toutle and Cowlitz Rivers (the "do-nothing" scenario) and that as a result the railroad and Interstate 5 (I-5) highway bridges will be destroyed.

According to Corps projections, the most significant impacts occur in the mid-1980's in replacing the destroyed structures and the economic costs of rerouting rail and highway traffic while the bridges are being rebuilt. The primary north-south highway and railroad corridors in the State of Washington go through Cowlitz County and cross the Toutle River just above its confluence with the Cowlitz River. The I-5 highway is part of the national defense system, and the highway bridges have an average daily traffic count of about 26,000 vehicles--about 81 percent cars and 19 percent trucks. The Burlington Northern Railroad system is used daily by 40 to 45 trains carrying about 100,000 tons of freight and includes 6 AMTRAK passenger trains. The Union Pacific Railroad is the largest single user of the system, averaging 20 trains daily.

Although we have accepted the Corps' assumptions on bridge destruction for purposes of comparative analysis, 1/ our assessment shows that significantly fewer economic losses are likely to occur.

LOSSES DUE TO DESTRUCTION
OF I-5 HIGHWAY BRIDGES

As shown in the table on page 86, the Corps predicted that, in the absence of further river maintenance, the I-5 highway bridges will be destroyed in the winter of 1986-87 with normal rainfall and flooding. The replacement bridges, according to the Corps, would be constructed at a higher elevation, take about 2 years to build, and cost about \$30 million.

1/See app. II for our discussion of the Corps' assumptions about bridge destruction.

Corps analysis

The Corps analysis assumed that the I-5 corridor would be interrupted for the entire 2 years of reconstruction of the highway bridges. During this period car and truck traffic would be rerouted through Raymond, Washington, via State Route 6, U.S. Route 101, and State Route 4. This route adds 84 miles and about 2 hours' travel time to the normal route. The Corps calculated economic impacts resulting from loss of I-5 as the extra costs incurred in rerouting traffic, a value assigned to extra time required to make the trip, and the cost to reconstruct the bridges. The car traffic was computed at \$0.18 per mile, truck traffic at \$0.09 per ton-mile, and time value at \$4 an hour for both cars and commercial trucks. Total economic impact of highway bridge loss was calculated at about \$1.1 billion for the 2-year bridge reconstruction period. Additional losses of lesser sums were calculated for years prior to bridge destruction. 1/

GAO analysis

Our discussions with Washington State Department of Transportation officials revealed that an interruption of the I-5 corridor cannot be tolerated for more than 72 hours and, in view of the "possibility" of the bridges being destroyed, contingency plans have been prepared for rerouting traffic around the I-5 corridor and over other, less vulnerable bridges. Plans have also been devised for placing a temporary structure over the Toutle River to carry the I-5 traffic while a permanent bridge is rebuilt. A temporary bridge could be in place in 2 to 4 weeks and handle I-5 traffic volumes with little delay, according to State officials.

The State's contingency plans to move traffic around the I-5 bridges if they are destroyed contain three alternate routes: the old Pacific Highway (State Route 99), State Route 411, and U.S. Route 101. State Route 99 is presently two and four lanes, requires little extra travel (less than 1 mile), and could be made entirely into four lanes in less than 1 week, according to State transportation officials. The route also requires use of a

1/Other economic and social impacts which are not included in the GAO or Corps analyses include wear and tear on the alternate highways, income effects to local businesses in Raymond and other towns along the 84-mile route, interruption of emergency services, interruption of national defense systems, and impact on individuals choosing not to commute the extra 84 miles.

bridge which goes over the Toutle River, but it is about 4 feet higher than the I-5 bridges and was not threatened during the May 18, 1980, eruption. Use of State Route 411 involves a detour of about 4 miles and routes traffic through the center of Castle Rock, a town of 2,000 population. U.S. Highway 101, an 84-mile detour through Raymond, Washington, is also available but is planned to be used only if all other alternatives in the local area are disrupted. The State estimates the delay time on State Routes 99 and 411 at 5 to 60 minutes, with possible delays of 1 to 3 hours at peak times.

The following computations show our estimates of the economic impact of highway bridge destruction, using the Corps' assumptions but substituting State highway department information for (1) the length of time traffic would be diverted and (2) the distances involved in the alternate routes. Two scenarios are provided--a low and high impact, in order to bracket actual losses should the bridges fail. The high-impact scenario differs from the low-impact scenario by computing the costs of diverting all traffic via U.S. Route 101 during periods of disruption and bridge construction--the Corps' assumption.

I-5 bridge low-impact scenario,
GAO assumptions and computations

- Damage or loss of bridge will entail rerouting via State Routes 99 and 411.
- Damages to I-5 bridges will result in 3-day detours and \$200,000 losses to the structures per flood event. One event is assumed in 1983, two in 1984, three in 1985, and four in 1986. In 1987 the I-5 bridges are assumed to be destroyed, resulting in a 21-day delay until a temporary bridge is in place.
- Average delay: 1 hour.
- Number of cars: 81 percent of 26,000 = 21,060.
- Number of trucks: 19 percent of 26,000 = 4,940.
- Length of trip: nil 1/.
- Cost per hour--car: \$4.

1/Mileage costs are about zero.

- Cost per hour--truck: \$20.
- Cost of temporary bridge: \$1 million.
- Cost of permanent bridge: \$30 million.

Three-day delay impact: 1/

Car costs: (1 hour)(21,060)(\$4)(3 days) = \$252,720
 Truck costs: (1 hour)(4,940)(\$20)(3 days) = 296,400
 Total: \$549,120
 Rounded to: \$550,000

Summary of Highway Bridge Costs
GAO Low-Impact Scenario

<u>Year</u>	<u>Number of flood events</u>	<u>Delay costs</u>	<u>Damage costs</u>	<u>Total</u>
1982	0	nil	nil	nil
1983	1	\$ 550,000	\$ 200,000	\$ 750,000
1984	2	1,100,000	400,000	1,500,000
1985	3	1,650,000	600,000	2,250,000
1986	4	2,200,000	800,000	3,000,000
1987	Bridge destroyed	<u>a/3,850,000</u>	<u>b/16,000,000</u>	19,850,000
1988	0	0	15,000,000	15,000,000
1989	0	0	0	<u>0</u>
Total				<u>\$42,350,000</u>

a/Assumes a 21-day delay.

b/\$1 million for temporary bridge plus \$15 million for one-half of the \$30 million new structure.

1/Mileage costs are about zero.

I-5 bridge high-impact scenario,
GAO assumptions and computations

Assumptions are the same as for the low-impact scenario except:

- All rerouting will be through Raymond via State Routes 6 and 4 and U.S. Route 101.
- Length of trip: 84 miles.
- Length of delay: 2 hours.
- Truck costs are \$0.09 a ton-mile.
- 1,300 10-ton and 3,640 40-ton trucks.

Three-day delay impact:

Car costs = (2 hours)(21,060)(\$4 per hour)(3 days) = \$ 505,440
 = (21,060)(\$.18)(84 miles)(3 days) = 955,282

Truck costs = (1,300)(10 tons)(\$.09)(84 miles)(3 days) = 294,840
 = (3,640)(40 tons)(\$.09)(84 miles)(3 days) = 3,302,208

Total: \$5,057,770

Rounded to: \$5,100,000

Summary of Highway Bridge Costs
GAO High-Impact Scenario

<u>Year</u>	<u>Number of flood events</u>	<u>Delay costs</u>	<u>Damage costs</u>	<u>Total</u>
1982	0	nil	nil	nil
1983	1	\$ 5,100,000	\$ 200,000	\$ 5,300,000
1984	2	10,200,000	400,000	10,600,000
1985	3	15,300,000	600,000	15,900,000
1986	4	20,400,000	800,000	21,200,000
1987	Bridge destroyed	<u>a/35,700,000</u>	<u>b/16,000,000</u>	51,700,000
1988	0	0	15,000,000	15,000,000
1989	0	0	0	<u>0</u>
Total				<u>\$119,700,000</u>

a/Assumes a 21-day delay.

b/\$1 million for temporary bridge plus \$15 million for one-half of the \$30 million new structure.

LOSSES DUE TO DESTRUCTION
OF THE RAILROAD BRIDGE

As shown in the table on page 86, the Corps predicts that with normal rainfall and river flow, damages begin occurring to the railroad bridge in 1983-84 and destruction occurs in 1985-86. During the May 18, 1980, eruption, the bridge, which carries two tracks, was covered with up to 4 feet of mud, trees, and other debris. It took 1 month and \$280,000 to repair and restore the bridge in its entirety; however, traffic was restored to one track in 3 days. Burlington Northern Railroad officials told us they have not studied the sediment transport issue or assessed the vulnerability of their bridge in detail, but they are concerned about future disruptions to rail service from flooding.

Corps analysis

The Corps analysis assumed that the railroad bridge and corridor would be interrupted and unavailable for 4 years while the bridge over the Toutle River is being replaced, at a higher elevation, at a total cost of \$125 million. During this period, the Corps assumed the 100,000 tons per day of normal rail traffic would be diverted as follows: 60 percent across Stevens Pass, Washington; 25 percent over Stampede Pass and through Yakima, Washington; 10 percent would move by truck via U.S. Route 101; and the remaining 5 percent would not move. These diversions entail greater distances and costs, estimated by the Corps at \$0.02 a ton-mile for rail and \$0.09 a ton-mile for truck. The Corps calculated these costs at \$374 million over a 4-year period. AMTRAK, which runs six trains daily, was assumed to cease operating with losses in net profits of about \$660,000 over the same 4-year period. Total economic impact was calculated by the Corps for the 4-year bridge reconstruction period at about \$500 million. Additional losses of lesser sums were also calculated for the years prior to bridge destruction.

GAO analysis

Our discussions with officials from both the Burlington Northern and Union Pacific Railroads revealed that they cannot tolerate a disruption in the rail line for more than a few days, let alone 4 years. Disruptions for 3 or so days could be tolerated with freight backing up, but longer delays would result in lost revenues. If the railroad bridge were to be destroyed, Burlington Northern officials told us they would construct a temporary timber trestle to carry traffic while a permanent bridge is built. The temporary structure would take about 10 days to construct and cost about \$500,000. The permanent bridge would probably be built

about 4 feet higher to provide greater protection from floods. According to railroad officials, the new railroad bridge would take about 6 months to build and cost about \$5 million. Raising the bridge grade 4 feet would require ramping the roadbed about one-half mile on each side of the bridge. This ramping would take about 1 week and cost about \$800,000. Again, these estimates differ significantly from the Corps' 4-year, \$125-million estimates.

In the interim, according to Burlington Northern officials, about 50 percent of the traffic would be diverted to lines over Stampede and Stevens Pass. The Stampede Pass route could handle an additional 20 trains; Stevens Pass an additional 6. The remaining traffic would either be diverted to trucks, would be delayed for 10 days, or would not move. The traffic rerouted by rail would require an additional 300 miles of travel at a cost of about \$0.025 a ton-mile.

The following computations show our estimates of the economic impact of railroad bridge destruction, using the Corps' assumptions but substituting Burlington Northern Railroad information for (1) the cost to rebuild the bridge, (2) the length of time to rebuild the bridge, and (3) the length of time railroad traffic would be diverted to costlier, alternate routes. Two scenarios are again provided in order to bracket actual losses should the railroad bridge fail. Our high-impact scenario differs from the low by assuming that Burlington Northern raises 25 miles of grade leading to the bridge and excavates a tunnel at a cost of \$125 million (similar to the Corps' assumptions). The high-impact scenario also assumes that the temporary structure will be washed out four times in 1986 by periodic floods.

Railroad bridge low-impact scenario,
GAO assumptions and computations

- Damages to the railroad bridge will cost \$300,000 each and cause 3-day delays. One event is assumed in 1983, two in 1984, three in 1985, and the bridge is destroyed in 1986; three flood events in 1987, two in 1988, one in 1989, and none thereafter.
- No economic loss is incurred during 3-day delays.
- During 10-day delays, 50 percent of the traffic is diverted to other rail routes at \$0.025 a ton-mile for 300 miles and 50 percent to truck at \$0.09 a ton-mile for 150 miles. (Note: Trucks probably could not carry 50 percent of the traffic but could handle some, and it is used here to approximate the economic impact of bridge failure. The

150-mile figure is used to approximate the Seattle to Portland, Oregon, run.)

--A new bridge will cost \$5 million, plus \$800,000 to raise the grade 4 feet.

--A temporary timber trestle bridge will cost \$500,000 and require 10 days to put in place.

Summary of Railroad Bridge Costs
GAO Low-Impact Scenario

<u>Year</u>	<u>Number of flood events</u>	<u>Reroute costs</u>	<u>Damage costs</u>	<u>Total</u>
1982	0	nil	\$ nil	\$ nil
1983	1	nil	300,000	300,000
1984	2	nil	600,000	600,000
1985	3	nil	900,000	900,000
1986	Bridge destroyed	a/10,500,000	b/6,300,000	16,800,000
1987	3	nil	900,000	900,000
1988	2	nil	600,000	600,000
1989	1	nil	300,000	300,000
1990	0	nil	nil	<u>nil</u>
Total				<u>\$20,400,000</u>

a/Reroute costs

Rail: (50,000 tons)(300 miles)(\$.025)(10 days) = \$ 3,750,000

Truck: (50,000 tons)(150 miles)(\$.09)(10 days) = 6,750,000

Total \$10,500,000

b/Damage costs:

Permanent bridge \$5,000,000

Raise grade 800,000

Temporary bridge 500,000

Total \$6,300,000

Railroad bridge high-impact scenario,
GAO assumptions and computations

The high-impact scenario makes the same assumptions as the low-impact scenario, except the timber trestle is forecast to be destroyed four times during the 6-month bridge reconstruction period. Typically, there are four to six such events annually. This scenario also uses the \$125 million elevated bridge, roadbed, and tunneling assumptions the Corps used in its analysis. This option would raise the bridge high enough to eliminate future damages from flooding in the Toutle River.

Summary of Railroad Bridge Costs
GAO High-Impact Scenario

<u>Year</u>	<u>Number of flood events</u>	<u>Reroute costs</u>	<u>Damage costs</u>	<u>Total</u>
1982	0	\$ nil	\$ nil	\$ nil
1983	1	nil	300,000	300,000
1984	2	nil	600,000	600,000
1985	3	nil	900,000	900,000
1986	Bridge destroyed	a/52,500,000	125,000,000	<u>177,500,000</u>
Total				<u>\$179,300,000</u>

a/Temporary structure destroyed four times after permanent existing bridge destroyed. Therefore, impact equals five times low-impact reroute costs.

SUMMARY COMPARISON OF LOSSES

Finally, the following table compares the Corps' estimates with GAO's two scenarios. The table also includes \$103.4 million in flood-related losses to communities as forecast by the Corps. These losses are included unaltered in our analysis to make the data comparable to the Corps' damage assessment in its July 1981 report entitled "Long-Term Program for Cowlitz and Toutle River Basins."

Summary of Estimated Economic Losses

(thousands)

<u>Scenario</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990-96</u>
<u>GAO LOW</u>									
Low I-5	\$ nil	\$ 750	\$1,500	\$ 2,250	\$ 3,000	\$19,850	\$15,000	\$ -	\$ -
Low RR	nil	300	600	900	16,800	900	600	300	-
Flood	<u>3,800</u>	<u>4,800</u>	<u>6,600</u>	<u>7,600</u>	<u>8,800</u>	<u>9,600</u>	<u>11,300</u>	<u>11,300</u>	<u>39,600</u>
TOTAL	<u>\$3,800</u>	<u>\$5,850</u>	<u>\$8,700</u>	<u>\$10,750</u>	<u>\$28,600</u>	<u>\$30,350</u>	<u>\$26,900</u>	<u>\$11,600</u>	<u>\$39,600</u>

(GAO low-scenario total = \$166.2 million)

GAO HIGH

High I-5	\$ nil	\$ 5,300	\$10,600	\$15,900	\$ 21,200	\$51,700	\$15,000	\$ -	\$ -
High RR	nil	300	600	900	177,500	-	-	-	-
Flood	<u>3,800</u>	<u>4,800</u>	<u>6,600</u>	<u>7,600</u>	<u>8,800</u>	<u>9,600</u>	<u>11,300</u>	<u>11,300</u>	<u>39,600</u>
TOTAL	<u>\$3,800</u>	<u>\$10,400</u>	<u>\$17,800</u>	<u>\$24,400</u>	<u>\$207,500</u>	<u>\$61,300</u>	<u>\$26,300</u>	<u>\$11,300</u>	<u>\$39,600</u>

(GAO high-scenario total = \$402.4 million)

CORPS OF ENGINEERS

Bridges	\$14,000	\$54,600	\$71,300	\$89,500	\$665,400	\$673,900	\$124,600	\$124,600	\$ -
Flood	<u>3,800</u>	<u>4,800</u>	<u>6,600</u>	<u>7,600</u>	<u>8,800</u>	<u>9,600</u>	<u>11,300</u>	<u>11,300</u>	<u>39,600</u>
TOTAL	<u>\$17,800</u>	<u>\$59,400</u>	<u>\$77,900</u>	<u>\$97,100</u>	<u>\$674,200</u>	<u>\$683,500</u>	<u>\$135,900</u>	<u>\$135,900</u>	<u>\$39,600</u>

(Corps total = \$1,921.3 million)

FEMA'S COMMENTS AND GAO'S RESPONSE

Federal Emergency Management Agency

Washington, D.C. 20472

AS 16 1982

Mr. Henry Eschwege
 Director
 Community and Economic
 Development Division
 United States General
 Accounting Office
 Washington, D.C. 20548

Dear Mr. Eschwege:

I appreciate the opportunity to review the draft report entitled "MOUNT ST. HELENS DISASTER: HOW MUCH FEDERAL FUNDS WERE PROVIDED, EXPENDED, AND ARE STILL NEEDED?" As the agency charged with the responsibility for administering the President's Disaster Relief Fund, the Federal Emergency Management Agency (FEMA) has an interest in the subject matter of this report.

- 1 We defer to the U.S. Army Corps of Engineers (COE) for comments on portions of the report related to COE activities.

Our comments are as follows:

- 2
 - We do not support a concept of earmarking funds for specific disasters. FEMA administers the Disaster Relief Act of 1974 (Public Law 93-288), as amended, and manages the President's Disaster Relief Fund. This is a "no year" fund available until expended and provides for PL 93-288 assistance in Presidentially declared major disasters and emergencies, on the average of about 40 per year. This process has proved most beneficial in providing the resources needed for an immediate response and commitment by the Federal Government where the disaster conditions confronting a stricken area warrant Federal aid and assistance. Alternatively, a policy which would earmark funds for specific major disasters could delay timely response to the crisis and would add unnecessary complications as actual expenditures varied from initial assessments. It is not consistent with the Disaster Relief Act to have funds restricted for any single major disaster. Funds as appropriated by Congress should be available for any major disaster or emergency which might arise.
- 3
 - FEMA should not be appointed to coordinate funding requests, approvals, and allocations to various agencies for a single major disaster. Funding requests and allocations for the executive departments and agencies are made and approved by the President

-2-

acting through the Office of Management and Budget. A FEMA assignment to coordinate funding would simply complicate this process.

- 4 • Considering the current status of Spirit Lake, it would be prudent to reassess this threat since it may be more serious than this report depicts.
- 5 • The draft report tends to generalize on a unique situation. The eruptions of Mount St. Helens posed problems which have not been encountered elsewhere. The threat posed by the volcanic ash was unknown and contributed greatly to the excessive estimates which were made.

Sincerely,



Louis O. Gluffrida
Director

Enclosure

1. Comments of the Department of the Army and the Corps of Engineers are in appendix V.
2. Neither the draft report nor this final report explicitly recommends that the Congress earmark funds for specific disasters. Rather, we point out that if the Congress wishes to make funds available for particular disasters (as our review of the legislative history of the Mount St. Helens appropriation shows was contemplated by the requesting Federal agencies, the President, and the House and Senate Appropriations Committees), or if it wishes to restrict the funds to the disaster, it needs to either place limitations or controls in appropriations language or designate a lead agency to coordinate fund use. In fact, the report recognizes that the concept of earmarking funds is not appropriate when the Congress is routinely replenishing agency disaster accounts, such as the President's Disaster Relief Fund, to provide funds in advance of unforeseen disasters which may occur in the future. In the case of Mount St. Helens, however, the disaster had already occurred, and most of the agencies, including FEMA, were clearly requesting funds for that disaster, not others. If the agencies intended at the time of their requests to use some of the appropriations for disasters or purposes other than Mount St. Helens, we believe that these other actual or potential uses should have been disclosed so that the Congress could have had the opportunity to determine whether the intended uses were acceptable. As it turned out, the excessive estimates, coupled with the absence of restricting language in the appropriations act, allowed Federal agencies to use as much as \$560 million--over half the amount the Congress appropriated--for purposes other than the Mount St. Helens disaster for which the funds were explicitly requested. We believe that the magnitude of the surplus funds, and the reduced congressional oversight and agency accountability which resulted, justify the suggestion that the Congress consider whether it wishes to impose financial restrictions in future situations of similar circumstances.
3. FEMA's comments regarding the appropriate agency to coordinate funding requests, approvals, and allocations to various Federal agencies for a major disaster are not responsive to our recommendation, because our recommendation did not relate to agencies' funding requests, approvals, or allocations. Rather, our recommendation relates to the need for an agency to coordinate the use and, if necessary, sharing of major disaster funds among Federal agencies after their initial appropriation and allocation. We believe that for this latter purpose it would be appropriate for FEMA to act as the lead agency. The Disaster Relief Act of 1974 was enacted to concentrate the power to direct and supervise most Federal disaster assistance

in the Office of the President. FEMA was created in July 1979 under an executive reorganization which merged organizational elements of several Federal agencies in order to improve Federal emergency management and assistance. In his Reorganization Plan No. 3 of 1978, which called for consolidating emergency preparedness, mitigation, and response activities and establishing FEMA, the President's transmittal message to the Congress stated that the plan rested on several fundamental principles, of which the first was the lead-agency concept:

"First, Federal authorities to anticipate, prepare for, and respond to major civil emergencies should be supervised by one official responsible to the President and given attention by other officials at the highest levels."

FEMA's current responsibilities include administration of disaster response and recovery assistance for State and local governments and coordination of disaster relief activities of other Federal agencies. FEMA can require other Federal agencies to provide disaster assistance with or without reimbursement to the agencies from the President's Disaster Relief Fund, and in many cases FEMA uses temporary staff of other Federal agencies. As the President's disaster coordinating agency and administrator of the President's Disaster Relief Fund, we believe it is appropriate to recommend that the Congress consider FEMA as a potential lead agency to coordinate fund use for major disasters.

4. The draft report did not discuss the threatened break in a volcanic debris barrier in Spirit Lake near Mount St. Helens because it was not considered a hazard by scientists and emergency planners at the time we completed our field work and, on July 15, 1982, sent the draft to FEMA for comment. Chapter 4 of the report has been added to include a discussion of this new Spirit Lake problem.
5. We agree that many problems, particularly the unknown threat posed by the volcanic ash, were unique to the Mount St. Helens disaster. In fact, we believe that any major disaster could have unique problems not encountered previously, could require supplemental appropriations, and could involve many Federal agencies. What we do not believe is unique to Mount St. Helens or any other major disaster is the propensity of Federal agency officials to make their disaster cost estimates on a "worst-case" basis. This practice generally leads to excessive estimates and, when funds are appropriated by the Congress in specific response

to a known disaster, to large surpluses, reduced accountability, and lessened or lost congressional oversight. It is for these reasons that we believe the Congress, when appropriating funds specifically in response to a disaster which has already occurred, may wish to consider placing limitations or controls on the use of the funds or designating a lead agency to coordinate the use of funds appropriated to other agencies. We believe that these actions are needed to ensure that the recovery needs of the specified disaster are reasonably satisfied before funds are put to other uses.

ARMY'S COMMENTS AND GAO'S RESPONSE

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310

17 AUG 1982

Mr. Henry Eschwege
Director
Community and Economic
Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

This is in reply to your letter of July 15, 1982, to the Secretary of Defense transmitting the draft GAO report, "Mount St. Helens Disaster: How Much Federal Funds Were Provided, Expended, and Are Still Needed?" GAO Code 068108 (OSD Case #6017).

- 1 The Department of the Army agrees with the recommendation in the draft report that additional detailed information is necessary as a basis for future dredging and other flood control work related to Mount St. Helens. Apparently the authors of the draft GAO report are unaware that on May 18, 1982, the Secretary of Defense was directed by the President to have the Army Corps of Engineers prepare a comprehensive plan of measures to manage the long-term threat occasioned by the eruption of Mount St. Helens. The comprehensive plan requested by the President will provide the basis for the Government to adopt a firm position on this matter, one that would be supported by the latest available technical data. A copy of the President's May 18, 1982, memorandum is enclosed.
- 2 With regard to the details of the draft GAO report itself, I note that the report treats the recommendations and data contained in the Portland District's Advance Measures Report #10 and Long-Term Program Report as reflecting the position of the Army Corps of Engineers. Since the initial effort by the District was based on preliminary information and developed, of necessity, on an expedited basis, it should not be presented as reflecting the final position of the Army Corps of Engineers. The failure of the authors of the draft GAO report to distinguish between decisions and recommendations made by the Portland District of the Corps of Engineers and decisions and recommendations made by other echelons of the Department of the Army is confusing, and is the cause of errors. I refer specifically to the statement in paragraph 3 of the "Cover Summary" that "the Corps requested \$68 million for FY 1983, but these funds had not been appropriated as of July 1982". The \$68 million for FY 1983 was recommended by the Portland District based on preliminary information and neither the Corps of Engineers nor the Department of the Army made such a request to Congress.

[GAO NOTE: Page references have been changed to agree with the final report.]

Mr. Henry Eschwege

3 I should also point out that the report does not accurately reflect the conditions under which the Advance Measures Report #10 and Long-Term Program Report were prepared. There were limited data available at the time of their preparation and the flood threat indicated by the data at that time necessitated prompt action. An Advance Measures Report is a vehicle for Corps District and Division Engineers to seek conceptual approval and funding for taking expedient action in the face of an identified flood emergency. Advance Measures Report #10 was a "worst case" analysis due to the very limited data available to assess impacts and determine costs. However, it did serve to identify a significant flood threat which required initiation of work on an expedited basis. The report was never expected to be a comprehensive evaluation nor a detailed engineering-economic analysis for the long-term, permanent solution of the situation.

I believe your report should be revised to reflect the above comments and the enclosed additional comments provided by the Corps of Engineers.

Sincerely,



William R. Gianelli

Assistant Secretary of the Army
(Civil Works)

Enclosures

Additional Corps of Engineers Comments on
GAO Code 068108, Mount St. Helens Disaster

- 4 a. The statement on page 7 that there were "serious discrepancies and questions regarding the Corps' assumptions and data," is misleading. Data obtained after the volcanic disaster in May 1980, which were essential to the early analysis, were developed in cooperation with Washington State Department of Transportation and Burlington Railroad personnel. New data, which was available for use by the GAO, was not available when the Corps report was being prepared.
- 5 b. Data gathered subsequent to the Corps' report, "Long-Term Program for Cowlitz and Toutle River Basins" indicate that, although original estimates of sedimentation rates were probably too high, the maximum infill in the Cowlitz and lower Toutle Rivers is expected to reach the early estimates. Therefore, it is possible that the level of physical damages to property and transportation facilities which could result from a "Do Nothing" scenario may indeed remain the same as outlined in the Corps' report.
- 6 c. The quotation, in Appendix II, page 87, from the Federal Highway Administration in its November 20, 1981, letter to FEMA regarding the probability of recurrence of such an event is true. However, different conclusions can be drawn. The May 1980 event, with massive mud flows, was highly significant. From the mouth of the Toutle River on downstream, the channel was effectively filled and blocked. That channel, as well as the related flood plain, was covered with 10 to 30 feet of sediment and heavy debris. This created an entirely new base condition along the stream channel which is related to all subsequent flows and water profiles, including upstream storage. Due to that changed base condition, an event comparable to the May 1980 flood would result in damages much greater than experienced as a result of the eruption. A hydrologic event of much less magnitude than the May 1980 event would currently cause inundation comparable to the post-eruption flood.
- 7 d. The partial quotations of the North Pacific Division Engineer on page 43 do not convey the full meaning of his statements. The complete quotations regarding the threat of bridge failure and the economic loss resulting are as follows:

"With the work performed by the State of Washington and the Burlington Northern Railroad on these two bridges and the reduction in the sedimentation yield to the Cowlitz, we now feel that there is no imminent danger to these two bridges. However, the Mount St. Helens eruption deposits in the upper Toutle basin are significant and estimated to be in the multi-billion cubic yard range. We expect with future flood events and no further dredging in the Toutle River to have this material transported into the lower Toutle, Cowlitz and Columbia River systems. The integrity of these bridges will depend on future weather conditions and the extent of river transport of the sediments."

and

"sir, the contingency plans were not in effect when our earlier projections were made. However, with the proposed plans to restore normal traffic within a matter of weeks or a month, the estimate of economic loss would be greatly reduced."

- 8 e. Some of the initial Corps estimates of economic loss may be too high; however, those estimates were based on the best available data as indicated by consultation with State Highway and Burlington Railroad officials during preparation of the report. Further, the economic analysis presented in the draft report by GAO should consider the following points:
- 9 (1) The Highway 99 bridge will probably be destroyed prior to destruction of the I-5 transportation corridor. State Route 411 was damaged during the Mt. St. Helens eruption and traffic has not yet been fully restored. Under those circumstances it is reasonable to assume that a substantial amount of traffic would be routed over State Highway 101.
- 10 (2) The GAO analysis does not consider the possibility of traffic interruption or damage to temporary structures during reconstruction of I-5 and the railroad bridges. Temporary structures will be much more susceptible to damage than are the existing bridges and approaches.
- 11 f. With respect to funding, the projected need for \$939 million beyond FY 1981 was based on preliminary information and a worst case analysis. The Corp's Portland District recommended funds for FY 1982 and FY 1983 only to perform interim activities until detailed planning on a long-term solution could be completed. Amounts recommended were \$68 million in FY 1982 and \$68 million in FY 1983. Most of the activities proposed in the report have not been undertaken. Only minimal new work has been initiated in addition to continuing ongoing activities.

1. A section was added in chapter 3 to recognize, among other recent developments, the President's May 18, 1982, directive. The comprehensive study was being discussed, but had not been mandated, during our fieldwork at the Corps of Engineers. Since the Presidentially ordered study should result in the Corps' reevaluating anticipated damages and economic losses from flooding in the Toutle-Cowlitz River Basin, and the need for and cost of additional dredging and other flood control work, we have withdrawn our draft report proposal for such a study. However, the Corps' comments on our draft report indicate that it may not yet fully understand the nature of the problems with its original analysis (see points #5 and #6 below). Therefore, we are recommending that in making its study, the Corps use the more realistic assumptions on the probability of Toutle River bridge failure, and the potential economic impact if the bridges do fail, which we discuss in this report.
2. The Corps' Portland District, like any other district or division office, is a duly authorized element and representative of the parent organization. As such, the Portland District issued numerous reports concerning Mount St. Helens, including the Advance Measures Report #10 and Long-Term Program Report in July 1981. These two reports, released 14 months after the eruption, were sent to, reviewed by, and were well-known to both Department of the Army and Corps headquarters personnel. They consistently were used by Federal, State, and local officials and the news media as authoritative source documents. The reports also provided the primary support for several requests by the Governor of Washington to the President and FEMA (as recently as March 26, 1982) seeking additional congressional funding for the Corps to continue its Mount St. Helens river dredging and other maintenance work. We believe that these reports would have long since been disavowed by the Corps, or new studies ordered, if they did not reflect, at least for a period of time, the position of the Army Corps of Engineers.

Therefore, we have not changed the report as fully as requested by the Department of the Army. We did, however, amend the report to show that the Portland District made the sediment studies and prepared the Advance Measures and Long-Term Programs reports. We have also deleted the references to the \$68 million funding recommendations for fiscal years 1982 and 1983 since they were not included in appropriations requests to the Congress.

3. Our report recognizes the pressures placed on Government agencies to provide timely and accurate estimates following a disaster and acknowledges that some errors are bound to occur. We point out, however, that the nature and magnitude of the problems discussed in the report cast doubt on whether the Corps used reasonable safeguards to ensure that it

developed accurate, reliable information. The Advance Measures and Long-Term Program reports were not published by the Corps until July 1981, 14 months after the major eruption of Mount St. Helens on May 18, 1980, when significant information was available about the potential economic impact of flooding. Further, the issue involved in this chapter is not whether the Corps' reports were prepared early or late, or presented a "worst-case" or "best-case" analysis, but that its economic analysis (1) was based on unrealistic assumptions and contained serious data errors on bridge replacement and traffic rerouting, (2) was relied on by Government officials, Members of Congress, and the media as a comprehensive, authoritative analysis, and (3) was not questioned by the Army Corps of Engineers until after we brought problems with the analysis to the Corps' attention in December 1981. Accordingly, we believe that our report accurately reflects the problems with the Corps' analysis that the Corps should have been aware of at the time it issued its reports.

4. The Corps' contention that it used the best data available at the time it made its analysis is misleading and essentially unfounded. We did not use "new data" which was unavailable to the Corps; rather, we found that the Corps used unreasonable assumptions and data in making its calculations. For example, Burlington Northern Railroad and State highway department officials told us that it is standard industry practice, when a bridge is destroyed, to put up a temporary bridge until a permanent replacement is built--a factor not included in the Corps' analysis. They also stated that, whenever feasible, traffic is rerouted temporarily over the shortest possible alternative route, not the most distant route as calculated by the Corps. Further, we found no evidence that the Corps had recognized the shortcomings in its analysis until after we had made our assessment and brought the problems to its attention.
5. The Corps' comment that the same level of economic losses outlined in its earlier report might still be valid, although occurring over a longer period of time due to lower sediment flow rates, indicates to us that the Corps may not yet fully understand the nature of the problems with its analysis. As we tried to clearly describe in our high- and low-impact assessments of the Corps' calculations, we did not question that physical damages to property and transportation facilities--including destruction of the Interstate 5 and Burlington Northern Railroad bridges--would occur. In fact, we accepted the Corps' estimates of the extent and timing of damages. What we did question were the Corps' assumptions and related economic cost calculations indicating,

for example, that the bridges would take several years to rebuild, that no temporary bridges would be built, and that bridge traffic would be rerouted over extraordinarily long detours during the entire rebuilding period. Railroad and highway officials indicated that these assumptions were not realistic when the Corps made them, are not in accordance with standard industry practices, could not be tolerated financially, and would not be permitted to occur. Therefore, even if the maximum sediment infills in the Cowlitz and lower Toutle Rivers do reach the Corps' early estimates, and the same types of damage to property and transportation do result, the economic losses should still be within the \$166 million to \$402 million range that we calculated, rather than about \$1.9 billion as the Corps calculated.

6. We are not in a position to agree or disagree with the Corps' conclusion on the extent of physical damages that might result from future flooding. Again, however, the point of our report is not to take issue with the level of estimated physical damages, but rather to show that the Corps' calculation of economic costs resulting from the physical damages was significantly overstated. Even if a flood much smaller than the May 1980 flood destroyed the bridges, as the Corps states here, it should still not take the railroad or the State highway department several years to rebuild the bridges, nor should highway traffic have to be rerouted via an 84-mile detour for the entire rebuilding period, nor should the cost to rebuild the bridges be as high as the Corps estimated, nor should AMTRAK have to cease operating for 4 years, etc. Therefore, even under significantly different flood conditions, the Corps' original cost estimates should still not be valid because of the fundamental errors in its assumptions and calculations.
7. We have changed the report to more accurately convey the full meaning of the North Pacific Division engineer's testimony.
8. We disagree for the reasons stated in our reply to point #4.
9. The Corps has offered no support or justification for its contention that the Highway 99 bridge will probably be destroyed prior to destruction of the Interstate 5 transportation corridor. While the Highway 99 bridge is slightly upstream on the Toutle River from the Interstate 5 bridge, and would therefore be subject to a flood condition somewhat sooner, our report points out that the Highway 99 bridge is about 4 feet higher than the interstate bridge and was not

threatened during the May 1980 eruption, while the interstate bridge sustained some damage. However, even if the Highway 99 bridge is destroyed, as the Corps conjectures, economic costs should still be within the range we calculated, since our high scenario assumed that all roads and bridges in the immediate area would be impassable and that highway traffic would have to be rerouted over the more distant U.S. Highway 101 detour.

Also, the Corps' statement that traffic on State Route 411 has not been fully restored since the Mount St. Helens eruption is not true. According to the district construction engineer, Washington State Department of Transportation, State Route 411 was reopened to traffic 2 weeks after the eruption and then rebuilt at a higher elevation in the summer of 1981. Although the highway has been open to only one lane of traffic for several months in 1982 due to a mudslide, the slide was not related to eruption or flood damage but rather was caused by excavation for a trailer park which undercut the road. According to the district construction engineer on September 7, 1982, the highway will be re-restored within 20 to 30 days after a construction contract, under negotiation, is awarded.

10. Contrary to the Corps' comment, our analysis did consider losses to temporary structures during reconstruction of permanent bridges. Our report assumed that the temporary railroad bridge would be destroyed four times in 1986 during reconstruction of the permanent bridge, and we included \$42 million in our high-impact scenario to cover that damage. We did not calculate costs for destruction of temporary highway structures because, according to a State highway official, the structures would be constructed in such a way as to minimize the possibility of damages. However, including costs for four assumed destructions of the temporary highway bridge in 1987 would add only about \$20 million to total highway delay and damage costs.
11. For the reasons stated in our replies to points #2, #3, and #4, we disagree with the implication that it was commonly known or accepted that the projected need for \$939 million was based on preliminary information and was a worst-case analysis. As we pointed out in our report, the information in the Corps' analysis was relied on extensively by Federal, State, and local officials and the media as justification for urging the Congress and the executive branch to make available funds to dredge the Cowlitz and Toutle Rivers, and not until recently have we seen any indication that even the Corps of Engineers has questioned the data.

STATE OF WASHINGTON'S COMMENTS AND GAO'S RESPONSE

State of Washington

JOHN SPELLMAN, Governor

OFFICE OF THE GOVERNOR

August 11, 1982

Mr. Henry Eschwege, Director
Community and Economic Development
Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

Thank you for the opportunity to review the draft of a proposed report entitled "Mount St. Helens Disaster: How Much Federal Funds Were Provided, Expended, and Are Still Needed?"

The Mt. St. Helens eruption was unlike a typical flood, tornado, earthquake, or hurricane disaster. The problems caused by the 1980 eruption and subsequent flooding have not ended. The most significant of those problems is potential flooding, which is of far more concern and could cause far greater losses than continued intermittent eruptions of the volcano itself.

- 1 The state of Washington's position is that the draft report over-emphasizes the Corps of Engineers' (COE) obviously high estimate, which they have since abandoned, of economic losses should highway and rail bridges be destroyed by flooding. That excessive COE estimate, now out of date, should not be used as a basis for influencing the Congress not to fund necessary Mt. St. Helens emergency response and recovery measures.
- 2 Second, in the state's view, the report completely ignores potential losses in terms of damage to other private and public property that could result from flooding in the Toutle/Cowlitz River Basin. The continuing sedimentation transfer problem in those rivers poses a serious flooding threat that will continue for years.
- 3 Third, the report fails to mention the Spirit Lake flood hazard which, unless addressed within the next year, could result in a catastrophic flood disaster much worse than the May 18, 1980, volcanic eruption. Enclosed is a copy of my August 2, 1982, letter to the President requesting immediate help to prevent flooding that could negate all the Federal, state, and local recovery expenditures that have been made since 1980.




Mr. Henry Eschwege
August 12, 1982
Page 2

- 4 In summary, the report reflects a lack of information about and understanding of present conditions. I therefore recommend that it not be published until it can include a comprehensive and factual overview of remaining post eruption problems and proposed solutions. In that regard, the state of Washington will be delighted to provide whatever assistance you may require, through the Department of Emergency Services, whose Director, Hugh Fowler, is available at (206) 753-5255.

With best wishes,

Sincerely,



John Spellman
Governor

Enclosure [See GAO note below.]

[GAO NOTE: Enclosure deleted.]

1. Contrary to the Governor's assertion, our report is not intended to influence the Congress not to fund necessary Mount St. Helens emergency response and recovery measures. Rather, it is our intention to inform the Congress that because of the frequently changing nature of the threat, the uncertainty which exists on the extent of further work and funds needed, and the significant problems in the Corps of Engineers' original analysis, it should approve funds only for emergency or other immediately needed maintenance work for dredging and flood control related to the Mount St. Helens disaster until the Corps of Engineers completes a reassessment currently in process.

The Governor's reply refers to the Corps' estimate as "obviously high," "excessive," "abandoned," and "out of date," and states that it should not be used as a basis for influencing the Congress not to provide additional funds for Mount St. Helens. Our report points out, however, that the Corps' analysis was being used continually by Federal, State, and local officials and the press as the basis for seeking continued Federal involvement, and was used by the Corps' Portland district to propose a \$939 million mitigation program. Even after the Corps began to question the magnitude of the economic losses, other officials, including the Governor himself, continued to rely on the Corps' excessive estimates as the basis for attempting to influence the Congress to provide additional funds for Mount St. Helens. For example, as late as March 26, 1982, in a letter to the President asking that the Corps be "* * * immediately authorized to proceed with vital repair and protective work * * *," the Governor relied on the Corps' excessive estimates by stating that

"The COE [Corps of Engineers] position is compellingly stated in its 'Mount St. Helens Advance Measures Report No. 10' and 'Long-term Program for Cowlitz and Toutle River Basins,' July, 1981. Those reports set forth the future actions required in order to avoid the loss of the nearly \$300 million invested since May 18, 1980, and in order to prevent billions of dollars of further physical and economic losses during the next 15 years."

In view of the considerable weight given to the Corps' estimates by the Governor of Washington and others in attempting to influence the Congress to provide additional Mount St. Helens funds, we cannot agree that our report overemphasizes the problems with those estimates.

2. The Governor's statement that our report ignores potential flood losses to other public and private property is not true. As the report clearly shows, we discuss the flood potential and then include in both our high and low calculations the same \$103.4 million in estimated flood damages that the Corps used in its reports.
3. Our draft report did not mention the Spirit Lake flood hazard because it was not considered a hazard by scientists or emergency planners on July 15 and 16, 1982, when we sent our draft report to FEMA, the Corps, and the Governor for comment. As material supplied to us by the Governor shows, it was assumed until July 20, 1982, that a debris barrier blocking the outlet of Spirit Lake near Mount St. Helens would hold the lake water back for 2 or 3 more years, allowing a controlled outlet to be installed. On that date, however, an intergovernmental task force team visited the Spirit Lake debris dam and vicinity and, 7 days later, by a memorandum dated July 27, 1982, notified the Forest Supervisor, Gifford Pinchot National Forest, that it had concluded (1) that Spirit Lake would fill to an extremely dangerous level by as early as spring 1983, (2) that the debris barrier was eroding rapidly and could result in a natural, or uncontrolled, breach of the debris barrier from 60 to 200 feet below crest level, and (3) that the amount of flooding could be several times as great as during the May 18, 1980, eruption of Mount St. Helens. The task force recommended actions leading to construction of a controlled outlet for Spirit Lake in the summer of 1983 to prevent a natural breach.

On August 2, 1982, based on the task force's conclusions, the Governor declared a state of emergency regarding "* * * a serious threat of catastrophic flooding * * *" and simultaneously requested the President to declare an emergency for Washington State under the Disaster Relief Act of 1974. Seventeen days later, on August 19, 1982, the President honored the Governor's request, freeing Federal funds to assist in further investigating and resolving the potential flood threat.

Therefore, since the chain of events concerning the Spirit Lake flood hazard did not begin until after our draft had been sent to the affected parties for comment, it was not discussed in that report. We have, however, included a discussion of the Spirit Lake problem in this final report. (See ch. 4.)

4. We disagree for the reasons stated in our reply to points #1, #2, and #3. We have, however, amended the report to include a description of the recent Spirit Lake problem.

This report, like any study, can reflect conditions only over, or as of, a particular period of time. The problem of establishing an appropriate cutoff for reporting is perhaps more pronounced in this instance than with most disasters because of the frequently changing nature of both the Mount St. Helens volcano and its eruptive, flood, and other threats. However, we believe that the essential message of our report chapter continues to remain valid: that the Corps of Engineers significantly overstated potential economic losses and the amount of funds needed to cope with those losses, and that the Congress should approve funds only for emergency or other immediately needed flood control work until the Corps of Engineers completes its Presidentially ordered re-assessment. The recent emergence of the Spirit Lake problem does not invalidate those conclusions; to the contrary, we believe it reinforces them.

BURLINGTON NORTHERN'S COMMENTS AND GAO'S RESPONSE**BURLINGTON NORTHERN**

Office of Division Superintendent
Room 326 - King Street Station
303 South Jackson Street
Seattle, Washington 98104

Mr. Henry Eschwege, Director
U. S. General Accounting Office
Washington, D. C. 20548

August 2, 1982

Dear Sir:

This will acknowledge receipt of the draft report "Mount St. Helen's Disaster: How Much Federal Funds Were Provided, Expended, And Are Still Needed?"

- 1 I reviewed contents of this draft, and while I am not in position to offer comments with regard to the possibility of flooding, I do concur with the damages and expenditures involved in the event our bridge was destroyed.

For you information.

Sincerely,

G. G. Widle
Superintendent

GGW:jmr

1. In a clarifying conversation on September 8, 1982, the division superintendent stated that he concurred with the cost, time, and other estimates provided to us by Burlington Northern which we used in our calculations.

AGRICULTURE'S COMMENTS AND GAO'S RESPONSE

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20250

AUG 25 1982

Mr. Henry Eschwege
Director
Community & Economic Development Division
General Accounting Office - Room 6146
Washington, D.C. 20548

Dear Mr. Eschwege:

We have the following comments on the GAO Draft Report "Mount St. Helens Disaster . . . (82-77)."

1. Review of records shows that supplemental funds appropriated to the Forest Service were specifically designated for the Mount St. Helens disaster. Further refinement of the use of these funds for the Mount St. Helens disaster identified: (a) management of emergency facilities, (b) reconstruction of roads, and (c) salvage of the timber. There were no other uses to which the Forest Service diverted these funds.
2. It appears that there is a minor error on page 57. Based on information supplied the GAO Regional Office in Seattle, Washington, the FY 1980 obligation for Mt. St. Helens should read (\$2.55) instead of (\$1.32). The FY 1980 obligations for other disasters should read (\$18.72) instead of (\$17.49). The total of all FY 1980 obligations (\$20.04) is correct.
3. The report on page 73, penultimate paragraph, states ". . . the Forest Service substantially underestimated its Mount St. Helens needs . . ." This was not the case. The \$25 million appropriated for the Forest Service as part of the FY 1980 supplemental appropriation was an annual appropriation, namely "Forest Management, Protection, and Utilization," and such funds, at the time the supplemental was approved expired September 30, 1980. These funds were not warranted to the Forest Service until August 5, 1980, which left only 2 months to fully commit these annual funds. The initial Forest Service proposal was for a 2-year program totaling approximately \$47 million, which would not have been fully obligated by September 30, 1980. Since an annual appropriation was made for Mount St. Helens, \$25 million was all that could be effectively used within FY 1980. After the close of FY 1980, the language of the FY 1981 Continuing Resolution authorized the carryover into FY 1981 of up to \$15 million that was not obligated at the end of FY 1980. These funds were to remain available until expended. The \$22.6 million authorized by reprogramming in FY 1981 for salvaging timber was part of the 2-year program originally proposed. We believe it is misleading to say the Forest Service substantially underestimated Mount St. Helens financial needs.
4. The fourth paragraph on page 82 should be corrected to: "Repair of the irrigation canal was found to be non-eligible. The threat of the canal being plugged was removed and technical assistance was provided to farmers. . . ."

[GAO NOTE: Page references have been changed to agree with the final report.]

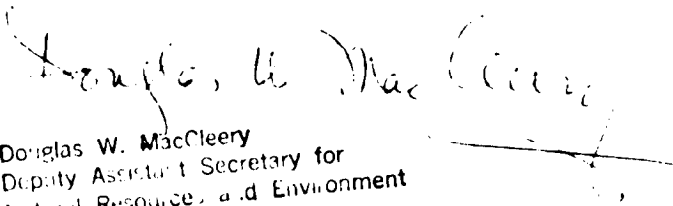
Mr. Henry Eschwege

2

- 5 5. Page 26 of the Report contains recommendations to the Congress. The Department does not believe it necessary to establish a lead agency to coordinate the use and sharing of major disaster funds among the Federal agencies. The Department has demonstrated its capability to carry out its responsibilities under current arrangements. The Forest Service, for example, has programs dealing with fire suppression emergencies and storm and flood disasters in which strict accountability of funds is maintained. The Department is accustomed to and skilled at establishing and monitoring controls of sensitive accounts. Development of a centralized approach could delay effective responses to natural disasters. We do want to reaffirm our position that Mount St. Helens funds were used by the Forest Service exclusively for that disaster.

We appreciate the opportunity to comment.

Sincerely,


Douglas W. MacCleery
Deputy Assistant Secretary for
Natural Resources and Environment

1. No comment necessary.
2. The figures used in the draft report were Agricultural Stabilization and Conservation Service expenditures rather than obligations. The report has been corrected to reflect the obligation data provided by the Department. However, in a clarifying conversation after receipt of the Department's response, ASCS personnel told us that the correct and incorrect fiscal year 1980 obligation figures for other disasters had been reversed in the response; that it should read (\$17.49) instead of (\$18.72). We have made that correction also.
3. We agree with the Department and have changed the report to eliminate the comment that the Forest Service substantially underestimated its Mount St. Helens financial needs.
4. The report was changed to eliminate the reference to the repair of an irrigation canal as an example of the emergency activities undertaken by the Soil Conservation Service.
5. Our report contains two alternative recommendations to the Congress if it desires to restrict appropriated funds in the future to specific major, unusual, or long-term disasters: to place limitations or controls in the statutory appropriations language, or to designate a lead agency to coordinate fund sharing and use. The Department has expressed concern about the second alternative--the lead-agency concept--but did not express any reservations about the first alternative. As our report points out, we believe that when the Congress appropriates funds specifically in response to a major disaster which has already occurred, in contrast to routinely replenishing agency accounts to provide for unforeseen disasters which may occur in the future, additional safeguards may be needed to ensure that the funds are available for the disaster for which they were intended. In our opinion, either alternative is a viable way of providing the additional safeguards.

COMMERCE'S COMMENTS AND GAO'S RESPONSE

UNITED STATES DEPARTMENT OF COMMERCE
The Inspector General
Washington, D.C. 20230

AUG 18 1982

Mr. Henry Eschwege
Director, Community and Economic
Development Division
U.S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Eschwege:

This is in reply to your letter of July 19, 1982, requesting comments on the draft report entitled "Mount St. Helens Disaster: How much Federal Funds Were Provided, Expended, and are Still Needed?"

We have reviewed the enclosed comments of the Administrator, NOAA and believe they are responsive to the matters discussed in the report.

Sincerely,

A handwritten signature in cursive script that reads "Sherman M. Funk".

Sherman M. Funk
Inspector General

Enclosure

[GAO NOTE: Page references have been changed to agree with the final report.]

- 1 The draft accurately depicts NOAA's expenditure of the \$500,000 appropriated in the FY 1980 supplemental for installation of a flood warning system. However, page 19 of the report should be amended to reflect \$170,700 under the "FY 1981 regular" column rather than under the "FY 1980 regular" column. The FY 1981 expenditure was incurred to complete the network and begin operation.

- 2 Because of the lateness of the FY 1980 appropriation to establish the Mount St. Helens hydrologic data collection network and warning system, NOAA was unable to request a permanent appropriation as early as FY 1981 or 1982. The National Weather Service requested an appropriation of \$160,000 to permanently fund operation and maintenance of this system beginning in FY 1983, but this amount was inadvertently reduced by the Agency budget office to \$76,000. Corrective action is pending. In the meantime, FY 1981 and 1982 funding has been redirected on a one-time basis from other, less time-critical NOAA activities to absorb recurring costs associated with operation of this network.

- 3 In June 1982, Cowlitz County formally requested that NOAA expand and strengthen the Mount St. Helens network. Compliance with this request would increase NOAA's FY 1983 shortfall for this network from \$84,000 to \$109,000. The following portrays Mount St. Helens requirements and shortages for FY 1983 and beyond

	(thousand of dollars)		
	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>
Operation and maintenance of existing network	160	160	160
FY 83 appropriation	<u>-76</u>	<u>-76</u>	<u>-76</u>
Shortfall	84	84	84
Additional requirement for Cowlitz County	<u>+25</u>	<u>+10</u>	<u>+10</u>
Total unmet need	109	94	94

1. NOAA is correct, and the report has been changed to show the \$170,700 as a fiscal year 1981 rather than a fiscal year 1980 expenditure.
2. The report has been changed on p. 77 to reflect the updated financial information provided by NOAA.
3. Same comment as #2.

EDUCATION'S COMMENTS AND GAO'S RESPONSE

UNITED STATES DEPARTMENT OF EDUCATION

WASHINGTON, D.C. 20202

18 AUG 1982

ASSISTANT SECRETARY
FOR ELEMENTARY AND SECONDARY EDUCATION

Mr. Gregory J. Ahart
Director
Human Resources Division
United States General
Accounting Office
Washington, D.C. 20548

Dear Mr. Ahart:

The Secretary asked that I respond to your request for our comments on your draft report entitled "Mount St. Helens Disaster: How Much Federal Funds Were Provided, Expended, And Are Still Needed."

- 1 The draft report accurately portrays the subject as it pertains to the Department of Education.

We found the report very helpful and appreciate the opportunity to comment on it.

Sincerely,

A handwritten signature in cursive script that reads "D. Jean Benish".

D. Jean Benish
Acting Assistant Secretary

1. No comment necessary.

INTERIOR'S COMMENTS AND GAO'S RESPONSE

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

AUG - 6 1982

Mr. Henry Eschwege
 Director, Community and
 Economic Development Division
 U.S. General Accounting Office
 Washington, D.C. 20548

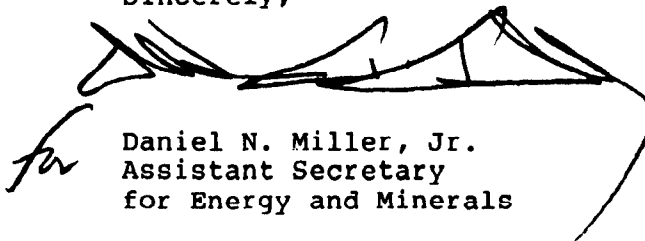
Dear Mr. Eschwege:

This letter is in response to your request of July 19, 1982, to review segments of your draft report, "Mount St. Helens Disaster: How Much Federal Funds Were Provided, Expended, and Are Still Needed?", pages 9-26 and 75-78.

- 1 The two Department of the Interior agencies concerned have no comments on the body of the report, the conclusions, or the recommendations. There are, however, three comments on minor inaccuracies in the report.
- 2 1) On page 19, there is a footnote a/ to a table on that page. The "a/" in the table is associated with the wrong number. It should be alongside the "\$8,231,000"; the funds referred to were FY 1981 funds.
- 3 2) On page 76, the number for hydrologic investigations should be \$5,650,000 not \$5,605,000.
- 4 3) On page 78, the sentence beginning, "The \$1.8 million ..." should be amended to read, "With the exception of one contract with a private consultant in Oregon, the \$1.8 million ..."

The Department of the Interior appreciates the opportunity of reviewing and providing our comments on this report.

Sincerely,

for 

Daniel N. Miller, Jr.
 Assistant Secretary
 for Energy and Minerals

[GAO NOTE: Page references have been changed to agree with the final report.]

1. The two Department of the Interior agencies referred to are the U.S. Geological Survey and the Office of Water Research and Technology.
2. The placement of the footnote has been changed to more clearly associate it with the \$8,231,000 figure.
3. The Department is correct, and we have changed the report accordingly.
4. The exception cited by the Department has been added to the report.

SBA's COMMENTS AND GAO's RESPONSE

**U.S. GOVERNMENT
SMALL BUSINESS ADMINISTRATION
WASHINGTON, D.C. 20416**

AUG 10 1982

Mr. Henry Eschwege
Director, Community and Economic
Development Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

The following are this Agency's comments, requested by your letter of July 19, 1982 on your draft report entitled, "Mount St. Helens Disaster: How Much Federal Funds Were Provided, Expended And Are Still Needed?".

- 1 SBA takes exception to the implication that Congress appropriated to the Small Business Administration \$430 million for Mount St. Helens, as shown on page 14 of the report.
- 2 Recognizing the imprecision of estimated disaster needs, but recognizing also the inevitability of future disasters, the conferees included language in the Conference Report on the Supplemental Appropriations bill (with respect to the SBA appropriation) that "... none of these funds are reserved for any specific disasters..." The GAO Report properly recognizes that the practice of lump-sum funding provided flexibility to
- 3 spend appropriation in response to unforeseen developments, which would be seriously impaired if SBA were required to return to the Treasury or to another agency funds appropriated for one specific disaster, only to have other disasters occur before Congress could act on new requests for funding.
- 4 With respect to accountability of disaster loan funds, while it is impossible to be specific about whether a loan was funded from a new appropriation, a carry-over, or a loan payment into the disaster loan revolving fund, there is complete overall accountability to Congress and assurance that funds appropriated for disaster assistance are used for that purpose only.

[GAO NOTE: Page references have been changed to agree with the final report.]

- 5 For these reasons, SBA opposes the draft report's recommendations to the Congress, insofar as they affect the operation of this Agency's disaster program.

Sincerely,



for Edwin T. Holloway
Associate Administrator
for Finance and Investment

1. The report does not state or imply that the Congress appropriated any amount to the Small Business Administration or any other agency for Mount St. Helens. In fact, the main message of the chapter is precisely the opposite: that while SBA and other agencies explicitly justified and requested funds for Mount St. Helens, the lack of earmarking language in the appropriations act meant that no part of the appropriations were specifically for Mount St. Helens. We believe that the "implication" that the Congress appropriated to SBA \$430 million for Mount St. Helens, which is the common public perception, resulted primarily from SBA's testimony at the fiscal year 1980 supplemental appropriations hearings--in which it tied its \$430 million request directly to Mount St. Helens needs--and from the widespread publicity given to the House and Senate Committee reports of those hearings.
2. We agree that the Conference Report on the fiscal year 1980 supplemental appropriations bill contained the nonrestricting language cited by SBA, and we have included that point in the report. However, we believe that the magnitude of the "imprecision of estimated disaster needs" which occurred in the Mount St. Helens request--in SBA's case about \$365 million left over for other uses, or about 85 percent of its request--points up the need for additional controls on major disaster funding. SBA's surplus represented well over half the \$560 million total leftover funds.
3. While our report recognizes that the practice of lump-sum funding provides needed flexibility in some disaster circumstances (such as in replenishment of ongoing disaster accounts), it also points out that unrestricted flexibility under other circumstances could seriously jeopardize disaster recovery because agencies are under no obligation to spend needed funds for the disaster for which the funds were intended. That is, lump-sum, or unrestricted funding, can result in "funding the agency," while not necessarily "funding the disaster." We believe that, generally, when the Congress appropriates funds in specific response to a disaster which has already occurred, it intends to "fund the disaster;" that is, to assure that that disaster's recovery needs, not just the agency's needs, are adequately satisfied before the funds are put to other uses. Since that assurance does not exist under the lump-sum appropriation procedure, we are recommending that if the Congress wishes to tighten control over appropriations for future major disasters, it needs to either place limitations or controls in appropriations language or designate a lead agency to coordinate fund use.

4. We disagree with the contention that general accountability to the Congress is sufficient in all cases involving use of appropriated funds. We believe that when the Congress has appropriated a specific amount of funds in response to a disaster which has already occurred, recipient agencies should be able to account in detail for the uses of those funds.
5. For the reasons stated in our reply to points #1 through #4, we do not agree with SBA and have made no substantive changes in our report's facts, conclusions, or recommendations.

TRANSPORTATION'S COMMENTS AND GAO'S RESPONSE

U.S. Department of
Transportation

Assistant Secretary
for Administration

400 Seventh St. S.W.
Washington, D.C. 20590

AUG 16 1982

Mr. Henry Eschwege
Director, Community and Economic
Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

We have reviewed the General Accounting Office (GAO) draft report, "Mount St. Helens Disaster: How Much Federal Funds Were Provided, Expended, and Are Still Needed?," and generally concur with its contents.

- 1 It would improve the accuracy of the report, however, if two minor changes were made on page 70, Appendix I, which relates to the Federal Highway Administration (FHWA). The second sentence of the first paragraph should be revised to exclude the words "interstate highways." The first sentence in the second paragraph should be revised to exclude the word "usually."
- 2 We also recommend that the figures pertaining to FHWA in the table on page 25 entitled, "Disaster Fund Summary for Agencies with 'Leftover' Mount St. Helens Funds," and the table on page 72 of Appendix I entitled, "FHWA Emergency Relief Fund Summary, Fiscal Years 1980 and 1981," be revised as indicated by the pen and ink changes on the enclosed pages.

If we can be of further assistance, please let us know.

Sincerely,


Robert L. Fairman

Enclosures

[GAO NOTE: Page references have been changed to agree with the final report. Also, the enclosures have not been included.]

1. The two minor wording changes requested by the Department have been made in the report.
2. The report has been changed to reflect the updated financial information provided by the Department.

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