

LESSONS OF RECOVERY



A REVIEW OF THE 1997 COLORADO FLOOD DISASTER

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Colorado DEPARTMENT of LOCAL Affairs
Office of EMERGENCY MANAGEMENT
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Executive Summary

"It's a long drawn out affair. Can't believe it's been a year."

That comment, made by Atwood Postmaster Roma Mason on the first anniversary of the 1997 disaster, undoubtedly echoed the feelings of many residents of communities impacted by the flooding. For those who lost loved ones, homes, businesses and personal possessions, words cannot begin to describe the grief, frustration and other emotions encountered as the first steps toward emotional and physical recovery were taken.

According to the Atwood Postmaster, the 1997 flood was worse than the last "great flood" in 1965, a claim supported by the estimates of flood engineers. In Fort Collins and in the Morgan County community of Weldona, the 1997 flood events far exceeded anything on record or in the memories of long-time residents.

Nevertheless, substantial progress was made in the first year of recovery, even in the hardest hit areas, due to the gritty determination of individuals and the coordinated efforts of communities, supported by volunteer agencies and local, state and federal government agencies. The new post office in Atwood is just one small example of the progress made in the first year after the flood. A brand new Last Stand in Weldona is once again serving as a community center for local residents. Many other examples are highlighted in this report.

As always, the real heroes of recovery are neighbors helping neighbors, supported by local elected officials, local government personnel, and the churches, civic groups and other volunteer and charitable organizations that make up the backbone of every community. This report attempts to chronicle the diligent and innovative efforts of these individuals and organizations and the contributions of state and federal government agencies and programs. The report also provides an historical account of the disaster, a reference digest of disaster assistance programs, a statistical summary of programs delivered, and a set of lessons learned for the benefit of counties, cities and towns in other parts of the state.

Tommy F. Grier, Jr., Director
Colorado Office of Emergency Management

Table of Contents

Introduction	1
Background	1
Rainfall Amounts	2
Fort Collins Storm	2
Schaefer Draw Storm	2
Pawnee Creek Storm	3
Flood Impacts	3
Larimer County	3
Fort Collins	3
Colorado State University	4
Unincorporated Larimer County	4
Morgan County	4
Weldona	5
Logan County	5
Atwood	5
Sterling	6
Disaster Declaration Process	6
Preliminary Damage Assessment	6
Federal Disaster Declaration	6
Flood Recovery Costs	7
Total Estimated Recovery Costs	8
Colorado State University	8
Colorado Disaster Emergency Fund Expenditures	9
Larimer County/Fort Collins	9
Morgan and Logan Counties	9
Local Response and Recovery Activities	10
Fort Collins and Larimer County	10
Morgan County	14
Logan County	16
State Recovery Programs and Activities	19
State Disaster Emergency Fund	19
State Recovery Resources	19
Disaster Recovery Centers	21
Individual and Family Grant Program	22
Crisis Counseling Assistance and Training Program	23
Hazard Mitigation Grant Program	23
CSU Recovery and Mitigation Activities	24
Other State Recovery Resources	25

Table of Contents (cont.)

FEMA and Other Federal Agency Programs and Activities	26
Individual Assistance Programs	26
American Red Cross	27
The Salvation Army	27
FEMA Housing Program	28
Individual and Family Grant Program	29
Cora Brown Fund	29
SBA Disaster Loans	29
Agricultural Assistance	30
Other Forms of Disaster Assistance for Individuals and Families	30
Public Assistance Programs	31
FEMA Public Assistance Program	31
Other Federal Agency Programs	33
U.S. Army Corps of Engineers	34
U.S. Department of Agriculture - Natural Resources Conservation Service	34
Federal Highway Administration (FHWA)	34
Hazard Mitigation Programs	34
Hazard Mitigation Grant Program (Section 404)	34
Site-Specific Hazard Mitigation Under Public Assistance (Section 406)	35
Long-Range State Hazard Mitigation Planning (Section 409)	35
Interagency Hazard Mitigation Team (HMT)	35
Lessons Learned from the 1997 Flood Disaster	36
Damage Assessment	36
Debris Removal/Health and Sanitation	36
Disaster Recovery Centers	36
Public Information/Media Relations	37
Volunteer Agency Coordination	37
Hazard Mitigation (general)	38
State Assistance	38
Federal Assistance (general)	38
FEMA Public Assistance Program	38
FEMA Individual Assistance Program	39
FEMA Hazard Mitigation Grant Program	39
References	40

Introduction

More than a year after flooding killed five Fort Collins residents and caused widespread destruction in Northeast Colorado, remarkable progress has been made in recovering from the disaster, even in hard hit communities like Atwood and Weldona. The total cost of the disaster in terms of financial impacts and economic losses may never be known, though estimates are in the hundreds of millions of dollars. Loss estimates at the Colorado State University campus alone range from \$120 to \$160 million. This report estimates that overall costs of recovery at the one-year anniversary of the flood exceed \$160 million (including insurance costs and funds committed to hazard mitigation measures).

The 1997 flood was the first disaster declared in the state under the Robert T. Stafford Disaster Relief and Emergency Assistance Amendments of 1988, or the **Stafford Act**. The federal declaration triggered an array of disaster assistance programs that have supplemented the recovery efforts of local and state government agencies, volunteer organizations and the private sector.

Background

Although heavy thunderstorms were prevalent over Eastern Colorado during the last week of July, 1997, nothing compared to the intense rainfall produced by storms from July 28-30 in Larimer, Morgan and Logan Counties. Individual thunderstorms produced more than 10 inches of rain in each of these counties during the three-day period. In Larimer County, a monsoonal flow trapped against the foothills west of Fort Collins produced the *heaviest 24-hour precipitation ever recorded in the area* (City of Fort Collins, 1998b). In Morgan and Logan Counties, *more than half of the annual average rainfall for the areas fell in less than 10-hour periods*.



*Aftermath of Spring Creek flood
(photo by John Weaver)*

The slow-moving storms resulted in record flood events at certain locations and widespread impacts across the eastern part of the state, especially in Larimer, Morgan and Logan Counties. Five residents of Fort Collins were killed when an unexpected surge of water swamped their mobile home parks while virtually all of the plains communities of Weldona and Atwood were flooded, destroying homes and causing residents to evacuate. The greatest financial loss was experienced by Colorado State University, where floodwaters caused more than \$100 million in damage to campus buildings, books, utilities and other resources.

Other areas of Larimer, Morgan and Logan Counties also suffered serious flood damages to homes, businesses, schools, roads and crops. Roads and bridges were damaged by floods in 10 additional eastern counties, and they were later added to the federal declaration to help cover the costs of public infrastructure repairs.

Pawnee Creek Storm

In historical context, the large rain amounts produced by the summer storms of 1997 are not unprecedented for the Front Range and Eastern Plains areas of the state, which are subject to convective thunderstorm activity when monsoon moisture or other weather patterns supply sufficient humidity to the atmosphere (Grigg, et al, 1998). By comparison, the thunderstorm that caused the disastrous flash flood in Big Thompson Canyon in 1976 produced between 12 and 14 inches of rainfall at the western end of the canyon in less than five hours. On July 27, 1997, wet tropical air streaming northward from Mexico supplied the moisture and an approaching cold front from the west provided the trigger for setting off heavy thunderstorms as the two moist air masses met over the state.

STORM	DATE	DURATION	TOTAL RAINFALL	COUNTY	IMPACTED COMMUNITIES
Fort Collins	July 28, 1997	6.5 hours	10.2 inches	Larimer	Fort Collins
Schaefer Draw	July 29-30, 1997	15 hours	10.5 inches	Morgan	Weldona
Pawnee Creek	July 29-30, 1997	9 hours	14 inches	Logan	Atwood/Sterling

Fort Collins Storm

The Fort Collins storm produced the *heaviest rains ever documented to have fallen over an urbanized area of Colorado* (Grigg, et al, 1998). The ten inches of rain that fell in parts of Fort Collins between 5:30 p.m. and 11:00 p.m. on July 28 set rainfall records for largest one-day, three-hour, and six-hour precipitation totals at the CSU gage. Soils in the area were already saturated due to heavy rainfall (four to six inches) from the previous evening. Runoff from the Fort Collins storm flooded several drainages, most notably along Spring Creek where the five fatalities occurred and where 120 mobile homes were destroyed and hundreds of other homes were damaged.

Schaefer Draw Storm

Schaefer Draw in Morgan County is a tributary of the South Platte River and encompasses approximately 14 square miles of drainage area. The community of Weldona is situated at the lower (southern) end of the basin, approximately 0.5 miles from the river. During the evening of July 29-30, 1997, a storm centered about six miles southeast of Weldona produced as much as *ten inches of rainfall*, generating heavy runoff that flooded homes and businesses in Weldona. According to the National Weather Service, up to 10.5 inches of rain fell in a 15-hour period near Weldona. Much of the precipitation total probably fell during a six-hour period from 7:00 p.m. on July 29 until 1:00 a.m. on July 30. Flood problems in Weldona were magnified as a result of breaches in two irrigation ditches above the town.

Pawnee Creek Storm

Pawnee Creek is a South Platte River tributary that drains a large watershed area -- approximately 700 square miles -- and ranges in elevation from approximately 5,400 feet down to 4,000 feet. The mean annual precipitation for the basin ranges from 14 to 16 inches (Riverside Technology, inc. [Rti], 1998). The same system of thunderstorms that caused flooding in Weldona moved eastward across Logan County and produced very heavy rainfall in the Pawnee watershed. According to the National Weather Service, *up to 14 inches of rain fell in the Pawnee basin in just a nine-hour period*. Although much of the rain fell to the west over Weld County, the runoff in the large watershed mainly affected downstream areas within Logan County.

Flood Impacts

Larimer County

The heavy thunderstorm-generated rains of July 28, 1997 caused serious flooding in several areas of Larimer County. In Fort Collins, five women perished as floodwaters swept through two mobile home parks north of Spring Creek and west of College Avenue. Many homes and businesses in other areas of the city and in unincorporated Larimer County suffered major flood damage. Public safety and emergency response personnel were nearly overwhelmed as rainfall intensified into the evening and as the magnitude of flood impacts grew. Hundreds of rescues were made in and around Fort Collins, including heroic life-saving efforts at the trailer parks on Spring Creek. If not for the extraordinary actions of local fire and law enforcement agencies, the death toll undoubtedly would have been much higher.

In addition to Spring Creek, several other drainages were flooded, including West Vine drainage basin, CSU drainage basin, and the Old Town and Canal Importation basin. Countywide, the flooding killed five people, injured 100 people, destroyed 135 homes, damaged more than 2,000 homes, closed 90 businesses at least temporarily, damaged 600 businesses, and resulted in at least 80 people losing their jobs. At CSU, where over \$100 million in property damage occurred, approximately 280 staff members lost their offices and contents, which in many cases involved the loss of years of unrecoverable files and research materials.

Fort Collins

The flood, estimated to be in excess of 500-year flood levels in some drainages, left a path of destruction in the central part of the city. The Johnson Center and South College mobile home parks were totally destroyed as nearly 400 people were rescued from windows and rooftops and from stranded vehicles in the area. According to the American Red Cross, 120 mobile homes were destroyed and another 2,000 homes received some level of flood damage. Many areas along Spring Creek were flooded, as well as Old Town Fort Collins, Poudre School District facilities and the CSU campus. Including estimates of damage at CSU, the total cost of the 1997 flood in Fort Collins may exceed \$200 million (City of Fort Collins, 1998a).

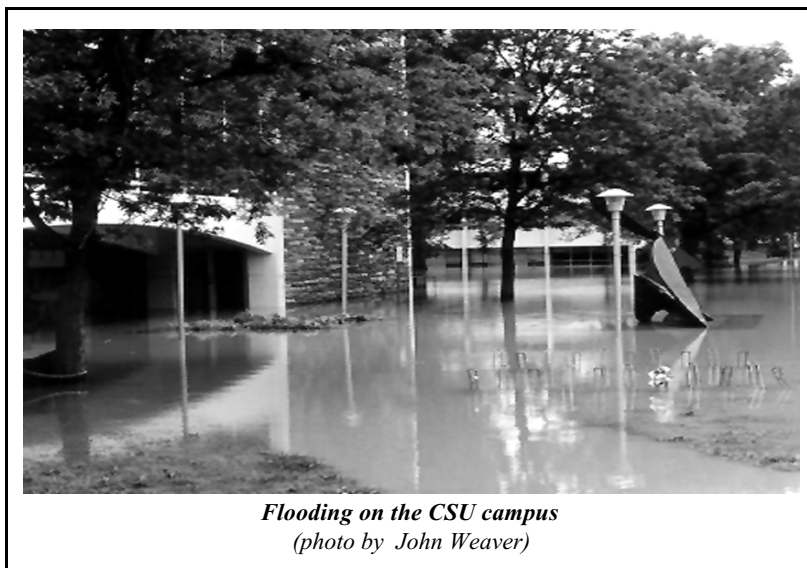


*Destroyed mobile homes stacked up near Spring Creek in Fort Collins
(photo by John Weaver)*

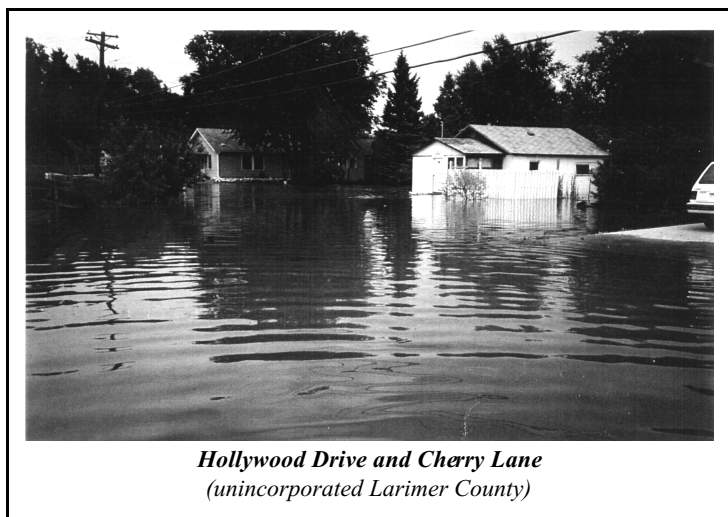
Colorado State University

In addition to the 5.3 inches of rainfall recorded at the CSU weather station, the campus was also inundated by heavy runoff from neighborhoods to the west. The campus flooding that resulted was one of the worst natural disasters ever to hit a major research university. Floodwaters crashed into the basements of Lory Student Center, Morgan Library, Hartshorn Medical Center, Eddy Hall and the Education Building, causing millions of dollars in damage.

Another approximately 40 buildings on campus were damaged in the flood and over 400,000 library volumes were damaged at Morgan Library (10 percent of the total CSU library collection). An entire semester's inventory of textbooks were destroyed at the student center and faculty members, staff and graduate students suffered some of the most irreplaceable losses: years or even lifetimes of research work. The total recovery cost at CSU will exceed \$100 million, making the campus the most expensive consequence of the disaster in terms of property losses.



*Flooding on the CSU campus
(photo by John Weaver)*



*Hollywood Drive and Cherry Lane
(unincorporated Larimer County)*

Unincorporated Larimer County

The heavy rains that flooded Spring Creek also caused flooding (estimated at greater than 500-year levels) in the West Vine drainage basin. Two homes were destroyed and more than 60 homes suffered significant basement and crawl space damage and shallow first floor flooding (Larimer County, 1998). The hardest hit areas in the unincorporated area were the Rostek and Irish Green Acres subdivisions and homes along parts of Hollywood and Sunset Streets. Streets and utilities in the area were also damaged by the flood, which was the worst in the basin in the memories of long-time residents. Although dollar estimates of agricultural losses in the county are unavailable,

farmers and ranchers reported substantial losses to the hay crop. The flood also caused extensive damage to recreational trails in the area, including trails at Lory State Park and Horsetooth Mountain Park in unincorporated Larimer County and the Spring Creek and Foothills trail systems in Fort Collins.

Morgan County

Floodwaters from Schaefer Draw damaged structures, roads, bridges, utilities and agricultural lands across a large area of Morgan County north of the South Platte River, although impacts were most pronounced in the community of Weldona. The USDA Farm Service Agency estimates that 15,000 acres of agricultural land were affected by the flood, with damages to corn, alfalfa, other crops and pasture lands.

Weldona

Intense rainfall in the vicinity of Weldona produced flood flows in Schaefer Draw and adjacent tributaries that caused two irrigation ditches to breach, resulting in combined flows that inundated 80 percent of the community to depths of four to five feet. In and around Weldona, the flooding caused approximately \$1.1 million in damages to 38 single family homes, six businesses, Weldon Valley High School, the local Catholic Church and annex, a postal facility, roads, bridges, embankments and crops.

Logan County

According to both long-time residents and available flood discharge estimates, the 1997 Pawnee Creek flood was comparable to, if not greater than, the previous significant flood event which occurred in 1965. In the narrower, upper reaches of the basin, floodwaters that were basically confined to the channel damaged roads and bridges and eroded streambanks. State Highway 14 between Sterling and Fort Collins was closed for a week for flood repairs and another bridge just across the border in Weld County -- on State Highway 71 between Stoneham and Kimball, Nebraska -- was totally destroyed, closing the highway for two weeks while a detour was built.

In addition to the access problems and other economic impacts caused by the temporary loss of the two state highway bridges, the flood added over 100 road and bridge projects to the Logan County maintenance and construction schedule, including major repairs to the bridge on County Road 7 and the replacement of four large culverts on County Road 11.2. Many of the damaged roads represented vital farm-to-market links that had to be repaired prior to the summer's wheat harvest in order to avert financial losses for area farmers.

Downstream, overbank flooding completely inundated bridges, miles of roads and approximately 13,700 acres of agricultural lands. Countywide, including the community of Atwood and the City of Sterling, approximately 1,400 residences and more than 200 businesses were affected by the flood. One estimate indicates that the flood caused nearly \$20 million in damages countywide, including \$9.7 million residential, \$6.8 million agricultural, \$1.4 million commercial, \$1 million road and bridge, and \$100,000 in damages to the railroad between Atwood and Sterling (ICON Engineering, Inc., 1998).

Atwood

At the lower end of the basin near the community of Atwood, wide floodplain areas exist and excess runoff is partially contained by the embankments of US 6 and the railroad, flooding farm and pasture lands in the vicinity. The manmade embankments, referred to as the Pawnee Overflow, typically divert flows to the northeast into the City of Sterling, where homes and businesses in some parts of the city are subject to repetitive minor flooding (RTi, 1998).

At approximately 3:00 p.m. on July 30, 1997, Pawnee Creek overflowed its banks and backed up behind the highway and railroad embankments, inundating most of the homes and other buildings in Atwood to depths of up to four feet. According to building inspectors who placed red (unsafe) and yellow (major repairs needed) tags on damaged homes in Atwood, 13 homes were destroyed, 27 suffered major damage, and 15 more had minor to moderate damage.

Eight of the homes had to be demolished because they were structurally unsafe or because repair costs were prohibitive. Pawnee floodwaters left the entire town covered in mud and debris, including large, round hay bales, railroad ties and utility poles. Individual well systems were damaged or destroyed throughout town.

Sterling

Floodwaters from the Pawnee Overflow began reaching the south end of Sterling at about 4:00 p.m., cresting in the downtown area around midnight. Although flood depths in Sterling were not as great as those in Atwood, much of the city's land area was inundated by two feet or more of water. Homes, businesses, schools, medical facilities, nursing homes, and public buildings were flooded or threatened by flooding before floodwaters began receding early on July 31.

Between 350 and 400 homes and 60 businesses experienced at least minor damage to flooring, drywall, furnaces, hot water heaters, furniture and other contents. Parts of the city that had more lead time were able to place sandbags around structures and prevent more serious damages. The total cost of damages to public and private property in Sterling, including insured and uninsured losses, is estimated at approximately \$10 million. Northeastern Junior College experienced significant flood damages as well, estimated to be in the range of \$2 million (Rti, 1998). Most of the damage at the college was to the student center, cafeteria and a residence hall.

Disaster Declaration Process

Preliminary Damage Assessment

Former Governor Roy Romer declared a state disaster and formally requested federal disaster assistance on July 30, 1997, based on the obvious and immediate flood impacts in Larimer, Logan and Morgan Counties and on initial damage estimates from local and state emergency management officials. Initial damage assessment figures confirmed that available government resources were insufficient to meet local disaster-related needs. In response to the Governor's request, the FEMA Regional Office in Denver scheduled a joint preliminary damage assessment (PDA) to verify, with local and state government representatives, actual damages and to estimate the amount and types of supplemental assistance needed. The PDA teams were made up of local, state and federal personnel with the skills or knowledge of the local area needed to assess damage to public infrastructure, homes and businesses.

Teams were also formed to identify and assess opportunities for implementing hazard mitigation measures. Following major events such as the 1997 flood disaster, the preliminary damage assessment is intended to provide state and federal officials with a basis for making recommendations and decisions on the level and types of assistance required under the Stafford Act.

Federal Disaster Declaration

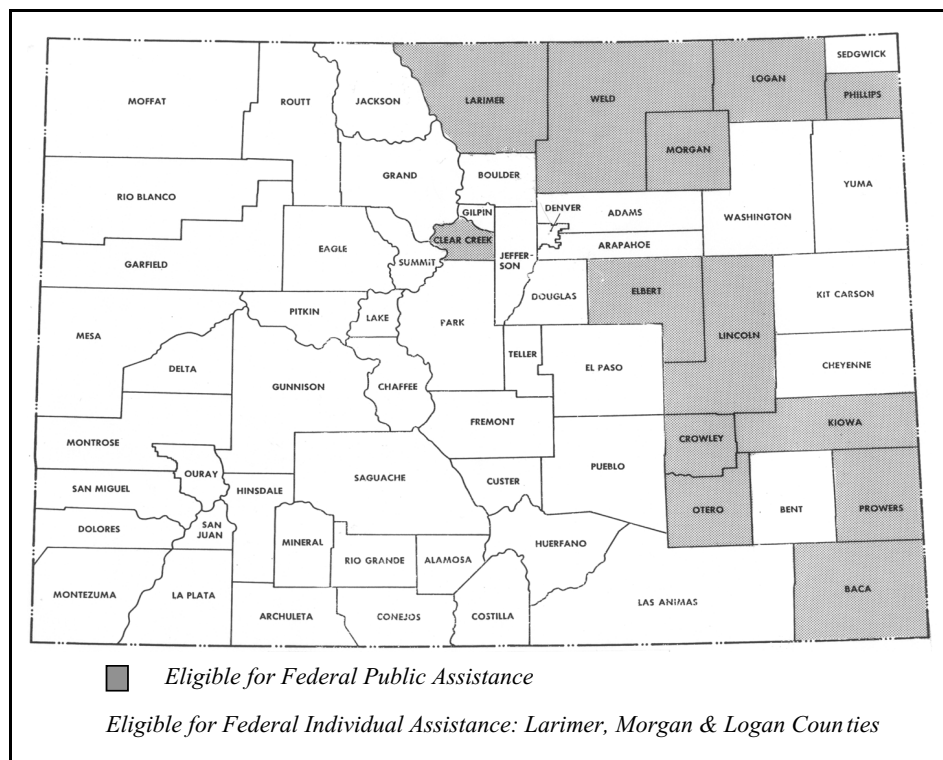
On August 1, 1997, President Clinton declared three northeastern counties -- Larimer, Morgan and Logan -- eligible to receive federal disaster assistance for flood damages under the authority of the Stafford Act. Concurrent with the presidential declaration, FEMA designated that all three principal forms of assistance -- individual assistance, public (infrastructure) assistance, and hazard mitigation -- be made available to the three declared counties.

DECLARATION PROCESS

1. RESPONSE AND INITIAL DAMAGE ASSESSMENT BY LOCAL GOVERNMENTS
2. LOCAL DISASTER DECLARATION(S)
3. REQUEST FOR STATE ASSISTANCE
4. IMPLEMENTATION OF STATE EMERGENCY OPERATIONS PLAN AND ACTIVATION OF STATE RESOURCES
5. JOINT PRELIMINARY DAMAGE ASSESSMENT (PDA)
6. GOVERNOR'S REQUEST FOR PRESIDENTIAL DISASTER DECLARATION
7. FEMA REGIONAL OFFICE REVIEW AND RECOMMENDATION
8. FEMA NATIONAL HEADQUARTERS REVIEW AND RECOMMENDATION
9. DECISION BY PRESIDENT WHETHER OR NOT TO AUTHORIZE STAFFORD ACT ASSISTANCE

Eventually, another 10 eastern counties were added to the declaration for *public assistance only* (repairs to roads, bridges and other infrastructure): **Kiowa, Crowley and Weld** (8-18-97); **Baca and Otero** (8-20-97); **Clear Creek and Phillips** (8-21-97); **Elbert** (8-26-97); and **Lincoln and Prowers** Counties (9-5-97). Additionally by virtue of the federal declaration, each of the state's 63 counties became eligible for assistance under FEMA's Hazard Mitigation Grant Program.

FEMA established a 16-day *incident period* for the disaster, meaning that eligibility for Stafford Act assistance was limited to flood damages that occurred during the period beginning on July 28 and ending on August 12, 1997. A disaster field office (DFO) was established in Fort Collins by FEMA immediately after the federal declaration to serve as a central location for managing Stafford Act programs and other federal assistance to all declared counties. A Federal Coordinating Officer (FCO) was appointed to coordinate federal disaster assistance programs and the Director of the Colorado Office of Emergency Management was appointed as the State Coordinating Officer (SCO) to direct state recovery activities.



Flood Recovery Costs

More than a year after the disaster, the total cost of the floods have yet to be calculated. As in all disasters, good estimates of the total cost of the 1997 disaster are elusive and the actual costs may never be known. Many, if not most, losses may never be compensated due to limited insurance coverage, eligibility requirements for government disaster assistance, and the thousands of hours of uncompensated time donated to relief efforts by volunteers and many employees.

The estimates in the tables that follow have been compiled from a number of sources, including FEMA, CSU, Colorado Department of Local Affairs, Colorado Office of Emergency Management, Colorado Water Conservation Board, City of Fort Collins, Larimer County, Morgan County, Logan County, Western Insurance Information Service, and Riverside Technology, inc.

The types of relief provided by volunteer and charitable organizations are hard to measure in financial terms. The American Red Cross estimates it provided more than \$700,000 in emergency services to flood victims. For other organizations, such as The Salvation Army and the church and civic groups cited in this report, good estimates of relief costs are unavailable.

The estimates are not intended to be all inclusive. Cost estimates of agricultural damage and unemployment benefits, for example, are not included. One year after the disaster, eligibility decisions were still being made regarding FEMA program assistance, so cost estimates are incomplete. On average, it takes at least two years to close out activities associated with federally-declared disasters.

Total Estimated Recovery Costs

COLORADO STATE UNIVERSITY	\$ 102,000,000
SMALL BUSINESS ADMINISTRATION (SBA) DISASTER LOANS	10,300,000
STATE OF COLORADO DISASTER EMERGENCY FUND	7,190,000
FEMA PUBLIC ASSISTANCE PROGRAM	4,600,000
FEMA HOUSING ASSISTANCE PROGRAMS	3,500,000
FEMA HAZARD MITIGATION GRANT PROGRAM (HMGP)	1,215,000
INDIVIDUAL AND FAMILY GRANT PROGRAM (FEDERAL SHARE)	2,014,000
AUTOMOBILE AND HOMEOWNERS INSURANCE	21,100,000
NATIONAL FLOOD INSURANCE PROGRAM	4,500,000
LOCAL GOVERNMENT SHARE OF PUBLIC ASSISTANCE/HMGP	575,000
HAZARD MITIGATION PROJECTS (LOCAL-STATE FUNDED)	3,535,333
HOUSING AND URBAN DEVELOPMENT (HUD)	668,569
CRISIS COUNSELING (LARIMER COUNTY ONLY)	104,416
TOTAL	\$161,302,318

The \$4.5 million paid out of the National Flood Insurance Program includes approximately 700 individual claims.

The total of \$21.1 million paid out in other insurance claims includes \$9.8 million for automobile insurance claims and \$11.3 million in "other" homeowners claims (weather damage determined to be side effects of the storm, e.g., rain, wind and hail, rather than actual flood damage).

Colorado State University

INSURANCE SETTLEMENT	\$ 62 Million
RESTORATION OF DAMAGED BOOKS	40 Million
TOTAL	\$ 102 Million

The process of restoring 437,000 flood-damaged books and journals could take years and the total estimated cost of salvage ranges from \$20 to 60 million, depending on how many books can be saved. The books are being restored by a company in Texas using a freeze-drying technique.

Colorado Disaster Emergency Fund Expenditures

PAYMENT TO CSU TO EXPEDITE RECOVERY EFFORTS	\$ 5,000,000
STATE SHARE OF FEMA PUBLIC ASSISTANCE PROGRAM	1,500,000
STATE SHARE OF INDIVIDUAL & FAMILY GRANT PROGRAM	690,000
TOTAL	\$ 7,190,000

The table above indicates expenditures from the Disaster Emergency Fund during the 1997-98 state fiscal year. The purpose of the \$ 5 million payment to Colorado State University was to expedite recovery efforts and to help university officials resume operations in time for the Fall, 1997 semester. Included in the \$690,000 payment for the non-federal share of the Individual and Family Grant is a \$4,000 payment to the Colorado Department of Public Health and Environment for encephalitis testing in declared counties.

Larimer County/Fort Collins

The Small Business Administration administered \$7.7 million in disaster loans in Larimer County. The National Flood Insurance Program paid \$1.5 million in claims in the county and FEMA provided \$2.8 million in housing grants. FEMA Public Assistance program (infrastructure) expenditures included \$900,000 in federal funds, \$679,000 in local funds, and \$300,000 from the state. Federal and state governments shared the costs of providing Individual and Family Grants to Larimer County flood victims totaling \$2.5 million (75% federal, 25% state). The total cost of administering the Project Rebound Crisis Counseling Program was \$104,416. The City of Fort Collins and Larimer County are also expending hundreds of thousands of dollars on post-flood mitigation projects. FEMA has approved a \$400,000 hazard mitigation grant for Fort Collins.

Morgan and Logan Counties

Flood victims in Morgan and Logan Counties received \$3 million for covered losses under the National Flood Insurance Program. The Small Business Administration provided \$2.6 million in disaster loans in the two counties and FEMA provided another \$700,000 million in housing grants. A combination of local, state, and federal funds have been used to restore roads and bridges damaged in the two counties, as well as to construct flood protection works for the communities of Weldona and Atwood.

LOCAL RESPONSE AND RECOVERY ACTIVITIES

Fort Collins and Larimer County

Response

The National Weather Service issued a flash flood warning for the Fort Collins area at 9:40 p.m. on July 28, 1997. As rainfall occasionally reached unbelievable rates of six inches per hour in some parts of southwest Fort Collins, residents of the two trailer parks on College Avenue were unaware that heavy runoff into Spring Creek was ponding in a large detention area behind the railroad embankment immediately upstream (more than 10 inches of rain ultimately fell in Spring Creek basin). Without warning, floodwaters overtopped the tracks at approximately 11:00 p.m. and swept into the mobile home park.

In less than five minutes, floodwaters rose six to eight feet and submerged or trapped 160 mobile home residents. The sudden breach of the railroad embankment and the failure of a compacted dirt plug in a culvert under the embankment contributed to the velocity of the flows. The force of the floodwaters derailed four cars of a Burlington Northern train adjacent to the trailer parks and broke gas lines, resulting in several explosions as rescue efforts were underway.



(Photo by John Weaver)

The death toll undoubtedly would have been much higher if not for the extraordinary efforts of firefighters and other rescue personnel. Over the course of the long evening, firefighters from **Poudre Fire Authority** and mutual aid agencies used safety lines and boats to rescue 362 people from the fast-moving waters. Floating mobile homes, live electrical wires, propane tanks, automobiles, and other hazards made the job even more treacherous. It was after 2:00 a.m. on July 29 when the last rescue was made. Poudre Fire Authority received substantial support with life-saving efforts from the **Larimer County Dive Rescue Team, Union Colony Fire Protection Authority, Fort Collins Police Department, Greeley Police Department, Colorado State Patrol, and dive teams from Loveland, Greeley, Estes Park and Longmont.**

On the **CSU** campus, where floodwaters significantly exceeded the estimated 100-year water levels, facilities operations personnel pumped millions of gallons of water out of buildings and assessed the degree of damage to campus facilities and utilities. The CSU Police Department was forced to relocate to city hall after their building was flooded. University officials immediately announced their intentions to begin the fall semester on schedule, a goal that was ultimately met.

The **American Red Cross** established a shelter at Rocky Mountain High School for displaced flood victims and set up a service center at Christ United Methodist Church. The volunteer agency also set up the American Red Cross Disaster Operations Center at the Centennial Chapter headquarters.

Recovery

The magnitude of the destruction in central Fort Collins became most apparent several days after the flood, when residents of what was left of the mobile home parks were allowed back in to retrieve personal belongings. Many left with only the empty boxes they brought in, unable to find a single item that could be salvaged. Not long thereafter, the City completely cleared the area and, one year after the flood, the site remained an open space area.

Due both to the promptness of the federal declaration and the proximity of the FEMA regional office in Denver, the formal *Preliminary Damage Assessment (PDA)* was scheduled to begin just three days after the flood. The City Manager directed planning, zoning and GIS mapping personnel to work around the clock to collect damage assessment data and to represent all flood impacts in the city on the digitally-produced maps. When federal and state inspectors joined local officials for the joint damage assessment, each team was given high quality maps showing categories of damage at all locations in the city. According to FEMA officials, the maps were crucial to an efficient PDA process and a prompt declaration.

A Disaster Recovery Center was established by the City of Fort Collins and the State of Colorado at the former University Mall to provide information and assistance to flood victims until federal and other supplemental assistance was available (see Disaster Recovery Centers under State Recovery Programs and Activities).

Additional phone lines and computer capacity were established at **Service Net**, an established volunteer program in Fort Collins, so that the agency could serve as a “one-stop” location for flood volunteer coordination. Volunteers from **Americorps** supported a number of center operations, including staffing of the reception area, phone bank and day care center.

Larimer County waived fees at the county landfill for disposal of flood debris. While the gesture alleviated one hardship for many flood victims, the volume of debris added to the landfill reduced the projected life of the facility by 25 percent, forcing Larimer County to move up the schedule for purchase of new land for future landfill sites.

With the support of a \$104,416 crisis counseling grant from FEMA, the **Larimer County Mental Health Center** instituted **Project Rebound** to provide disaster mental health services for Larimer County residents impacted by the flood. The FEMA grant was awarded for the period covering November 17, 1997 to August 16, 1998, during which time the *Project Rebound staff served over 3,000 individuals*. Services provided by the six paid staff members included outreach, individual crisis counseling, group crisis counseling, screening, education and information, and referrals to more intensive mental health therapy and to other services.

Although family and friends of those killed and former residents of the mobile home parks were a primary focus, the staff also provided services to schools, CSU faculty and students, the business community, and other area residents. Project Rebound staff also sponsored a “reunion” for mobile home park residents on March 11, 1998, supported the City’s planting of a flower garden spelling the word “HEAL” at Creekside Park on May 23, 1998, and advised the City regarding plans for the one-year anniversary commemoration.

On July 28, 1998, a candlelight memorial service was held at Rolland Moore Park to commemorate the first anniversary of the flood disaster. A formal recognition of flood recovery efforts was conducted at CSU’s Lory Student Center and later that evening, at sunset, a community-wide moment of silence was observed. At Creekside Park, adjacent to the site of the former mobile home parks, a tree was planted to mark the end of a long year of cleanup and emotional recovery.

Mitigation

A year after the flood, the Fort Collins City Council has considered a plan to make development policies in the city's 11 storm runoff basins more restrictive. Prior to the flood, the City had already earned a reputation for sound stormwater utility and floodplain management practices. Between 1989 and the flood, for example, the City spent \$5 million removing 85 structures from the Spring Creek 100-year floodplain, a program that city officials credit for saving as many as 98 lives during the 1997 event.

Prior to the 1997 flood, FEMA also awarded Fort Collins a Class 6 rating in the NFIP Community Rating System in recognition of the City's development of a comprehensive floodplain management program and implementation of hazard mitigation measures. Fort Collins is one of only 10 cities nationwide in 1997 to have achieved the rating, which gives residents a 20 percent discount on flood insurance premiums. The City's flood hazard mitigation efforts were also recognized in FEMA's selection of the City as the state's first Project Impact community.

In the wake of the flood, Fort Collins and Larimer County are undertaking several large mitigation projects that address flood hazards in the areas hardest hit in 1997.

Larimer County is implementing **structural mitigation measures** in the West Vine Drainage basin to alleviate repetitive minor flooding problems and infrequent severe flooding such as in 1997. The project includes construction of new stormwater outlet works, multiple culvert crossings, grass-lined drainage channels to convey runoff, a new detention pond, and elevation of two homes. The project is jointly funded by Larimer County and the State of Colorado. The total estimated cost of the project is approximately \$727,000, with Larimer County funding approximately \$377,000 and the remaining \$350,000 funded using Community Development Block Grant (CDBG) dollars (Larimer County, 1988).

In **Fort Collins**, a project to implement a **floodproofing program** for private residences subject to repetitive shallow flooding has been approved for funding under FEMA's Hazard Mitigation Grant Program (HMGP), authorized by the Stafford Act for federally-declared disasters. The federal share of the project cost is \$150,000 (75 percent) and the City of Fort Collins will provide \$50,000 matching funds (25 percent) for a total of \$200,000. The project is designed to fund floodproofing measures for private properties, including mini-floodwalls, sump pumps, watertight closures, landscape berms, and check valves on sanitary sewer discharge lines. The City will use the funds to provide subsidies ranging from 25 to 50 percent of floodproofing costs, depending on conditions at each property (City of Fort Collins, 1998b).

Improvements to the stormwater drainage system in the Old Town basin of Fort Collins are also being undertaken as part of the City's capital improvements program. The projects, which were moved up on the schedule as a result of the flood, are designed to improve storm sewer and street conveyance capacity in older sections of town and in historic drainage corridors. The City is also planning capital improvements that are designed to control spills from the irrigation channels that run throughout the city (Grigg et al, 1998).

Another approved HMGP project involves the development of a **comprehensive early warning system** for city residents. The **Poudre Fire Authority and Office of Emergency Management** have designed a system to increase warning times for potential floods and other hazards by utilizing new technology to collect, analyze and communicate critical information. Part of the system includes expansion of the existing streamflow and precipitation gage networks and installation of new gage hardware to report stream conditions in all drainage basins on a real-time basis, as opposed to only once an hour. The emergency notification part of the system relies on multiple methods for alerting the community of an emergency situation, including a new automated dialing system (Reverse 911), an enhanced cable television override system, and a new emergency management AM radio station.

The system also includes plans for improving hazard awareness and public education, training emergency response personnel, and covering the costs of long-term maintenance of the automated flood warning system. FEMA has approved \$250,000 as the federal share of the HMGP project. The local match is approximately \$83,000, although the total cost of implementing the entire system may be much greater. The City of Fort Collins will utilize public funds and private contributions to fund the balance of project costs (City of Fort Collins, 1998a).

On August 27, 1998, the City of Fort Collins signed a formal agreement designating it as a “*disaster resistant community*” and Colorado’s first **Project Impact** community. Project Impact is FEMA’s national initiative to help communities develop their own locally-based prevention and loss-reduction programs, through public and private partnerships, to reduce the vulnerability of people and property from natural hazards. The designation carries with it a \$500,000 FEMA grant to provide seed money for designing and implementing programs and projects that fall under six broad categories: (1) education and training, (2) planning and risk identification, (3) interagency communication and partnerships, (4) warning and notification, (5) incentives, and (6) public policy. (Fort Collins is required to provide a 25 percent local match.) Work groups were developed to design projects for each category and private sector participation will be actively solicited by the City over the course of the effort to supplement available public resources.

“NEIGHBORS HELPING NEIGHBORS”

Many public, private, volunteer and nonprofit organizations have contributed to the success of local recovery efforts in Larimer County and Fort Collins. The groups cited below exemplify the community-based approach of “neighbors helping neighbors” through extraordinary donations of time, skills, funds and other resources:

- ❑ City of Fort Collins (Mayor, City Manager’s Office, Poudre Fire Authority, Fort Collins Police Department, Office of Emergency Management, Community Development Center, Poudre Emergency Communications, Neighborhood Resources Center, Streets, Parks, Utilities, Planning, Zoning and Building Departments)
- ❑ Larimer County (Board of County Commissioners, Sheriff’s Department Emergency Services Unit and Deputies, Office of Emergency Management, Health Department, Community Services Department, Human Development Department, Social Services, Public Works, Road and Bridge)
- ❑ Volunteer Organizations (American Red Cross, ServiceNet, Salvation Army, Larimer County Volunteer Organizations Active in Disasters, Catholic Charities)
- ❑ Educational Institutions (Colorado State University, Poudre School District, CSU-NOAA Cooperative Institute for Research in the Atmosphere)
- ❑ Housing Agencies and Authorities (Neighbor-to-Neighbor, Fort Collins Housing Authority)
- ❑ Health and Medical Organizations (Larimer County Mental Health Center, Larimer County Medical Center)
- ❑ Private Contributors (Hewlett-Packard, ConAgra, National Semiconductor, Gay and Lesbian Outgiving Fund, McDonald’s, Gannett Foundation, Everitt Companies, American Furniture Warehouse)

Morgan County

Response

During the evening of July 29-30, 1997, slow-moving thunderstorms dumped heavy rainfall over the Schaefer Draw Basin and adjacent tributaries in Morgan County, flooding the unincorporated Town of Weldona and causing flood damages to roads, crops and isolated residences in other parts of the county. Breaches in irrigation facilities owned by the Weldon Valley Ditch Company and Riverside Irrigation District contributed to flood flows in Weldona, resulting in an overnight evacuation of the town of approximately 150 people.

According to the National Weather Service, up to 10.5 inches of rain fell over the Schaefer Draw watershed during a 15-hour period on the evening of July 29-30. The seriousness of the situation became apparent shortly after midnight, when floodwaters in Weldona reached the four-foot level and local rescuers began plucking residents from porches and rooftops. Under the direction of the **Morgan County Emergency Management Director**, who served as Incident Commander during response operations and later managed county recovery efforts, additional resources were called in to support rescuers from the **Morgan County Sheriff's Department**, **Morgan County Public Works** and **Wiggins Fire Department**.

School buses were used to transport evacuees to the Wiggins School, where the **Morgan County Chapter of the American Red Cross** set up an emergency shelter. The overnight evacuation took place in a driving rain as floating propane tanks and other hazards hampered rescue efforts. By mid-morning, the Colorado Army National Guard arrived with helicopters and humvees to assist local agencies with enforcement of the mandatory evacuation that had been ordered by the Incident Commander for health and safety reasons. Members of the **National Humane Society** arrived at noon to assist with the care of pets and animals in Weldona. More than 30 cats were rescued from the home of one resident. The **Civil Air Patrol** and **Colorado State Patrol** also provided air support to survey damages and to assess conditions at local canals, levees and reservoirs.

Recovery

Damage assessment activities in Weldona and at other impacted areas in the county were coordinated by the **Morgan County Assessor's Office**, with support provided by the **Colorado Chapter of the International Conference of Building Officials (ICBO)**. The **Northeast Colorado Health Department** provided advice to local officials concerning health hazards and began providing free tetanus shots and well-testing services. The mandatory evacuation was in effect for 24 hours, during which time County Commissioners formally declared the county a disaster area and began to prepare for the arrival of FEMA damage assessment officials.

In the immediate recovery phase, volunteer organizations, churches and businesses stepped in to help Weldona residents muck out and begin to repair flood-damaged homes and businesses. **American Eagle** (Anheuser Bush) and **Culligan Water** provided drinking water and local **Salvation Army** and **American Red Cross** volunteers provided food, clothing, cleaning supplies and other personal care items. The **Fort Morgan Chamber of Commerce** donated food and catering services and helped pay for the removal of trash and flood debris. Three days after the flood, **Excel Corporation** sponsored a barbecue dinner for the community. **Caring Ministries** took the lead in managing donated goods and funds and provided ongoing liaison with local volunteer agencies to help address unmet victim needs.

The American Red Cross opened a service center at the Senior Center in Weldona to assist residents with emergency needs such as food, clothing, cleaning supplies, and meals.

Several days after the flooding, a **disaster recovery center** opened at the Weldon Valley School building in Weldona to provide assistance and information to flood victims. Local agencies participating in the center's operations included **Morgan County Human/Social Services, Northeast Colorado Housing, Inc., Northeast Colorado Revolving Fund, Northeastern Colorado Association of Local Governments, and Morgan Community College Small Business Development Center**. State agencies representing housing, emergency management, human services, insurance, labor and employment, and business development were represented at the Weldona center, in addition to key federal disaster agencies (FEMA, SBA, USDA Farm Service Agency and Rural Development).

In the first several months after the flood, the heavily-damaged Last Stand Saloon, a local landmark and a sort of community center for area residents, was torn down, replaced with a new, modern structure and reopened at its old location, serving as a sign of progress in community recovery.

Mitigation

The lack of flood protection measures in the Weldona area has left the community vulnerable to repetitive losses when storms dump significant rainfall over Schaefer Draw. To address the problem, the **Morgan County Board of Commissioners** and the State of Colorado have approved the use of funds to construct flood control measures designed to divert floodwaters around the town and convey water to the South Platte River. The project, designed with the assistance of the Colorado Water Conservation Board, calls for construction of channels and a ring dike system and improvements to drainage features in and around the community. The estimated cost of the project is \$600,000, with Morgan County providing \$300,000 and the State committing \$250,000 in CDBG funds.

Morgan County has also been designated as a "disaster resistant community" for FEMA's Project Impact in 1999. The designation, partly due to the success of flood recovery efforts, will provide funds for new emergency management programs and projects around the county, including additional mitigation measures for the Town of Weldona.

"NEIGHBORS HELPING NEIGHBORS"

Many public, private, volunteer and nonprofit organizations have contributed to the success of local recovery efforts in Morgan County. The groups cited below exemplify the community-based approach of "neighbors helping neighbors" through the donation of their time, skills, funds and other resources:

- Morgan County (Board of County Commissioners, Office of Emergency Management, Assessor, Sheriff's Department, Road and Bridge, Social Services)
- Volunteer Organizations (Brush Salvation Army, Fort Morgan Salvation Army, Fort Morgan Chapter of the American Red Cross, Caring Ministries)
- Housing Authorities (Northeast Colorado Housing, Inc)
- Health Organizations (Northeast Colorado Health Department)

- ❑ Business Assistance (Morgan Community College Small Business Development Center)
- ❑ Private Contributors (Fort Morgan Chamber of Commerce, Excel Corporation, American Eagle, Culligan Water)

Logan County

Response

As it became apparent to local officials that flooding throughout the Pawnee Creek watershed was imminent, immediate steps were undertaken to protect population in the Sterling-Atwood area. Emergency personnel and elected officials from Logan County and the City of Sterling coordinated response activities for citizens throughout the county, including flood warnings, emergency evacuations, flood-fight operations, road closures and emergency assistance to flood victims.

The **Board of County Commissioners, Logan County Sheriff's Department, Road and Bridge Department, Emergency Manager** and other local personnel, with the support of Colorado State Patrol and Colorado Department of Transportation, worked overnight attempting to minimize the flood's consequences in unincorporated areas. Sheriff's Deputies evacuated all 80 residents of Atwood and performed dozens of rescues in rural parts of the county.

The **Sterling Police Department, Sterling Fire Department, City Manager**, American Red Cross and local emergency medical services providers worked feverishly to protect people and property from advancing floodwaters, including addressing the special needs of nursing home and hospital populations. Facing a prediction of high water at Sterling Regional Medical Center, the hospital was evacuated and patients were transferred to another hospital or discharged. Basic emergency room operations were relocated to the Wally Post Gym at Sterling High School. Residents of the Sterling Living Center were evacuated with the help of police to Northeast Junior College, where they had to be moved a second time -- from the first to the second level of a dormitory building -- when floodwaters moved toward campus.

The **Northern Plains Chapter of the American Red Cross** established a shelter at Wally Post Gym on July 30 and by later in the evening had registered over 100 people. The shelter remained open until August 3.

Recovery

Two days after the flood, a **Coordinated Response Center** opened at the Logan County Central Services Building in Sterling to provide assistance and information to flood victims. Like the disaster recovery centers in Fort Collins and Weldona, the center in Sterling was established jointly by local officials and the Colorado Department of Local Affairs. City, county, state, federal and volunteer agencies participated in the center's operations. The **Northeast Colorado Health Department** administered hundreds of free tetanus shots to area residents at the center and also provided free testing of water well samples. Local agencies represented at the center included **Logan County Social Services, Northeast Colorado Housing, Inc., Northeast Colorado Revolving Loan Fund, Northeastern Colorado Association of Local Governments, and Morgan Community College Small Business Development Center.**

Outreach teams from the center were dispatched to Atwood for the convenience of residents of the hard-hit community and to ensure that all flood victims were aware of the resources available to them.

Volunteers and law enforcement officials distributed information about the center and available assistance door-to-door in Atwood, which was also the focus of large-scale volunteer clean-up efforts.

State agencies representing emergency management, housing, insurance, labor and employment, human services, and business development were represented at the Sterling center, in addition to the principal federal agencies offering flood relief (SBA, FEMA, USDA Farm Service Agency and Rural Development).

The immediate housing needs of flood victims in Atwood and Sterling were met by the **American Red Cross**, who provided vouchers to individuals and families for hotel and other short-term accommodations. A service center was established at Sterling High School to address lodging as well as other needs like food and clothing. **Northeast Colorado Housing, Inc.** and the **Sterling Housing Authority** filled gaps in state and federal housing assistance by providing rental assistance and low-interest loans to flood victims. The **Northeast Colorado Association of Local Governments** provided local residents with housing rehabilitation and weatherization assistance. To complement SBA and other federal assistance, business loans and technical assistance to business owners were made available by the **Small Business Development Center**, **Northeastern Colorado Revolving Loan Fund**, **Logan County Revolving Loan Fund** and the Northeast Colorado Association of Local Governments.

To improve interjurisdictional coordination in the wake of the flood, city and county emergency services agencies formed the **Logan County/Sterling Disaster Preparedness Committee**, a joint planning committee representing city/county management and elected officials, law enforcement, fire services, health and EMS providers, hospital and nursing home centers, local public schools, Northeastern Junior College, Colorado State Patrol and the new correctional facility in Sterling. The planning committee has met every other month since the disaster in order to improve and coordinate emergency plans, clarify responsibilities and lines of authority, identify training needs, formalize shelter arrangements, and improve warning and notification measures with regard to the hospital, college and nursing homes. The committee has also conducted several training exercises to validate new plans and procedures.

The **Logan County Flood Recovery Task Force**, operating under the nonprofit umbrella of the **Cooperating Ministry of Logan County**, provided a total of \$134,181 in direct assistance to 55 county residents with unmet needs as a result of the disaster (and one Phillips County resident).

By the anniversary date of the flood, Logan County had substantially completed all flood-related road and bridge work, including 38 projects approved under FEMA's Public Assistance program at a total cost of \$612,816.

Mitigation

A large-scale, post-disaster mitigation project, known as the **Pawnee Overflow Project**, has been approved for funding by city, county, state and federal agencies. The project is a joint undertaking by the city and county and is intended to protect flood-prone areas in both jurisdictions (including Atwood) during future flood events of a similar magnitude. The project includes channel improvements in Pawnee Creek near Atwood and new diking and channeling above Sterling to divert overflow drainage into the South Platte River. The estimated cost of the project is \$2,865,000, which will be shared by Sterling and Logan County (\$950,000), the State of Colorado (\$1,100,000), and FEMA (\$815,000 in Hazard Mitigation Grant Program funds).

In spite of the Pawnee Overflow Project, many Atwood residents have raised new and rebuilt home foundations three feet or more to protect against extraordinary flood events. At Northeastern Junior College, a floodwall has been constructed to prevent floodwaters in the future from entering Dowis Residence Hall, where carpets and drywall had to be replaced after the flood.

“NEIGHBORS HELPING NEIGHBORS”

Local churches, civic organizations and businesses volunteered their time to help flood victims, neighbors and strangers alike. For example, nearly 1,000 hours of time was donated by volunteers assisting with reconstruction projects and general labor. Church Alive, local fast-food restaurants and community groups supplied meals for flood victims at the American Red Cross shelter at Wally Post Gym.

Many public, private, volunteer and nonprofit organizations have contributed to the success of local recovery efforts in Logan County. The groups cited below exemplify the community-based approach of “neighbors helping neighbors” through extraordinary donations of time, skills, funds and other resources:

- ❑ Logan County (Board of County Commissioners, Sheriff’s Department, Planning Department, Road and Bridge, Social Services)
- ❑ City of Sterling (Mayor, City Manager, Sterling Police Department, Sterling Fire Department, City Engineer, Community Development, Public Works, Streets Department)
- ❑ Volunteer Organizations (American Red Cross, Salvation Army)
- ❑ Churches and Charitable Organizations (Logan County Flood Recovery Task Force, Cooperating Ministry of Logan County, Seventh Day Adventist Church, Church Alive)
- ❑ Educational Institutions (Northeastern Junior College, Sterling Schools)
- ❑ Housing Agencies and Authorities (Sterling Housing Authority, Northeast Colorado Housing, Inc.)
- ❑ Health and Medical Organizations (Northeast Colorado Health Department)
- ❑ Business Assistance (Morgan Community College Small Business Development Center, Logan County Revolving Loan Fund, Northeastern Colorado Revolving Loan Fund)

State Recovery Programs and Activities

The State of Colorado contributed to flood relief efforts in a variety of ways, including direct financial assistance (more than \$7 million), the establishment of disaster recovery centers, and the administration of important disaster assistance programs designed to directly assist individual victims and to help local governments restore public infrastructure and prevent future losses.

State Disaster Emergency Fund

As of the anniversary date of the flood, **\$7,190,000** had been expended from the State Disaster Emergency Fund to assist victims of the 1997 flood. Of this amount, five million dollars was provided to Colorado State University to expedite recovery efforts and to help university officials resume most campus operations in time for the 1997 fall semester. Another \$1.5 million from the fund was transferred to the Department of Local Affairs to fund part of the State's share of FEMA's Public Assistance Program. The State spent another \$686,000 to fund the non-federal (25%) match of FEMA's Individual and Family Grant Program.

State Recovery Resources

The table below summarizes the different programs and activities that were provided or coordinated at the state government level to assist local recovery efforts following the 1997 floods.

Department/Agency	Division/Office	Programs and Services Provided
Governor's Office		Declares state disaster and requests federal assistance; authorizes expenditures from disaster fund to fund state recovery costs and to address unmet local needs.
Higher Education	Colorado State University	Coordinates financial and physical recovery efforts at CSU campus in Fort Collins, including implementation of hazard mitigation measures.
	Colorado State Forest Service	Provides staff support to state planning and reporting functions at Disaster Field Office; conducts field reconnaissance of damaged areas and provides inspectors with area maps.
Human Services	Division	Individual and Family Grant Program
	Mental Health Services	Administers the Regular Crisis Counseling Assistance and Training Program -- known as Project Rebound in Larimer County -- in coordination with local mental health services providers (services include outreach, individual and group crisis counseling, education, and referrals).
	Consumer Advocate	Consumer relations staff provides information to disaster victims on avoiding home repair fraud or other scams; consults with Better Business Bureau to help determine qualifications and standing of construction contractors.

LESSONS OF RECOVERY - A REVIEW OF THE 1997 COLORADO FLOOD DISASTER

Labor and Employment	Job Service Centers	Disaster Unemployment Assistance Program provides direct weekly payments to individuals out of work as a result of a disaster, including self-employed workers, farmers and other disaster victims who may not be covered by regular unemployment insurance programs.
Local Affairs	Emergency Management (OEM)	Coordinates financial and technical assistance to impacted local jurisdictions and state agencies; provides technical assistance on local emergency planning, community recovery, GIS mapping and hazard mitigation; assists in administration and delivery of federal disaster assistance programs.
	Field Services	Coordinates establishment of Disaster Recovery Centers in impacted communities; provides technical assistance regarding community redevelopment and economic recovery; assists in administration and delivery of federal disaster assistance programs.
	Housing	Coordinates low- to moderate-housing grants; provides short-term housing assistance to disaster victims; assists local housing authorities in locating housing resources.
	Local Government	Provides technical assistance with respect to local planning, budgeting, public facilities/services, GIS services, and land-use issues; coordination with HUD.
Military Affairs	Colorado Army National Guard	Provides support to local authorities with rescue and evacuation efforts; provides helicopter support for reconnaissance and observation flyovers by elected officials and other VIPs.
Natural Hazards Mitigation Council	Intergovernmental	Technical assistance for evaluation of projects and information on reducing and managing potential impacts from natural hazards.
Natural Resources	Colorado Water Conservation Board (CWCB)	Flood Control and Floodplain Management Section prepares flood documentation reports and mitigation proposals; provides technical assistance regarding local flood hazards, flood insurance and hazard mitigation; administers Hazard Mitigation Grant Program.
	Parks	Coordinates emergency and long-term repairs of damaged improvements at State parks.
Public Health and Environment		Coordinates loans and grants to restore waste and wastewater facilities and domestic water utilities; coordinates encephalitis testing and remedial actions; provides technical assistance regarding household waste issues, storm sewer systems, water quality issues and other health matters.
Regulatory Agencies	Insurance	Fields questions or complaints from disaster victims on insurance matters, including offering advice on insurance requirements, claims and problems with settlements.
Transportation (CDOT)		Provides emergency repairs to highways, roads and bridges and responds to local government requests for emergency assistance; participates on damage assessment team inspections of damaged highways facilities; coordinates financial reimbursement related to federal aid road systems; implements hazard mitigation measures to prevent repetitive losses to CDOT facilities.

Colorado Historical Society	State Historical Preservation Officer	Provides consultation on historic structures; provides technical advice on preservation methods; reviews mitigation proposals for designated structures; administers State Historical Fund Grants, including Emergency Grants.
Colorado Bar Association	Young Lawyers Division	Provides legal advice, counseling and representation at no cost to individual disaster victims.

Disaster Recovery Centers

The **Field Services** staff of the **Department of Local Affairs** coordinated the rapid establishment of Disaster Recovery Centers (DRCs) in Fort Collins, Weldona and Atwood to provide disaster victims with a central location for meeting with representatives of the various volunteer and governmental agencies involved with disaster relief. The following checklist was developed by Field Services Representatives who managed DRCs in the disaster-impacted communities.

Checklist for Disaster Recovery Centers

Space

- √ local government or school facility, if available (consult local officials)
- √ large, open space capable of holding 100 or possibly more people at a time (at least 1,500 sq. ft. and up to 10,000 sq. ft.)
- √ near American Red Cross service centers, whenever possible (victims may need to register with Red Cross before receiving temporary housing assistance)

Hours of Operation

- √ extended and weekend hours to accommodate victims' schedules (e.g., 9 AM to 9 PM)

Telephones

- √ as few as 5-10 in smaller centers and up to 50-75 in large centers
- √ rollover lines and voice, fax and computer data capabilities
- √ utilize existing local contracts with US West, where available
- √ cellular phones and extra batteries

Staffing

- √ space for following types of program and service providers: housing, human services, city/county liaisons, local emergency management, utilities, local/regional health departments, agricultural assistance, job services, volunteer agencies (American Red Cross, Salvation Army, VOAD), state agencies (Local Affairs, Human Services, Insurance Commissioner), federal agencies (FEMA, SBA), business development and revolving loan funds, volunteer coordination, local church and charitable organizations, rural development and local government organizations
- √ promote local-state partnerships and volunteer and private contributions
- √ encourage rotation of staff to avoid burnout

Layout

- √ front desk and intake area
- √ waiting area with refreshments and crayons and coloring books
- √ co-location of local, area and state housing personnel to facilitate coordination

Equipment and Supplies

- √ photo copier/paper, computers/printers, blank disks, phone directories, basic office supplies, tables/chairs, fax machine

Other Key Considerations

- √ press release announcing center location, hours, phone numbers and types of assistance available
- √ day care center
- √ parking to accommodate projected visitor numbers
- √ pamphlets and information sheets on health and sanitation issues, available assistance programs and other disaster information
- √ availability of public transportation (city bus routes)
- √ regular staff coordination meetings
- √ simple registration forms for tracking and follow-up
- √ need for outreach teams to contact residents in isolated areas or without transportation
- √ heating/air conditioning/trash pickup/janitorial services

*These guidelines were developed by Don Sandoval and Kent Gumina,
Field Services Representatives for the Colorado Department of Local Affairs.*

Individual and Family Grant Program

FEMA's **Individual and Family Grant Program (IFG)** was administered by the **Colorado Department of Human Services**. This form of grant assistance is authorized under the Stafford Act and provides for a cost share of eligible grants between federal (75%) and state (25%) governments. The grants are intended to help disaster victims meet necessary disaster-related expenses and serious needs when other forms of assistance are either unavailable or inadequate. The maximum IFG grant amount for the 1997 disaster was \$13,100.

IFG grants can be used to cover various types of expenses created by the disaster, including funeral, personal property, housing, transportation, medical and dental expenses. According to FEMA officials, the administration of the IFG program by the Colorado Department of Human Services may have been unprecedented in a couple of respects. Although official records are not available, FEMA officials were unable to cite another example of a state developing an administrative plan in such a short time period (approximately one week) or when the first IFG checks had reached disaster victims so quickly (approximately two weeks after the disaster). This accomplishment was even more remarkable in view of the fact that Colorado had not been involved with the program since the 1982 Lawn Lake disaster in Estes Park.

Crisis Counseling Assistance and Training Program

When the scope and long-term nature of mental health problems among flood victims in Larimer County became obvious, the **Colorado Department of Human Services, Mental Health Services**, applied for and received a \$104,416 grant on behalf of Larimer County. A subcontract was provided to the **Larimer County Mental Health Center** and the nine-month crisis counseling effort -- christened as **Project Rebound** to foster a positive approach to the difficult task of providing outreach mental health services to flood victims -- began on November 17, 1997 with six paid staff members and a student intern.

FEMA funded 100 percent of the Project Rebound budget and provided ongoing technical support in coordination with Colorado Mental Health Services (MHS) and the National Center for Mental Health Services. The **MHS Disaster Coordinator** helped to write the grant application and consulted with the Project Rebound coordinator and staff on a regular basis. Project Rebound staff members provided a variety of services, including outreach, individual crisis counseling, group crisis counseling, screening, education and information, and referrals to more intensive mental health therapy and to other services.

Project Rebound surpassed its initial goals by contacting and providing some type of service to 3,281 individuals. Although family and friends of those killed and the former residents of the mobile home parks were a primary focus, the staff also provided services to schools, CSU faculty and students, the business community, and other area residents. Project Rebound staff also sponsored a reunion of mobile home park residents and provided consultation to City of Fort Collins staff on the one-year anniversary commemoration.

Hazard Mitigation Grant Program

The **Hazard Mitigation Grant Program, or HMGP**, (Section 404 of the Stafford Act) provides for a post-disaster mitigation fund equal to 15 percent of the total federal share of grant assistance provided for a specific disaster. The program is administered at the state level and supported by 75 percent federal funding of the eligible costs of local and state mitigation projects (the 25% state or local match may be in-kind, cash or a combination of the two). The principal objective of the program is to facilitate the implementation of hazard mitigation measures in the immediate recovery phase following a disaster. Individual projects must be cost-effective and designed to substantially solve an identified problem, rather than just analyzing or studying the hazard. FEMA retains the authority for final review and approval of state-recommended projects.

The **Flood Control and Floodplain Management Section** of the **Colorado Water Conservation Board (CWCB)** administered the grant program in coordination with the **State Hazard Mitigation Officer, Colorado Office of Emergency Management (OEM)**. CWCB staff provide engineering technical assistance to local governments beginning during the response phase and continuing through the process of identifying and implementing recommended projects. The process followed by CWCB and Colorado OEM after the 1997 floods is as follows: (1) conduct applicant briefing to explain the program to local officials, (2) solicit applications from interested local jurisdictions, and (3) establish a review committee to prioritize and recommend projects for FEMA approval. Unlike other federal disaster programs, eligibility for HMGP was not limited to declared counties (all 63 counties were potentially eligible for HMGP assistance).

With the assistance of local engineering consulting firms, eight projects were eventually selected and submitted to the FEMA regional office in Denver. As of this report date, three projects have been approved by FEMA:

1.	<u>Fort Collins Residential Floodproofing Project</u>	Estimated Project Cost:	\$200,000
	FEMA Share: \$150,000	Local Share:	\$50,000
2.	<u>Fort Collins Warning System Project</u>	Estimated Project Cost:	\$333,333
	FEMA Share: \$250,000	Local Share:	\$83,333
3.	<u>Sterling/Logan County Pawnee Overflow Project</u>	Estimated Project Cost:	\$2,865,000
	FEMA Share: \$815,000	Local Share:	\$950,000
	State Share: \$1,100,00		

Two of the other projects were withdrawn when they did not meet FEMA benefit-cost criteria, but the Colorado Department of Local Affairs arranged for supplemental funding by other means to allow the projects to go through:

1.	<u>Weldona Flood Protection Project</u>	Estimated Project Cost:	\$600,000
	Local Share: \$350,000	State Share: (CDBG Funds)	\$250,000
2.	<u>West Vine Basin Project</u>	Estimated Project Cost:	\$727,000
	Local Share: \$377,000	State Share: (CDBG Funds)	\$350,000
3.	<u>Pueblo Warning Project</u>	Estimated Project Cost:	\$25,000
	State Share: \$25,000 (Disaster Preparedness Improvement Grant Funds)		

A stormwater improvement project for Canon City was declined by FEMA and the City's first appeal of the decision was also denied. FEMA approval of another project at the Town of Wiley was suspended pending a decision by the Colorado Department of Transportation concerning a CDOT bridge that could be effected by the project.

CSU Recovery and Mitigation Activities

By the one-year anniversary of the flood, repairs to most of the flood-damaged buildings at Colorado State University were completed and repairs to two of the hardest-hit buildings -- the lower level of the Lory Student Center and the basement of Morgan Library -- were scheduled for completion by the spring of 1999. It may take another year after that before efforts to salvage all of the library books are complete. Most of the costs of repairs and replacement of building contents were covered by a \$62 million insurance settlement negotiated by university officials. Since the flood, more than 500,000 books and journals have been donated to the library.

CSU officials are undertaking measures -- berms, floodwalls, detention ponds and drainage improvements -- that will eventually make the entire Fort Collins campus safe from a 100-year flood and that will protect certain critical facilities, such as the library and student center, from a 500-year event. By the two-year anniversary of the 1997 flood, most of the flood mitigation measures are scheduled to be in place.

Other State Recovery Resources

An additional recovery resource -- coordinated at the state government level -- can be provided by the **Colorado Chapter of the International Conference of Building Officials (ICBO)**. The members of ICBO are professional building officials that can assist local governments with structural inspections of damaged properties. ICBO representatives can also provide technical assistance to local officials with respect to development or improvement of local building codes. In 1997, ICBO teams were a valuable asset to local jurisdictions, especially in rural areas where building codes did not exist at the time of the disaster.

FEMA and Other Federal Agency Programs and Activities

Individual Assistance Programs

Individual Assistance refers to the umbrella of programs that provide direct assistance to people -- individuals, families, small business owners, farmers, ranchers -- via grants and low-interest loans. The two other major program areas -- Public Assistance and Hazard Mitigation -- help people indirectly by assisting local governments to repair infrastructure and to devise and undertake hazard mitigation measures.

The types of assistance available to individual disaster victims after a Presidential declaration include funds for temporary housing, grants to meet serious needs and necessary disaster-related expenses, and low-interest loans to repair or replace real and personal property. Most federal assistance is in the form of low-interest loans to meet expenses not covered by local and state programs or by private insurance. In most cases, qualified applicants receive checks in three weeks or less.

The Administrator of the Small Business Administration (SBA) and the Secretary of Agriculture may also independently declare disasters in order to provide loan and grant assistance under their statutory authorities. SBA economic injury loans and the assistance available from the U.S. Department of Agriculture (USDA) also extend to individuals in contiguous counties. The other forms of assistance described in this section are only available to the counties declared for Individual Assistance. For the 1997 disaster, FEMA Individual Assistance is available in only Larimer, Morgan and Logan Counties.

FEMA's National Teleregistration Center (NTC) helps to optimize the timeliness and convenience of disaster assistance by taking a *single application* by phone for all Individual Assistance programs. The national toll-free telephone bank and computer center is staffed with trained service representatives, who attempt to match callers with the types and nearest sources of disaster aid specific to the needs of each disaster victim. The computer system electronically transmits application information to the various assistance providers within minutes of each call.

Homeowners, renters, business owners, and farm and ranch operators may be eligible for assistance from a variety of volunteer, local, state and federal agencies. Sometimes referred to as the *ladder of assistance*, the needs of individual victims are first addressed by the American Red Cross with succeeding levels of assistance available to address unmet needs, from private insurance to loans, housing assistance and grants. At the bottom of the ladder is a *safety net*, which includes the Cora Brown Fund, private donations, and assistance available from other volunteer agencies, church groups and charitable organizations.

Depending on the nature of disaster impacts, the following programs may be triggered by a disaster declaration to help meet the needs of individuals and families.

American Red Cross

Immediate assistance to disaster victims -- food, clothing, shelter and medical assistance -- is coordinated by the **American Red Cross**, in cooperation with other volunteer, civic and church organizations or, where available, the local Voluntary Agencies Active in Disasters, or VOAD. American Red Cross is available regardless of the magnitude of a disaster and is not dependent on a formal declaration or designation. The American Red Cross is an independent, humanitarian, voluntary organization, not a government agency, although its services are closely coordinated with government agencies to ensure that assistance to victims is as seamless as possible.

According to American Red Cross damage assessment figures, *the 1997 floods destroyed a total of 178 homes, caused major damage to 346 homes and minor damages to 1,043 others. A total of 1,567 suffered adverse effects from the disaster (1,153 in Larimer County, 387 in Logan County, and 27 in Morgan County).*

In the immediate aftermath of the flood, approximately 250 people were sheltered at American Red Cross-managed shelters that were established in each of the three counties. American Red Cross Service Centers assisted 560 families and provided temporary housing assistance to 249 families. More than 8,000 meals were served from four fixed and four mobile feeding units. Flood victims were provided with 565 clean up kits and 385 comfort kits. American Red Cross mental health workers also made close to a thousand individual contacts and Disaster Health Services opened 167 cases with 21 home or hospital visits. Health services replaces prescriptions and eyeglasses and attempts to meet other medical needs.

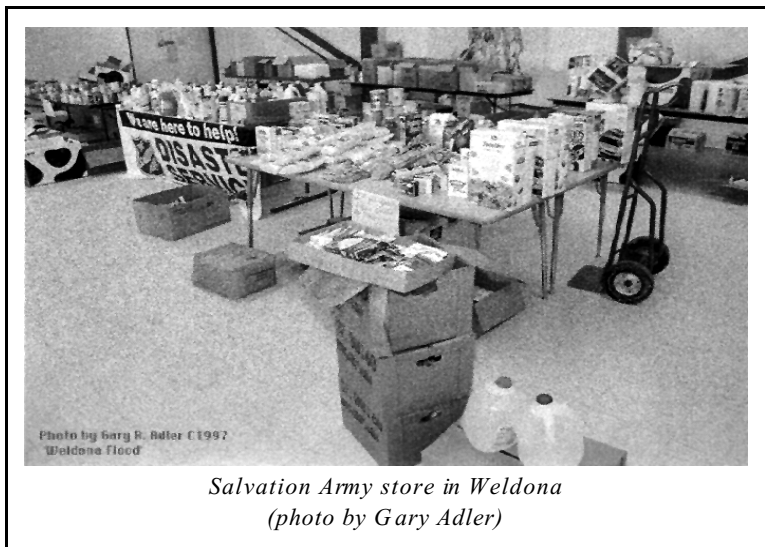
The American Red Cross committed 593 paid staff and 550 volunteers to flood relief efforts in 1997, representing the following chapters: **Centennial Chapter, Northern Plains Chapter, Morgan County Chapter, Frontier Chapter, Western Colorado Chapter, Pueblo County Chapter, Pikes Peak Chapter, and the Mile High Chapter.**

"I didn't know there were so many nice people in the world, but there are," one flood victim in Atwood commented. "The Red Cross was great. If I ever win the lotto, they get a big chunk of it" (*Journal-Advocate*, July 31, 1998).

The Salvation Army

Like the American Red Cross, **The Salvation Army** is not a government agency, but an independent, humanitarian organization that provides disaster services regardless of the availability of government assistance. The Salvation Army provides immediate assistance to disaster victims, including food, water, counseling, and medical advice and assistance. The organization also assists emergency response personnel and emergency relief workers by providing food, beverages and other care. The **Fort Collins Branch of The Salvation Army** assisted the victims of the flooding in Fort Collins and Larimer County.

In Weldona, the Salvation Army assisted every household in the community with food, cleaning supplies and other provisions and established a “convenience store” to allow residents to walk in and pick up supplies as needed. The **Intermountain Divisional Headquarters** in Denver shipped approximately 18,000 pounds of emergency supplies to Morgan and Logan Counties. Salvation Army volunteers from the two counties unloaded the palletted shipments and distributed the goods in Weldona, Atwood, Sterling and to families in unincorporated areas.



Salvation Army store in Weldona
(photo by Gary Adler)

FEMA Housing Program

FEMA provides direct-payment grants to disaster victims for temporary housing or for emergency repairs that are needed to restore a home to a “livable” condition until more permanent repairs can be made. Eligibility is limited to homeowners and renters whose primary residences are uninhabitable or inaccessible as a result of the disaster. FEMA housing assistance cannot duplicate insurance payments covering living expenses and/or home repairs.

The three primary types of FEMA housing assistance are: (1) **transient accommodations reimbursement**, for short-term lodging (applicant must provide paid receipts), (2) **home repair assistance**, for homeowners who can return to their homes with minimal repairs, and (3) **rental assistance**, for people who are displaced while repairing or replacing their disaster-damaged primary residence.

In 1997, FEMA housing assistance was applied in concert with housing programs available from the American Red Cross, local housing authorities and the State of Colorado. This allowed victims to maximize the amount and duration of assistance for alternate housing by combining the help available from different sources.

In general, only one form of FEMA housing assistance is provided per household. FEMA rental assistance is provided for up to three months for homeowners and up to two months for renters, although extensions can be granted on a case-by-case basis. Home repair assistance is intended only to make the home “*minimally habitable*,” or safe and secure, and is limited to the maximum grant limit of \$10,000 per household.

A total of \$3.5 million in temporary housing assistance (rental assistance for people displaced from their homes and repair money for flood-damaged homes) has been provided by FEMA to 1,831 families in the first year following the disaster.

Individual and Family Grant Program

Individuals and families who are unable to meet necessary disaster-related expenses and serious needs can qualify for assistance under the **Individual and Family Grant (IFG) Program**, which is offered when assistance from other sources is either unavailable or inadequate. Individuals or families who cannot qualify for an SBA loan may be eligible for *cash grants of up to \$13,100* to help recover uninsured property losses. Home inspections are normally conducted prior to the issuance of a check. The IFG Program is administered by the State of Colorado and supported by 75 percent federal funding of the total grants awarded.

Cora Brown Fund

When Cora C. Brown of Kansas City, Missouri died in 1977, she left a portion of her estate -- \$802,000 - to the federal government for the purpose of establishing a special fund to assist victims whose disaster-related needs have not or will not be met by governmental or other relief agencies. Potentially eligible applicants must reside in a county that has been declared a disaster area by the President for individual assistance. The fund, administered by FEMA as part of the assistance "safety net," is infrequently used. On average, there are only three Cora Brown Fund recipients each year and the average award amount is \$2,500. There is currently more than one million dollars in the fund. Potential recipients are identified by FEMA, in cooperation with local volunteer agencies.

SBA Disaster Loans

The **Small Business Administration (SBA)** has several loan programs to help homeowners, renters and business owners recover from a disaster when a declaration is made by the President or by SBA. The programs are designed to assist disaster victims with the process of long-term rebuilding and repair, rather than immediate emergency needs. The three principal SBA disaster programs are:

1. **Home Disaster Loans** - *personal property loans of up to \$40,000* are available to homeowners and renters to assist with repair or replacement of lost or destroyed items such as automobiles, clothing and furniture. *Real property loans for up to \$200,000* may be made to restore an applicant's home to its pre-disaster condition. Upgrades, additions or other structural improvements are ineligible unless required to comply with local building codes. Loans may be increased up to 20 percent, however, in order to protect damaged real property from possible future effects of the same hazard.
2. **Business Physical Disaster Loans** - *direct loans of up to \$1.5 million* to repair disaster damages can be made to businesses of all sizes and to nonprofit organizations. These loans may also be used to replace business supplies and inventories.
3. **Economic Injury Disaster Loans** - working capital loans to small businesses and small agricultural cooperatives are also available to provide financial relief during the disaster recovery period. Economic injury loans are available only to owners that cannot obtain this type of assistance from other, non-governmental sources. *Loan amounts and the terms of the loans vary* according to the borrower's needs and repayment ability.

SBA disaster loans are approved based on an applicant's ability to repay, with most loans set at four percent interest and for terms of up to 30 years. Collateral is required on loans in excess of \$10,000 and properties located in flood hazard zones are required to have flood insurance. Loan decisions are normally made within one to three weeks after completion of a disaster loan application.

Checks are issued promptly following an on-site visit from an SBA loss verifier, who determines the dollar cost for disaster-related property repairs and/or replacement. Following the flood disaster of 1997, **SBA approved more than \$10 million in disaster loans** for over 670 homes and businesses to cover personal property losses.

Agricultural Assistance

Emergency agricultural loans for physical and production losses can be obtained from the **Farm Service Agency of the U.S. Department of Agriculture** following a Presidential declaration or designation by the Secretary of Agriculture. Low-interest emergency loans and technical assistance are available to family farmers and ranchers to repair disaster-caused damages to primary residences, outbuildings, crops and other farm or ranch property. Emergency loans may also be used for essential family living expenses, delinquent installments, refinance of debts, and for the purchase of essential equipment and livestock.

Loan assistance is intended to help restore productive operations as soon as possible, thereby enabling farmers and ranchers to obtain credit from private sources. Farms and ranches in counties contiguous to declared or designated counties may also qualify for loan assistance. Applications are made to the Farm Service Agency office serving the declared county, where assistance in completing the required forms can also be obtained. Loan applications may be made up to eight months after the disaster.

Other Forms of Disaster Assistance for Individuals and Families

Individual disaster victims may also obtain assistance about insurance, legal services, income taxes and other services from established government offices in Colorado, or by calling toll-free numbers that are publicized after a disaster in affected areas.

Disaster Unemployment Assistance

Direct weekly benefit payments to individuals who are out of work as a result of a disaster -- including self-employed workers, farmers and other victims who may not be covered by regular unemployment insurance programs -- can be obtained from local job service offices. The **Disaster Unemployment Assistance Program**, which is administered by the **Colorado Department of Labor and Employment** and funded by **FEMA**, is discussed in more detail under *State Recovery Programs and Activities*.

Social Security Assistance

The **Social Security Administration** can assist disaster victims by helping to expedite the delivery of Social Security payments delayed by the disaster, especially for recipients who have been displaced by the disaster and no longer reside at their former address. The local office can also assist victims in applying for Social Security disability and survivor benefits.

Income Tax Advice and Assistance

The **Internal Revenue Service (IRS), Taxpayer Services Division**, can assist disaster victims who have an estimated tax installment due. The IRS allows certain casualty losses to be deducted on federal income tax

returns for the year of the loss or by amendment to the previous year's return. A guide on tax relief for disaster casualty losses is also available from the IRS.

Flood Insurance Information

The **National Flood Insurance Program Claims Office** can be contacted for advice to people in a disaster area concerning insurance requirements, claims and problems with policies.

Veterans Assistance

The state office of the **Department of Veterans Affairs'** is available to offer guidance to disaster victims in obtaining death benefits, pensions, insurance settlements and adjustments to home mortgages for veterans.

Public Assistance Programs

FEMA Public Assistance Program

Whereas Individual Assistance programs provide direct assistance to the people adversely affected from a disaster, FEMA's Public Assistance program helps disaster victims to recover by assisting local and state governments with the reconstruction of community infrastructure. Public Assistance grants are designed to support local efforts to repair infrastructure, restore public services, and to fund cost-effective mitigation measures. Eligible applicants include local governments (counties, cities, towns, special districts and other eligible political subdivisions), state governments, Indian tribes, and certain nonprofit organizations.

Public Assistance grants are provided on a cost-share basis: 75 percent federal and 25 percent non-federal. The FEMA-State agreement for the 1997 declaration sets forth the following cost-share arrangement 75 percent federal, 12.5 percent state and 12.5 percent local. Eligible work is classified as either emergency work or permanent work. Emergency work includes the immediate efforts undertaken by local governments and emergency response agencies to save lives, protect health and safety, and to limit property damage as a result of the disaster. Permanent work involves the repair or replacement of damaged structures, such as roads, bridges, public buildings, utilities, water-control facilities, and parks and recreational facilities.

To apply for Public Assistance grants, potential applicants in the declared disaster area are invited to an *applicants briefing*, where FEMA officials explain various aspects of the program, including eligibility requirements. Within 30 days of the disaster declaration, applicants can submit a Notice of Interest form, indicating emergency needs and the types of repair work which may be eligible for assistance. Inspections of damage sites by state and federal officials can then be scheduled, with participation by local officials familiar with all damage locations.

The inspection teams identify the eligible scope of work and cost estimates using a **Damage Survey Report (DSR)** for each job site. The estimate of work at a specific damage site must exceed \$1,000 for the project to be eligible. DSRs are classified as *small projects* or *large projects*, depending on the threshold amount in effect at the time of declaration.

Eligible costs include labor, materials and equipment costs of force account or contract work. Small projects involve a simplified reporting/close-out process and an expedited funding mechanism, whereby federal funds are provided up-front and based on DSR estimates rather than the actual costs of performing the work. If actual costs for all of an applicant's small projects turn out to be less than the estimates, the balance may be applied to other disaster-related work or for hazard mitigation. If a net cost overrun occurs for all small projects, a procedure exists for applicants to request additional funds.

Large projects require quarterly reporting that details project progress and financial documentation of project expenditures up to the end of the last quarter. The report should include the project's status, projected completion date, and any anticipated problems that could delay the project. Final payment of the federal share of large projects is based on the actual eligible costs incurred by the applicant, whether the work is accomplished by contract or force account.

Public Assistance grants are provided to restore damaged facilities to their *pre-disaster condition* and design, subject to applicable local codes, standards and specifications. Applicants may improve facilities using funds from other sources, as long as the pre-disaster function is maintained, or may construct an alternate project by taking a 10 percent reduction of the federal share of eligible costs. Insurance recoveries and proceeds from salvage are deducted from approved project costs. Improved or alternate projects must be approved by FEMA and an Environmental Assessment may be required.

In addition, cost-effective hazard mitigation measures may be included in the project design, subject to review and approval by FEMA. This type of mitigation -- **Stafford Act Section 406** -- is identified by inspectors on a site-by-site basis and provides for approval by FEMA of additional funds to allow applicants to perform extra work, above and beyond normally-eligible work, which is designed to reduce or eliminate future damages at the location. A benefit/cost analysis is conducted by FEMA to determine the cost effectiveness of each mitigation proposal. Examples of possible mitigation projects under this authority include relocation of facilities, efforts to stabilize slopes, and measures to floodproof buildings, utilities, bridges and culverts.

An allowance to local and state applicants to cover the costs of administering Public Assistance grants is also granted by FEMA and is 100% federally-funded. Applicants may request an extension of time limits to complete individual projects and can appeal FEMA eligibility decisions on a case-by-case basis within 60 days.

The table below provides a summary of approved projects, or DSRs, by applicant in each of the declared counties (as of October 1, 1998).

COUNTY	APPLICANT	DSRs	TOTAL
State of Colorado	Colorado State University	50	\$ 3,310,151
	Department of Local Affairs	4	340,553
	Division of Parks	3	68,952
	Division of Wildlife	15	36,472
Baca	Baca County	4	79,052
Bent	Fort Lyons Canal Company	2	147,643
Clear Creek	Clear Creek County	14	134,403
	Clear Creek School District	1	23,092
Crowley	Crowley County	14	548,382
	City of Olney Springs	1	3,912

Elbert	Elbert County City of Simla	43 1	391,371 7,472
Kiowa	Kiowa County	4	77,864
Larimer	City of Fort Collins Larimer County Poudre School District R-1 Rivendell School of Northern Colorado	60 22 26 2	1,085,742 424,487 187,062 6,099
Lincoln	Lincoln County	9	44,112
Logan	Logan County North Sterling Irrigation District City of Sterling Clara's Child Development Center Northeast Colorado Health Department New Hope Baptist of Sterling	38 3 7 1 1 1	612,816 104,024 28,132 24,261 12,305 11,511
Morgan	Morgan County Riverside Irrigation District Weldon Valley Ditch Company Weldon Valley Schools	27 1 3 2	176,403 43,271 16,722 8,631
Otero	Otero County	3	136,633
Phillips	Phillips County	8	53,060
Prowers	Prowers County	2	77,086
Weld	Weld County City of New Raymer	11 3	305,793 60,509
TOTAL	34 Applicants	386	\$ 8,587,978

Other Federal Agency Programs

Because FEMA funds cannot duplicate assistance available from other sources, FEMA Public Assistance funds are generally not available for individual projects that another federal agency has the statutory authority to fund. FEMA may request another federal agency to review a project or projects and to determine if the work is eligible under its authority. If not, then FEMA may consider the work under the Stafford Act. The principal infrastructure programs at the federal level are administered by FEMA, the Army Corps of Engineers, the Department of Agriculture - Natural Resources Conservation Service, and the Federal Highway Administration, and the Department of Education.

U.S. Army Corps of Engineers

The Corps of Engineers (COE) has a continuing authority to conduct advance flood preparation measures, flood fighting and rescue operations, and the repair and restoration of damaged flood control works that are locally-owned and operated. COE provides direct assistance to eligible applicants, rather than reimbursement of locally-incurred costs. The most common reasons for denying COE assistance are (1) the facility is not considered a “flood-control” structure, (2) the work is determined to be within the local entity’s maintenance responsibility, or (3) the “functional capacity” of the facility has not been diminished. FEMA will consider funding those projects that are determined to be ineligible by COE due to the first reason cited above.

U.S. Department of Agriculture - Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) has overlapping authorities with COE for the repair and restoration of flood control works. Works constructed for flood control purposes are funded under the COE authority and NRCS covers works constructed to prevent erosion or damage from erosion. Examples of potentially eligible projects include emergency repairs to levees, channel clearance and construction of flood and streambank protection projects. NRCS and COE review requests from local and state government for repair assistance and report eligibility decisions to FEMA. Ineligible projects may then be considered under the Stafford Act.

Federal Highway Administration (FHWA)

The FHWA Emergency Relief program may be independently activated by the Secretary of Transportation in order to make permanent repairs to roads and highways on the federal-aid system. The program, however, is not automatically triggered by a Presidential declaration and usually is not available to supplement Stafford Act assistance. Local and state highway departments can identify roads that are part of the federal-aid system. FEMA may assist with debris clearance and emergency repairs only for these facilities.

Hazard Mitigation Programs

Hazard Mitigation Grant Program (Section 404)

Section 404 of the Stafford Act establishes the **Hazard Mitigation Grant Program (HMGP)** to assist local and state governments with the implementation of hazard mitigation projects following a major disaster declaration. The objectives of the program are: (1) to prevent future losses of lives and property as a result of disaster events, (2) to implement state and local hazard mitigation plans, (3) to facilitate project implementation during the immediate recovery phase, and (4) to provide funding for previously identified loss-reduction measures.

Eligible applicants include local and state governments, Indian tribes, and certain private nonprofit organizations. The program is administered at the state government level and is supported by 75 percent federal funding of the eligible costs of each project.

The 25 percent state or local match may be in-kind, cash or a combination of the two. Federal funds for the HMGP are *limited to 15 percent of the federal share of grant assistance* provided through the Stafford Act for each disaster (the total of federal funds spent on the Public and Individual Assistance Programs, minus administrative expenses).

Applications for individual HMGP projects are encouraged as soon as possible following the disaster so that mitigation opportunities are not lost during the reconstruction phase. Examples of eligible projects include: (a) acquisition, elevation or relocation of hazard-prone structures, (b) retrofitting (e.g., floodproofing) of structures and facilities, (c) development and adoption of local and state standards for mitigation, (d) development of warning systems that utilize data from the National Weather Service and the U.S. Geological Survey, (e) restoration of wetland areas, and (f) construction of structural protective works (e.g., debris basins and water storage projects). Projects may be designed to protect either public or private property.

Individual projects must be cost-effective, environmentally compatible, and consistent with state hazard mitigation plans. Projects must also be designed to substantially solve the problem, rather than simply analyzing the hazard or identifying the extent of the problem. FEMA retains the authority for final review and approval of recommended projects forwarded by the State.

Site-Specific Hazard Mitigation Under the Public Assistance Program (Section 406)

Loss-reduction measures can also be incorporated into reconstruction for approved DSRs at individual sites under Section 406 of the Stafford Act. This form of mitigation assistance is discussed in the previous section on FEMA's Public Assistance Program.

Long-Range State Hazard Mitigation Planning (Section 409)

Section 409 of the Stafford Act requires the preparation of a State Hazard Mitigation Plan that outlines the State's overall hazard mitigation strategy and priorities. Development of the plan is a requirement for participation in the HMGP. The plan must assess the vulnerability of the state's population to all natural hazards. It must also evaluate state agency programs and authorities related to hazard mitigation and identify both short- and long-term strategies for implementing measures to eliminate or reduce the effects of identified hazards on people and property. The *Colorado Flood Hazard Mitigation Plan* (Colorado Water Conservation Board, 1998) was prepared in accordance with Section 409 and reflects the State's priorities for flood hazard mitigation, as developed through a local-state-federal-private team process. The goals and objectives outlined in this plan provide recommended courses of action relating to the primary causes of flooding in Colorado. The plan also serves as a useful reference document concerning the range of mitigation strategies and measures and the various agencies -- public and private -- that possess mitigation resources and authorities,

Interagency Hazard Mitigation Team (IHMT)

An interagency team of 12 federal agencies is convened immediately after a declared disaster for the purpose of producing a report that identifies recommended mitigation strategies and objectives. State and local government agencies also participate in the preparation of the report, which presents recommendations for immediate and long-term actions by appropriate agencies. The information and recommendations in the report, entitled *Flood of 97: Hazard Mitigation Team Report in Response to DR-1186-CO Flood Disaster in Colorado Declared August 1, 1997*, also provide a basis for the preparation of the 409 State Hazard Mitigation Plan.

Lessons Learned from the 1997 Flood Disaster

Damage Assessment

- ▶ Anticipate Preliminary Damage Assessment (PDA) -- joint federal-state-local inspection -- to take place three to five days after federal declaration. FEMA can organize PDA quickly in Colorado due to proximity of FEMA regional office in Denver and the ability to draw inspectors from other federal agencies at the Denver Federal Center.
- ▶ Utilize GIS staff and services to support damage assessment activities. Fort Collins GIS staff produced high quality, accurate maps that facilitated PDA process.
- ▶ Appoint Damage Assessment Coordinator from appropriate department (e.g., Assessor, Building Official, Public Works or City Manager's Office)
- ▶ Document all local costs and organize in files by project with supporting records (pictures, daily activity reports, equipment logs, invoices/receipts, contracts, lease agreements, insurance information)
- ▶ Utilize technical support available from neighboring jurisdictions and from the Colorado Chapter of the International Conference of Building Officials (ICBO)
- ▶ Obtain damage assessment information from other reliable sources (e.g., American Red Cross, agricultural agencies, insurance sources, ICS Plans Section)
- ▶ Provide additional local damage assessment training opportunities

Debris Removal/Health and Sanitation

- ▶ Expect health and safety hazards and hazardous materials problems in connection with removal of flood debris
- ▶ Arrange for local/regional health departments to provide tetanus shots/well tests
- ▶ Expect condemnation and demolition actions to be politically contentious
- ▶ Provide local landfill fee waivers to facilitate debris removal and reduce financial burden to flood victims. Recognize that capacity problems can result, as in Larimer County, where flood debris exhausted 25% of the life of the county landfill and forced county officials to move up their schedule for purchase of new landfill site

Disaster Recovery Centers (see *Disaster Recovery Center Checklist* under State Recovery Programs and Activities)

- ▶ Provide "one-stop shopping" to the extent possible by bringing in all relief service providers to minimize confusion and inconvenience for victims
- ▶ Ensure adequate staffing: Housing (Local/State), Health, Local VOAD, American Red Cross, Salvation Army, Farm Services, SBA/SBDC, Job Service, Emergency Management (Local/State/FEMA), Social/Human Services, Mental Health, Insurance

- ▶ Provide extended and weekend hours of operation for the convenience of victims
- ▶ Provide ongoing victim outreach and follow-up to help ensure that victims do not fall between the cracks in assistance programs

Public Information/Media Relations

- ▶ Continually moderate “expectations” about FEMA and other disaster assistance, reminding applicants that assistance is not designed to make victims “whole” again
- ▶ Enlist local media support of recovery efforts (e.g., *Fort Collins Coloradan* published hundreds of articles and public service announcements concerning the flood, almost all of them positive in tone)
- ▶ Utilize local government home pages/Internet sites to publicize information about available disaster assistance
- ▶ Utilize local radio stations for public service announcements and to publicize locations and hours of recovery centers and toll-free numbers
- ▶ Conduct town meetings to explain assistance programs and to enlist community feedback and involvement (record or videotape)

Volunteer Agency Coordination

- ▶ Encourage co-location of all disaster relief providers at disaster recovery centers, recognizing that, depending on conditions, American Red Cross may require a separate location due to the nature of the services provided and due to reasons related to American Red Cross national policy
- ▶ The American Red Cross provides assistance to disaster victims both at its service centers and by outreach. When co-location is not possible, Disaster Recovery Center staff should be sure to obtain information about locations, phone numbers, and hours of operations for all Red Cross Service Centers in the area.
- ▶ Appoint state donations coordinator to manage donations management activities in cooperation with volunteer agencies
- ▶ Identify “safety net” of church/charitable organizations in disaster-stricken communities and ensure appropriate coordination of government assistance

Crisis Counseling

- ▶ Anticipate possibility of delayed mental health problems with victims that might not be apparent in early stages of recovery
- ▶ Consult Colorado Mental Health Services regarding state resources/federal grants for local crisis counseling
- ▶ Recognize the need for public recognition and community-wide commemoration of disaster event (e.g., anniversary events/public park dedications) as part of the community healing process

Hazard Mitigation (General)

- ▶ Involve local/state historic preservation organizations early-on in the review/approval of mitigation projects associated with historically-significant structures and districts (the State Historic Preservation Officer must approve local decisions)
- ▶ The single most beneficial flood hazard mitigation activity is compliance and effective enforcement of floodplain management regulations
- ▶ The most effective mitigation is pre-disaster (e.g., floodplain management practices in Spring Creek prior to the flood prevented far greater loss of life and property in Fort Collins)
- ▶ The immediate post-disaster period provides a window of opportunity for gaining political support of mitigation plans and initiatives

State Assistance

- ▶ Establish shift schedule for long-term staffing, relief & rotation to avoid employee “burn-out”
- ▶ Ensure concurrent response equity of state resources to all impacted areas, regardless of sequence of disaster events or disproportionate media attention
- ▶ Recognize need for State staff support at FEMA-State Disaster Field Office (programs, congressional affairs, legal support, etc.). Avoid dedicating Colorado OEM Regional Planner to DFO position to permit ongoing liaison with local jurisdictions

Federal Assistance (General)

- ▶ Recognize disaster assistance program limitations and help to local governments and individual victims to understand program limits (e.g. housing repair program intended to make structures safe and secure, rather than restoring to pre-disaster condition)
- ▶ Need *clearinghouse* at federal level to determine applicable programs and to match eligible local projects with appropriate federal programs (e.g., FEMA, FSA ,NRCS)
- ▶ Consider need for temporary contracts to hire disaster recovery manager to administer federal programs and maximize local eligibility for outside assistance

FEMA Public Assistance Program

- ▶ State Public Assistance Officer should pause the DSR approval process in order to: (1) ensure appropriate local personnel are reviewing DSRs; (2) ensure sufficient time to review proposed scope of work; and (3) ensure that hazard mitigation (Section 406) opportunities have been identified
- ▶ Ensure that local applicants have insurance policies available and can determine extent of coverage
- ▶ Provide Public Assistance Manual and related training and orientation to local governments and provide training to state personnel to build depth at State Public Assistance Officer position

- ▶ Provide follow-up technical assistance with local applicants regarding record-keeping requirements, force account versus contract work (pros and cons), temporary versus contract employees (pros and cons) and other program eligibility issues (remember that FEMA reimbursement usually requires detailed supporting documentation)

FEMA Individual Assistance Program

- ▶ Utilize FEMA Community Relations staff to assist with outreach activities and to help identify unmet needs (Community Relations personnel proved to be a valuable partner in counties where greatest impacts to individuals and families occurred)
- ▶ Coordinate the temporary and affordable housing resources available (volunteer, local, regional, state, federal) to help ensure seamless housing assistance for disaster victims and to maximize individual housing benefits

FEMA Hazard Mitigation Grant Program

- ▶ Resist projecting total HMGP fund for the disaster until FEMA can lock in reliable estimate (15% of federal share of Stafford Act assistance)
- ▶ Anticipate fast-track application process with minimal time for pre-engineering. Previously identified and engineered local mitigation projects have competitive advantage.
- ▶ HMGP implementation, on the other hand, may be less expeditious, especially for projects requiring NEPA review
- ▶ Recognize that FEMA uses cost-benefit methodologies for HMGP that are different and more restrictive than methodologies used by other federal agencies

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