FLOOD DAMAGES SUFFERED IN THE UNITED STATES DURING WATER YEAR 2007

Flood damages during Water Year 2007 (October 2006-September 2007) totaled $2.53 billion. These damages represent just over a third of the thirty year average (1977 - 2006) of $6.96 billion (2007 dollars)*, which includes the catastrophic damages associated with Hurricane Katrina. Major events in Water Year 2007 included a six month period of nearly continuous flooding in Texas and Oklahoma; substantial flooding in the Northeast and Pacific Northwest; and widespread flooding in the Midwest. During Water Year 2007, there were 104 flood-related deaths, equaling the thirty year average (1978-2007) of 104. This long-term average **does not** include the deaths from Hurricane Katrina, which have been estimated in the hundreds, because definitive numbers have not yet been determined. The fatalities in Water Year 2008 include 75 vehicle related incidents with 90 deaths attributed to flash flooding incidents.

COMPILATION OF FLOOD LOSS STATISTICS

There is no one agency in the United States with specific responsibility for collecting and evaluating detailed flood loss information. The National Weather Service (NWS), through its many field offices, provides loss estimates for significant flooding events. However, this task is ancillary to the primary mission of the NWS that is to provide forecasts and warnings of hydrometeorological events. The NWS's focus is on predicting the events that lead to death and damage, not on an assessment of the consequences of the events it predicts. Therefore the estimates provided here should only be considered approximate.

SUMMARY OF MAJOR EVENTS

The Nation's mid-section saw repeated bouts of heavy rain, with Texas and Oklahoma bearing the brunt of the flooding. In association with these many episodes of flooding, Texas recorded the greatest number of lives lost due to flooding with 53, and 43 of these occurred during the March through August time period. Although the hurricane season was relatively quiet, Tropical Storm Erin caused widespread flooding from Texas through Oklahoma. Moisture associated with the storm contributed to devastating inland flooding from Minnesota and Wisconsin into Ohio. The water year began and ended with flooding, fueled by subtropical moisture, in the Pacific Northwest in November, 2006 and in the Northeast in April, 2007.

- TEXAS, LOUISIANA: October 25 - 27, 2006

A strong storm system brought heavy rain event to Southeast Texas and Southern Louisiana from Wednesday, October 25th through Friday, October 27th. This system was

one of several that brought widespread heavy rainfall and flooding to the region in October 2006, saturating the ground and leading to significant flooding.

Most locations across Southeast Texas and Southern Louisiana received between 1 and 5 inches of rainfall from this event. However, a 25 mile wide by 150 mile long area, stretching from near Sour Lake, Texas to around Port Barre, Louisiana, received substantially higher amounts of rainfall with this system. In fact, locations within this swath received three-day rainfall totals ranging from 7 to 16 inches.

With grounds already saturated from the heavy rainfall of the previous two weeks, this rainfall event spawned widespread flooding across parts of Southeast Texas, Southwest Louisiana, and South-Central Louisiana. Numerous homes and businesses were damaged by the flood waters, with road and school closures across the area. This heavy rainfall also resulted in some area rivers rising to levels not seen in many years. Damages reported in association with this event were approximately $600 million.

- OREGON, WASHINGTON: November 5 - 7, 2006

Following an unusually dry and sunny late summer and early autumn, Pacific Northwest weather changed dramatically in early November as a series of strong, wet storms began to affect the region. The most significant was a multi-day rain event caused by copious amounts of subtropical moisture, resulting in one of the wettest periods ever seen in the Northwest. Oregon and Washington had 24-hour rainfall records broken during the event. This resulted in widespread flooding across the region, primarily west of the Cascades. Ten river forecast points crested at record levels. These forecast points included the Cowlitz River at Packwood, Cowlitz River at Randle, Bogachiel River near La Push, Nisqually River near National, Carbon River near Fairfax, Puyallup River near Orting, Snoqualmie River near Carnation, Skykomish River near Gold Bar, South Fork Stillaguamish River near Granite Falls, and Stillaguamish River at Arlington. There were widespread evacuations, levees overtopped, and towns flooded. Federal disaster declarations were issued for this event. Two people perished in flood-related incidents, and damages reached at least $71 million in Washington and $49 million in Oregon. In Mount Rainier National Park, flooding washed out campgrounds, main roads, and the main power source to two of the park's visitor centers, while creating new channels and shorelines. Between November 6 and 7, the park received 18 inches of rain in 36 hours.

- TEXAS, OKLAHOMA: March through August, 2007

During this six month period, Texas and Oklahoma endured many rounds of heavy rain and flooding, culminating in approximately $309 million in damages and Texas recording fatalities totaling 43. Rainfall totals during this period ranged up to 20 inches above normal. This prolonged wet period eliminated the broad expanse of moderate to exceptional drought which had existed across the region, as documented by the U.S. Drought Monitor. This drought had persisted since at least May of 2005 in varying

degrees of severity. During this period, storm systems drenched portions of the central and northern Plains and the Midwest as they progressed across the Nation. Some of the more significant flooding events are detailed below.

- TEXAS: March 29 - 30, 2007

A slow moving upper level system dropped up to 15 inches of rain from central Texas into central Oklahoma, with the heaviest amounts just south of Dallas. Widespread rainfall amounts of 2 to 4 inches were reported from Del Rio to Houston north through Texas and across central Oklahoma. The heaviest rainfall, approximately 10 to 15 inches, fell just south of Dallas across Ellis and Hill Counties. Hundreds of roads were closed, 18 bridges were damaged, and hundreds of people were evacuated with dozens of high water rescues. Numerous businesses were flooded and four people perished in flood-related incidents.

- TEXAS, OKLAHOMA: May 7 - 8, 2007

Several rounds of thunderstorms developed along and east of a dryline and weak cold front along the Texas/Oklahoma Panhandle each day from May 4 through May 8. Storms on May 8 which caused the greatest damages were accompanied by tornadoes across western Oklahoma and the panhandle of Texas. Nine inches of rain was reported in Tulsa, with 3 to 7 inches common across the region. There were numerous high water rescues in Tulsa and Oklahoma City. Oklahoma Governor Brad Henry declared a State of Emergency for all 77 counties. There were 2 Oklahoma flood-related fatalities.

- TEXAS, OKLAHOMA, KANSAS, IOWA: May 22-28, 2007

North-central and central Texas saw repeated bouts of thunderstorms through the period. A cold front moved into north central Texas the evening of May 24th and became stationary and combined with a very moist air mass over the eastern half of the state to set the stage for heavy rain over central Texas. There were 5 to 6 inches of rain in north central Texas and up to 15 inches of rain across parts of the southern Plains. This included up to 8 inches over parts of Kansas, and up to 6 inches in Iowa. In Saline County, Kansas, the towns of Hedville and Bavaria were evacuated due to flooding. Numerous government facilities, homes and businesses were flooded in the Salina area. There was near record flooding in the Little Arkansas River in Halstead, Kansas. Seven people lost their lives in flood-related incidents in Texas.

- TEXAS, OKLAHOMA: June 17 - 18, 2007

Abundant moisture interacted with an upper level low pressure system across southern Oklahoma and northern Texas, producing several episodes of heavy rain. Recent rainfall nearly saturated soils across much of central and north-central Texas. Thunderstorms developed June 17 and 18, from the Dallas-Fort Worth Metroplex north to the Oklahoma

border. Slow moving thunderstorms produced torrential downpours with rainfall amounts of 3 to 6 inches some areas in less than a 3 hour period. The heaviest rainfall occurred near the Oklahoma border, from Gainesville to Sherman, Texas (Cooke and Grayson Counties), where radar estimated as much as 8 to 12 inches with 4 to 6 inches across sections of Oklahoma. There was catastrophic flooding across Gainesville and Sherman, Texas. Water inundated downtown Gainesville to a depth of 4 feet, and a nursing home had to be evacuated in Sherman. There was also serious flash flooding across the Dallas/Fort Worth area. Seven people lost their lives in flood-related incidents in Texas.

- TEXAS, OKLAHOMA, KANSAS, MISSOURI: June 26 - July 6, 2007

Widespread flooding affected north-central Texas and Oklahoma into southeastern Kansas and western Missouri. From 6 to 10 inches of rain fell across portions of Texas and Oklahoma. By the end of the period, heavy rainfall developed across the Texas Coastal Bend and Deep South Texas with up to 4 to 7 inches. Thunderstorms were scattered across the region and continued through the period. Hundreds of homes were evacuated, several water treatment plants flooded and were closed, and thousands of residents were evacuated in Oklahoma during flooding on the Caney River.

There were 10 to 20 inches of rain in 48 hours across southeast Kansas and western Missouri. There was major to record flooding on numerous rivers and streams in Kansas and Missouri. These included in Kansas: the Marias Des Cygnes, Neosho, Verdigris and Walnut Rivers; and in Missouri: the Little Osage, Marmaton, Osage and South Grand Rivers. The levee at Coffeyville, Kansas was overtopped, flooding the east side of town and resulting in a 1000 barrel oil spill which flowed into the Verdigris River upstream of Coffeyville, Kansas. A levee broke in Erie, Kansas which flooded the town. This torrential rainfall also contributed to major flooding downstream in Texas and Oklahoma, following on the heels of earlier flooding. This deadly event resulted in 6 flood-related fatalities in Texas, 2 in Missouri, and 1 in Kansas.

- TEXAS: July 20-21, 2007

An upper-level low centered over western Texas produced numerous showers and thunderstorms over interior portions of Texas. The heaviest rainfall occurred across the Texas Hill Country and Rio Grande Valley, where some locations received from 6 to 12 inches of rainfall, with isolated amounts of up to 17 inches. Numerous roads were closed due to high water associated with major river flooding. Flooded rivers and lakes affected adjacent homes and property across the region. Medina County was one of the most impacted counties. The town of D'Hanis in Medina County was heavily impacted by flash flooding of local tributaries, and the majority of the town was under water. US Highway 90 was closed in the D'Hanis area. At least 100 homes and most businesses were impacted by water in D'Hanis and 30 homes suffered major damage. Fortunately, there were no flood-related fatalities associated with this event.

- TEXAS, OKLAHOMA: August 16 - 19, 2007

Tropical Storm Erin made landfall near Corpus Christi the morning of August 16th, quickly decayed to depression status, and moved northwestward through central Texas. During August 16 and 17, 3 to 6 inches of rain fell across much of southeast and central Texas. The remnants of Erin then moved across west central Texas and central Oklahoma during the period August 19 through 21. Widespread amounts of 3 to 6 inches fell in areas around Houston and westward into the Hill Country of central Texas near San Antonio. Additional rainfall amounts of 4 to 6 inches of rain fell across the Texas Big Country, between Wichita Falls, Abilene, and San Angelo, and 6 to 9 inches fell over Central Oklahoma. There was a storm total of 12 to 15 inches northwest of San Antonio in Texas and in parts of central Oklahoma. Nine inches of rain were recorded in the San Antonio Region. As a result of the associated flooding, portions of Abilene were under a mandatory evacuation notice. Twelve fatalities were recorded from this event in Texas and Oklahoma.

- NORTHEAST: April 15 - 17, 2007

A potent and slow moving Nor'easter dropped a widespread 3 to 6 inches of rain over the Carolinas, eastern Maryland, New Jersey, eastern Pennsylvania, southeastern New York and New England. New York City, northeastern New Jersey and Westchester County recorded the heaviest rains with 6 to 8 inches. At Central Park, NY, 7.57 inches of rain were recorded on April 15 which ranked as the 2nd highest all-time daily total for rainfall for this date. Record flooding occurred on the Mill River in Northampton, MA and on the Ramapo River at Pompton Lakes, NJ. Major flooding occurred on the Raritan, Passaic (near record), Rockaway and Saddle Rivers in New Jersey, in the lower Delaware basin, and on most smaller streams in New Jersey and southeast New York. Widespread urban flooding closed many primary and secondary roads throughout the northeast corridor. This was the worst flooding in New York City since Tropical Storm Floyd in 1999. The governors of Maine, New Jersey, and West Virginia declared states of emergency.

- NORTHERN PLAINS: May 5 - 11, 2007

Nearly stationary storms dropped up to 10 inches of rain from New Mexico and Texas into the Dakotas during the weekend of May 5 - 6, resulting in flooding and damage throughout the week. Major flooding occurred in South Dakota as a result of 5 to 10 inches of rain. A new official 24–hour May rainfall record for the entire state of South Dakota was set at Columbia South Dakota on May 6, 2007 where 8.73 inches were recorded. Nearly all of Aberdeen, South Dakota had flooding problems, and nearly 90% of the city of Aberdeen experienced basement flooding. Numerous buildings were condemned and there were over 30 boat rescues in the Aberdeen area.

The rainfall caused major flooding along the Missouri, Grand and Platte Rivers in Missouri and the James River in South Dakota, with levels approaching those recorded in 1993. This flooding persisted for more than a week on rivers in South Dakota, Missouri and Kansas. Levees broke along the Missouri River, forcing evacuations while other levees in Platte County, Missouri were overtopped, flooding roads and some homes.

- KANSAS: June 28 - July 6, 2007

Heavy rains in May and June se the stage was for the catastrophic flooding of late June and early July in Kansas. The heavy rain of May 5 to 7 caused record flooding on the Arkansas River at Haven and the Little Arkansas at Halstead. More heavy rain May 24 and 25 again caused record flooding on the Little Arkansas River.

There were 4 heavy rain episodes in June, the last of which resulted in catastrophic flooding across southeastern Kansas. Rainfall totals from this last event ranged from 8 to as much as 21 inches with the heaviest observations across southeastern Kansas. Record flooding occurred on the Fall River at Fredonia; the Verdigris River at Independence and Coffeyville, and the Neosho River near Erie. The gages at Independence and Coffeyville remained above flood stage for a prolonged period lasting 9 days.

The damage from these floods was extensive. Over 3000 homes and businesses were destroyed or suffered major damage. Thousands of miles of roads were damaged by flood waters, and thousands of acres of crops were lost by the long-standing flood waters. Flooding in Coffeyville caused a major environmental disaster as the Coffeyville Resources Refinery was inundated by flood waters. As a result, 71,000 gallons of crude oil spilled into the flood waters and contaminated the water for miles downstream.

- UPPER MIDWEST INTO OHIO: August 18 - 23, 2007

Moisture from the same source as Tropical Storm Erin interacted with a quasi-stationary front centered over Iowa and Illinois to generate thunderstorms and heavy rainfall which persisted over the same areas in Minnesota and Wisconsin. The resulting torrential rains brought flooding to parts of southern Minnesota and southern Wisconsin August 18-19. Up to 17 inches of rain was reported in Minnesota and up to 11.75 inches was reported in Wisconsin. Record flooding occurred on the Root River in Minnesota and the Kickapoo River in Wisconsin. Major flooding was reported on the DeKalb River in Illinois. Flood waters created many mudslides in Houston, Olmsted, Wabasha and Winona Counties, in Minnesota and Crawford and Vernon Counties, in Wisconsin. Numerous small communities were evacuated and a train carrying hazardous materials derailed in Vernon County, Wisconsin. There were state declarations of disaster in Minnesota, Wisconsin, and Iowa.

As the rain moved east, major flash flooding and river flooding affected northern Ohio. Major flooding occurred in Hancock, Wyandot, Crawford, and Richland Counties, where 6 to locally 10 inches of rain fell in 6 to 8 hours. Significant river flooding occurred downstream

in Marion, Seneca, and Ashland Counties. Flooding in Crawford, Hancock, Holmes, Richland, and Wyandot Counties resulted in evacuations of about 185 people. The flooding forced the closure of many roads in Wyandot County. This torrential rainfall resulted in major flooding of Findlay and Shelby, Ohio. All of downtown Findlay was underwater, along with several surrounding neighborhoods. There was near record flooding on the Blanchard River at Findlay, along with major flooding in several other communities. During this flooding, over 1000 properties were damaged as well in Bucyrus, Crawford County, Ohio.

*Note: This average is determined by first adjusting previous year's damage totals by the Construction Cost Index, to create comparable numbers.

FLOOD DAMAGES

Water Year FY 2007

LOCATION	LIVES LOST	TOTAL DAMAGES SUFFERED (Thousands of dollars)
ALABAMA		$287
ALASKA		$43,200
ARIZONA	7	$15,101
ARKANSAS	1	$2,850
CALIFORNIA	1	$673
COLORADO	1	$4,932
CONNECTICUT		$802
DELAWARE		$0
FLORIDA		$137
GEORGIA		$39
GUAM		$0
HAWAII		$0

FLOOD DAMAGES

Water Year FY 2007

LOCATION	LIVES LOST	TOTAL DAMAGES SUFFERED (Thousands of dollars)
IDAHO		$2,000
ILLINOIS		$18,038
INDIANA	3	$6,474
IOWA	2	$57,604
KANSAS	1	$268,285
KENTUCKY		$685
LOUISIANA	1	$651,927
MAINE		$47,788
MARYLAND AND DISTRICT OF COLUMBIA		$51
MASSACHUSETTS		$2,494
MICHIGAN		$827
MINNESOTA	8	$193,679
MISSISSIPPI		$10,440
MISSOURI	6	$44,997
MONTANA		$4,810
NEBRASKA		$11,054
NEVADA		$5,307
NEW HAMPSHIRE		$8,917
NEW JERSEY		$130,050

FLOOD DAMAGES

Water Year FY 2007

LOCATION	LIVES LOST	TOTAL DAMAGES SUFFERED (Thousands of dollars)
NEW MEXICO		$275
NEW YORK	5	$43,045
NORTH CAROLINA		$186
NORTH DAKOTA		$2,575
OHIO	1	$267,706
OKLAHOMA	8	$29,964
OREGON		$49,006
PENNSYLVANIA		$30,403
PUERTO RICO AND VIRGIN ISLANDS		$206
RHODE ISLAND		$105
SOUTH CAROLINA		$55
SOUTH DAKOTA		$24,700
TENNESSEE		$31
TEXAS	53	$322,601
UTAH		$11,223
VERMONT		$4,205
VIRGINIA	1	$15,106
WASHINGTON	5	$72,354
WEST VIRGINIA		$2,960

FLOOD DAMAGES Water Year FY 2007		
LOCATION	LIVES LOST	TOTAL DAMAGES SUFFERED (Thousands of dollars)
WISCONSIN		$117,311
WYOMING		$1,777
America Samoa		$0
TOTAL	104	**$2,529,242.00**