NATIONAL LEVEE SAFETY AND DAM SAFETY PROGRAMS

(110–38)

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON
ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS AND
EMERGENCY MANAGEMENT

AND THE

SUBCOMMITTEE ON
WATER RESOURCES AND ENVIRONMENT

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
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CONTENTS

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May 7, 2007

SUMMARY OF SUBJECT MATTER

TO: Members of the Subcommittee on Water Resources and Environment and Members of the Subcommittee on Economic Development, Public Buildings, and Emergency Management

FROM: Subcommittees on Water Resources and Environment and Economic Development, Public Buildings, and Emergency Management Staff

SUBJECT: Hearing on "National Levee Safety and Dam Safety Programs"

PURPOSE

The Subcommittees on Water Resources and Environment and Economic Development, Public Buildings, and Emergency Management are scheduled to meet on Tuesday, May 8, 2007, at 10:00 a.m., in Room 2167 of the Rayburn House Office Building, to jointly receive testimony regarding the state of our nation's levee and dam safety programs. Witnesses will include representatives from the United States Army Corps of Engineers ("Corps"), the Federal Emergency Management Agency ("FEMA"), the American Society of Civil Engineers, the Association of State Dam Safety Officials, the National Association of Flood and Stormwater Management Agencies, and the Association of State Floodplain Managers.

LEVEE SAFETY BACKGROUND

The Corps has constructed nearly 9,000 miles of the nation's estimated 15,000 miles of levees. On the federal level, new levee construction requires complex engineering and its capacity is based on a level of protection that is justified by an analysis of the risks, costs, and benefits of constructing the project. There are strict engineering standards required when a federal levee is designed and built.

FEMA has defined a levee in the National Flood Insurance Program regulations as "a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding." Its primary function is flood protection.

There are undoubtedly thousands of miles of other levees built by other Federal agencies, states, towns, farmers, and landowners. Some of these levees are well built and well maintained; others are not. What we know about the existence and condition of these other levees we often learn when one fails or is overwhelmed by a flood event.

Levees must be maintained. Planting grass on a levee helps to prevent erosion, however trees and shrubs have root systems that can form a conduit for water and weaken the structure. Except for the mainline levees of the lower Mississippi River, maintenance of levees constructed by the Corps is a non-federal responsibility. Little is known about the current condition of Federal or non-federal levees, including whether these levees were designed to meet current conditions, or whether they have been properly maintained by the non-federal interest.

Although rare, failure of flood damage reduction infrastructure does occur, and has become more frequent in recent years. Unlike dams, levees are not designed to be overtopped by floodwaters for an extended period of time. Levees are also not designed to abut a waterbody for longer than a storm event or seasonal water level. If this occurs, it can cause erosion of the soils in, under, and around the levee. In addition, some levees fail due to inadequate maintenance, inappropriate materials, poor design, or poor construction methods. In some cases, levees are subject to the variable subsidence of a region resulting in the levees being lower than when built.

Levees are typically built in a certain location and to a specified height to provide a certain level of flood protection. The level of protection provided by a levee may change with time due to natural or man-made changes. Natural changes may include land subsidence, sedimentation, and vegetative growth in the floodway. Land use changes in an area such as upstream development can induce hydrologic changes including faster runoff that will reduce the level of protection provided by a levee.

Levees provide flood damage reduction benefits as well as economic development opportunities. However, structurally deficient or antiquated levees present a risk to public safety and economic infrastructure. While statutory authorities like Section 10 of the Rivers and Harbors Act of 1899, the Clean Water Act, and the National Flood Insurance Program may influence control over federal and non-federal levees, there is no minimum standard to regulate the design, placement, construction, or maintenance of non-federal levees built by private individuals or public entities.

People and property behind a levee are always subject to some level of risk. However, people living and working behind levees are often unaware of the risk. That risk may have to do with the height or the condition of the levee or the risk that a flood event will occur that is greater than the design of the levee.

For urban areas, the Federal Government typically designs levees and flood damage reduction projects around a one percent annual probability of such an event, more commonly referred to as a "100-year flood", as the minimum standard for identifying, mapping, and managing flood hazards. Often in urban areas, a greater level of protection is warranted and larger levees are constructed. Levees that protect agricultural lands typically are designed to protect against smaller floods that are more likely to occur in a given year, such as a flood with an annual probability of 20 percent, more commonly referred to as a "five-year flood".

FEMA operates the National Flood Insurance Program as a way to manage flood risk without having to rely on Federal disaster assistance. In the United States, there is only a small private insurance market for flood insurance. Participating communities are expected to adopt building codes and other types of activities that will reduce losses posed by a 100-year flood. However, structures built behind the protection of 100-year levees are not designated as being within the floodplain, and therefore occupants within these areas are not required to participate in the National Flood Insurance Program. FEMA does require levees protecting flood-prone areas to be certified for structural soundness, proper maintenance, and provide protection against a 100-year flood. The Army Corps of Engineers performs a majority of these certifications; however, this process is currently not designed to assess the geotechnical conditions of the levees or the hydrological conditions of the areas to be protected. While levee structures may be sound, the underlying geology or hydrology may impact the structure. Performing this type of assessment will represent a significant cost for the Army Corps of Engineers, communities, and levee districts. The Corps estimates that to perform these types of assessments for the 1,600 miles of levees in California's Central Valley will cost $100 million, or $60,000 per mile of levee. For Fiscal Year 2006, the Corps had $30 million to begin an inventory and conduct some assessments of federally-constructed levees nationwide. The Administration requested $20 million to continue this inventory and assessment process in Fiscal Year 2007 and $10 million for fiscal 2008.

While some States have programs to regulate levees constructed by non-federal entities, the majority of States do not have such programs. Those States that have programs are in response to the National Flood Insurance Program or regulatory programs that require localities to control land use or implement other floodplain management measures. Under the National Flood Insurance Program, FEMA can exempt communities from certain requirements of the program if the communities can show that the levees protecting them are designed, constructed, located, and maintained according to certain criteria. The accuracy of maps used by FEMA to define flood hazard areas are currently under review, as more than 75 percent of the maps are more than 10 years old, raising concerns that hydrologic data has changed since the maps were last reviewed.

A 2004 analysis by the Army Corps of Engineers found some locations along the Missouri River where the 100-year flood elevation is four feet higher than what was shown on previous flood maps. As FEMA updates its maps through its Map Modernization Initiative, some communities that were once thought to be protected from the 100-year flood event may find themselves with less protection and subjected to different flood insurance requirements.

RECENT ISSUES

In recent years, there has been much activity and concern about the condition and safety of levees around the country. The hurricane season of 2005 dramatically demonstrated the consequences of levee overtopping and failure when New Orleans flooded after levees failed during Hurricane Katrina. In addition, the Corps completed an initial review of levees and identified 122 levees that are determined to have unacceptable maintenance. *See attached list.* The State of California has also conducted a review of its levees and identified 29 critical sites. In the fall of 2006, California passed a $4.09 billion general obligation bond dedicated to levee repair work.

A "Flood Risk Policy Summit of 2006"was convened in December 2006 that brought together more than 60 professionals from Federal and state governments, flood risk managers,

engineering professionals, natural resource specialists, and others. There are a number of recommendations that resulted from this meeting.

In April 2007, the Association of State Floodplain Managers and the National Association of Flood and Stormwater Management Agencies issued joint recommendations for a national levee policy that resulted from the 2006 Summit. A few of the recommendations include:

- establishing a National Levee Inventory and National Levee Safety Program – beyond just a federally funded assessment of levees, a safety program needs to be developed that takes into account the role of States, regional flood management authorities, and non-federal sponsors;
- providing incentives and disincentives based on effective local, regional, and state actions;
- considering public safety and other issues on equal footing determinations of national economic benefits in Corps project formulation and analysis; and
- require better operation and maintenance of flood risk reduction structures -- developing incentives to properly maintain and disincentives for improper maintenance of flood damage reduction projects.

In addition to the wide-ranging condition of levees, it is prudent to also consider the impact from changing natural conditions such as sea level rise and climate change. Both of these changes have dramatic implications for new and existing flood- and storm-damage reduction infrastructure, such as levees. For example, according to National Oceanic and Atmospheric Administration ("NOAA") estimates, a potential storm surge from a category 3 hurricane (estimated 12-15 feet without waves) at the end of the century combined with a mean sea level rise and land subsidence in New Orleans could result in a storm surge of 12 to 15 feet above the city's present altitude. Predicted increases in storm severity in the eastern United States and faster snow melt in the mountains of the western United States will increase burdens on existing and planned flood damage reduction systems.

PRIOR LEGISLATIVE AND OVERSIGHT ACTIVITY

In the 109th Congress, the Subcommittee on Water Resources and Environment held a hearing on April 6, 2006, to oversee levee safety issues and the need for legislative action. On July 28, 2006, the Committee on Transportation and Infrastructure reported H.R. 4650, the Levee Safety Program Act of 2005, to the House. No further action was taken.

In the 110th Congress, Representative Schmidt introduced H.R. 1587, the National Levee Safety Program Act of 2007. This legislation is modeled on H.R. 4650 from the 109th Congress.

DAM SAFETY BACKGROUND

In 1972, Congress directed the Secretary of the Army to undertake a national program on the inspection of dams (P.L. 92-367). The Water Resources Development Act of 1996 (P.L. 104-303) amended that Act to establish the National Dam Safety Program as a partnership of States, Federal agencies, and other stakeholders to encourage individual and community responsibility for dam safety. The National Dam Safety Program Act has as its mission to "...reduce the risks to life

and property from dam failure in the United States through the establishment and maintenance of an effective national dam safety program to bring together the expertise and resources of the federal and non-federal communities in achieving national dam safety hazard reduction."

Since its creation, the National Dam Safety Program has helped to mitigate the risk of dam failure by providing technical and financial assistance to state dam safety officials. There are approximately 80,000 dams in the United States; of these, approximately 10,000 dams are considered to have high-hazard potential, meaning their failure could result in loss of life or severe property damage. Private individuals, corporations, and state and local governments own more than 95 percent of the dams in the United States, making state dam safety officials our first line of defense in preventing dam failures and mitigating the effects through the development of Emergency Action Plans. A primary function of the National Dam Safety Program is to increase the level of knowledge and preparedness to prevent and mitigate the effects of dam failures.

The Act includes:
1) a National Dam Inventory to provide to the public periodically updated information on the inventory of dams in the United States;
2) an Interagency Committee on Dam Safety to encourage the establishment and maintenance of effective federal and state programs, policies and guidelines intended to enhance dam safety;
3) a National Dam Safety Program, including a strategic plan, a National Dam Safety Review Board and grant assistance to the states to provide vital support for the improvement of the state dam safety programs that regulate most of the dams in the United States;
4) a dam safety research effort for technical and archival research; and
5) dam safety training for state dam safety staff and inspectors.

PRIOR LEGISLATIVE AND OVERSIGHT ACTIVITY

In the 109th Congress, the Subcommittee on Economic Development, Public Buildings, and Emergency Management held a hearing on the National Dam Safety Program on July 26, 2006.

On September 14, 2006, the Subcommittee recommended H.R. 4981, a bill to reauthorize the National Dam Safety Program, favorably to the full Committee. On September 20, 2006, the Committee on Transportation and Infrastructure reported the bill to the House. On September 27, the House passed H.R. 4981. On December 9, 2006, the House passed a similar Senate bill, S. 2735, which became Public Law 109-460.

JOINT OVERSIGHT HEARING ON NATIONAL LEVEE SAFETY AND DAM SAFETY PROGRAMS

Tuesday, May 8, 2007,

HOUSE OF REPRESENTATIVES,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS AND EMERGENCY MANAGEMENT,
JOINT WITH THE SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT,
Washington, DC.

The Subcommittees met, pursuant to call, at 10:00 a.m., in Room 2167, Rayburn House Office Building, the Honorable Doris O. Matsui presiding.

Ms. MATSUI. I would like to call the Subcommittee to order.

Today, we are going to have a joint hearing on national levee safety and dam safety programs before the Subcommittee on Water Resources and Environment and the Subcommittee on Economic Development, Public Buildings, and Emergency Management.

I would like to welcome today's witnesses to our hearing on national levee safety and dam safety programs. We will hear from representatives of Federal and State agencies and national associations.

In the aftermath of the 2005 hurricane season, the American public again focused on the importance of adequately designed, constructed, and maintained flood control infrastructure. The images of flooded streets, homes, and businesses continue to be a vivid reminder that we cannot take our Nation's infrastructure for granted. The potential for loss of life and property are too great to be ignored.

Unfortunately, no one entity has a complete inventory or understanding of the Nation's flood control infrastructure. There has never been a comprehensive review of the adequacy of the levees that protect so many at-risk communities around the Country.

Since receiving authorization and funding in the Fiscal Year 2006 supplemental appropriations bill, the Army Corps of Engineers has begun to review the status of levees in the United States. This initial review of over 2,000 levees found 56 percent to be acceptable, 38 percent minimally acceptable, and 6 percent or 122 levee segments at risk due to unacceptable maintenance. My home State of California has also conducted an initial review of its levees and identified 29 critical sites.

In the fall of 2006, California passed a $4 billion general obligation bond dedicated to levee repair work. Additionally, last month in my district of Sacramento the voters passed a local assessment

by 82 percent that will raise an additional $326 million dedicated for current and future flood protection projects. We in Sacramento understand that there has to be a local share.

These results point to the terrific need for a comprehensive review and approach to maintain our Nation's vast flood control infrastructure. While I am encouraged that we are making some progress in addressing these long-range flood protection issues, I firmly believe that better coordination from a policy perspective and a resource allocation perspective needs to be put in place. I am also glad that FEMA is here with us today. FEMA and the Corps share responsibility for the protection of communities behind the levees. FEMA, through its management of the National Flood Insurance Program, and the Corps, through its role in certifying the condition of flood control levees for structural soundness, determine the minimum level of protection in the 100-year flood plain.

I look forward to hearing more about how the two agencies are collaborating and what ways things can be improved. I also look forward to the ideas that our non-Federal witnesses can offer for how all affected parties can better work together for the protection of our at-risk communities.

Flood protection has been my top priority since taking office. Sacramento is the most at-risk river city in the Country for catastrophic flooding. How we proceed in developing a comprehensive national policy has direct impact on my constituents. I am committed to working with congressional leaders as well as industry leaders in an effort to streamline an over-arching flood protection policy that meets our Nation's long-term needs as well as our communities immediate vulnerabilities.

This hearing is a good first step. I look forward to hearing from today's witnesses.

At this time I would like to recognize Ranking Member Baker for any opening comments.

Mr. BAKER. Thank you, Madam Chair. I certainly appreciate the convening of this hearing on what is an extraordinarily important topic. I do not know that any State delegation has more sensitivity to the issue of levee integrity than the State of Louisiana and the lessons unfortunately learned by the failures there in 2005. What is extraordinary I believe is the recognition that dam structures and levees exist everywhere in this Country and that many were built 35, 40, 50 years ago without any modern standard of engineering or materials specifications and that they continue to be the barrier between significant new residential development and disaster.

The bill that has been introduced by the gentlelady from Ohio, Mrs. Schmidt, which would at least begin the process of inventorying all of these structures around the Country, seems almost incredibly way overdue; and then secondly, to assess the structural integrity of those structures, again almost seems incredibly late at this point.

In Louisiana, we have a combination of distressing circumstances. We reside in an area where the land is literally sinking as a result of the depositional activity of the Mississippi River. Much of our State was constructed by that process over many millions of years. And so as we build a levee to a designated height,

over time the levee sinks. But the higher you build the levee, which means the bigger the material base must be, the more weight you have and the faster it sinks.

Some people look at that and say, well, why would anyone want to live there, and what responsible person would want to live behind a levee given those dynamic problems. Well, we have an environment which is extraordinarily rich in oil and gas, seafood, and other assets, and I constantly point out to my friends across the Country that 70 percent of the Nation's grain harvest goes through the Port of Orleans to destinations around the world.

And so there is economic necessity for people to live in this region. In fact, it is estimated that within a few years almost 90 percent of the American population will be within some reasonable drive of an American coastline. So it is a trend that is not likely to be reversed. Therefore, assessing the integrity of drainage and flood protection structures is an absolute necessity.

I guess the ultimate question is how we are going to pay for all the improvements that ultimately are going to be determined to be necessary. Madam Chair, I read with great interest one estimate of the assessment of cost per mile of levee is $60,000. Now this is not to do anything, this is just to look at them. I have got to get a better understanding of how much looking you get for $60,000. But in any event, it tends to lead me to conclude that this is going to be a very expensive proposition to rectify. Unfortunately, it is going to be a great deal more expensive if we do not. I yield back.

Ms. MATSUI. Thank you, Mr. Baker.

Now I would like to recognize Chairwoman Norton, Chair of the Subcommittee on Economic Development, Public Buildings, and Emergency Management, for any opening remarks.

Ms. NORTON. Thank you, Madam Chair. I, too, want to welcome you to today's hearing on dam and levee safety, which is an integral part of a national plan to "reduce risks to life and property from dam failure in the United States."

As you know, the National Dam Safety Program Act was passed in 1996 with the stated goal of reducing risk of life and property through the establishment and maintenance of an effective national dam safety program to bring together expertise and resources of Federal and non-Federal communities. The Army Corps of Engineers works closely with State and local dam safety officials, FEMA, and various other agencies to update information on over 79,000 dams currently in the United States and Puerto Rico.

As would be expected, safety regulation is an indispensable part of reducing hazards associated with dams. The responsibility for safety rests entirely with the States and every State except Alabama has a dam safety program. Most State programs include safety evaluations, a review of plans and specifications for dam construction, periodic inspections, and review and approval of emergency action plans.

Through the National Dam Safety Program, States receive grants directly from FEMA and can use these funds to supplement State budgets to hire much-needed personnel, buy equipment for dam inspections, and perform safety analysis. These grant funds have been used to successfully train State personnel and to carry out in the field training for dam owners to conduct annual mainte-

nance reviews. Further, FEMA funds have been used to revise and update State maintenance and operation guidelines to identify and operate dams to be repaired or removed.

Almost a year ago, on July 26, this Subcommittee met to discuss amendments to and reauthorization of the National Dam Safety Program Act. I am eager to hear from today's witnesses about the progress this program has made since its reauthorization, and what, if anything, still needs the attention from the authorizing Committee.

I thank you again, and welcome today's witnesses.

Ms. MATSUI. Thank you. At this time I would like to recognize the gentlelady from Ohio, Mrs. Schmidt, for any opening remarks.

Mrs. SCHMIDT. Thank you, Madam Chairman. Thank you for recognizing me and for holding this important hearing on levee and dam safety programs.

The terrible devastation of Hurricane Katrina underscores the need for reliable hurricane and flood protection infrastructure. An inventory and assessment of our Nation's levees is long overdue and it is shocking that we do not yet have one.

I was pleased to support legislation that passed our Committee by voice vote last Congress, and in consultation with Congressman Duncan and our Committee leadership, was pleased to reintroduce this legislation this past March. This legislation, H.R. 1587, would greatly strengthen our levee safety infrastructure by providing inventory, inspection, and assessment of our Nation's levees. It would establish the National Levee Safety Program Act, which is modeled after the National Dam Safety Program Act.

Thanks to the Dam Safety Program Act, we know a great deal more about our Nation's dams. When it comes to our Nation's levees, however, we know very little. We do not know how many we have, where they are located, and often do not know their condition. In addition to significant health and safety concerns, this lack of information is also frustrating as we try to prioritize future spending on flood protection. We often do not know what our levees are protecting or at what level of risk is associated with them. Establishing an inventory and assessment will enhance safety and help us prioritize future spending on flood protection so taxpayer dollars are spent as wisely as possible. The legislation I reintroduced to establish the National Levee Safety Program Act will allow us to develop a national inventory of levees, and work with States, local officials, and private entities to develop and strengthen levee safety programs.

Thanks again for holding this hearing. I have talked or met with many of the experts who are testifying. I look forward to hearing more from them today. I know there are some ideas about how we can improve upon the legislation I introduced. As we move forward, I am optimistic that we will hopefully soon send the strongest possible bill to the House floor. Thank you.

Ms. MATSUI. Thank you. I would now like to recognize the gentlelady from California, Mrs. Napolitano, for any opening remarks.

Mrs. NAPOLITANO. Thank you, Madam Chair, and thank you for holding this very important hearing. As the Chair of the Sub-

committee on Water and Power, this is of great interest to me for a number of reasons.

We need to be more proactive about how we protect those areas that will affect the water delivery, the power delivery, and also the economy of many of our Nation's best resources. So I am very much looking forward to hearing the testimony and seeing how we can dovetail some of the efforts, because the dams produce electricity, which then goes to the grid. We are looking at global warming effects on those dams. And, of course, the levee protection, protects our economy, especially in California, and we saw what happened in Louisiana and some of those areas.

So I am very much looking forward to this, Madam Chair, and thank both of you for opening it up. I yield back.

Ms. MATSUI. Thank you. Now I would like to recognize the gentleman from South Carolina, Mr. Brown, for opening remarks.

Mr. BROWN. Thank you, Madam Chairman, and I thank both you and the Subcommittee for calling this important hearing today.

Levees and dams serve an important purpose for both providing safety protection of communities, but also in providing other services such as recreation. While one may not think of coastal South Carolina as home to many dams, there are 59 dams in my district providing important services for their owners and thereby communities. Unfortunately, 12 of them are considered high hazard dams, and each is privately owned.

My coastal district knows the impact of floods and storm surges. So I am pleased to see that this hearing is additionally focused on the needs to improve our Nation's levees. The coast of my whole district depends upon beaches, marshes, and barrier islands to protect it from hurricanes and many areas have levees to provide additional protection. We must get a better handle on the conditions of our levees across the Nation and we must do it in a way that cuts through the bureaucracy that has clouded decisionmaking on this issue up until now.

Madam Chairman, I look forward to hearing from our witnesses. Thank you for coming.

Ms. MATSUI. I would now like to recognize the gentleman from New York, Mr. Hall, for opening remarks.

Mr. HALL. Thank you, Madam Chair, Ranking Member, and thank all of our witnesses today.

I represent a district, all five counties of which are now under a FEMA and State Disaster Declaration. Dutchess County, Westchester County, Putnam County, Orange County, and Rockland County, New York, straddling both sides of the Hudson River, were hit very hard about two weeks ago by the nor'easter that came up through the eastern seaboard. I feel that we are living in an experiment. I also sit on the Select Committee on Energy Independence and Global Warming and we have heard testimony most recently from the insurance companies and their representatives and from reinsurance experts about how they are computing the future damage likely to be caused by increased storm severity and frequency. We had in the last 18 months three 50 year floods, according to the farmers in Orange County who I have met with whose fields are still drying out.

Obviously, all of us need to be concerned, and we in the 19th District need to be concerned about the dams, about water projects in general, river clearing and snagging and channeling, and levees when necessary. We do not have that many of them in our part of the Country, but I certainly support the restoration and maintenance of those in parts of the Country where they are essential. I also share with my fellow Congressman Napolitano the concern that she voiced about the potential or the actuality of low-head hydro-electric power or even larger scale hydro-power being generated when possible. But the first thing is to assess the safety of the structures for those living downstream.

Yesterday, I visited three dams in my district, all of which are over a hundred years old. The Whaley Lake Dam has burrows on the surface of it. It is a dam that is largely earth and rock with some concrete structure. It has a frozen relief valve for the emergency release, a 48 inch pipe, and that valve is in the middle of the dam where it would not be accessible were the dam being overtopped by high water. Also at the Beaver Dam in Orange County, and Veterans Memorial Park Lake Dam in Putnam County. In this latest storm, there was severe damage to Wappinger's Falls Dam where there is a low-head hydro plant.

How we catch up is the question. My understanding from speaking to representatives of the Corps of Engineers is they feel that the budget that was presented for this year by the Administration does not give them adequate flood control funding. I am interested in hearing about that. And then as long as we are out doing assessments for safety, I am curious to know how much extra time or effort is involved in doing an assessment at the same time for hydroelectric potential.

So I am glad you are here. I am looking forward to your testimony. Thank you Madam Chair. I yield back.

Ms. MATSUI. Thank you. At this time I would like to recognize the gentleman from Colorado, Mr. Salazar, for opening remarks.

Mr. SALAZAR. I want to thank the gentlelady. Thank you, Madam Chair. I appreciate that we are addressing the safety issues of our Nation's levees and dams. I believe there is no question that having a safe and secure infrastructure is vital to our Country's overall well-being.

Many of our Nation's dams are aging and deteriorating. Currently, there are over 3,300 unsafe dams across the United States. Look no further than last month when dam failures caused major problems in both New Hampshire and New Jersey.

This morning's front page news in the Pueblo Chieftain talks about Fond Creek floods embankment fails. Much of Pueblo was flooded yesterday because of unsafe levees.

It is unacceptable that our Nation's dams receive a D from the American Society of Civil Engineers in their 2005 Report Card for America's Infrastructure. I believe that dam safety affects millions of people, and I am pleased to be sponsoring the Dam Rehabilitation and Repair Act of 2007 along with my good friend on the other side of the aisle, Mr. Randy Kuhl from New York. Our bill, H.R. 1098, will help our local communities fix their high hazard deficient dams. Many of these dams, all State or locally owned, have

been neglected for years and now pose a great risk to their nearby communities.

In my State of Colorado, we have over 1,800 dams, 741 of them are in my district. Of those, 340 are classified as high hazard dams, which means they are near people and can potentially endanger life. An additional 19 dams are deficient and the State has determined that they are in serious need of repair. H.R. 1098 is a modest start to addressing the safety of our Nation's dams. We should continue to be proactive in funding rehabilitation of critical infrastructure, and dams should be no exception.

I look forward to today's testimony. Thank you. I yield back.

Ms. MATSUI. Thank you. At this time I would like to recognize the gentlelady from Hawaii, Ms. Hirono, for opening remarks.

Ms. HIRONO. Chairwoman Matsui and Chairwoman Norton, thank you very much for holding this very important hearing. I represent a district with 136 regulated dams. On March 14 of 2006, one of these, the Kaloko Dam on the Island of Kauai, was breached after an unusually heavy rain of 40 days. This resulted in the failure of the dam and 1.6 million tons of water crashing down from the reservoir, resulting in the deaths of seven people including a young child and a woman who was eight months pregnant. In addition to the tragic loss of life, this catastrophe led to an ecological disaster with significant damage to streams, reefs, and coastal waters, not to mention the hardship on the farmers who relied on their irrigation from the dam.

Kaloko Dam was not even characterized as a high hazard dam, although it was categorized as a regulated dam. It was supposed to be regularly inspected. Unfortunately, this did not happen. This dam, like the majority of old earthen dams in Hawaii, was constructed and maintained for many years by Hawaii's formerly strong sugar industry. After the closure of many of these sugar companies, what we were left with was a dam owned by one party, the irrigation ditches by another party, and users of the water were a number of small farmers. And so the oversight formerly performed by the sugar company was simply nonexistent.

The tragedy of Kaloko Dam focused the attention of the State of Hawaii on the need to assess the condition of the many old earthen dams in the State. And with the critically important assistance of the Army Corps of Engineers, all 136 regulated dams have now been inspected. However, the need for funds to repair, renovate, and in some cases demolish these dams is significant. This is why I have cosponsored, with our fellow Committee Member Representative Salazar, his bill H.R. 1098, the Dam Rehabilitation Repair Act of 2007. This bill provides Federal funding to assist States to address urgent needs to repair dams that pose a significant threat to public health and safety. I am hopeful that our Committee will consider H.R. 1098, which provides much needed assistance for our States in meeting this very urgent safety challenge.

I yield back my time. Thank you.

Ms. MATSUI. Thank you. I would like to recognize now my colleague from California, Mr. McNerney.

Mr. MCNERNEY. I thank the Chairs and the Ranking Members for holding this important hearing. I represent a portion of the central valley in California just South of Sacramento, including the

major city of Stockton that, like Sacramento, is very susceptible to levee flooding. Our district either contains or abuts a large number of the 122 levees that the Corps has determined to have unacceptable maintenance. So I clearly have a keen interest in today's hearing.

In the last few weeks, a delegation of local representatives from San Joaquin County and local jurisdictions within the county came to visit us to push for Federal funding on several issues. But the one issue that they stood out upon was levee failure and the levee security. I hear the same thing when I talk to members of my community, of the residents, they are all genuinely concerned that an earthquake or other natural disaster could cause major flooding and the disastrous consequences for decades in our area.

We had a failure in 2004 of the levee Jones' Tract and it took $90 million dollars to repair that levee. That should have been a wake-up call. Estimates are that a massive or multiple simultaneous failures caused by earthquake or similar event would cause $40 billion dollars in damage, undermine the environmental integrity of the entire delta, and shutting off water to approximately 23 million Californians. It is a matter of time before we have this sort of event in California. I want to make sure we are doing everything we can to make sure we prevent that sort of event from being a catastrophe.

I am looking forward to your testimony today. I appreciate that you are willing to come down here and talk to us. I yield back the balance of my time.

Ms. MATSUI. Thank you. Now I would like to recognize the gentleman from Missouri, Mr. Carnahan, for opening remarks.

Mr. CARNAHAN. Thank you, Madam Chair. It is great to be here with my colleagues to talk about this key issue. I am here today after we have all seen the news about the Missouri River in my State that made it within a few feet of the historic flood crest of 1993.

I am very concerned and I just want to express in my opening remarks the lack of a nationwide inventory of all the locations for Federal and non-federal levees and their condition. Levees protect the human lives, agriculture, commercial/residential property from flooding on our Nation's treasured waterways. There is absolutely no excuse for the Federal Government's lack of understanding of the condition of every levee. For that reason, I support the creation of a National Levee Safety Board.

I would also like to express my opinion regarding the need of coordination among levee districts. These levee districts are responsible for the maintenance of Federal levees but often do not sufficiently coordinate with neighboring districts. Because floods in our major waterways can affect numerous levee districts, Congress must encourage these districts to better coordinate their efforts.

With that, I am going to ask that the remainder of my opening remarks be submitted for the record. I look forward to hearing this panel today.

Ms. MATSUI. Thank you.

We will now proceed to our witnesses. We are so pleased to have a very distinguished panel of witnesses on our first panel here this morning. First we have Mr. David Maurstad, Director of the Miti-

gation Division and Federal Insurance Administrator of the Federal Emergency Management Agency. We also have Mr. Steven L. Stockton, Deputy Director of Civil Works of the U.S. Army Corps of Engineers. We are pleased that you could join us this morning. Your full statements will be placed in the record. We ask that witnesses try to limit their testimony to a five minute oral summary of their written statements as a courtesy to other witnesses.

Mr. Maurstad, please proceed, and then we will follow with Mr. Stockton.

TESTIMONY OF DAVID I. MAURSTAD, DIRECTOR, MITIGATION DIVISION AND FEDERAL INSURANCE ADMINISTRATOR, FEDERAL EMERGENCY MANAGEMENT AGENCY; STEVEN L. STOCKTON, DEPUTY DIRECTOR OF CIVIL WORKS, U.S. ARMY CORPS OF ENGINEERS

Mr. MAURSTAD. Good morning. My name is David Maurstad. I am the Assistant Administrator for Mitigation in the Department of Homeland Security's Federal Emergency Management Agency. I am honored to appear before you today to discuss FEMA's National Dam Safety Program and the Agency's policies as they relate to levees and areas of residual risk.

The December 22, 2006 reauthorization of the National Dam Safety Program will greatly benefit the States and enable the program to continue effectively addressing the risks associated with the more than 79,500 dams across the Nation.

Through grants, training support, research, data collection, and other activities, the program provides a much needed impetus for the continued safeguarding and protection of people, property, and the dams themselves.

The National Dam Safety Program provides critical support for the operation, maintenance, and improvement of the Nation's dams. Thanks to the recent reauthorization, the program continues to improve.

The States regulate approximately 95 percent of the Nation's dams. From fiscal year 2004 through 2007, FEMA distributed a total of approximately $12.9 million in grant assistance to 49 participating States and Puerto Rico for dam safety. The number of State regulated high-and significant-hazard potential dams with emergency action plans, or EAPs, has increased by about 50 percent since 1998, to approximately 8,000 dams. State dam inspections have also increased from 13,000 to 15,000 inspections per year. This increase is particularly impressive considering that State dam safety budgets have been declining.

The National Dam Safety Program also funds research projects in support of dam safety. To guide funding decisions, the National Dam Safety Review Board developed a five year strategic plan which ensures that priority is given to research projects that demonstrate a high degree of collaboration and expertise and will yield products that contribute to dam safety in the United States. Other important areas of focus are training and exercise initiatives, funding information technology projects, and collaboration with Federal agencies on dam safety and security issues.

Federal agencies responsible for dams owned or operated by the Federal Government have made significant strides in ensuring the

safety of dams within their jurisdictions. Federal and State coordination has also increased in many areas, including emergency action planning, inspection, research and development, training, and information exchange.

Despite the program's achievements, the dam safety community continues to face many challenges, most critical the aging of America's dams. Recent data indicates that the number of deficient dams in the U.S. has increased by more than 33 percent since 1998 to more than 3,500. It is also estimated as of 2002, 85 percent of the dams across the Country were 50 years or older.

The dam safety community is working on a number of options to remediate dam deficiencies and progress is being made. Some examples include: model loan programs for the repair of dams, dam removal projects, and rehabilitation programs. The program also is working to address the identification and classification of dams and to ensure that all 50 States participate in the program. Alabama, the only State not participating, is developing legislation needed to provide State participation in the program complete.

Finally, let me turn to a significant challenge FEMA is now facing, how to depict areas situated behind levees on the agency's flood insurance rate maps. These maps are currently being updated through FEMA's Map Modernization Program. They are important community planning tools that depict flood risk levels and enable FEMA's National Flood Insurance Program to set fair and affordable rates. Accurately depicting levee protected areas has become a critical matter. Some firm panels may depict levees that have never been evaluated for compliance with applicable mapping criteria, yet the map modernization budget does not include resources for levee evaluations. In the case of private levees, the levee owner is responsible for providing documentation that the levee complies with regulatory requirements. In the case of federally-owned levees, the Federal owner agency is responsible.

If FEMA, the National Flood Insurance Program, and our floodplain management partnership do not address this matter judiciously and wisely, the production of modernized maps could be significantly delayed. Of course, we must balance this concern with the need to provide levee owners enough time to evaluate levees and to submit required data to appropriate authorities. FEMA is doing all that it can to make sure that the risks in communities with levees are properly documented and communicated, and that areas behind decertified or failed levees are mapped in a manner that clearly identifies risk to life and property.

Let me conclude by indicating to effectively prioritize and address issues of concern, we believe that a comprehensive national levee inventory system and database should be developed, monitored, and maintained. FEMA is encouraged by the Army Corps of Engineer's initiative to develop a national levee inventory and we are working closely with the Corps at the headquarters, regional, and local level to address flood risk and insurance implications of levee certification. Thank you.

Ms. MATSUI. Thank you, Mr. Maurstad.

Mr. Stockton, you may proceed.

Mr. STOCKTON. Thank you, Chairwoman Matsui, Ranking Member Baker, and Members of the Subcommittee. I am Steve Stock-

ton, Deputy Director of Civil Works for the U.S. Army Corps of Engineers and a registered professional engineer.

I am pleased to be here today and to have the opportunity to speak to you about the National Dam Safety Program and the proposed National Levee Safety Program. My testimony today will provide a brief discussion on the benefits of the programs, the need for establishment of a National Levee Safety Program, an update for the current Corps of Engineers Levee Safety Program, and the coordinated efforts between the Corps, FEMA, and others in the Flood Risk Management Program.

Following the failure of Teton Dam, Kelly Barnes Dam, and others in the 1970s, there was an emphasis placed on inventorying and inspecting dams and the need for a coordinated Federal and State program for dam safety. Through the years following these catastrophes, the program has developed into the National Dam Safety Program that FEMA administers, and State programs exist today with 49 of the 50 States. Like the dam failures in the 1970s, the levee and flood wall failures associated with Hurricane Katrina and the major levee repair needs in California, emphasize the need for a National Levee Safety Program and State levee regulatory agencies.

The National Dam Safety Program provides benefits to the Nation by reducing risks to life and property from dam failure through an effective program that brings together the expertise and resources of the Federal and non-federal communities in achieving hazard reduction. These benefits are being achieved through the publication of various technical documents, through the training of dam safety professionals, through cooperative research, and through publication of the National Inventory of Dams. The program has allowed the Corps to leverage its resources through work with other Federal agencies and with the various States. The program has improved dam safety programs by providing a forum for the States to share information as well.

Just as the National Dam Safety Program has improved dam safety across the Country, the establishment of a parallel National Levee Safety Program would improve levee safety. Such a program would provide support to new State agencies being established to regulate levees. This program would bring the expertise and resources of the Federal and non-Federal communities together in achieving levee safety hazard reduction. Development of the program will not be overnight. It has taken 25 years for the dam safety program to grow to maturity, but the levee safety program will use the lessons learned from the development of the dam safety program as a basis to allow for quicker implementation.

The first step in establishing a levee safety program will be inventorying and assessing the levees. The Corps is taking the first step with supplemental appropriations provided in Fiscal Year 2006 to inventory levees in the Corps program and to develop risk based methodology for the assessment of these levees. At present, we have accounted for all levees in our program and by the end of this Fiscal Year we will have completed detailed surveys of over two-thirds of all levees. Assessment methodology development is ongoing and is currently being beta tested. It will be ready for use in risk assessments in Fiscal Year 2008.

Notwithstanding the Administration's concern with the proposed Water Resources Development Act currently under consideration by Congress, I would like to present the Corps' factual assessment of that bill's proposed National Levee Safety Program. The proposed program is modeled after the current National Dam Safety Act. The legislation would establish a national committee of Federal, State, tribal, local, and private representatives to advise the Secretary of the Army on levee safety matters. The committee would lead the development of Federal and State standards for levee safety and the establishment of a model for State levee safety programs. The committee would draw on the expertise and knowledge of the National Dam Safety Review Board and the Interagency Committee on Dam Safety in the development of the program. Substantial changes that were added to the National Dam Safety Act in 2006 would be included in the levee program from its beginning.

The inclusion of an assessment of each levee in the inventory could enhance the value of the inventory when used by various emergency agencies and local governments during times of natural disasters. The assessments could allow the first responders to focus their actions in critical areas where failures are most likely to occur. This could save time and possibly lives in emergency situations. In addition, these assessments could provide information to assist local governments, public utilities, and private individuals when making investment decisions concerning property protected by the levees.

If the proposed legislation is enacted in its current version, authorization of appropriations would be included that are consistent with the appropriations that have been provided over the years for the National Dam Safety Program.

We are committed to continuing to improve the safety of Federal dams and levees, continuing to cooperate with other Federal and non-Federal agencies to reduce the risk to public safety in areas located below dams and behind levees, continuing to help decisionmakers set priorities for future dam and levee safety investments, and continuing to ensure that all Americans can make more informed decisions on building homes, locating businesses, and purchasing flood insurance based on the actual risk of flood and storm damages where they live.

This concludes my statement. Again, I appreciate the opportunity to testify today. I would be pleased to answer any questions.

Ms. MATSUI. Thank you very much. I would like to begin by asking Mr. Stockton a question about watersheds in a sense. We all know that we cannot look at an area just segment-by-segment because every area affects every other area. And we are looking more at watershed planning, how one area affects the other, and what we do in the various areas. So I was wondering what changes to existing authorities or new authorities will be needed for the Corps to better analyze cumulative impacts of flood control projects and better incorporate these projects into more realistic watershed plans.

Mr. STOCKTON. Thank you, ma'am. Coming out of Hurricane Katrina, we did, in fact, find that we had a hurricane protection system in name only. The projects had been authorized as indi-

vidual components. A lot of our policies drive us to work with non-Federal sponsors to authorize and then to construct individual projects. What we are hoping to do is develop a more comprehensive, integrated systems approach to planning; manage all of the projects within a watershed to achieve multiple purposes; look at life safety as being the primary objective; and really improve our ability at risk communication and lifecycle management of infrastructure.

As far as the needed authorities, I think we have many authorities now that allow us to take a step in that direction. One of the main obstacles to doing watershed planning has been the provisions that require non-Federal sponsors cost-share those studies. We were funded in Fiscal Year 2006 to do five pilot watershed studies at 100 percent Federal funding, and I think those experiences and the lessons learned out of those five pilot watershed studies will inform future decisions on what additional authorities may be needed.

Ms. MATSUI. To follow up, would you be considering some nonstructural elements as you are proceeding in analyzing watersheds, not just the structural elements of levees and dams?

Mr. STOCKTON. Absolutely.

Ms. MATSUI. I have a question for Mr. Maurstad about the 100-year floodplain. Is it an appropriate level of protection for most flood control decisions? I know it is as far as a marker for flood insurance. But is it an appropriate level of protection?

Mr. MAURSTAD. I think the thing to keep in mind relative to the 100-year level or the 1 percent annual chance is that it is a minimum Federal requirement for the Flood Insurance Program. That has become a marker for making other decisions, other policy decisions which may or may not be appropriate. I think we need to continue to move forward in making sure that people understand that as we communicate what a 1 percent annual chance is, that is just the minimum level. We want to continue to encourage communities to base decisions on higher levels and reward them for doing that through the community rating system and providing discounts to policyholders in their particular area.

A similar issue to the one that you have raised is to make sure that people understand and that we look toward recognizing residual risk behind levees and dams, and that people understand that the levee and the dam is providing a particular level of protection up to a particular design for a particular size of storm. But, again, that is just a guide for us to use, it is not an absolute as to whether or not you have protection for every and all events that may occur.

So I think we need to better communicate. I think we need to make sure local and State governments base their decisions that this is the minimum Federal requirement, that the private sector also look at it and recognize that there may be issues of risk that they need to take into account as they make decisions on development. So communication, identification, and analysis of the risk I believe we just need to continue to improve upon.

Ms. MATSUI. For both of you. I know that FEMA and the Corps work pretty well together. I see this in Sacramento a lot. But what changes would you like to see to improve program efficiency and interaction between the Corps and FEMA?

Mr. MAURSTAD. Well, I will start in saying that there has been a very good working relationship between FEMA and the Corps historically. I believe that with the support of Administrator Paulison, General Strock, General Riley, we have raised that to a higher level, going back to August of 2005 when senior leadership began meeting and working in conjunction with the Association of State Floodplain Managers and NAFSMA on how we can better coordinate our programs so that the end user—communities, States, and local citizens—can better understand the relationship and the responsibilities and the role of the respective agencies.

We have done more than just meet at that level. We also have taken steps together with General Riley to have greater working relationships at the field level with the FEMA regions and the Corps districts so that there is a better coordination and consistency throughout the Country on policies that affect both FEMA and the Corps of Engineers.

So I think we had a good foundation. We have built on that foundation for greater communication and collaboration. Part of why we are doing this is so that we can identify those areas that we do not need additional legislation to better provide service to the Country. And in those areas where there may be changes in regulation or guidance, that we do it in cooperation and collaboration instead of individually, and then finally, if there are areas that need legislative remedy, that we bring that to the attention of decisionmakers.

Mr. STOCKTON. I could not agree with Mr. Maurstad more. I think collaboration has been excellent at the national level and at the regional level. Before we go out with policies on certification of levees, or vegetation management policies on levees, or issuance of flood risk maps, we coordinate those very, very closely so we do not confuse the public by having different policies. So, a very good collaborative relationship.

Ms. MATSUI. Thank you. I would now like to have Ranking Member Baker ask questions.

Mr. BAKER. Thank you, Madam Chair. Mr. Stockton, I want to engage in a more detailed discussion about Katrina assessments. Since the event of the storm and the extensive work the Corps has engaged in, which has been monumental, to restore and improve the levee system, does the Corps now have a database of levee integrity to know where we still have identifiable problems, or is there insufficient data yet to make a levee system assessment?

Mr. STOCKTON. Specifically within New Orleans and vicinity, we have that information. We have done detailed assessments of the Hurricane and flood damage reduction systems in that vicinity.

Mr. BAKER. How granular is that? Is it just by drainage basin? Can we get to neighborhood? In other words, if I am a homeowner and I want to know what my circumstance looks like, what kind of risk assessment am I as a homeowner able to make by calling the Corps, or do we need more data?

Mr. STOCKTON. I would say within the next month we, in collaboration with FEMA, will be issuing risk maps, that try to take a lot of the technical information that has been acquired through assessments of the levee systems and be able to communicate that and inform the public about that residual risk. So we are probably

about a month out from being able to really issue those maps and that information in an understandable form.

Mr. BAKER. Okay. Were there are actually two parts here. One is I guess the FEMA part, which is the hydrology, storm surge kind of assessment. I am more interested in the structural side. If the entity that is there is sitting on top of a clay and we have got a T-wall barrier that might get tilted with the storm surge and the water seeps down the front, all of a sudden you have got that leveraging effect that causes failure. Do we have a good understanding about the structural integrity of the levee as separated from the overall storm management risk issue, which is the FEMA part?

Mr. STOCKTON. Yes. We have completed the detailed assessments and we are now in the design phase for those areas that are deficient and implementing remedial designs for those areas.

Mr. BAKER. Based on that assessment, and I know that the system varies from section to section as to what level storm it is competent to withstand, Orleans area only, are we now back to pre-Katrina level? Are we at 90 percent? What is your assessment of our condition in a categorical sense?

Mr. STOCKTON. Today, we are back to pre-Katrina levels. The pre-Katrina levels after the Interagency Performance Evaluation Team looked at the entire system were not as high as we thought they were pre-Katrina. So they are higher than they were prior to Katrina but they are not as high as we thought they were because of a lot of factors.

Mr. BAKER. I know there is litigation pending, but have we made any determination on the governmental side about prior failure to meet design standards by contractors constructing any element of the levee system? I know you may not be able to say in some cases because there is some litigation about this ongoing I understand. But I will make it easier. As opposed to construction and adequacy, or design and adequacy, or design built to the 100-year level and the storm simply overwhelmed appropriate design based on that frequency of storm, what is the most common problem in assessment of the post-Katrina event: contractor deficiency; design deficiency; and maybe I ought to add a fourth, lack of maintenance to maintain the integrity; or an unpredictable storm that simply overwhelmed the generally accepted standard for protection?

Mr. STOCKTON. Sir, I think those are all contributing factors. As you know, we have produced our Interagency Performance Evaluation Team Report that was peer reviewed by the American Society of Civil Engineers and which is being reviewed by the National Academy of Science. All that information on the engineering forensics of what happened and why, is publicly available, it is posted on the IPET website. So the information is out there. I cannot give you a breakdown of the root causes from each of those contributing factors, but they all come into play.

Mr. BAKER. Equally? There is no predominant observation as a result of the storm there is one area we need to be more concerned about than others?

Mr. STOCKTON. I think if there is one predominant area, it was the overwhelming nature of the storm. It exceeded the design

standards in many areas. But there were other contributing factors.

Mr. BAKER. And it was a 3 storm that hit rather than a 5. Thank God for that. Going forward, we have another Katrina on the horizon, and this is maybe a FEMA contributing response as well, but assume for the moment it is that 3-plus storm this season, are there areas where we should have particular concerns? There is a balance here. People will not leave more than three days in advance. If you maximized outflow for three days from the Orleans area, there is not enough concrete to get everybody out under sort of the existing protocol that is usually adopted. Has there been any modification, FEMA, your agency, as to how we notify in this particular locale the people with better information earlier on, a more sophisticated risk quantification? So that we know there is a problem with the levee, we know this storm has a high likelihood, and we know we have got too many people to get out. What can we do to avoid that, and what structural, organizational, informational changes have been made since Katrina going into this storm season?

Mr. STOCKTON. Sir, as you know, we are continuing to build the system stronger and better. Every day that goes on, we continue to complete work that provides additional protection. These risk maps that will be published within a month will show at different points in time how much risk is reduced based upon——

Mr. BAKER. Excuse me. I am way over my time and I want to get the point in.

The publication of the map a month from now is certainly helpful and will give people with the ability to make their own personal independent assessment. What I am speaking to is the public service notifications that come across the media based on your structural and engineering knowledge, complemented by FEMA's own assessment of the severity of the storm to give people more adequate warning to take actions on their own to avoid what happened before.

I will point out, you said we are back to pre-Katrina levee construction standards which were less than what we thought they were, which, in my view, is probably inadequate to withstand a storm of the severity which we faced two years ago. I hope my assessments are incorrect. But in light of that, do we have a better ability to notify people of the pending risk so that they can get the heck out in a more deliberate time?

Mr. MAURSTAD. Mr. Baker, I would say we certainly do, built upon the work that was started this time last year, fine tuned throughout the year, and again working on as we approach hurricane season again this year by the Louisiana Transition Recovery Office in New Orleans, working very closely with the State and very closely with New Orleans on refining and making sure that the community has an evacuation plan that encompasses all the various needed components to identify, as you have talked about, if a certain situation exists, how are we going to assist, how is the community going to evacuate for that particular set of circumstances, including at-risk individuals that may not be able to evacuate themselves, better sheltering in place, and a whole variety of components that make up a good, sound, solid evacuation

plan. Of course, primary responsibility for that, with the support of FEMA and the State, is the City.

Mr. BAKER. Madam Chair, I thank you for your indulgence in the time. This is an area where we have a lot of work yet to do I am afraid.

Ms. MATSUI. I understand, Mr. Baker. At this time I would like to recognize Chairwoman Norton for her questions.

I know we have another panel following this. I would like to try to limit the questioning to five minutes. Thank you.

Ms. NORTON. Thank you very much, Madam Chair. Mr. Stockton, I could not help but notice, I hope you noticed, in the New York Times yesterday a report where one of the critics of the dam construction in New Orleans offered more criticism. This, of course, is Robert Bee, the professor of engineering from the University of California at Berkeley, who was concerned about erosion on a levee by the Mississippi River Gulf outlet. This is a navigation canal that helped channel water into New Orleans during the storm. He indicated that the Corps had done good work and he could not be certain without further inspection, and did not want to cry wolf, but he did say he also did not want to ignore what he calls potentially important early warning signs.

Now what he points to is the use in the levees in New Orleans of a dense clay-rich soil that is supposed to resist erosion, and he cites recent work in the Netherlands that suggest that clay-capped levees with a porous core were prone to a failure in high water.

My question is, why did the Corps reject the suggestion that the levee should be armored with rock or concrete against overtopping and instead use this porous clay-rich soil which may erode over time?

Mr. STOCKTON. Ma'am, as I stated earlier, our number one priority is public safety. I, too, read the article. We imported most of the clay-rich soil because it is more resistant than some of the——

Ms. NORTON. I am asking a very specific question. Why the soil rather than the rock or concrete? Do you disagree that the rock or concrete overtopping would have been more secure? I understand that you are doing your best. I want to know why you chose one material over the other.

Mr. STOCKTON. We have some funds included in there to provide overtopping protection. We do not have enough funding to provide overtopping protection everywhere. That said, we are importing high-quality materials, they are meeting ASTM standards, and they are being built to very high standards. You can always build things better and stronger if you have enough money to build them better and stronger.

Ms. NORTON. So I take it you are not using the rock or concrete topping anywhere in the levees in the Gulf region?

Mr. STOCKTON. No, we are in many areas.

Ms. NORTON. So how do you determine where to use it? How do you determine, given the limited funds which I think you cite as a reason for not using them universally, how do you determine when to use them and where to use the rock or concrete overtopping? Where are they being used, for example?

Mr. STOCKTON. In the highly dense urban areas, we have now modified our structures to prevent erosion on the backside of those

levees where there is high risk and high consequences to human life and property. In other areas, we have used lesser standards where there are lower consequences.

Ms. NORTON. Would you within 30 days submit to this Committee an indication of where the rock or concrete overtopping is being used and where the porous clay is being used, and what percentage have rock or concrete overtopping? I understand what you are saying and also understand that you have very severe funding issues.

[Information follows:]

Insert #2:

The U.S. Army Corps of Engineers uses a variety of methods to repair and rebuild both Federal and non-Federal levees throughout the region. The methods used today include significant lessons learned after Hurricane Katrina and, subsequently, confirmed by the Interagency Performance Evaluation Task-Force (IPET) that was established by the Chief of Engineers, U.S. Army Corps of Engineers, to develop independent findings on how the New Orleans Hurricane and Storm Damage Reduction System (HSDRS) performed during Hurricane Katrina. The IPET includes more than 150 nationally recognized experts from over 50 different organizations (Federal, state and local government agencies; academic institutions; and the private sector). The work of the IPET was submitted weekly for peer review to a distinguished external review panel comprised of members of the American Society of Civil Engineers. The work underwent further independent review by the National Research Council Committee on New Orleans Regional Hurricane Protection Projects.

One of the primary lessons learned from Katrina is that levees constructed using compacted clay are significantly more resilient to hurricane forces than hydraulic-fill levees. Another important lesson is that the most vulnerable points in the system exist in transition zones (where an earthen levee ties into a floodwall, or where pipelines cross the levee) and along floodwalls that do not have scour protection.

The IPET results indicated that failures occurred at transitions (either between levee and floodwall or at pipeline crossings) and along I-walls that did not have scour protection and/or had insufficient tip penetration or excessive stick-up. The only earthen levee failures were the Mississippi River-Gulf Outlet project levees that were constructed out of hydraulic fill material that contained sands and silts in excess of our current standards. Today, clay material is used in the repair of all levees and berms and provides a basic level of armoring. When a section of levee requires additional resiliency, additional armoring is applied. This is often in the form of rock but may also consist of concrete levee caps, mat revetments (used primarily along Mississippi River levees), geo-textile fabrics, etc. The placement of armoring provides added resiliency from levee over-topping and protects the levee backside from scour and erosion that could lead to failure. Armoring is generally used in transition zones such as where a concrete wall abuts an earthen embankment, where there is an abrupt change in the geometry of an embankment, or where pipes or other utilities are placed through a levee.

No data are readily available to identify the percentage of levee work that included additional armoring during the emergency repair and rehabilitation work following Hurricanes Katrina and Rita. However, were such percentages available, they would be misleading since additional stone or mat armoring of some levees has not been included to date on those levees that will be raised additional amounts to reach the new 100-year elevation. If the armoring was placed at this time, it would subsequently have to be removed and replaced. When the new 100-year design is finalized, we will determine which areas of the entire hurricane protection system are the most vulnerable to damage from hurricane wave forces, and apply additional armoring in those areas.

Ms. NORTON. Finally, let me ask, I am depending here upon one of your critics, and he has been a critic for some time, even though he says he is trying to be balanced here and gives you some considerable praise, the question is suggested whether or not there is any systematic peer review of the work of the Corps, or whether we are always dependent upon your critics, because here in the New York Times article, some said it looks all right to me, some say it did not. Here I am a Member of Congress trying to make a judgement. Is there any peer review system that the Corps uses?

Mr. STOCKTON. Yes, ma'am. Every product we produce has an independent technical review of that product, and depending upon the risk and consequence, we will use other societies, like the American Society of Civil Engineers, as we did on the Interagency Performance Evaluation Team, the National Academies. For general design things, we will have architect engineer firms design them. So we are very open. We want the best possible solutions to problems.

Ms. NORTON. And this has been peer reviewed, the use of the clay reinforcements has been peer reviewed and has been approved?

Mr. STOCKTON. I am not familiar with the specific allegations and locations. All I know is that the new designs that we are constructing go through an independent technical review process. If this is in a location where we are instituting a new design, it will go through that process.

Ms. NORTON. Thank you very much, Mr. Stockton. I am very concerned. We are going to have in my Subcommittee hearings on the over-arching issues that we think will keep or help repopulation of New Orleans, in particular. One of the things we are looking at, for example, is insurance, because if people cannot get insurance, I do not care what you do or what anybody does, it is not going to occur.

And another thing we are looking at is the levees. Unless people believe that this is not going to happen to them again, people can keep saying come home, but people are not going to come home. So I am going to ask you to get to my Committee within 30 days what the peer review details are. Who did the peer review for the use of the clay-rich soil that is now being used on the levees around New Orleans and the Gulf Coast, which agency, National Academy of Sciences, the Association of Civil Engineers, whichever one. Please get that and a copy of the peer review to our Subcommittee within 30 days.

I thank you very much, Madam Chair.

[Information follows:]

Insert #3:

I can assure you that the reconstructed levees in the New Orleans area today are in better condition than they were before the 2005 hurricane season. Repaired levees are constructed with better materials and generally to higher elevations than existed at the time of Hurricane Katrina. In all levee embankment specifications today, allowable soil materials are more stringent than prior to Hurricane Katrina. Soils with organic contents greater than 9% after placement are not allowed. Soils with plasticity indices (PI) less than "10" and soils classified as Silts (ML) are not allowed. Only soils classified as clays (CH or CL) are allowed. Material not meeting the specifications is discarded.

While some recently constructed levees have experienced minor surface erosion, this is due to rainfall and the lack of grass growing on the newly constructed levees. Grass or other form of armoring is an important final construction activity that is requisite to assuring the continued levee stability and integrity. While most areas have well-established turf, work continues on those areas needing additional seeding and watering.

Our Quality Control (QC) plans require contractors to perform in-place tests throughout the contract at set intervals (per 1500 cubic yards placed and per lift). The contractor is required to document that material meets the levee material requirements and that the material is being placed, processed (proper moisture content) and compacted in accordance with levee specifications. The contractor's laboratory for performing soil tests is inspected and validated by the Corps of Engineers.

We are employing a four-phase testing program to validate the acceptability of the levee material utilized in earthen levees. All field and laboratory tests are conducted in accordance with the Unified Soil Classification System as described in the American Society for Testing and Materials specifications. The American Society of Testing and Materials Unified Soil Classification System is the most widely referenced and accepted classification system in the world.

> Borrow Pits – A series of borings are retrieved that effectively depict the material present in all borrow pits (borings are taken every 500 ft on center). Samples from these borings are tested in the laboratory for Classification (soil type), Moisture Content, Organic Content, and Grain Size (sand content). An excavation plan can then be developed to establish which portions of the pit are suitable for levee construction.
>
> Quality Control (QC) During Excavation –Contractors classify soils during the excavation of borrow pits to ensure that all material meets the stringent contract specifications.
>
> In-Place Testing – Once the soil is processed, placed, and compacted within the levee section, samples are taken for every 1,500 cubic yards of placed material per 12-inch lift. The following tests are then performed: Classification, Moisture

Content (must be with +5% to -3% of the optimum moisture before compaction), Organic Content, and In-Place Density (at or above 90% of the Standard Proctor Density Test). The government performs its own quality assurance (QA) testing as stated above at less frequent intervals.

Post-Construction Borings – Additional borings are taken after construction to verify adherence to the contract specifications, specifically proper soil type, proper compaction (moisture and density), and soil shear strength verification to validate the design values. Borings are also utilized in the design of subsequent levee lifts.

Coupled with the QC program is our Quality Assurance (QA) program under which we perform periodic field and laboratory tests to document the contractor's QC findings. If discrepancies are found, corrective action is taken to meet the contract specifications. We also perform QA on Architect-Engineer laboratories on a routine basis to ensure that all boring extractions, storage, and sample testings are conducted according to acceptable criteria. The project designer conducts Engineering During Construction QA site visits. Additionally, the Corps' Mississippi Valley Division QA Team may inspect levee construction to further review the quality of construction.

As mentioned previously, the methods being used today include the lessons learned following Hurricane Katrina and confirmed by the IPET. The work of the IPET was submitted weekly for peer review to a distinguished external review panel comprised of members of the American Society of Civil Engineers. The work underwent further independent review by the National Research Council Committee on New Orleans Regional Hurricane Protection Projects.

For the emergency repair and rehabilitation work, peer review was not conducted but I assure you that all aspects of the work to bring the entire HSDRS to the 100-year level of protection is undergoing significant peer and external independent technical review. Attached is a link to the newly released ASCE report on Katrina. This report is a "peer review" and will help explain why clay is an acceptable material for levee construction. The link is http://www.asce.org/files/pdf/ERPreport.pdf.

Ms. MATSUI. Thank you very much, Chairwoman Norton.

Now I would like to recognize Mr. Boustany.

Mr. BOUSTANY. Thank you, Madam Chairman. I will stick to the five minute rule as well. I do want to refer to an article that came out in the New York Times yesterday that Ms. Holmes Norton referenced. The initial response by the Corps was that the engineer from the University of California at Berkeley was overstating the risk. But the Corps issued a statement saying that they would basically go back and reinspect these areas where there was so-called rills or furrows. And granted there is some ongoing erosion as you construct levees, has the Corps completed the reinspection of those areas? And is there still a disagreement about the risk? And what can be done?

We are talking about potential lives here going into the next hurricane season. We are also looking at the specter of law suits. How can we get everybody together on determining what these risks are so that we can construct appropriate levees? Mr. Stockton, would you answer that please.

Mr. STOCKTON. I cannot respond specifically to the allegation. Now I need to explain something about levees. They are designed to a certain height, and they are designed to be durable, and sustainable. But there is always going to be a certain amount of residual risk that there could be a potential storm that will exceed that. So what you want is a levee, that if overtopped, won't fail catastrophically, that it will resist erosion. And it becomes then a balancing act—do you build it higher within the resources you have available, or do you build it lower but more durable to sustain that overtopping at a lower level. You are trying to strike the right balance because you can never build something high enough or strong enough to resist all possible storm events. So there is always a certain amount of residual risk which falls into the Flood Insurance Program to cover.

Mr. BOUSTANY. Clearly, there are designs that you take into account and then there are also the soil conditions. I was just curious to know, after reinspection have you come out with any further statements with regard to the allegations that were made by this University of California engineer. Is the Corps talking to others in academia who have looked at this independently to see if we can come to some kind of an agreement as to what needs to be done?

Mr. STOCKTON. We work very closely with others, and this gets back to the independent technical review. This IPET study had over 150 individuals, engineers, scientists from inside the Federal Government, academia, outside the Corps of Engineers; we have Dutch experts involved in our design teams, we have internationally renowned architect engineer firms helping us with not only the design but the peer review. It is very difficult to respond to allegations that are in the New York Times when you do not know exactly where it is, or what they are referring to, or the time that they were referring to it.

Mr. BOUSTANY. I understand.

Mr. STOCKTON. So, we take it very seriously. Public safety is our primary concern. We are going to provide the best possible flood damage reduction, and reduce the risk within the resources we have available.

Mr. BOUSTANY. Thank you, Mr. Stockton. I yield back.

Ms. MATSUI. Thank you. I would like to recognize now Mr. Hall.

Mr. HALL. Thank you, Madam Chair. I have a question for Mr. Stockton. Would you support assessments of dams for low-head hydro-electric power generation? And how much extra time or effort would that take if you were assessing a dam for safety and your people are there anyway? I am aware of at least one project in Pennsylvania where the Corps is currently involved in a low-head hydro project. So there is obviously experience and expertise. The question is, while we are at it, how much would that add to your job?

Mr. STOCKTON. Thank you, sir. I think it is really two separate issues. When you are doing the dam safety assessment you are looking at the structural integrity of the project. To look at a hydropower potential assessment, I know about 20 years ago we did a nationwide assessment of hydro potential throughout the United States.

But that is more hydrologic, economic evaluation of the quantity of water, the amount of head you have, and then looking at what kind of capital investment you would want to make to produce that hydropower. So I think they are two separate activities. I do not think they could be bundled together to do them concurrently. There would not be a lot of common purpose in doing them. I think it is a great suggestion that we do evaluate them for hydropower potential, but it would be a different group of people having to do that with different skill sets.

Mr. HALL. Okay. But would it be cheaper or would it not if, say, a spillway or a release pipe were being repaired or installed, to, if one were going to do a hydro application at that dam, to do that at the same time that the repair is being made?

Mr. STOCKTON. Absolutely.

Mr. HALL. Okay. And are you, and I guess this would also be a question for Mr. Maurstad, are you planning currently for increased storm severity and frequency due to climate change?

Mr. MAURSTAD. We are. Currently, Congress is looking at whether or not we should be moving more forward in doing that right now. As we utilize the information that we have available to us to determine the premiums for national flood insurance policies, we look at what the current circumstances are, what the current risk is, and with the current program limitations, what premiums can we charge. Clearly, that is one component of the overall assessment. Do we need to do more in looking at what the potential is for future damages as a result of climate change? Arguably, we do. We currently insure about a trillion dollars worth of property throughout the 50 States and Territories. So we know what the potential downside risk is. Are storms going to increase in severity, increase in frequency, and what effect does climate change have on that, we are going to look at that more closely.

Mr. HALL. Mr. Stockton, you do not have to add to that, but you can if you would like.

Mr. STOCKTON. I just wanted to say that we have always been in the business of attenuating the hydrograph peaks and valleys with droughts and floods. And we continue to adopt and update

based upon changing hydrologic records, depending upon the severity and frequency of those events. So, yes, we are adjusting.

Mr. HALL. We have in my district in the Wallkill River Valley a multistage project that the Corps did over the course of the last century, the most recent installment of a three-part planned straightening, clearing and snagging, and channeling of the river and its tributaries was completed in 1984 and there has been no work done since then. This is one of the areas where black dirt farmers were completely underwater and their planting season was severely disrupted.

The question is, since the upstream part of the project is what remains to be done, how does FEMA or the Corps assess whether to straighten a stream or a river, and/or to place levees on it versus encouraging development to move out of the flood prone areas? Obviously, we have got a lot of not just farmers, but homes being built now because of the extension North out of the city. Is there a decisionmaking process as to whether you straighten a stream, do a project, or induce people to move out of that area based on the likelihood of flooding?

Mr. STOCKTON. Yes, sir, we have a very comprehensive, technically rigorous planning approach where we will look at the project, develop alternative solutions, and we will look at all those things, look at moving folks out of the floodplain, we will look at nonstructural solutions, we will look at structural solutions. We will evaluate all of those different options and, in conjunction with our local sponsor, we will make recommendations, investment recommendations to the Administration and Congress based upon all of those factors, and it is very project-by-project.

Mr. MAURSTAD. FEMA will provide assistance to local communities in the development of a local mitigation plan that will look at situations and circumstances like you have described. But the decisions as to development and whatnot are left at the local level. Mitigation projects, by the same token, are developed at the local level to determine if there are areas that the community would like to have folks relocate from, turn back to green space. Again, local decisions. But we have mitigation funding programs that are available to help assist with the economic aspects of those decisions made at the local level.

Mr. HALL. Thank you, sir. Thank you, Madam Chair.

Ms. MATSUI. Thank you. I would now like to call upon the gentleman from Tennessee, Mr. Duncan.

Mr. DUNCAN. Thank you very much, Madam Chairwoman. I had the privilege of chairing this Subcommittee for six years up until this Congress. In the last Congress, we reauthorized the Dam Safety Program Act. Also, I introduced the original National Levee Safety Program Act, although we did not complete the work on that. Congressman Costello and I a little over a year ago toured various water projects for a week in California and part of that time we spent in Sacramento and we saw the flooding and the levee problems they have had there. So I know how important this work is.

I guess one of the things I would like to point out is that we have had a lot of people working on these programs in the past. These are not new all of a sudden type situations we are talking about

here. In fact, I notice in our briefing paper it says the Congress directed the Secretary of the Army to undertake a national program on the inspection of dams in 1972. Then we authorized the first Dam Safety Program in the WRDA Act of 1996. The Corps, as one of our key staffers said to me a few minutes ago, the Corps wrote the book on levee construction and got into it in the early 1800s, and the Dutch even sent their experts over here to learn about levees from us.

So Mr. Stockton, there are a lot of people that are already working on all of these program about dam safety and levee construction and problems in the Corps right now and have been for many years. Is that correct?

Mr. STOCKTON. Yes, sir.

Mr. DUNCAN. But then I see that the estimate is it would take $100 million, $60,000 a mile, just to assess the 1,600 miles of levees in the central valley of California. Now the Corps, by our information, has constructed 9,000 of the 15,000 miles of levees in this Country. Is that correct or fairly accurate?

Mr. STOCKTON. I am not familiar with those specific numbers, but it sounds close.

Mr. DUNCAN. That is what we have in our information here, so I assume it is fairly close to being correct. You know, I guess the point I want to make is, this work is very important and needs to be done, but it also needs to be done in a cost-effective way that keeps the taxpayers in mind. You know, when you say $100 million, I bet that if we put out a contract for $50 million to do these assessments that companies would be jumping to get it. Also, you might want a Rolls Royce or a Mercedes, but a Chevrolet might do just as well to transport you to and from where you are going. So I hope that we try to do these things in a cost-effective. We need to do them, but I hope we do them in a cost-effective way that is fair to the taxpayers.

In addition to that, because we have had so many people working on these things for so long, surely we know where the greatest threats are or where the biggest potential problems are. Do we not have information about that already, Mr. Stockton, since we have so many people working on these things already?

Mr. STOCKTON. Yes, sir. What we have done is we have tried to divide this into groups and it really has to do with ownership. There are the levees that we designed and constructed and we still own, the ones we have turned over to local entities to operate and maintain, and then those categories of levees that we have adopted into our rehabilitation and inspection program. We have a pretty good grip on those and those are the ones we are currently inventorying. We are also taking steps to get the cost of these assessments down. We produced numbers about a year ago based upon not knowing that fourth category of levees, all the non-Federal ones—who constructed them, where they are, or even how many there are—and we came up with some rough order of magnitude cost estimates. We are going to conduct five beta tests the latter part of this year to test the risk assessment methodology and to get the rough order of magnitude cost estimates down to a reasonable number.

But as you can imagine, some of these levees were designed to current engineering standards, others where you might have a farmer's levee out there that you have no technical information on when or how it was constructed. And so I think through these beta tests of our risk assessment methodology we will come up with a much more economical way of doing these assessments.

Mr. DUNCAN. All right. My time is up. All I am saying is let us just use a little commonsense on this very important work. Thank you, Madam Chairwoman.

Ms. MATSUI. Thank you very much, Mr. Duncan. I would like now to recognize Mrs. Napolitano for questions.

Mrs. NAPOLITANO. Thank you, Madam Chair. I am very interested in all of the discussion over the dams. Of course, Mr. Maurstad, in your testimony you indicate that the Dam Safety Act budgets have been declining, and you give information about 2003, 2004, but you do not give any information on 2005 or 2006 of whether or not it is still continuing to decline. That is one area.

I note the fact that the American Society of Civil Engineers gave a 2005 report with a D for the status of the infrastructure of America's dams. And following along with Mr. Duncan's line is the prioritization of areas where we know that you have a greater risk, whether it is earthquake or flood, hurricanes, et cetera. How do we tell the States you are not putting a focus, you are relying on the Federal Government for bailout or for assistance knowing full well that you are in an area where you are at risk for a catastrophe of some kind. Would you address that.

Mr. MAURSTAD. I will try. The reference in the testimony I believe was to the declining support at the State level for dam safety programs, and that information I believe we generated from the National Dam Safety Review Board information. I do not think we necessarily solicited that information. It is more of a general comment as to this is the environment that exists in the States with some of the States that have had revenue shortfalls in the previous years. The support for the National Dam Safety Program from the Federal Government has remained fairly level during that period of time. We continue to do what we can to support the States in their efforts.

If I did not fully address your question, maybe you could——

Mrs. NAPOLITANO. Well, have you been able to identify those States whose budgets are getting lower or continue to decline? Are those areas where you know they are at risk?

Mr. MAURSTAD. I would have to go back and see if we could generate that information on specific State-by-State support of the Dam Safety Program in their particular State.

Mrs. NAPOLITANO. Madam Chair, may I ask the Committee to get some information on that.

The other question I have, and we do not touch on that, is personnel issues, for both of you, whether you have continued to decline in personnel, professional personnel that you can rely on to be able to carry out the duties or the work that needs to be done for the safety of the dams.

Mr. MAURSTAD. Well our level of personnel has not changed during my tenure that I am aware of. We continue to have very competent people that are working to assist the Dam Safety Program.

Throughout my particular directorate, of course, we all face transition and folks coming in and going out of Federal Government service, but I think it has been fairly stable in the dam safety area, and of good quality people.

Mrs. NAPOLITANO. Has your budget been as stable?

Mr. MAURSTAD. Again, the budget has been relatively stable over the course of the last few years. We continue to try to put forth the necessary resources. The grants have remained fairly level. We recognize that there is always a need for greater support and we continue to try to find ways to do that.

Mrs. NAPOLITANO. I am sorry but my time is running out, sir. I really wanted more focus on whether you are getting enough funding to be able to do the review of the safety of the dams with the personnel that you have. Every year I know almost every agency's budget has been cut. So how then would you be able to do the job, if that is happening to your agency?

Mr. MAURSTAD. This is not an area where the budget has been cut. I think we have remained fairly close to the authorized levels. This is an area where there is a great need out there. It is a relatively small program that has done fairly well with the resources that it has been provided. The statistics in my testimony I think indicate that a lot has been done. There is still more that needs to be done.

Mrs. NAPOLITANO. If you have been able to put in some kind of format the catastrophes that have happened in the last, say, five years that have indicated an increase of need of services, an increase in budget for services, because we have had some major catastrophes, and how can we look forward to dealing with those in the future?

Mr. MAURSTAD. Well, again, it really would be necessary to go back and see which of those disasters were less than whatever the design level for the particular control structure would be. Again, I have to harken back to we have developed a risk consequence equation in the Country that bases resources, both Government and private sector, on trying to withstand a 1 percent annual chance flood event. And let me just speak to the area of flooding. There are many events that occur every year that exceed a 1 percent annual level of opportunity to occur. That is the balance that we try to pose. That is why we strongly encourage communities and individuals to mitigate against greater storm levels than that. That is just a minimum Federal level requirement. It is not an indication that a community or an individual is not at risk for flooding or other type of hurricane-related event.

The Dutch has been mentioned a couple of times. After their great catastrophe over half a century ago, they developed a system that is not a 1 percent annual level, but a one one-hundredth of 1 percent annual level. We have a different attitude toward risk in this Country. I am not quite sure why. But to be able to answer your question more pointedly, a great deal of research would have to be done on the disasters that were caused, that were less than the 1 percent annual chance.

Mrs. NAPOLITANO. Thank you, Madam Chair. I would ask Mr. Stockton if he could reply in writing to any of the questions that he may.

Mr. STOCKTON. Yes, ma'am.
[Information follows:]

Insert #4:

As part of our national Campaign Plan and Strategies started in 2006, USACE is developing a comprehensive evaluation of all technical competencies and capabilities throughout the organization. Although we do not yet have results to report, our preliminary assessments indicate that competency sustainment is a highly complex and challenging issue that we have grappled with for over two decades. The key factors which influence competencies – workforce, workload, and competency characteristics – are all in a period of significant change within major mission areas (civil works, military programs, and research and development). In general, the pace and nature of these changes has tended to reduce our capacity to sustain in-house competencies. The difficulty in retaining professionals for dam safety evaluations is believed to be one element of this trend. Although thin from a personnel standpoint, we have a good dam safety program in place. Once we get the results of our current evaluation, we will be implementing actions to sustain the capabilities necessary to recruit and retain the necessary professionals.

Ms. NORTON. [presiding] I thank the gentlelady very much. Mr. Dent.

Mr. DENT. Thank you, Madam Chairman. Mr. Maurstad, my question deals with some issues I have been confronting in eastern Pennsylvania. As you are aware, we have had some major weather events in eastern Pennsylvania; three significant floods in the past two years. There has been quite a bit of public discussion about the reservoirs up in New York State and at what level of capacity they should, and that if we had less water in the reservoirs and provide for releases of water, that might somehow mitigate flooding downstream or down the Delaware. This has been the source of a number of debates and discussions among the Delaware River Basin Commission, FEMA officials, Department of Environmental Protection officials. I have had meetings and a lot of conversation about it. I just want to get your take on this, about releases of waters from reservoirs, in this case the ones up in New York State that feed New York City. How do you think that would impact on flood mitigation efforts on rivers like the Delaware?

Mr. MAURSTAD. Well my reaction would be that our programs can be affected by the decisions that are made by State and local governments. And as a result, we certainly want to be a part of those discussions to know how our programs, specifically, National Flood Insurance Program, and our policyholders would be affected by that.

I do not have the expertise to know the proper level of a particular reservoir in a circumstance like that. Again, we try to look at and understand and assess what the risk is in a particular area against the 100-year level flood that I talked about before. But it is really outside the scope of the National Flood Insurance Program to weigh in on that, sir.

Mr. DENT. I guess my main comment would be we would like to continue to see an active FEMA presence in these discussions as we wrestle with the issues of flooding along the Delaware, which has become more pronounced in recent years.

My second question also to Mr. Maurstad. Last year when we held a similar hearing, we heard that FEMA was having difficulty developing specific criteria to define what a State regulated dam is for purposes of allocating State assistance awards. Has FEMA developed a definition? And if not, how is this being addressed?

Mr. MAURSTAD. I believe the criteria that you requested is currently under review by the National Dam Safety Board. I think a draft has been developed, it is going through the decisionmaking process of the Board, and would anticipate that a proposal will be provided to the Dam Safety Review Board when it meets in June, and we will know the outcome at that point to that draft performance guidance.

Mr. DENT. Thank you. The National Weather Service too has advised that the eastern part of the United States is in a tropical weather pattern where we should anticipate additional extreme storm events. Has FEMA developed any strategies under the National Dam Safety Program for mitigating against an increased likelihood of these floods?

Mr. MAURSTAD. Well I think we expect that there is going to be activity, and so the prospect or the likelihood does not drive our ac-

tions as much as just making sure that we do what we can to be prepared—to have planned, to have exercised, to have programs in place—so that if an event happens in a particular dam area, the community and individuals will know what actions to take. Part of that is to try to encourage individuals and communities to take actions today that will reduce their vulnerability in the future. So I would say our actions are less driven by forecasts and more driven by what we understand events are going to happen somewhere in this Country and we have to be prepared for them.

Mr. DENT. I thank you, Mr. Maurstad. Mr. Stockton, the Corps recently produced an inventory of levees at risk of failure due to lack of proper maintenance. What can be done to ensure that levees are properly maintained by the responsible parties once they are built?

Mr. STOCKTON. Yes, we have put out guidance to more strictly enforce our existing standards. What we have is our Public Law 84-99, Rehabilitation and Inspection Program. And under that, if a levee owner's levee is in that program, we will actually rebuild and restore that levee if it is damaged to 100 percent of what its pre-storm condition was. So we encourage them and incentivize the non-Federal owners to maintain them at a high standard so they can stay within this program. If they are levees of maintenance concern where they do not maintain them to a certain standard, then they are no longer in that program.

Mr. DENT. Thank you, Mr. Stockton. Madam Chair, I yield back at this time.

Ms. NORTON. Thank you, Mr. Dent. Mr. McNerney.

Mr. MCNERNEY. Thank you, Madam Chair. Mr. Maurstad, you stated that FEMA is evaluating levee safety and decertification and the impact that will have on insurance. A lot of my constituents are going to be impacted by this, so I would like to develop some degree of comfort with the outcome.

What are the timelines? I see my notes say there is going to be about two-thirds of the levees will be inspected and judged by the end of this year.

What sort of scientific tools are going to be brought to bear on this? For example, $20 million was spent on a levee in our district recently and now they are worried that it is going to be decertified. So we need to know that if money is spent on these levees that it is not going to be decertified soon afterwards.

And will the outcome be used to decide what the priorities are for levee work from the Corps of Engineers?

Mr. MAURSTAD. Thank you. I can answer part of that question and part of it may be more in Mr. Stockton's area. FEMA does not certify the levee. What we are doing, in coordination with the Corps' levee assessment, is as we are going through a mapping process in a particular county or a particular jurisdiction, we are asking the owners of the levees to provide to FEMA certification that that levee either meets or continues to meet the 1 percent annual chance standard. We develop processes during the map development to allow communities the adequate time, if they believe that their levees are certifiable, to provide us with that information. And we are coordinating, again, with the Corps while that process is going on.

Our role in this is to make sure that as we develop new modernized, digital flood maps that they accurately relay the risk of flooding to that particular jurisdiction. Because we think it is important that people know what their risk is to property and to life associated with the levee, and that the levee in fact does provide the level of protection that people believe that it does. So it is that coordination that is occurring with Corps that I hope provides you with the assurance that you need.

Mr. STOCKTON. Yes, sir. We provide standards for levee certification for them to resist the one year exceedance flow event. We do that certification for levees which we own. It is the non-Federal owner's responsibility to do the certification for their levees based upon those standards.

I think the scenario you are describing is where the situation changes; you have a new hydrologic record, a different flow frequency, you might have new information on the under-seepage underneath the levee, you might have erosion, you might have incomplete maintenance. So that is why we have the Inspection of Completed Works Program, to annually reassess whether those levees are meeting the standards, and where they are not they become decertified.

Mr. MCNERNEY. Okay. I yield back at this point.

Ms. NORTON. Thank you very much, Mr. McNerney. Mr. Carnahan.

Mr. CARNAHAN. Thank you, Madam Chair. And thanks again to the panelists for being here. I just had a couple of quick questions I wanted to continue with. In my home area in St. Louis, Missouri, we have a very large levee called the St. Louis Flood Protection System, which I am sure you are familiar with. During the great flood in 1993, a section of the flood wall failed even though the water level was below the height for which the flood wall was designed.

Today, 14 years later, the problem has still not been fixed. My constituents, thousands of acres of commercial/industrial property, railroad tracks and roads would be affected if that were to fail. Some insurance experts have estimated that $3 billion worth of claims could result during the next disastrous flood if the wall were to fail.

The Army Corps has expressed an understanding of the severity of the situation, yet the leadership refuses to spend the necessary resources because it classifies the flood wall as "designed efficiency." If the Corps does not address this problem immediately, the City of St. Louis and the economy of our entire region could be devastated during the next great flood. Our actions now will determine whether or not the next great flood is the next great disaster.

During Fiscal Year 2006, the Army Corps spent $30 million on levee inventory. Can you give me, this is for Mr. Stockton, what is the status of that inventory, and is the Corps making an effort to prioritize those levees within that inventory?

Mr. STOCKTON. Yes, sir. As I said in my statement, we are about two-thirds of the way through the inventory of those levees within our system. Once we know how many levees we have, and where they are, then we can begin the assessment phase. We have half a dozen of these pilot studies to test the assessment risk method-

ology that we are going to use to assess the levees. We will be moving into that phase and we really have not yet begun doing the assessments, we are just doing the inventory at this point.

Mr. CARNAHAN. And are you looking at all levees, or just only Corps levees?

Mr. STOCKTON. We are looking at levees that are in our program. Those are the federally owned levees, they are levees that we have constructed and turned over to the local entities to operate and maintain, and we are looking for ones that have been constructed by non-Federal entities and have been brought into our Rehabilitation and Inspection Program. It does not include the universe of levees that have been constructed by local entities that are not in our program and are not in the National Flood Insurance Program. One of the reasons for doing the inventory is to figure out the size and magnitude of the problem, where all the levees are.

Mr. CARNAHAN. And what is the plan for looking at those levees that do not fit into that universe?

Mr. STOCKTON. Well, once we know where they are, once we do the inventory, we will have a better sense of how many there are, the extent, and locations.

Mr. CARNAHAN. Because one of my concerns also is about the lack of coordination among local levee districts. They often are very focused on their parochial needs of their own particular levee district. But there seems to be a real hodgepodge of communication between those various districts where one's failure or success could really impact the others along in their area of the river. Do you see a need for increased coordination among these districts, and do you have any recommendations on how to address that?

Mr. STOCKTON. Yes, sir. That was one of the key lessons learned coming out of our engineering forensics after Katrina. We did not have a truly integrated, comprehensive system. We had a collection of individual projects that were at different stages of completion, at different heights, and there were gaps between them. Part of that has to do with local responsibilities in each levee district. Each entity is responsible for their own funding, their own operations, their own maintenance, their own repair, and there is no integrated approach at the State level.

Now the solution in the case of New Orleans was to consolidate a lot of those individual levee boards into an east bank and west bank levee board, which gives you fewer levee entities to actually work with so you get more uniformity in policy, and construction, and operations, and maintenance.

Mr. CARNAHAN. Thank you. Thank you, Madam Chairman.

Ms. NORTON. Thank you very much, Mr. Carnahan.

I want to thank both of these witnesses again. Very helpful and informative testimony. Thank you.

Ms. NORTON. I invite the next witnesses to the table.

Mr. Larry Larson, Executive Director, Association of State Floodplain Managers; Warren Williams, Director, General Manager-Chief Engineer, National Association of Flood and Stormwater Management Agencies; Larry Roth, Deputy Executive Director, American Society of Civil Engineers; John Moyle, Manager, Dam Safety Section, New Jersey Department of Environmental Protection, Association of State Dam Safety Officials.

Mr. Larson, if you want to go first, you may proceed. I will ask the witnesses to keep their testimony within five minutes, if at all possible, recognizing that your full testimony will be entered into the record.

TESTIMONY OF LARRY LARSON, EXECUTIVE DIRECTOR, ASSOCIATION OF STATE FLOODPLAIN MANAGERS; WARREN D. "DUSTY" WILLIAMS, DIRECTOR, GENERAL MANAGER-CHIEF ENGINEER, NATIONAL ASSOCIATION OF FLOOD AND STORMWATER MANAGEMENT AGENCIES; LARRY ROTH, DEPUTY EXECUTIVE DIRECTOR, AMERICAN SOCIETY OF CIVIL ENGINEERS; JOHN MOYLE, MANAGER, DAM SAFETY SECTION, NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, ASSOCIATION OF STATE DAM SAFETY OFFICIALS

Mr. LARSON. Thank you, Chairwoman Norton. Thanks to both Subcommittees for holding this joint hearing on this important matter.

My name is Larry Larson. I have worked for 40 years at the local, State, and national level to reduce flood losses. I managed the levee safety and dam safety programs for the State of Wisconsin for 30 years. I am a registered professional engineer in California and Wisconsin.

We all know that levees can lead to catastrophic losses and that not just the levees in New Orleans that we saw in 2005. We have had a lot of discussion about levees elsewhere in the Nation today, including Sacramento where the levees are in far worse shape than they were in New Orleans prior to Katrina. We must have programs, policies, and institutions that can adequately handle these events and efficiently use taxpayer money and build a sustainable future.

One thing I would like my testimony to do today is to hopefully disabuse anyone of the notion that our current system of managing flood risk in this Nation is working. It is not. And we are not going to solve it by tweaking around the edges. And we are not going to solve it by throwing a bunch of money at it. We need an approach that is entirely different than our current model.

Our current model is the Federal top-down model, where locals, through the Congress, come up and ask for levees and dams, Congress provides the money, the Corps builds it, and then turns it over to the local sponsors for operation and maintenance; then things start to fall apart. We have no entity to oversee and continue to oversee those activities and ensure that levees and dams continue to be safe. The only way we are going to get there is to put the entity in charge of that activity that has the actual authority in the Constitution to do it, and that is the States.

Why are States and locals not doing more? Mainly because they think this is a Federal Government problem. They have gotten to that notion because of the 1936 Flood Control Act, the National Flood Insurance Program, the Disaster Relief Act, and now we are talking about the Dam Safety Act that has been around for 10 or 12 years. And as you just heard, FEMA is testifying that as local and state governments assume the Federal Government is doing something on dam safety, the State governments start to back

away from providing funding for dam safety. That is not a model that is working.

We need to put the States in charge and we need to do it in a way that has incentives and disincentives. The States have the ability to prevent future disasters. Under the Constitution, they are the only ones that have the ability to do things like land-use management, building codes, regulatory authority over levees and dams. The Federal Government does not have that authority, only the States have that. If we get them to do it and do it right, we are going to reduce Federal disaster costs, and that is what we are all seeking.

ASFPM has always urged the Nation to seek other alternatives than levees. Levees should be the option of last resort. And if we invest in levees at all at the Federal level, it ought to be levees that provide 500-year protection. As we discovered, 100-year protection is not doing it, and it will not do it especially where you have critical facilities like hospitals, police and fire stations, emergency shelters, water supply, all the rest of that. We need to change what we are doing and build only 500-year or higher levees with Federal dollars.

In terms of incentives and disincentives to get States and locals to act, we have always favored a sliding cost-share. States and locals that do more should get a better cost-share in Federal programs. Right now that is topsy-turvy—those that do the least get the most Federal money. We need to change that. The States and locals that spend money to reduce risk should be able to bank that money, for example, toward the non-Federal share of the next disaster:

Disincentives can be provided in Public Law 84-99 program, for example, needs to be properly administered so that it withholds support for those levees that are not properly operated and maintained.

The first steps in this program could be we suggest that you instruct the Corps to complete the national levee inventory. That is essential so that we know the size of the problem and the people and property at risk, and then to establish a National Levee Safety Committee that could design a program and provide it to you as a suggestion for subsequent legislation to set up the actual program itself.

We do not support use of the current dam safety model as the approach to use. We do not believe it has the appropriate teeth to ensure that dams have become safer in our Nation, you have seen the data on that, nor are States building up their dam safety programs. But we think there are approaches that can be used, and we are here to do what we can to help you support moving ahead in that respect. Thank you very much.

Ms. NORTON. Thank you very much, Mr. Larson. Mr. Williams.

Mr. WILLIAMS. Thank you, Madam Chairman. While I represent the flood control district of Riverside County, a rapidly urbanizing county in southern California, located about 50 miles east of Los Angeles, I am here appearing before you today also representing NAFSMA, the National Association of Flood and Stormwater Management Agencies.

NAFSMA is a national organization which represents more than 100 local and State flood control agencies across the Nation, serving a total of more than 76 million citizens. As a result, we have a strong interest in the issues the Committee is addressing today. We thank you for the opportunity to address this Committee.

Well before Hurricane Katrina, NAFSMA was concerned about the impact of levee safety on both the Corps of Engineers' flood management program and FEMA's Map Modernization Program. We commend both FEMA and the Corps for the commitment to tackle these difficult issues and for their efforts to work closely together to define and coordinate their messages to the local and State flood management agencies.

NAFSMA has strongly stressed the need for and supported the creation of a federally-funded national levee inventory program. Since this issue was first raised, the Corps and FEMA have made a great deal of progress in identifying deficient levees throughout the Country and have set up a process for certifying levees. While NAFSMA applauds the interagency efforts in this direction, we are concerned that the allotted time for correcting problems and achieving certification is insufficient and that there is a lack of resources available to accomplish this effort.

While initially the mandated compliance period seemed reasonable, early indications are they may not be. Different interpretations of guidance documents are already occurring, causing much confusion. Adequate funding resources are not available at the Federal level to carry out these certifications. And in some areas local governments and regional entities are concerned about where to get the necessary funds. And there is a mounting worry as to whether we will be able to find private engineering firms willing to sign the needed certification documents due to liability concerns.

It is clear that we need to move forward with a national levee Inventory and certification program, but it needs to be done in a thoughtful and pragmatic manner. The process needs to ensure both public safety and provide realistic expectations that can be met by the owners and operators of the levees.

To that end, NAFSMA strongly supports the establishment of a National Levee Safety Commission. This commission will be charged to report back to Congress on the need, potential structure, and possible Federal, State, and local funding resources that should be directed to this program. Federal representatives, as well as appropriate representatives from States and local and regional governments, as well as the engineering community, need to be involved in this effort.

Another issue I would like to bring to your attention is the need for streamlined permitting for maintenance activities of all flood control projects, including levees. Although maintenance issues such as addressing vegetation on levees and eliminating burrows within levees would seem simple at first, it is important to note it is often very difficult and time consuming to secure the necessary regulatory permits to carry out this work. These issues become even more difficult when the vegetation provides habitat for an endangered species or the burrowing animal happens to be endangered itself.

Many of our levees are in areas with numerous endangered species. In Riverside County alone, for example, there are 91 species with a status of either endangered, threatened, or proposed for listing. Our agencies have often been delayed in carrying out routine maintenance activities needed to keep their flood management system operating at optimal levels by their inability to obtain necessary Federal permits in a timely manner, if at all. Local and regional agencies have even been faced with one Federal agency telling them that a flood control facility must be cleared or any flood insurance claims will be subrogated against them while at the same time another Federal agency was preventing them from obtaining the necessary permits to do the work. Clearly, there must be a means to coordinate these conflicting concerns to meet the over-arching national and interstate responsibility of ensuring protection.

For existing flood control projects, we need to develop a mechanism to ensure the necessary regulatory permits will be provided for operation and maintenance in a timely manner, and that endangered habitat and species are protected and water quality regulations are met. For new federally-partnered projects, the needed regulatory permits need to be part of the original design and the maintenance manual. And in cases where emergencies exist or potentially could exist, streamlined permitting processes must be made available to local agencies.

The last issue I would like to speak to today is the need to continue adequate funding for FEMA's Map Modernization and mitigation programs. Although I have focused much of my testimony on the Corps' role in a national levee safety program, it is critical to note that accurate Flood Insurance Rate Maps are an essential part of national levee safety and flood risk management activities. To ensure that these maps are available to all levels of government as soon as possible, NAFSMA strongly supports continued adequate funding of FEMA's Map Modernization Program and its mitigation programs.

In closing, NAFSMA very much appreciates the opportunity to present our thoughts on these critical national issues to the Subcommittee for consideration. We stand ready to work with you on these important issues and would welcome your questions. Thank you.

Ms. NORTON. Thank you, Mr. Williams. Mr. Roth.

Mr. ROTH. Madam Chair, my name is Larry Roth. I am the Deputy Executive Director of the American Society of Civil Engineers. I am a licensed professional engineer and a licensed geotechnical engineer in the State of California. Before joining ASCE staff, I had 30 years of experience in water resources engineering, including dams, levees, and canals.

I am very pleased to appear here today to testify for ASCE in strong support of H.R. 1098, the Dam Rehabilitation and Repair Act of 2007, which would amend the National Dam Safety Program Act to provide critically needed funding for repairs to publicly owned dams across the United States.

ASCE also supports enactment of a national levee safety program modeled on the National Dam Safety Program. We believe that H.R. 1587, the National Levee Safety Program Act of 2007, in-

cludes all the necessary components for a vital nationwide levee safety program.

Like all man-made structures, dams deteriorate. Deferred maintenance accelerates deterioration and causes dams to be more susceptible to failure. As with other critical infrastructure, a significant investment is essential to maintain the benefits and assure safety.

In 2005, ASCE issued the latest in a series of assessments of the nation's infrastructure. Our 2005 Report Card for America's Infrastructure found that the number of unsafe dams in the United States increased by a stunning 33 percent between 1998 and 2005. There are now more than 3,300 unsafe dams nationwide. An alarming number.

The nation's dam safety officials estimate that it would cost more than $10 billion over the next 12 years to upgrade the physical condition of all critical non-Federal dams. The problem of hazardous dams is enormous. As the Congressional Research Service stated recently, unsafe dams represent a serious risk to public safety. The CRS study said: "While dam failures are infrequent, age, construction deficiencies, inadequate maintenance, and seismic or weather events contribute to the likelihood of failure." To reduce the risk, regular inspections are necessary to identify deficiencies and then corrective action must be taken.

Although catastrophic failures are rare, there were over 1,000 dam safety incidents, including 129 failures, between 1999 and 2006. The number of high hazard dams, dams whose failure would cause loss of human life, is increasing dramatically, largely because of downstream development. By 2005, the number of high hazard-potential dams totaled more than 11,000 across the Nation.

The National Dam Safety and Security Act of 2002 provides funding that has improved dam safety programs. Unfortunately, it does not provide financial assistance for needed repairs. According to the results of a study by the Association of State Dam Safety Officials, the total investment needed to bring U.S. dams into safety compliance or to remove obsolete dams tops $30 billion.

That is why the bill sponsored by Representatives John Salazar and Randy Kuhl, H.R. 1098, the Dam Rehabilitation and Repair Act of 2007, is so badly needed. The bill would provide a modest $200 million over five years for the repair, rehabilitation, or removal of non-Federal, high hazard publicly owned dams. ASCE strongly recommends that Federal legislation like H.R. 1098 be enacted to provide a funding source for the repair and rehabilitation of dams in the United States.

ASCE recently provided a detailed external review of the U.S. Army Corps of Engineer's performance evaluation of the New Orleans hurricane protection system during and following Hurricane Katrina. We have summarized our findings and a recommendation in this report, The New Orleans Hurricane Protection System: What Went Wrong and Why?, which will be released to the public on June 1.

One of our key recommendations is that Congress should enact legislation to establish a national levee safety program that is modeled on the successful National Dam Safety Program. ASCE strongly supports the enactment of Federal and State legislation to pro-

tect the health and welfare of citizens from the catastrophic effects of levee failure. A bill introduced by Representative Jean Schmidt of Ohio would satisfy virtually all of these important requirements.

Thank you, Madam Chairman. That concludes my statement. I would be pleased to answer any questions.

Ms. NORTON. Thank you, Mr. Roth. Mr. Moyle.

Mr. MOYLE. Good afternoon. My name is John Moyle. I am a licensed professional civil engineer with the New Jersey Department of Environmental Protection. I am responsible for New Jersey's dam safety program and flood control program. I am past president of the Association of State Dam Safety Officials and a member of the National Dam Safety Review Board under FEMA.

On behalf of the Association, I would like to thank Chairwoman Norton and the Members of the Subcommittee for having this hearing. The Association and I are very pleased to have been afforded the opportunity to provide testimony concerning the condition of the Nation's dams and the critical role of the Federal Government in the safety of dams.

The Association is a national nonprofit organization of more than 2,300 members including State, Federal, and local dam safety professionals dedicated to improving dam safety through research, education, and communication. The Association represents the dam safety programs of the States and our goal is to reduce the loss of lives by establishing strong dam safety programs.

The State dam safety programs regulate 86 percent of the 83,000 dams in the United States. Table 1 of our written testimony provides a breakdown per State. The States and these programs look to Congress and the Federal Government for their continued leadership and support toward strong dam safety programs. Dramatic incidents and dam failures in the United States have shown that impounding water is a hazardous activity.

While the National Dam Safety Program has greatly improved the safety of our Nation's dams, the safety of dams requires more attention from national policymakers. Events over the past few years illustrate the need. The years of 2005 and 2006 saw the levee failures in New Orleans, the emergency evacuation of the town of Taunton, Massachusetts, below the failing dam, the failure of the Taum Sauk Dam in Missouri, the fatal collapse of the Kaloko Dam in Hawaii where seven people lost their lives, the public outcry from the looming threat posed by the Wolf Creek Dam in Kentucky, and just three weeks ago in New Jersey during the nor'easter and Presidential Declaration, we had a State highway embankment fail which formed an earth dam for Rainbow Lake. These events have again brought focus to the vulnerability and potential consequences of deteriorating and unsafe dams.

The National Dam Safety Program exists today and is administered by FEMA. For ten years the program has provided valuable assistance to State dam safety programs, funding critical training for State engineers and providing technical research. Additionally, the program directs the Corps of Engineers to maintain a national inventory.

The modest increases authorized for the National Dam Safety Program last year have not been budgeted as part of FEMA's mitigation program. In fact, funding levels for the State Assistance

Grants have been creeping downward for the past five years. These grants need to be fully funded. I ask you to take a look at Table 2 where it shows the average State grant is approximately $50,000 per year. Should an increase in this budget occur, it will allow for the hiring of more dam safety inspectors, provide better emergency action planning, and encourage States to do more enforcement on unsafe structures. I also suggest that you look at Table 3 where the States have identified what additional measures could be implemented if there was additional funding into the program.

Dam safety, however, requires more than what the National Dam Safety Program provides. Inspections and education alone will not substantially improve dam safety. Reconstruction funding is needed for both public and privately owned dams. H.R. 1098, the proposed national dam rehabilitation funding program, is a great beginning to address publicly owned dams.

According to reports submitted by the 50 States, the number of deficient dams has risen by 80 percent since 1998. Also of concern is a dramatic nationwide increase in the number of high hazard-potential dams since 1998. The number of high hazard dams have increased by 28 percent. This increase is not due to the construction of new dams, but the increased development downstream of existing dams.

Dam repair costs throughout the United States is estimated by the Association to be over $30 billion. Table 4 shows potential funding assistance that each State could receive under H.R. 1098 to repair unsafe public dams. Currently, New Jersey has a low interest program to fund dam repairs and the Federal program would leverage these costs so that we could improve more critical dams in New Jersey.

Thank you again for your time and giving us this opportunity to discuss this important topic. The Association requests that the Subcommittee recognize the enormous value of our Nation's dams and the increasing concerns for public safety. We request your support for an increase in funding to continue the National Dam Safety Program, and for passage of H.R. 1098. We would also like to thank Congressman Salazar and Kuhl for their commitment and support through the introduction of H.R. 1098. The Association is grateful for the reauthorization which extended and increased funding, but we need to have a more aggressive management of this program and proper funding to achieve the results the people downstream below these dams expect. The Association also supports the establishment of a national levee program. Within our written testimony we outline seven principles for implementing an effective program.

Thank you. If you have any questions, I would be happy to answer.

Ms. NORTON. Thank you very much, Mr. Moyle.

Let me ask, actually all of you are qualified to answer this question, but it is the American Society of Civil Engineers that indicates that independent peer review should be required for every levee or significant modification of a levee system. Perhaps you heard me inquire about peer review, given some emerging criticism of the levees in and around New Orleans that is now developing.

Have any of you advised, given peer review, or know of peer review on any of the Gulf levees now under construction? Mr. Roth?

Mr. ROTH. No, ma'am. ASCE has not been involved in peer review of levees that are currently under construction. Of course, IPET, which Mr. Stockton referred to, the Interagency Performance Evaluation Task Force by the Corps of Engineers to identify the reasons for the behavior of the hurricane protection system in New Orleans, ended up providing results that are being incorporated into construction, and that IPET study was peer reviewed by ASCE. But we have not been involved directly in the peer review of construction documents for the repairs. I might add, Ms. Norton, our policy on peer review does not require peer review for every levee, just for levees that pose a significant risk to human health and safety.

Ms. NORTON. Well you would certainly categorize, or would you, the levees being constructed around New Orleans and the Gulf Coast as meeting that standard?

Mr. ROTH. Yes, ma'am.

Ms. NORTON. Are any of you aware of any peer review that is taking place of the construction of any of those levees? It is important for us to just understand what the profession understands to be the case. The fact is that I think you could discern from the responses of the Corps of Engineers representative that the problem did not seem to be that they would have chosen the particular reinforcement that is used, but it is a question of funding.

Some of us are very worried, particularly in light of global warming, the unpredictable nature of flooding generally today, and are worried particularly about a city that is under water, in any case below sea level, excuse me, and certainly was under water. Costs are a significant factor but it boggles the mind to imagine what we would all think of ourselves if there were a major storm.

I am very aware of the Corps and what it has gone through—the Corps is directly responsible for much of what was done in the District of Columbia for a hundred years because there was not any home rule here—and of the need to strike a balance. One wonders what the balance should be in a city, a major American city that provides oil to the United States of America, a major American city which was the major city before Katrina for providing revenue for the entire State.

One wonders how one should proceed, particularly given, let us face it, all kinds of cost considerations that we ourselves impose, particularly now that there is a new Congress submitting ourselves to what we call pay-go, something we have not had for the last dozen or so years. Very, very strict discipline, as it says, hey, anything you want to do you have to pay for. This is a most difficult process.

So I do not ask this except to find some objective way, now I am not sure all of you are objective either, some of you have a vested interest also, but maybe the National Academy of Sciences. Ultimately you get people from the profession in any case to tell you what the real deal is. But I do believe that somehow or the other Congress has to come to grips with what we are doing there and of what we are requiring of the court to do.

There was testimony I think from you, Mr. Larson, about the top-down notion. You were very clear that this just is not working, that the system we have in place is not working. That we give money to those that do not do as well. I do not know, I would have to take a look at them. They also may be the people, the States who are least able to do as well.

I have no idea whether they would have a good excuse or whether they are becoming, as some of you imply in your testimony, more dependent on the Federal Government. Hey, you need not. Under pay-go, all I can tell you is that you need not. We will be fortunate enough to do what we should do at the levels that are even now expected of us, which are nowhere near what they should be.

But there is State responsibility largely here. As I said in my opening statement, there is one State that does not have any system. Imagine that. I do not understand why Alabama does not, but it does tell you that States can go from very substantial levels of responsibility to none. But if there is a dam failure, everybody will look to FEMA. My Subcommittee has jurisdiction over FEMA.

So I really have two questions flowing from this. First, with responsibility largely in the States, which I assure you it will continue to be, this is a Federal system, we believe in federalism, but we also have the obligation to protect the taxpayers. Mr. Larson says, well, you ought to be paying more attention to the floodplain, implying less attention perhaps to the dam itself. I want to hear from him on that, number one.

Number two, in light of the fact that a dam giving away leaves us with a version of Katrina, with huge, huge impact on taxpayers, the question becomes, what is the response? How does the Federal Government, given the State system in place, carry out its responsibility to protect the taxpayers and to protect the citizens from the impact of dam failure? Would, for example, more rigorous Federal regulations help accomplish some of this purpose regarding safety perhaps?

So if you would take that two-part question. Those are essentially my questions and they are for any or all of you.

Mr. LARSON. I will start, Congresswoman. I think you have thrown out some real concerns that the Nation faces at how we are going to deal with this issue. Remember what the Corps of Engineers just testified to. In New Orleans, they now have a level of protection that was pre-Katrina and they have now determined that is about a 100-year level of protection. That means you have a one in four chance of that levee overtopping in a 30 year period.

Is that adequate protection for the City of New Orleans? I surely would not think it was. I would not live there, I guarantee you that. And I do not think that we should expect that we are going to protect highly urbanized areas with those levels of protection. But now there is a real problem. If that is not adequate, we need a 500-year level in New Orleans. What is the cost of that and how are we going to pay for it? Those are critical issues.

There are two basic concepts that ASFPM supports. One is, those people who live at risk should pay the cost of living at risk. Now we tend to spread the costs a lot in this Nation among those at risk. With more and more knowledge about where risk exists, we can help people make those kinds of decisions. But we are not

doing that. We are letting people build where they want to and then we are backing them up with Federal disaster relief and so on. We have got to reach a better balance on that.

Also, we have got to put the States' feet to the fire. They are the ones who have the authority. The Feds cannot go out and regulate dams and levees. They do not have land-use authority. You cannot pass a law that says the Corps of Engineers should go out and regulate these levees. They can have carrots and sticks in their programs to say if you do not do this you will not get this help and so on, but they cannot regulate. The States can do that. But we must get the States to the table in a shared program approach so that they accept the responsibilities and then provide them incentives and disincentives for doing that. And until we reach that point, we will continue to lose. Before Katrina, the average annual flood losses in this Nation were going up; they were four times bigger in 2000 than they were in 1900, in real dollars.

Ms. NORTON. Mr. Larson, we could say, for example, with respect to funds that we give, that there is some contingency in terms of regulations on safety.

Mr. LARSON. That is right.

Ms. NORTON. We certainly could say you are not going to get these funds unless a certain degree of national safety perhaps at a minimal level is met.

Mr. LARSON. Right. And the farther you go beyond that, the better cost-share you will have on Federal programs. So we can provide incentives and say here is the base, as you indicated, but we can even go beyond that if you do more than that.

Ms. NORTON. Mr. Williams?

Mr. WILLIAMS. Madam Chairman, I agree with most of what Mr. Larson said. I would add to it that it is the reason for the commission and our support of the commission. One size will not fit all. And to try to ascertain what all the answers to your questions are at this point, I think it is premature.

We have to identify what all the problems are. A case in point, the levees in New Orleans are not the same as the levees in California. The levees in California are not the same throughout the State. In your area, we have the Bay Delta area, in my area we have Palm Springs protected by levee. They are both levees, they both have the basic same function, but they are entirely different in the way they should be assessed and the way they should be maintained.

Ms. NORTON. Granted, Mr. Williams. But it is not rocket science. Now again, New Orleans is below sea level. How many cities are below sea level, particularly when the Nation is dependent upon them for a vital resource like oil? You could compare that, and I realize the difficulty, you are engineers, you do very fine computations all the time, but I am not sure why we do not have a data system that could tell us the difference.

There could be other areas below sea level but they might not have a vital resource, they might not be the center of the State's revenue. I do not understand why this would be—I understand why it is difficult for dummies like me, but for fellows like you who are used to rating things by data and mathematically, it does seem to me that would be possible.

Mr. WILLIAMS. I cannot disagree with anything you said, ma'am.

Ms. NORTON. Has anyone ever attempted to do such a measurement, saying, okay, here are all the criteria, now we are going to put in there the most significant areas of the United States where dam failure would occur, and then to chart then the criteria, I have named some of them, and say, okay, this is what we say, we are professionals, you know, we are not seeking funds from the Federal Government, this is where we come out. Would that be useful to our Country at this point?

Mr. WILLIAMS. I believe it would be and I believe we are at the beginning of developing that. Why it does not exist now, I could not answer other than it is such a diverse Country. But I think different areas have different levels of that inventory.

Ms. NORTON. Mr. Moyle wanted to respond right then.

Mr. MOYLE. I was going to respond to your question about looking at hazards associated with dams. One of the tools we use is we have emergency action plans and those plans develop those inundation areas downstream. We are working with the Department of Homeland Security to look at which are the most critical dams as far as what are the greatest impacts or consequences downstream. So it is a tool that we are beginning to start——

Ms. NORTON. What do you mean, critical dams?

Mr. MOYLE. Those that have the greatest consequences to population below the dam, other interdependencies down below that dam, whether it is a water treatment plant, it is a school, it is a hospital, you would take into consideration all those other impacts downstream and those dams would be the ones that need to be protected from a national security standpoint.

Ms. NORTON. I am also on the Homeland Security Committee. We had to pound the Homeland Security Department to do precisely that for terrorism. So now they have all these fine notions, they did not come out so well when they did the funding last year, and New York and the District of Columbia went through the ceiling, but they have these fine measurement risk consequences about how we ought to fund the terrorism grants. Now you see the way we were doing this, we were doing that on a kind of per-capita basis.

The fact is that every single jurisdiction is subject to some kind of natural disaster. We even had a flood here in the District of Columbia which is not exactly a floodplain. But when it came to a terrorist disaster, any layman could tell you where Al Queda is likely to be looking. So, first of all, we are a Federal Republic and so everybody wants a little piece of the pie. But then after Katrina, shame on everybody if we have anything approaching that again.

Mr. Roth, finally, did you want to give an answer? I will go on to Mrs. Schmidt after.

Mr. ROTH. I did, thank you. You pose some very difficult and thought-provoking questions regarding the future of New Orleans and its hurricane protection system. Ms. Norton, I would just like to draw your attention to our report which will actually be released to the public on June 1st. I would like to personally offer you a copy. It does have many answers I believe that will satisfy some of your concerns regarding New Orleans.

Ms. NORTON. Mr. Roth, do not think I did not notice that I had provided you from the last question a lead-in to indicate, what I must tell you I am very grateful for, your upcoming report, I want an autographed copy, if you would, What Went Wrong and Why, or words to that effect. But do you have anything—you see what I am looking for. I am looking for something comparable, what will go wrong and why if we do not prepare for the next flood, in effect.

Mr. ROTH. That is precisely our point. We try to make the point extremely well in here that the reason we face the situation that we faced in New Orleans following Katrina is that as a society, State and local government, Federal Government, we put safety, either unintentionally or intentionally, on the back burner. We simply cannot do that. Our levee systems, first and foremost, protect people. If we do not pay attention to them, we do not inspect them, we do not maintain them, they are going to fail, and when they fail they are going to take precious lives with them.

Katrina was an incredible wake-up call. That was said many times I think today or several times today. What was not said was we cannot hit the snooze button. We have got to pay attention to the lessons from Katrina and take action not only in New Orleans, but in California, in the Mississippi Valley, in Atlantic Coast where levees are protecting people.

Ms. NORTON. Thank you, Mr. Roth. I want to thank each of you on this panel. You advise is very valued for us because you are professionals.

I want to move to Mrs. Schmidt.

Mrs. SCHMIDT. Thank you, Madam Chairman. I have a couple of questions. The first one is for Mr. Williams. Sir, one of the critiques of my bill is level of funding is not adequate. How much money should be authorized to undertake my effort?

Mr. WILLIAMS. Thank you, ma'am, or no, thank you.

[Laughter.]

Mr. WILLIAMS. I do not know and I do not think anybody knows for sure. Our concern is both timeframe and money, that if we rush into this levee certification and levee inventory program too quickly, we will come out with a result that is not entirely adequate and what we are all looking for. The flip answer is, adequate funding to make the right report. I do not know what that is.

Our concern is mainly time right now, but resources certainly have to be there. That is why we recommend that the commission have the ability to look at what resources are available, not just in the Federal Government but in a cost-share manner from the locals and from the State. It is going to take all those resources together to really make this program worthwhile I believe.

Mrs. SCHMIDT. Thank you. I have two questions, depending upon the way Mr. Larson answers the first one, I may only have one. Mr. Larson, in your testimony you suggest States need financial incentives from the Federal Government to undertake levee safety programs. Some could say this means that States need financial incentives to provide for the health and welfare of their citizens. Why do we need to provide Federal financing incentives for States to do the right thing?

Mr. LARSON. Well, if we have the will at the Federal Government level to say you do not get any disaster relief from the Federal Gov-

ernment because flooding and public safety is not only the function, but the primary duty of State and local government, then we would not need incentives.

But I doubt that is going to happen. Politically, that is a very, very difficult thing to do, and you know that better than I do. But we now have a system where we have reliance on Federal backstops for disaster relief and the rest. So I do not think you are going to turn that around by just simply saying to the State and local government you ought to do this.

We tried that in a number of programs. In dam safety, for example, we tried that, but as you heard Mr. Maurstad say, the amount of money States are putting into their dam safety programs has actually decreased in the last ten years. So unless we turn that around I think with some sort of incentive or disincentive, it can work both ways, we are not going to get that shared responsibility that we are going to have to have that Mr. Williams talks about, that we do need to have that shared Federal/State/local approach to it. It cannot be Federal. We are not going to solve this problem at the Federal level.

Mrs. SCHMIDT. Thank you. In another part to your testimony you suggest that the Federal Government, including the Corps of Engineers, should not be performing the detailed engineering assessments for non-federal levees. Who should be responsible for these assessments, and why?

Mr. LARSON. The levee owners. We believe that the levee owners have—you have to remember that local communities requested levees. This was their option on how they choose to address flood risk in their community. And now we are providing communities, and we always have, with options about how we can assist you to do that. Some options communities are using now is to relocate populations out of risk areas, to elevate structures and do other things, but not to put structural measures in.

Structural measures have a long-term obligation not only at the local level where they have to operate and maintain those, but as we now see, even when they do not do that, who do they come back to? They come back to the Federal treasury to say, gee, we did not have enough money to operate and maintain, help us out.

So, it is our opinion that if you made that choice at the local level to build a structural measure, such as a levee, and you provided assurance that you were going to operate and maintain that levee, then you should do that. And part of that operation and maintenance is getting that levee certified and of assessing the adequacy of the levee, and providing that information to those of us at the Federal level who credit those kinds of structures.

Mrs. SCHMIDT. Thank you. Does anyone wish to add to that? Yes, sir?

Mr. MOYLE. Larry mentioned the National Dam Safety Program, which is an incentive program, and in that program you have to be able to have the State authority to inspect, enforce, and issue permits for dams, and that is the incentive. Currently, the levee program, I believe there are only 20 States that even have regulatory authority. So the incentive program may be to get those States to think more proactively about having a regulatory program oversight over levees.

Mrs. SCHMIDT. Thank you. Anybody else?

Mr. WILLIAMS. If I may add. I would agree with Mr. Larson in most cases, but there are cases, well, actually, a lot of cases where the levees were federally partnered in the construction. In such cases, NAFSMA would advocate that the Federal Government still be involved, on a cost-shared basis, of course, in the certification. They are the original levee constructors.

Mrs. SCHMIDT. Thank you. I do not have any other questions.

Ms. NORTON. Thank you very much, Mrs. Schmidt.

My own Ranking Member of the GSA Subcommittee, the FEMA Subcommittee is here. Mr. Graves, do you have any questions of this panel?

Mr. GRAVES. Thank you, Madam Chairman. I apologize for being late. I have actually been up close and personal to the levee issue the last two days. I live in northwest Missouri where we have gotten a lot of rain. And when I left this morning, on our farm the water was six feet deep.

But we had major breaks. Over Sunday, I was sandbagging to try to stop breaks in private levees, and we lost that fight, and then yesterday, Monday, we were sandbagging the Missouri levee down around St. Joe area. We are expecting the crest today sometime around, well, right about now, as a matter of fact. No loss of life, good news, just mostly property damage. But it is an issue we are dealing with both on public levees and private levees. And it is quite interesting that we have this hearing today in just being able to deal with it.

I do not have any questions at this point, Madam Chairman. I appreciate your having this hearing. I am going to read through the testimony. I would like my original statement to be submitted to the record, if that is possible. I very much appreciate your concern and your insight into this issue.

Ms. NORTON. Glad to receive your statement, Mr. Graves, particularly as a case in point, perhaps of a different order of magnitude, but I am not sure farmers in your area would consider it so. It does tell us the continuing issue this raises, Mr. Graves. Of course, as a farmer, you can imagine what it must mean. I certainly hope it is not at a time when crops have been spoiled and that that region of the farm was not underwater.

Every time I think, gentlemen, about the catastrophes we have seen, and you see it on television, perhaps it is because I studied history in college, I get new appreciation for early America, for 19th century America, for 20th century America for that matter, when I see what happened in I believe Kansas with a little town blown away. Just think about that. Before there was a FEMA, before the Federal Government took any responsibility for anything like this, which did not happen until around the time of the New Deal, and FEMA was created, when, in the 1970s.

I have in mind people leaving the East Coast and just going to the next part of the Country and being glad that they were expanding the frontier, then finding hurricanes of the kind they never experienced in the East, floods that wiped away whole, huge sets of Americans who came here seeking their fortune, went West seeking their fortune.

I do not know if we really appreciate without a reading of history, which too often centers on battles, on perhaps biography, and less often on what Americans suffered to build the great American economy and each and every great city. Whether you are talking about New York City or a small town in Kansas, if it occurred much before the 1970s, these areas were on their own. The loss of life was huge and largely unreported.

What we are trying to do now is bring all of these issues into a 21st century context, right as everything may be changing from under us as notions of global warming throw everything up in the air. Your professional understanding and expertise is ever so much more valued today, and your testimony is particularly important to the Committee.

Agencies come in, they are after all under the discipline of being a part of an Administration, whether it is Democratic or Republican. They are doing the best they can. You hear me asking about peer review, because Congress needs to step back and find some way to truly understand, consistent with cost, what we have to do, and when we have to do it, and how much time experts think we have to do it.

You have in coming today and offering candid testimony and new ideas helped us immeasurably as we seek what for us will be large answers to even larger questions. Again, thanks to each and every one of you for your testimony.

I thank the Members for attending.

This joint Subcommittee hearing is now adjourned.

[Whereupon, at 12:20 p.m., the Subcommittee was adjourned.]

Subcommittee on Water Resources and Environment
Subcommittee on Economic Development, Public Buildings and Emergency Management

Hearing on "National Levee Safety and Dam Safety Programs"
Tuesday, May 8, 2007

Statement – Congressman Jason Altmire (PA-04)

Thank you, Chairwoman Johnson and Chairwoman Norton, for holding today's joint hearing regarding the state of our nation's levees and dams.

Hurricane Katrina demonstrated to all of us the consequences of levee failure. I look forward to an update on the status of the levees in the New Orleans area from Director Stockton, U.S. Army Corps of Engineers, and hope that he will advise the committee on how the Corps is rebuilding and strengthening the levee infrastructure to ensure that it can sustain future hurricanes.

In addition to the levees in the Gulf Coast, there are an estimated 15,000 miles of levees in the U.S. It is critical that we properly assess their current state, identify high risk areas, and examine ways to improve the entire levee system.

Dams are also in dire need of repair and infrastructure improvements, particularly in my home state. The American Society of Civil Engineers estimates that there are 325 unsafe dams in Pennsylvania, which have deficiencies that leave them more susceptible to failure. In its annual report card, the nation's dam infrastructure received a "D."

The National Dam Safety Program, created in 1996, has increased the level of knowledge and preparedness of local and state stakeholders in order to prevent and mitigate the effects of dam failures. But with approximately 80,000 dams across the country, including 10,000 considered to have high-hazard potential, we can do more. I am glad that we are taking the time today to evaluate what federal programs are currently in place and how we can provide additional assistance.

Thank you again, Chairwoman Johnson and Chairwoman Norton, for your attention to these issues. I yield back the balance of my time.

# # #

STATEMENT OF THE HONORABLE RICHARD BAKER HEARING ON LEVEE SAFETY

- I would like to welcome everyone to our hearing today on levee safety and dam safety.

- I was very pleased that Representative Jean Schmidt of Ohio introduced H.R. 1587, the "National Levee Safety Program Act of 2007."

- We have seen in the Gulf Region what can happen when hurricane and flood protection infrastructure is inadequate or fails to perform.

- Yet more Americans are moving to coastal areas where the risk of hurricanes and floods is greatest.

- In the South Atlantic region, the coastal population grew 51 percent from 1980 to 2000 and it is expected to increase another 13 percent by 2008.

- Along the Gulf of Mexico, the population has increased 38 percent from 1980 to 2000 and is projected to grow an additional 12 percent by 2008.

- We do not know where the next hurricane or flood will hit. But we do know that many of our major cities, including parts of Washington, DC, have a greater probability of flooding than did New Orleans. For example, the city of Sacramento, California has almost twice as many people as New Orleans, yet it has less flood protection than any other major city in America. Cities like Houston, St. Louis, and Miami also are at risk. We cannot treat citizens of these cities differently unless we have a policy reason that we can explain and justify to our constituents.

- Often, we only first learn about the existence and condition of these other levees when one fails or is overwhelmed by a flood event. For instance, the State of California in 2006 declared a state of emergency in the Central Valley in anticipation of the failure of 24 levees. According to the State of California, it would cost $5 billion to make critical delta levees, but not all delta levees, stronger in the face of flood and seismic events in the Central Valley.

- In the past this Committee has taken steps to ensure that the nation's flood damage reduction

infrastructure is properly inventoried, inspected, and assessed.

- In 1986 the Congress authorized "the National Dam Safety Program Act" to conduct an inventory and assessments of all dams nationwide. This has been a successful program and we have modeled "the National Levee Safety Program Act" after that law.

  - The National Inventory of Dams shows that 45 percent of all Federal dams are at least 50 years old; and that 80 percent of them are at least 30 years old.

  - We know less about the status and capabilities of our levees. There has never been a national inventory of levees. Little is known about the current condition of both federal and non-federal levees, including whether these levees were designed to meet current conditions, and whether they have been properly maintained by the non-federal interest.

  - Over the decades, levees have been built by different entities, at different times, and to different standards. They have been linked

together to provide a protective system, but with such a mixture of conditions, the true level of protection may be in doubt.

- Over time, development has taken place behind some of these levees so that much more may be at risk in terms of lives and economic resources.

- There is so much that we do not know about the levees in America that we cannot be sure how safe our cities and towns really are. We need more information.

- That is why I applaud Mrs. Schmidt for introducing the "National Levee Safety Program Act," to develop an inventory of levees in the United States and work with the States to encourage the development of their own levee safety programs.

- We have worked closely with members on both sides of the aisle and the various groups to advance the goal of improving the infrastructure in the most cost-effective manner. We have received favorable feedback from diverse parties. The National Levee Safety Program Act

embraces innovative solutions for the inventory and subsequent assessments of these structures.

- H.R. 1587 includes provisions for the Army Corps of Engineers to conduct an inventory, inspections, and assessments of all levees nationwide. The bill also provides incentives for States and localities to participate in the program.

- In order to make the best investment of taxpayer dollars, we need to do an inventory, an inspection, and an assessment of levees across the United States. We need to know what they are protecting and what is the level of risk associated with these levees. This should help us prioritize future spending on flood protection.

- I hope that our witnesses today will help us understand the current condition of our hurricane and flood protection infrastructure and what it should look like in the future. I hope to hear some suggestions on how this good legislation can be made better. I look forward to an educational and enlightening hearing.

OPENING STATEMENT OF
THE HONORABLE RUSS CARNAHAN (M0-3)
WATER RESOURCES AND ENVIRONMENT SUBCOMMITTEE
TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
U.S. HOUSE OF REPRESENTATIVES

Hearing on
National Levee Safety and Dam Safety Programs

Tuesday, May 8, 2007, 10:00 AM
2167 Rayburn House Office Building

Chairwomen Johnson and Norton & Ranking Members Baker and Graves, I thank you for holding this important joint hearing on National Levee Safety and Dam Safety Programs.

I am very concerned about the lack of a nationwide inventory of the locations of all federal and non-federal levees and of their current condition. Levees protect human lives and agricultural, commercial, and residential property from flooding on our nation's treasured waterways. There is no excuse for the federal government's lack of understanding of the condition of every levee and, for that reason, I support the creation of a National Levee Safety Board. I would also like to express my opinion regarding the need of coordination among local levee districts. These levee districts are responsible for the maintenance of federal levees but often do not sufficiently coordinate with neighboring districts. Because floods on our major waterways can affect numerous levee districts, Congress must encourage these districts to better coordinate their efforts.

In addition, I am glad that this subcommittee is examining the important issue of dam safety. Over 30 years, Congress has maintained an active role in dam safety by providing

technical and financial assistance to state dam officials. However, more resources are necessary to continue to address the problem of unsafe dams. For that reason, I am a proud cosponsor of HR 1098, the Dam Rehabilitation and Repair Act, which was introduced by my good friend from Colorado, Mr. Salavar. In my home state of Missouri, we are keenly aware of the need for an increased focus on dam safety after the failure of the Taum Sauk Dam in 2005.

I look forward to our witness' testimony and again thank the Chairwomen and Ranking Members for holding this joint hearing.

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OPENING STATEMENT OF REP. STEVE COHEN

Transportation and Infrastructure Subcommittee on Highways and Transit

"National Levee Safety and Dam Safety Programs"

May 8, 2007

I am pleased to be here today to receive testimony from the U.S. Army Corps of Engineers, the Federal Emergency Management Agency and others today regarding the status of our nation's levee and dam safety programs.

The devastation brought on by Hurricane Katrina revealed the serious consequences of levee failure. This prompted the U.S. Army Corps to conduct a review, which identified 122 levees nationwide that are determined to have unacceptable maintenance. Subsequently, the Association of State Floodplain Managers and the National Association of Flood and Stormwater Management Agencies have issued joint recommendations for a national levee policy that seeks to deter a repeat of the disaster that occurred in New Orleans.

Similarly, we must work to ensure the safety of our nation's dams. There are 80,000 dams in the United States, approximately 10,000 of which could cause severe loss of life or property destruction in the event of failure. In 1996, Congress established the National Dam Safety Program as a partnership of state and local governments to encourage community responsibility for dam safety.

I look forward to hearing from our witnesses today regarding the effectiveness of current federal programs as well as what other initiatives may be necessary to improve preemption capability as well as our capacity to respond in the event of natural disasters.

STATEMENT OF
THE HONORABLE JERRY F. COSTELLO
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
HEARING ON THE NATIONAL LEVEE SAFETY AND DAM SAFETY PROGRAM
TUESDAY MAY 8, 2007

Thank you, Mr. Chairman, for holding today's hearing on the National Levee Safety and Dam Safety Program.

The last few years have shown us that proper maintenance and repair of our levees and dams are critical for protecting people and property.

In my congressional district, there are significant components of the Wood River Levee which are in need of repairs and improvements. The levee was built in the 1950s and its 26 miles of walls protect 13,700 acres of land in Alton, East Alton, Wood River, Roxana, South Roxana and Hartford against possible flooding from the Mississippi River. According to a corps study, a levee failure could cost more than $3 billion in economic and environmental damages. I continue to work with federal and local officials because the potential for a levee failure is a major problem that is growing more severe each day.

Another example near my district is the 10.9 mile levee protecting the City of St. Louis. The flood of 1993 proved too powerful for the levee protecting the city when water seeped under parts of the ten mile flood wall and further weakened the levee, demonstrating mistakes in the original design. Many have estimated that if the flood of 93 happened today there is over a 90 percent probability that some component would fail.

Mr. Chairman, because of the potential for failure in and around my district, I am interested in hearing from our witnesses their thoughts regarding levee and dam safety overall. Little is known about the current condition of our entire levee system and that needs to change so that we can make sound decisions when putting federal, state, and local money towards these projects.

I look forward to today's testimony.

Rep. Vernon J. Ehlers

Water Resources & Environment Subcommittee hearing
Levee and Dam Safety
May 8, 2007

Statement / Questions

I strongly support H.R. 389 and 1098, the Dam Rehabilitation and Repair Act, introduced by our colleagues Mr. Salazar and Mr. Kuhl. I have a community in my district that has been trying to get funding for dam removal for several years, to no avail. The crumbling dam was originally constructed in 1857 and no longer serves any useful purpose. It currently blocks fish passage on the Grand River, and its removal would restore the river to a free-flowing state and remove the threat of sudden breach.

In 2004, following a major flood and disaster declaration, the community of Lyons submitted a grant application to the State of Michigan under FEMA's Hazard Mitigation Grant Program. The state approved the project, but FEMA denied it. The Region V office in Chicago initially stated that there is no record of HMGP funds being approved for dam removal. I pointed out to them in a letter that in fact FEMA has approved a dam removal project with HMGP funds, in Marquette, Michigan in October 2003. It was part of a series of projects, including dam construction, silt removal, and streambank stabilization.

In its letter denying the appeal, Region V changed its tune slightly and stated that "FEMA has not yet evaluated dam removal projects to establish if this activity is eligible under FEMA mitigation regulations." FEMA also stated that the community did not adequately demonstrate imminent dam

failure and the threat of flood damage to other property downstream from the dam. The letter pointed to other federal programs that would be more appropriate, especially considering the potential ecological benefits and the. The problem is that those programs either (a) do not provide enough funding for the size and scope of this project or (b) do not quite fit the intended purpose or eligibility requirements of the program.

HMPG funds may be used to fund projects that will reduce or eliminate the losses from future disasters (e.g. floods), and the potential savings must be more than the cost of implementing. Examples include demolition or relocation of buildings, retrofitting structures to minimize damage, and localized flood control projects such as levee and floodwall construction. The funds cannot be duplicative of other available federal programs. It seems to me that dam removal could fit within those criteria.

Question: Is dam removal an eligible project under the Hazard Mitigation Grant Program? Does dam removal fit within the program parameters?

The community of Lyons typifies the experience of so many small communities in Michigan and across the country. The community has sought funding from every possible source, such as the U.S. Fish & Wildlife Service, the National Fish & Wildlife Foundation, as well as state funding. They have run into several hurdles, including the limited amount of funding available from those sources and the various eligibility requirements. I hope you can help to fund this project.

MAZIE K. HIRONO
2ND DISTRICT, HAWAI'I

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Opening Statement of Congresswoman Mazie K. Hirono of Hawaii
On National Levee Safety and Dam Safety Programs
Joint Hearing of the Subcommittee on Water Resources and the Environment
and the Subcommittee on Economic Development, Public Buildings,
and Emergency Management,
Committee on Transportation and Infrastructure

May 8, 2007

Mazie K. Hirono

Chairwoman Johnson and Chairwoman Norton,

I want to thank you for scheduling this very important hearing on National Levee Safety and Dam Safety. Like so much of our nation's aging infrastructure, unsafe dams and levees throughout the nation need our attention.

On March 14, 2006, Ka Loko Dam in Kilauea on the island of Kauai was breached after an unusually heavy period of 40 days of rainfall. The failure of the dam before dawn led to some 400 million gallons of water—1.6 million tons—crashing down from the reservoir and resulting in the deaths of seven people, including a young child and a woman who was 8 months pregnant. In addition to the tragic loss of life, the catastrophic failure has been an ecological disaster, with significant damage to streams, reefs, and coastal waters. In addition, significant Native Hawaiian archeological sites have been damaged. Moreover, the failure of the dam has been a major hardship for the farmers who relied on it for irrigation water.

Ka Loko Dam was not even categorized as a high-hazard dam, although it was categorized as a regulated dam and was supposed to be regularly inspected. Unfortunately, that didn't happen.

Ka Loko Dam, like the majority of old earthen dams in Hawaii, was constructed and maintained by many years by Hawaii's formerly strong sugar industry. The string of closures of sugar companies from the late 1970s to the 1990s meant that many of these old dams came to be owned by private owners who were ill-equipped to manage and maintain them. In many cases, as with Ka Loko, the dam was owned by one party, the irrigation ditches by another party, and the users of the water were a number of small farmers. The oversight formerly performed by the sugar company was simply nonexistent.

The tragedy at Ka Loko Dam focused the attention of the State of Hawaii on the need to assess the condition of the many old, earthen dams in the state. With the critically important assistance of the Army Corps of Engineers, all 136 regulated dams have now been inspected. However, the need for funds to repair, renovate, and in some cases demolish these dams is significant. This is why I have cosponsored our fellow committee member Representative John Salazar's bill, H.R. 1098, the Dam Rehabilitation and Repair Act of 2007, which provides federal funding to assist states to address urgent needs to repair dams that pose a significant threat to public safety.

I am hopeful that our committee will soon consider H.R. 1098, which provides much-needed assistance for our states in meeting this urgent safety challenge.

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Statement of Rep. Harry Mitchell
House Transportation and Infrastructure Committee
Subcommittee on Water Resources and Environment
5/8/07

--Thank you Madame Chairwoman.

--As you know, dam and levee safety is serious business...and it is also an expensive business...especially in the age of terrorism.

--In Arizona alone, the cost of rehabilitating our state's existing dams is estimated to be between $97 million and $242 million.

2

--But as expensive as it is to rehabilitate our vital dams and levees, the cost of failing to could be catastrophic.

--Nearly two years after Katrina, New Orleans is still struggling to recover from broken levees.

--Today we will hear testimony about programs that protect our nation's vital dams and levees.

3

--We will also consider what role the federal government should play in keeping these vital infrastructures safe.

--As we do, I hope we will resist the urge to send state and local governments any unfunded mandates.

--In this regard, I am particularly concerned about the way in which the Federal Emergency Management Agency ("FEMA") has been undertaking its flood hazard nationwide map modernization program.

4

--As part of the program, FEMA requires that key levees shown on its flood maps be certified and accredited to provide protection from a 100 year flood.

--This is an expensive process, yet no federal money has been budgeted for it.

--According to the Army Corps of Engineers, it will cost approximately $1 million to certify Arizona's levees.

5

--At present, however, all of this cost will be passed onto the individual communities in which these levees are situated.

--I believe we can do better.

--I look forward to hearing from today's witnesses, and yield back the balance of my time.

STATEMENT OF
THE HONORABLE JAMES L. OBERSTAR
MAY 8, 2007
National Levee Safety and Dam Safety Programs

I am pleased that today two of our Subcommittees, the subcommittee on Economic Development, Public Buildings, and Emergency Management and Subcommittee on Water Resources can jointly hold this important oversight hearing. This Committee has a long standing interest in the maintenance and safety of our nation's infrastructure.

The damage caused by Hurricane Katrina reinforced the importance of the safety of our Nation's water control infrastructure and the catastrophic consequences of the failure of that infrastructure in terms of the loss of human life as well as property damage. However other recent events including the failure in the Kaloko Dam in Kilauea, Kauai, in Hawaii a little more than a year ago resulting in the loss of several lives, point out the critical need for continued maintenance and safety programs for our nations dams and levees.

Today we will focus on two critical components of our nation's water control infrastructure, dams and levees.

Since the passage of the National Dam Safety Program Act in 1996, the program has improved the nation's dam safety. Dam inspections have increased significantly. There have been advances in the state-of-the-practice and user documentation; State training programs have been enhanced; research in the area of

improving dam safety has increased; and an information technology plan will be developed that will establish an information resource system to centralize national dam safety information. The Dam Safety Act of 2006, which was enacted last December, reauthorizes all of the programs established by the 1996 Act through 2011 and authorized an increase in funding.

Notwithstanding Congress' recent action, our committee intends to pursue a vigorous oversight of this program just as we are pursuing our oversight of FEMA as a whole. I look forward to hearing from today's witness as to how the dam safety program is working at the Federal, state and local level.

There has never been an inventory of the levees in this country. We lack an across-the-board sense of where levees are located, what condition they are in, or what resources are at risk if one should fail or be overtopped. Creating such an inventory of the structures, along with them and completing geotechnical assessments of them, will be lengthy and expensive. We must determine the ownership of the structure, its age, and the type of property the structure is protecting. Then we must determine a plan for how to secure dangerous levees and keep all levees in compliance with routine operation and maintenance requirements.

Hurricane Katrina is estimated to be the costliest and most deadly hurricane in our nation's history. Prior to 2005, the most costly hurricane to strike the U.S. was Hurricane Andrew, which made landfall in southern Florida in 1992 and was estimated to cost $25 billion in damages. NOAA estimates that Katrina wreaked

about $100 billion in damages. Most of these costs could be attributed to the flooding, and the resulting property damage, of large parts of New Orleans because of inadequate levees. A team of engineers studying the New Orleans flood protection after Katrina noted that, "New Orleans levees were built using standards developed when they were meant to protect farmland, not millions of people and their property."

Similar problems exist elsewhere in the country, including California. After several levee breaches last year during periods of high water, California did an assessment of levees. The State discovered 29 critical sites. In response, California then passed a $4.09 billion bond last fall to fund the repair and reconstruction of the dangerous levees. This response was quick and we hope effective in repairing California's levees and thus protecting its citizens.

I welcome our witnesses today and I am eager to hear their testimony on the status of this critical component of our Nation's infrastructure.

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Statement by Rep. Ellen Tauscher
Water Resources Subcommittee Hearing
May 7, 2007

Madam Chairman, thank you for holding this important hearing today. The issue of levee and damn stability cannot be underestimated and in California, the stability of our state's levees are of critical importance to the reliable delivery of water throughout the state.

Today, however, I'd like to use my time to address a matter that is of specific importance to a community in my district. The Walnut Creek Flood Control project was originally authorized by Congress in the late 1950's. Over many phases of work, starting in 1958, the Corps and the District constructed over 22 miles of channel improvements.

Each fall the Corps inspects all 22 miles of the constructed facilities in the Walnut Creek watershed. With a few exceptions the last inspection found the entire system to be in good working order. One item that has been a long standing concern is the amount of accumulated sediment in the lower reaches of the Walnut Creek channel.

In the early 1990's the Contra Costa Flood Control District (District) applied for regulatory permits to dredge the Lower Walnut Creek channel. The District pursued these permits for three years but due to the strong opposition from various agencies, the District withdrew its permit application. Instead of dredging, the District approached the Corps to conduct a general reevaluation of the project to address the regulatory issues and obstacles facing channel dredging and to develop a more sustainable channel system. The Corps agreed to conduct the *Lower Walnut Creek, California, General Reevaluation Study* and has been working with the District on it since 2002 to define this alternative project.

To date the reevaluation study has not been completed but the District and the Corps anticipate that the completed reevaluation study will identify a more sustainable channel that will provide the requisite flood protection, satisfy the desired environmental standards and meet the requirements for Federal funding.

In the long term, the District plans to address the deficiencies in the lower portion of the channel in accordance with the recommendations of the reevaluation study. To that end, the District has diligently supported the Corps' efforts on the General Reevaluation Study. In the short term, the District has implemented several desilting projects and will continue to take measures to reduce flood risk

As the Chairman has already stated, in 2006, the Army Corps of Engineers completed a national list of deficient levees. The Corps 2006 Annual Inspection of the Walnut Creek Project noted the accumulation of sediment in the lower channel that has reduced channel capacity. Based on this deficiency the Corps placed the Walnut Creek project on the national list of deficient levees.

Because the Walnut Creek project is on the list, the District has one year to correct the deficiency. This puts the District in a nearly impossible position. They have been working in good faith with the Corps for several years on the reevaluation study to avoid or reduce the amount of dredging, yet they may be forced to dredge due to the one year correction requirements. Yet, the Corps continues to oppose dredging.

I ask then, "If the Corps opposes the dredging necessary to eliminate the flood risk and thus won't issue a permit, but requires the district to correct the silting problem within one year, what is the district to do?" The District is caught in a Catch-22.

I believe the best option is to allow the District to continue to work with the Corps on completing the reevaluation study which can then be used to develop interim flood protection measures, that can be implemented locally, to minimize flood risks until a permanent Corps project is built. I believe this will be the most cost effective approach that does the least environmental damage and still provides flood protection until the ultimate project is built. However, this approach may take longer than one year to implement and the district will need the Corps to act in partnership to address the deficiency.

I am aware that the district has worked closely with the Sacramento Corps office with good results, but I am aware that actions taken in Sacramento must be approved by the Army Corps of Engineers Headquarters. I respectfully request today that the correct personnel in the Corps' headquarters engage in ensuring that the Sacramento District and the Contra Costa Flood Control District have the tools they need to move forward with this important project.

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TESTIMONY

Association of State Floodplain Managers, Inc.

before the House Committee on Transportation and Infrastructure

Subcommittee on Water Resources and Environment and the
Subcommittee on Economic Development, Public Safety and Emergency Management

National Levee & Dam Safety Programs

Presented by:

Larry Larson, P.E., CFM
Executive Director
May 8, 2007

INTRODUCTION

The catastrophic events of 2005 affecting most of the Gulf Coast and the increasing flood damage elsewhere in the nation are reminders to the nation that we are susceptible to natural hazards – especially flooding – and that we must have programs, policies, and institutions that can adequately handle these events, efficiently use taxpayer money, and build a more sustainable future. Nothing less than our nation's prosperity and viability are at stake. The Congress and these Subcommittees will be at the epicenter of this discussion, with an opportunity to make policy changes that can have importance and relevance far into the future.

The Association of State Floodplain Managers, Inc. (ASFPM), and its 26 Chapters represent over 10,000 state and local officials and other professionals who are engaged in all aspects of flood loss reduction and floodplain management and hazard mitigation, including management, mapping, engineering, planning, community development, hydrology, forecasting, emergency response, water resources projects, and insurance. Many of our members work with communities impacted by hurricanes Katrina, Rita, and Wilma or work with organizations that are assisting those communities in rebuilding. All ASFPM members are concerned with reducing our nation's flood-related losses. Our state and local officials are the federal government's partners in implementing programs and working to achieve effectiveness in meeting our shared objectives of reducing the suffering and costs associated with flooding. For more information on the Association, please visit http://www.floods.org.

ASFPM has been involved in numerous national policy dialogues with partner organizations in the past two years. These have included the Flood Risk Policy Summit involving 60 experts from many different groups such as homebuilders, realtors, lenders, environmental organizations, academia, and others. We co-sponsored this Summit with the National Association of Flood and Stormwater Management Agencies (NAFSMA), with strong support from the Corps of Engineers and FEMA. We also participated in the American Water Resources Association's National Water Policy Dialogue and held discussions with the leadership of numerous agencies, the White House and Congressional staff, researchers, and others. The overriding consensus of these discussions was that the nation must change our top-down national flood risk model to place a heavy emphasis on states, who must work with regional flood management authorities and communities to implement effective flood risk management approaches. This is especially true of levee safety.

ASFPM appreciates the leadership of these Subcommittees and the full Committee in addressing the critical issues of levee and dam safety. Katrina was a wake up call on the consequences of ignoring levee safety and

there are other situations in the nation with levees in far worse shape then those in New Orleans, with large segments of the population at risk behind those levees. We look forward to working with you to develop a more effective approach to flood risk reduction associated with levees and dams.

Thank you for inviting us to offer our recommendations on levee and dam safety. The following testimony addresses:

A. Changing how the nation manages flood risk—the federal/state/local partnership

B. The history of levees in the nation—how we got in this predicament

C. Consequences to a nation lacking a comprehensive approach to levee safety

D. The need for data showing where levees exist or the population at risk behind levees

E. Overarching suggestions for reducing future flood damages caused when levees fail

F. Measures to improve effectiveness of the policy nexus between USACE & FEMA programs

G. Providing technical assistance to communities and levee owners and sponsors

A. Changing how the Nation Manages Flood Risk-The Federal/State/Local Partnership

An overarching and critical issue to all our efforts is the understanding that we need to change the nation's top-down model of flood risk management. One concept that is receiving more and more support in these discussions is to design the system to have states become the focal point for managing flood risk. The logic behind this is that in order to more effectively manage and reduce flood risk, we must rely on authorities that are reserved to the states under our Constitution, namely land use management, building codes, and community planning for development, mitigation, and resource protection.

A number of principles necessary for improved flood risk management have emerged, which this testimony will address:

- Flood protection provided by levees is a double-edged sword, providing significant protection, but also leading to severe flood impacts when levees fail or are overtopped. Wise flood risk management must include use of a menu of floodplain management options and cross integration of those options.
- The nation is urgently in need of data showing where levees exist, their condition, and the population and critical infrastructure (hospitals, police, water supply plants, etc.) at risk behind those levees.

- An effective levee safety program must be developed, building off the land use authorities of the states. Incentives and disincentives for states must be incorporated to foster action.
- Integrated watershed planning for water resources projects is essential for effective flood risk management. To accomplish this, states must be encouraged to play an integral role through a system of incentives using cost-shares and discounts.
- The Army Corps of Engineers can play a key role in fostering watershed and "bottom up" project development by providing states and local jurisdictions with technical assistance and consensus building assistance.

Why aren't states and locals doing more to manage flood risk? It's simple, Congress and the Administration has told them flooding is the responsibility of the federal government. Not in so many words, but current policy actions reinforce this concept. For the past 70 years, starting with the 1936 Flood Control Act through the 1968 National Flood Insurance Program Act and its reforms, along with various versions of the Disaster Relief Act, those national programs and policies have led state legislatures, governors and local decision makers to believe that flooding is the problem of the federal government. Over the decades this has resulted in many states and locals putting little or no resources or effort into reducing flood risk, believing the federal government would bail them out after flood events. There are few incentives or disincentives for states and locals to take action on their responsibility to reduce flood risk.

What is the appropriate model to devolve flood risk and floodplain management programs to the states? Almost none of the current federal flood risk programs are delegated to the states, and that includes water resource development programs, dam safety, the NFIP, and flood mitigation. Many of these programs have some state involvement or some contractual arrangement with states, but do not delegate authority or decision making to the states. Few governors or legislatures are interested in those non-delegated approaches, and they continue to view such efforts as federal programs, with federal disaster assistance as a backdrop removing the need for state or local priorities or leadership. Models of programs that actually delegate authority for decision making and funding to states include the Clean Water Act and the federal highway programs. Under these models, the state works with federal programs to reach agreement on the state-specific goals of the program, then designs the state program to achieve those goals. The program is not delegated to a state until appropriate state laws and capabilities are in place. The federal program then has oversight and auditing functions to ensure the goals are being met, and can and does withhold federal funds if the state does not uphold its end of the agreement.

What incentives might be most effective? ASFPM has long advocated that federal programs use a sliding cost share to reward positive state and local actions. A sliding cost share could apply to disaster assistance payments, which might keep the 75 federal/25 state/local as a base, but the federal share could increase as states undertake more and more actions that will reduce their risk to flooding and other natural hazards. This is cost effective for the federal government since it reduces federal disaster assistance from many programs. The same sliding cost share approach could apply to water resources and flood mitigation projects. Another approach would be that when states invest in important flood risk activities such as flood mapping, that amount of money could be "banked" toward the non-federal share of the next disaster. In this way, state legislators and governors can see the benefit of a "pay now or pay later" scenario, and in the meantime their citizens are safer, suffer fewer flood losses and trauma, and future disasters are reduced. As a start, the sliding cost share could be linked to the Community Rating System (CRS) used in the National Flood Insurance Program (NFIP). The CRS program has a list of 18 activities a state or community can undertake that go beyond national minimum standards that will all further flood loss reduction. Points are given for each activity, and the number of total points determines how much incentive is given for discounted rates. Under this system, the federal, state, and local governments would be integrating their actions to reduce losses, and we will be rewarding those states and communities who do more, instead of the current system that provides more federal money to those states and communities who do less to reduce flood risk.

Disincentives are also important. The PL 84-99 program of the Corps of Engineers provides federal money to rebuild and repair levees that are damaged in a flood event. This is a tremendous back stop for levee owners, who can gain the "benefits" of having a levee, such as tax proceeds, increased development, etc., but who can externalize the costs of failure to the federal taxpayer. This becomes especially problematic when levee owners ignore proper operation and maintenance (O&M) making failure an expected event. The first thing that must happen is for the Corps to ensure local sponsors and levee owners are meeting proper O&M standards, and if not, removing them from the program. Secondly, to encourage state participation and oversight of an effective levee safety program, when some certain number or percentage of levees in a state are out of compliance, all levees in a state would not be eligible for the PL 84-99 program.

B. The History of Levees in the Nation—How we got in this predicament

Levees have existed in this nation since early times. Those early levees were simply mounds of dirt thrown up by farmers or property owners to prevent frequent flooding of their property or crops. Most of the population lived near rivers or the coast, since waterways were our highways and the rivers were our source

of water for human and livestock consumption. The federal government got into the levee business in an organized way when Congress asked the Corps to become involved in the levees in Sacramento in 1917. The Flood Control Act of 1936 provided authority for the Corps of Engineers to be the lead agency on Flood Control projects in the nation. That authority has been used extensively for structural projects such as levees, dams, and channelization, which modify our natural waterway systems to accommodate human needs. While the Corps has authority to also perform non-structural projects such as elevation or relocation of at-risk buildings, the vast majority of projects have been structural. The evolution of responsibility for flooding and its consequences that has focused on federal structural projects has led states and communities to view flooding as a federal problem, not a state and local problem. It is important that all federal legislation on levees and disaster assistance implement a levee safety and flood mitigation approach and establish a shared responsibility for damages when a levee fails.

Thousands of miles of levees have been constructed by the Corps, most with a non-federal sponsor that provides cost sharing for construction and accepts responsibility for operation and maintenance. The location of those levees is known to the Corps, although many of them may not be in a geo-spatial database. Many other levees have been constructed by communities or private individuals or levee groups. We know where some of these are, especially those who apply for and participate in the Corps PL 84-99 rehabilitation program. Many private levees were built to protect farmland from frequent flooding in order to improve the economics of cropping the land. Over time, development of homes or other building has taken place in that area which would be inundated if those levees overtop or fail. Many of the property owners behind those levees may not even be aware the levee "protecting" them is poor and likely to fail.

Levees have been built to various heights to contain storms of various frequencies. In the early years, levees may have been built to contain either the probable maximum flood, or the 500, or 200-year flood, etc. In the past few decades most levees have been "dumbed down" to only contain the 1% chance flood (100 year flood). That is an unintended consequence of combining the Corps' National Economic Development (NED) policies with FEMA's policy for the flood insurance where areas protected by the 100-year flood are not required to carry flood insurance or be subject to any land use regulations for protection from flooding. Mapping those residual risk areas and requiring flood insurance in them is essential. Levee standards for protection on urbanized areas and critical infrastructure like hospitals, emergency operation centers, and shelters must be protected to at least the 0.2% (500-year) flood event or in category 5 storm surge coastal areas.

C. Consequences to a Nation Lacking a Comprehensive Approach to Levee Safety

We do not know the population or amount of structures at risk behind levees that would suffer damages or loss of life when those levees overtop or fail. We have no data on the population behind most of the levees in the nation, let alone how many of those people would be able to evacuate in the event that levee or floodwall overtops or fails during a storm event. Damage data on the cost of the structures or the infrastructure in those levee or floodwall inundation areas is needed in order to asses the exposure of the disaster programs for both property damage and infrastructure.

What is the risk associated with each levee? ***Risk is determined by multiplying the probability of failure of the levee or floodwall times the consequences when that levee fails.*** Which of our levees is high risk, moderate risk or low risk? We need all these answers in order to proceed wisely.

Based on the data that a well designed levee inventory would produce, Congress can ask the National Levee Safety Committee to design and propose a levee safety program that would use a federal/state partnership to prioritize the nation's efforts to protect people and property. Without that data, the size of the problem and costs of future events like Katrina-Rita are not known. To start fixing the problem before we know the magnitude or cost does not seem to be an efficient use of taxpayer dollars.

D. The Need for Data Showing Where Levees Exist and the Population at Risk Behind Levees

Levees can be grouped in 4 categories:

1. Federally built and operated
2. Federally built and locally maintained
3. Locally built and locally maintained
4. Privately built and hopefully maintained

Information on Corp of Engineers constructed levees (category 1) is now being gathered in a geo-spatial database that can provide cumulative data such as miles of levee, condition of the levees, etc. This data did not previously exist, and this data for the other classes of levees is more problematic, with data on even the location of private levees being almost non-existent.

Data on the adequacy of the levee for (1) hydraulic capability (height to contain a certain level of storm) and (2) structural stability (is it geo-technically sound and structurally stable) is similar to the above. Data on the population at risk when the levee overtops or floods or the cost of the structures and infrastructure likely to be damaged is also not known to any reasonable extent. The concern is that, without this data, Congress, the agencies, the states and communities, and the public have no idea of the magnitude of the problem.

ASFPM surveyed the states to determine if states had an inventory of levees in their state. Only two states have a geospatial data base of their levees, and less than a dozen have even a listing of levees within their states. Other data indicates less than half of the states have implemented their authority to regulate levee design, construction, or maintenance of levees.

E. Overarching Suggestions for Reducing Future Flood Damages Caused when Levees Fail- Key Provisions of any National Levee Inventory and Safety Program

Some basic principles should be included in addressing the levee problem in the nation. Those include:

1. Congress should focus first on an inventory of levees so that we have enough data to determine the magnitude and potential solutions to the problem. The federal government (Corps of Engineers as lead) should develop the initial levee inventory in cooperation with the states, which must collaborate with local and regional entities in their state.

2. An initial bill could complete the inventory, establish a National Levee Safety Committee of federal and state agencies representatives, and otherwise direct the Corps of Engineers to perform assessments on federally owned levees. Subsequent legislation could then design a levee safety program based on the data and recommendations of the National Levee Safety Committee. We recommend you consider this approach.

3. Any long-term levee program must use the states as a focal point. States are the only entities that have the authority to regulate the design, construction, operation, and maintenance of levees. The federal government can encourage those things and offer incentives, but cannot mandate them. A state-administered national levee safety program is needed to protect the federal interest in public health, safety, and fiscal responsibility, as well as to protect public safety and costs related to all levees not in the federal system. Such a program must be fully integrated with state and local programs of flood risk management, especially floodplain management and dam safety, and should

use a state delegation model similar to that used to implement the Clean Water Act, rather than function as an independent program like the existing National Dam Safety Program. State capability in this area is critical and can be developed most effectively through federal legislation that provides incentives and disincentives for states to accept delegation for the development and implementation of effective state levee safety programs.

4. The Association of Dam Safety Officials estimates that the number of high-hazard dams has increased from 9,000 to almost 12,000 in the last 10 years---not because new dams were built, but because new development was allowed in the failure zones below dams. This illustrates the need for States to use their land use authority to oversee levee safety, or we will continue to create the same potential consequences.

5. The current National Dam Safety Program is doing some positive things in training, research, and the inventory; we urge continued funding of that program to provide for those needs.

6. Incentives must be built into the program to encourage states to undertake levee safety programs in conjunction with their regional and local governments. Monies states spend on effective levee safety programs will result in reduced federal tax spending for disaster relief. Thus, incentives could consider that some significant percentage of the appropriate state expenses could be banked against the non-federal share of future disaster costs in that state.

7. Federal and state policy groups and Boards, acting through the National Levee Safety Committee, must be charged with recommending appropriate levee standards for various levees in the nation. Those standards must be improved to require 500-year levees for protecting urban areas and critical infrastructure. This improves protection from the current 1% (100-year) standard generally used, which is inadequate for protecting highly urbanized areas or for critical infrastructure like hospitals, drinking water, fire stations, etc. Congress and the Administration should adopt a policy that the 500-year level of protection for levee design is the minimal standard for purposes of flood insurance, water resources projects, and other federal investment.

8. The local sponsor must demonstrate the financial and staffing capability to provide operation and maintenance for the life of the structure—before the project is approved, constructed, re-constructed, or recognized as providing a certain level of flood protection.

9. The federal government should not be performing detailed engineering analysis of levees or designing engineering remedies for non-federal levees. That is the function of levee owners and sponsors.

10. The levee inventory and any follow up assessment and levee safety program must be clearly coordinated with related mitigation programs of the Corps of Engineers and other federal agencies such as FEMA, NRCS, Bureau of Reclamation, etc., and especially with the flood mapping programs of FEMA. Additionally, this program must be done in collaboration with state programs, which in turn must involve regional and local related programs.

11. Guidance must be developed that establishes criteria and definitions for high, moderate, and low risk levees in order to set priorities for the assessment and future mitigation actions.

12. ASFPM finds that future flood losses can be reduced if levees are never used to protect undeveloped land. Levees may be a viable last resort option for mitigating damages to existing urbanized areas if properly designed, constructed, operated, and maintained, but only if proper warning and evacuation procedures can assure protection of lives for those living at risk behind those levees.

F. Measures to Improve Effectiveness of the Policy Nexus between Corps of Engineers and FEMA programs

There are a number of places where policies of the Corps and FEMA intersect. As explained above in the discussion of levee risk, sometimes those policy nexuses result in unintended negative consequences. In addition to those mentioned above, the following suggestions come from the Flood Risk Policy Summit this past December involving many experts representing various interests:

- **Public safety must become a default standard in determining the design of and priorities for flood mitigation projects above and beyond the benefit/cost analysis and any other objectives in the NED or Principles and Guidelines.** For example, an NED analysis might suggest that the optimal project is a 100-year structure. We know that there is better than a 1 in 4 chance, that over 30 years, this project design will be met or exceeded. If exceeded or if it fails, in the case of a levee, it can occur with little warning, destroying property and trapping people. Injury and loss of life potentials are high; people's lives are forever altered. This scenario, while hauntingly reminiscent of New Orleans, will be played out in other communities. We cannot in good conscious be designing and building flood mitigation projects with federal tax dollars that result in (avoidable) loss of life.

- **Levees must be designed to protect urban areas and critical infrastructure to the 500-year flood in order to gain federal support or investment.**
- **Federal monies should not place people and structures at risk, nor contribute to the increased flood risk of other structures and people.** Many agencies will spend billions of taxpayer's dollars in our efforts to rebuild the Gulf coast. This includes the Corps of Engineers, FEMA, HUD, EDA, EPA, and DOT. It is imperative those agencies do not increase flood risk, or cause flood risk to be transferred to others through their actions. Federal Executive Order #11988 directs all federal agencies to analyze their actions to avoid increasing flood risk as they assist to build, finance, or provide technical assistance. We urge these Subcommittees to condition each program authorization on compliance with this Executive Order.
- **Operation and Maintenance of flood control structures must be ensured through strong federal and state oversight.** No federal assistance for flood control structures should be provided without upfront assurance of financial capability for ongoing O&M of the structure.
- **The O&M requirements of the PL 84-99 program must be tied to the criteria for certifying levees under FEMA's flood mapping program.**
- **Identify residual flood risk structures and lands that will be flooded when levees fail or overtop and require flood insurance for structures in those areas.**
- **Emergency action plans (EAPs) that address flood warning and evacuation should be required for all residual risk areas behind levees in order to protect lives and minimize property damage. These plans, and the periodic exercise of them, should be a requirement of any federal or state program that recognizes the levee as providing protection.**
- **Integrate planning and program requirements for flood mitigation and water resource planning and projects between the two agencies, using holistic, watershed approaches.**
- **Require a level of protection commensurate with the risk for the Corps and FEMA programs that map and manage flood risk, especially for flood control structures where the consequence of failure is catastrophic.**
- **Flood control structures should not be built with federal dollars in communities which do not join the National Flood Insurance Program, nor should those communities be eligible for federal disaster assistance for damage to public infrastructure.**
- **Levees should be considered an option of last resort and used only to protect existing communities.** Levees should not be used to protect undeveloped land with the speculation new development will be placed at risk behind those levees.

G. Providing technical assistance to communities and levee owners and sponsors

Communities and local levee owners often need technical assistance (not detailed engineering work) when levees are being mapped or found to be in non-compliance with O&M standards. At these times, those local communities or sponsors need technical assistance from either FEMA or the Corps of Engineers to explore their options and determine how to go about assessing their alternatives. Assistance from the Corps is a logical alternative, and appropriate authority seems to already exist, albeit very poorly funded.

Two relatively small programs of the Corps of Engineers Civil Works Program have nationwide benefits – these are the Floodplain Management Services Program (FPMS) and Planning Assistance to States Program (PAS). The 2007 budget request for these programs is $5.6 million and $4.5 million respectively. The FPMS and PAS programs provide support and the ability of Corps staff to travel to and assist those communities. However, proposed funding levels will not even meet current needs expressed by states and communities for technical assistance from the Corps. Sadly, they fall far short of the authorized level for these programs and will not allow the Corps to apply them in appropriate and innovative ways to assist with levee problems throughout the nation.

ASFPM urges these Subcommittees to strongly support the following:

►► **ASFPM urges the Committees to support the fully authorized funding of the FPMS program to $15 million in FY 08, and to consider a substantial increase in the annual authorization ceiling for this program to at least $50 million in the upcoming WRDA.**

►► **ASFPM urges the Committees to direct the Corps to explore how it can utilize the FPMS program to assist communities and states to evaluate existing levee certification and maintenance options to safely provide protection to a specific flood level. Additionally, the Corps should be encouraged to work closely with FEMA to utilize this information to help develop more accurate flood maps for the nation that reflect the location and safety level of existing levees.**

►► **ASFPM urges the Committee to support full funding of PAS at its authorized level of $10 million and also to consider an increase in this program's annual authorization ceiling to at least $30 million.**

CONCLUSION

The ASFPM has a mission to reduce the costs of flood damages in the nation, which prior to the 2004 and 2005 hurricane seasons exceeded $6 billion/year. Today, we once again stand at a crossroads – in the aftermath of a catastrophic flood disaster with an opportunity to refine our nation's policy for managing flood hazards. Thank you for the opportunity to provide our thoughts on these important issues. The ASFPM and its members look forward to working with you as we move towards a common goal of reducing flood losses. ASFPM has a white paper on the national policy challenges of levees. It can be viewed at:

http://www.floods.org/PDF/ASFPM_Levee_Policy_Challenges_White_Paper.pdf

For more information, please contact:

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Statement of David I. Maurstad
Assistant Administrator, Mitigation

Federal Emergency Management Agency
Department of Homeland Security

Presented Before the

House Transportation and Infrastructure Committee
Subcommittee on Economic Development, Public Buildings, and Emergency Management
Subcommittee on Water Resources and Environment

May 8, 2007

Good Morning Chairman Norton, Ranking Member Graves, Chairman Johnson, Ranking Member Duncan and members of the Subcommittees. My name is David Maurstad. I am the Assistant Administrator for Mitigation in the Department of Homeland Security's (DHS's) Federal Emergency Management Agency (FEMA). I am honored to appear before you today to discuss FEMA's National Dam Safety Program (NDSP) and the Agency's policies as they relate to levees and areas of residual risk.

The December 22, 2006 reauthorization of the National Dam Safety Program will greatly benefit the States and enable the Program to continue effectively addressing the risks associated with more than 79,500 dams across the Nation.

Through grants, training support, research, data collection, and other activities, the Program provides a much needed impetus for the continued safeguarding and protection of people, property, and the dams themselves.

THE ROLE OF THE NATIONAL DAM SAFETY PROGRAM

The National Dam Safety Program, which was formally established by Section 215 of the Water Resources and Development Act of 1996 (Public Law 104-303), provides critical support for the operation, maintenance, and improvement of our Nation's dams. The Dam Safety Act of 2006 (Public Law 109-460), which reauthorizes the National Dam Safety Program through Fiscal Year 2011, continues all of the programs established by the 1996 Act.

The NDSP's primary purpose is to provide the States the financial resources they need to strengthen their dam safety programs. The Program supports activities such as: grant assistance to States; State dam safety program improvements; training for State dam safety staff and inspectors; and a technical and archival research program that develops dam safety monitoring devices. The Program also facilitates information exchange between Federal and State dam safety partners through the National Dam Safety Review Board and the Interagency Committee on Dam Safety (ICODS), both of which are chaired by FEMA.

State Dam Safety

According to the 2004-2005 National Dam Safety Biennial Report to Congress, there are

approximately 79,500 dams in the United States. The states regulate approximately 95 percent of these.

From FY 2004 through 2007, FEMA distributed a total of approximately $12.9 million in grant assistance to 49 participating states and Puerto Rico for dam safety.

In 2005, Delaware joined the Program after passing legislation to establish a State dam safety program. The only State not currently participating in the Program is Alabama, which is currently developing the legislation needed to participate in the Program.

Thanks to the recent reauthorization, the National Dam Safety Program continues to improve. Using the Program's 1998 Review Board performance criteria, the NDSP captures information on (1) the state-regulated "high-and significant-hazard potential" dams with Emergency Action Plans (EAPs); (2) the number of dam inspections each State conducts annually; and (3) the dams each State has identified as needing remediation.

NDSP data indicates that since 1998, the number of EAP's for state-regulated "high-and significant-hazard potential" dams has increased about 50 percent, from 4,000 to approximately 8,000 dams. Today, about 42 percent of all state-regulated high-and significant-hazard potential dams have an Emergency Action Plan. In fact, Alaska, Kansas, Nevada, New Jersey, Utah, Vermont, Washington and Puerto Rico have reported significant increases in EAP activity. Finally, the Program is seeing increased emphasis on basin-wide EAP exercises – Federal-State collaborations that efficiently use the time and resources of dam safety and emergency response personnel.

State dam inspections have also increased. Since NDSP started collecting such data in 1998-1999, total inspections have increased from approximately 13,000 inspections to approximately 15,000 inspections annually. This increase is impressive considering that State dam safety budgets have been declining. According to the most recent Association of State Dam Safety Officials (ASDSO) information, State dam safety budgets have decreased by 12 percent over the past two years, from a total of approximately $33 million in 2003 to approximately $29 million in 2004.

Although relatively small, National Dam Safety Program support is crucial because of the significant number of dams that are considered unsafe – dams with identified deficiencies that make them more susceptible to failure triggered by a storm event, earthquake, or inadequate maintenance. In the American Society of Civil Engineers (ASCE) 2005 Report Card for America's Infrastructure, dams received a grade of D. Additionally it has been noted that there are 3,500 dams in the United States which have deficiencies that leave them highly susceptible to failure. In the National Inventory of Dams, more than 11,000 U.S. dams are classified as high-hazard potential, meaning that the consequences of the dam's failure would likely result in loss of human life. Finally, the NDSP reauthorization will play an important role in the Program's efforts to develop tools and technologies that will help identify and prioritize the risks associated with the State-regulated high-and significant-hazard potential dams and the Nation's aging dam infrastructure.

Research

NDSP research funding addresses a cross-section of issues and needs, all in support of making U.S. dams safer. To guide funding decisions for specific research projects, the National Dam Safety Review Board developed a 5-year Strategic Plan, which ensures that priority is given to research projects that (a) demonstrate a high degree of collaboration and expertise; and (b) will

yield products that will contribute to dam safety in the United States.

From a National Security standpoint, the Department of Homeland Security (DHS) is integrating the Review Board's Strategic Plan with the Dam Security Research Plan, which was developed for the Dam Sector Annex to the National Infrastructure Protection Plan.

Training
Since the National Dam Safety Program's inception, FEMA has supported a strong, collaborative training program for dam safety professionals and dam owners. Training funds have enabled FEMA to expand training programs, start initiatives to keep pace with evolving technology, and enhance information exchange.

Available at the National, Regional, Local, and even individual "self-paced" levels, NDSP training includes: National Dam Safety Program Technical Workshops on hydrologic deficiencies and potential failure mode analysis and monitoring; the ASDSO Regional Technical Seminars; state training assistance funds; hydrologic modeling system and river analysis system workshops at FEMA's Emergency Management Institute, and the Training Aids for Dam Safety Program.

NDSP is also coordinating with the U.S. Army Corps of Engineers to make training materials available on the Corps' Learning Network website at http://usaceln.org/technical, which gives these informative products broad exposure and distribution.

Information Technology
Technology provides critical tools for the National Dam Safety Program's mission, since an important NDSP objective is to identify, develop, and enhance technology-based tools that can educate the public and help decision-makers.

Important initiatives such as The National Inventory of Dams, the National Performance of Dams Program, and the Dam Safety Program Management Tools system all receive Program funding allowing them to collect invaluable data on dam status, dam incidents, and dam safety. In turn, this information helps National Dam Safety Program partners effectively document failure modes and identify critical research and training needs.

Federal Programs
Although the Federal Government owns or regulates only about five percent of the dams in the United States, many of these facilities are significant in terms of size, function, public benefit, and hazard potential. Since the implementation of the Federal Guidelines for Dam Safety, the Federal agencies responsible for these dams have made significant strides in ensuring the safety of dams within their jurisdictions.

All of the federal agencies responsible for dams have implemented the Federal Guidelines. Many of the agencies maintain comprehensive training programs as well as research and development programs, and have even incorporated security considerations into these efforts to protect their dams against terrorist threats.

In addition, Federal-State cooperation and coordination has increased in many areas, such as emergency action planning, inspection, research and development, training, and information exchange.

Dam Security
Dam safety and dam security are complementary programs, and collaboration between dam sector stakeholders certainly will continue. For example, FEMA coordinates with the DHS Risk Management Division, the Sector Specific Agency for the Dam Sector. We fully support and will participate in the framework established by the National Infrastructure Protection Plan, including the Government Coordinating Council (GCC) and the Sector Coordinating Council (SCC), and the GCC Workgroups.

There is significant cross-representation of the federal and state professionals involved in dam safety and dam security. These professionals serve on the DHS-chaired groups, as well as the FEMA-NDSP chaired groups, including the National Dam Safety Review Board and the Interagency Committee on Dam Safety. FEMA's continued participation on the GCC and in support of the Sector Coordinating Council, will facilitate the ability of both groups to address critical issues of common concern.

CHALLENGES
Despite the National Dam Safety Program's achievements, there continue to be challenges for the dam safety community.

Aging of America's Dams
The aging of U.S. dams continues to be a critical issue. The American Society of Civil Engineers (ASCE) 2005 Report Card for America's Infrastructure indicates that that the number of deficient dams in the United States has gone up by more than 33 percent since 1998, to more than 3,500. These statistics reflect the crux of one of dam safety's most important issues: the aging of the Nation's water control infrastructure and developing a coping strategy in an era of diminishing resources. The *Report Card* states that while federally owned dams are in good condition – and there have been modest gains in repair – the number of dams identified as deficient is increasing at a faster rate than the dams being repaired. It is estimated that as of 2002, 85 percent of dams across the United States were 50 years or older.

The dam safety community is working on a number of options to remediate dam deficiencies, including model loan programs for the repair of dams, dam removal projects, and rehabilitation programs. Some progress is being made through the repair of small watershed dams constructed with assistance from the U.S. Department of Agriculture. Although the Dam Safety Act of 2006 states that funds provided to the states cannot be used for the construction or rehabilitation of dams, the National Dam Safety Program intends to track data on the identification and remediation of high-hazard potential deficient dams so the information can be used as an indicator of overall progress.

Identification and Classification of Dams
Another long-standing issue relates to dam identification and classification. There are a number of unregulated dams, incorrectly classified dams, and dams whose classifications have changed over time – particularly in light of downstream population increases. Moreover, hazard classification alone does not give a clear picture of the risk of failure. Such a classification is independent of the dam's condition and only represents potential consequences in terms of loss of life and downstream property damage. Several federal agencies are strengthening their focus on developing risk analysis methods and effectively incorporating risk analysis into evaluation and decision-making processes.

Tracking inspection data should provide valuable information to help identify those dams in the United States that are in need of remediation.

Emergency Action Planning
Emergency Action Planning also continues to be a critically important dam safety and security issue. First Responders use Emergency Action Plans as their primary tool to warn and evacuate vulnerable populations below the dams. The Emergency Action Planning Program, established by the Federal Energy Regulatory Commission, incorporates all of the procedures and products needed for implementing and exercising EAP's among all sectors.

Participation of all States in the National Dam Safety Program
As mentioned above, Alabama is the only state not participating in the National Dam Safety Program, and an important NDSP objective is to bring the State on board soon, making United States NDSP participation complete.

Mapping Areas of Residual Risk – Levees
Finally, a primary challenge FEMA is facing is how to depict areas of residual risk – areas situated behind levees – on the Agency's Flood Insurance Rate Maps (FIRMs).

These maps, which are currently being updated through FEMA's Map Modernization Program, are important community planning tools that depict flood risk levels and enable FEMA's National Flood Insurance Program (NFIP) to set fair and affordable rates.

As Map Modernization converts paper FIRM panels into digitized floodmaps, accurately depicting "levee-protected areas" has become a critical matter. Some FIRM panels may depict levees that have never been evaluated for compliance with Section 65.10 criteria – ***"Mapping Areas Protected by Levee Systems,"*** yet the Map Modernization program does not include the authority for FEMA to conduct levee evaluations since FEMA does not own any levees.

- In the case of private levees, it is the responsibility of the levee owner, with appropriate oversight from State and local government officials, to provide documentation that the levee complies with regulatory requirements.
- In the case of Federally owned levees, it is the responsibility of the Federal owner agency.

Map Modernization is a catalyst in FEMA's effort to accurately depict levee systems and the areas situated behind them; however, the Program continues to operate in an environment where levee-protection levels in many areas are not identified, recognized, and understood.

If FEMA, the NFIP, and our floodplain management partnership do not address this important matter expeditiously and wisely, the production of modernized maps – maps that accurately reflect flood risk in areas behind levees – could be significantly delayed.

Of course, we must balance this concern with the need to provide levee owners enough time to evaluate levees and to submit required data to appropriate authorities.

That said, FEMA is doing all it can to make sure that the risks in communities with levees are properly documented and communicated, and that areas behind decertified or failed levees are mapped in a manner that clearly identifies risk to life and property.

Finally, to effectively prioritize and address issues of concern, we believe that a comprehensive, geospatially based, National levee inventory system and database should be developed, monitored, and maintained. FEMA is encouraged by the Corps of Engineers initiative to develop a National Levee Inventory. Such an effort will serve as a foundation for levee-related decision-

making at all governmental levels, and the Agency looks forward to continuing to support the Corps in this effort.

FEMA and the Corps are now working closer than ever – meeting regularly to address the flood risk and flood insurance implications of levee certification. Most important, these meetings are not just occurring in Washington between headquarters leadership and staff, but across the Nation, in the field, at the FEMA Regional and Corps District Offices.

Finally, it is important for policymakers, as well as the public, to clearly understand FEMA's role within the levee arena:

- FEMA establishes appropriate risk zone determinations and reflects these determinations on the NFIP flood maps.
- We do not design, operate, certify, or maintain levee systems.
- We do not examine levees.
- We do not determine how a structure or system will perform in a flood event.
- We establish mapping standards, and we rely on others to provide the information we need to clearly represent the flood risks of areas behind levees.

Conclusion

Although the National Dam Safety Program is a relatively small program, it has helped significantly to encourage appropriate actions that address the risks associated with the Nation's more than 79,500 dams. Through grants, training support, research, data collection, and other activities, the Program provides for the ongoing safeguarding and protection of people, property, and the dams themselves.

Regarding the accurate mapping of areas behind levees and other areas of residual risk, FEMA and the NFIP will continue to work with the Corps and other Federal and State entities to make sure that the people living and working in high risk areas are aware of the risks they face and that they understand that they can purchase flood insurance as a financial safety net.

Thank you for the opportunity to testify before you today, and I will be pleased to any questions that Members may have.

MOYLE

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Testimony of the
ASSOCIATION OF STATE DAM SAFETY OFFICIALS
for the
Joint Hearing of Subcommittees on Economic Development, Public Buildings, and Emergency Management
and
Subcommittee on Water Resources and Environment
Committee on Transportation and Infrastructure
U.S. House of Representatives
May 8, 2007

Dear Chairwoman Norton, Chairwoman Johnson and Members of the Subcommittees:

The Association of State Dam Safety Officials (ASDSO) is pleased to offer this testimony concerning the safety of the nation's dams and levees and the critical role that the federal government has in mitigating the disasters caused by unsafe dams and levees.

ASDSO is a national non-profit organization of more than 2,400 state, federal and local dam safety professionals and private sector individuals dedicated to improving dam safety through research, education and communications. We represent the dam safety programs of the states and our goal simply is to save lives, prevent damage to property and to maintain the benefits of dams by preventing dam failures. ASDSO focuses its attention on improving dam safety yet has become interested in the topic of levee safety because levees, ideally, are designed similarly to dams and act as flood control structures much the same way many dams do.

Dams and levees are a critical part of the nation's infrastructure and provide vital benefits such as flood protection, water supply, hydropower, irrigation and recreation. Yet these dams and levees have the potential for failure and tragic consequences. As downstream development of dams increases and dams continue to age and deteriorate, they demand greater attention and investment to assure their safety. Levee safety, although years behind the national effort for dams, demands the same level of attention and investment.

The state dam safety programs regulate 86% percent of the 83,000 dams on the National Inventory of Dams. With the exception of Alabama, all states, plus Puerto Rico, have in place regulatory programs overseeing the safety of dams. About half of these same programs have the authority to regulate levee safety, but most cannot due to lack of staffing and resources. Many states do not have laws on the books creating levee safety regulatory programs. The states and these programs look to Congress and the Federal government for their continuing leadership and support toward strong dam and levee safety programs.

The eyes of the nation were focused on dam safety in the 1970s when several dramatic dam failures resulted in catastrophic consequences, including many deaths. The first national efforts to improve dam safety through coordination at the federal level occurred after these terrible failures.

While the National Dam Safety Program has greatly improved the safety of our nation's dams, the safety of dams and levees demands much more attention from national policymakers. Events over the past two years illustrate the need.

The years of 2005-2006 saw the failure of the Wheeler Island levee in California, the catastrophe of New Orleans, the emergency evacuation of downtown Taunton, Massachusetts because of a failing upstream dam, the failure of Taum Sauk Dam in Missouri, the fatal collapse of Kaloko Dam in Hawaii, and public outcry over the deterioration of Herbert Hoover Dike in Florida and the looming threat posed by Wolf Creek Dam in Kentucky.

As in the 1970s, this series of events has fixed national attention on dam and levee safety. Yet good intentions do not solve problems that continue to grow as dams and levees deteriorate or need rehabilitation to bring them up to current safety standards. The obligation to assure that they are properly constructed, operated and maintained rests with owners, regulators and policymakers at both the federal and state levels.

The Association of State Dam Safety Officials respectfully requests that this Subcommittee recognize the enormous value of our nation's dams and the increasing concerns for public safety because of dams. We request your support for an increase in funding to continue the National Dam Safety Program and for passage of HR 1098 to create the National Dam Rehabilitation and Repair Program.

The Association is grateful for the reauthorization of the program through the Dam Safety Act of 2006 (PL 109-460), which extended and increased authorized funding levels for this successful program.

Congressman Salazar, the Association also appreciates your commitment and support through the introduction of HR 1098 to improve this critical national public safety program.

The National Dam Safety Program

After the 1976 Teton Dam failure and other deadly failures, and prompted by the Kelly Barnes Dam (Toccoa Falls) failure in Georgia, also in the late 1970s, President Carter realized that federal programs were needed to address the dam safety issue. Based on his administration's groundwork, the federal government has been leading the way by example with the dams they own and regulate. The **National Dam Safety Program** exists today administered by the DHS, Federal Emergency Management Agency. For 10 years, the program has been providing assistance to state dam safety programs, continuing education to dam engineers and technological advancements through research for the dam engineering profession. Additionally, the Program directs the US Army Corps of Engineers to maintain a national tracking system that catalogues dams in the US.

The National Dam Safety Program Act of 1996 (PL 104-303) created the national program. Congress reauthorized the program through the Dam Safety and Security Act of 2002 (PL 107-310) and made modest increases in the authorized funds. At the close of the 109th Congress, the National Dam Safety Act of 2006 was passed (PL 109-460). As authorized, the program provides $38.7 million over five years in grant assistance to states based on the relative number of dams in each state. The grants may be utilized to best suit the individual state's needs. In addition, the National Dam Safety Program provides $3.25 million over five years to be used for training of state dam safety engineers and $9 million over five years for research. These research funds are used to identify more effective methods of evaluating the safety of dams and more efficient techniques to repair dams.

The modest increases authorized for the National Dam Safety Program last year have not been budgeted as part of FEMA's Mitigation Directorate budget. In fact, funding levels for the State Assistance Grant Program have been creeping downward for the past five years. These grants need to be fully funded so

enough can go to states to allow for the hiring of more dam safety inspectors, more emergency planning focused on dam failure hazards can occur and better enforcement of unsafe structures can continue.

According to the National Inventory of Dams—a program authorized by the National Dam Safety Program and administered by the US Army Corps of Engineers—there are over 83,000 dams in the United States. For the vast majority of these dams, the responsibility of assuring their safety falls on the shoulders of the states through regulatory programs (the remaining dams are owned or regulated by federal agencies). Because of limited staff and limited funding, most states are overwhelmed by that challenge. Table 1 attached to this testimony provides state-by-state data on the number of dams, the number of staff, the state budget and the number of dams that are considered deficient in the table.

"Deficient" means that these dams have been identified as having hydrologic or structural deficiencies that make them susceptible to a failure triggered by a large storm event, an earthquake, progressive deterioration, or simply through inadequate maintenance.

According to reports submitted by the 50 state dam safety programs, the number of deficient dams has risen by 85%—from 1,818 to 3,361—since 1998. This increase dwarfs the modest gains in the number of state-regulated dams undergoing repairs. Most of these deficient dams (70%) are classified as high- or significant-hazard-potential dams, meaning that significant property damage and/or loss of life is expected in the event of dam failure. Eight states—Ohio, Pennsylvania, Indiana, New Jersey, North Carolina, Georgia, and New Mexico—report more than 100 dams of high- or significant-hazard potential that do not meet state dam safety criteria.

Also of concern is a significant nationwide increase in the number of high-hazard-potential dams (dams whose failure would cause loss of human life). Since 1998, the number of state-regulated high-hazard-potential dams has increased by 9%—from 9,175 to 10,013. This increase is not due to the construction of new dams, but the increased development downstream of existing dams. While the majority of these dams meet safety standards, their potential to cause loss of human life demands stringent oversight

According to the *Model State Dam Safety Program* (FEMA No. 316), a high hazard potential dam should be inspected every year; yet data submitted to the National Inventory of Dams indicates that only about half of state-regulated high hazard potential dams are inspected yearly.

The task for state dam safety programs is staggering. The state of New York oversees the safety of 1,906 dams with only eight full time employees. Maine's lone dam inspector is responsible for more than 800 dams, and in Texas, seven state employees keep watch over 7,000 dams—that's 1,000 dams per staff member.

Because of these problems, and the resulting risk to human life, local economies, and the environment, ASCE gave U.S. dams a grade of 'D' in its 2005 Report Card for America's Infrastructure. The combined effect of rapid downstream development, aging/non-compliant structures and inadequate past design practices, coupled with a predicted increase in extreme events, demands fully funded and staffed state dam safety programs, as well as substantial and proactive funding for dam repairs.

The need is real. The recent dam failures in Hawaii, Missouri, and New York, and the near failure in Massachusetts last year have brought into tragic focus the potential consequences of deteriorating and unsafe (deficient) dams. Recent extreme rainfalls in the Northeast last summer and this spring have caused serious concerns over the vulnerability of dams in New Jersey, New Hampshire, Maryland, New York and Pennsylvania.

Federal Leadership Role

There is a clear need for continued federal leadership in support of dam safety. This country suffered several large and tragic dam failures in the 1970s that focused attention on dams and prompted Congress to pass national dam safety legislation:

- 1972 - Buffalo Creek Dam in West Virginia failed and killed 125 individuals;
- 1976 - Teton Dam failure in Idaho caused $1 billion in damages and 14 deaths;
- 1977 - Kelly Barnes Dam, in Toccoa Falls, Georgia failed, killing 39 Bible college students;
- 1977 - Failure of the Laurel Run Dam in Pennsylvania killed 40 people;

More recent failures have demonstrated the enormous damages that dam failures can produce:

- 1995 – Timber Lake Dam, near Lynchburg, Virginia, failed, killing two people.
- 1996 - Meadow Pond Dam in Alton, New Hampshire failed, killing one woman and causing $8 million in damages.
- 2003 - Failure of the Silver Lake Dam in Michigan caused more than $100 million in damages including $10 million in damages to utilities, $4 million to the environment, $3 million to roads and bridges and flooded 20 homes and businesses. It also flooded a major power plant, causing the closure of two iron mines and temporarily putting 1,100 miners out of work.
- 2004 - Big Bay Lake Dam in Mississippi failed, destroying or damaging over 100 homes, two churches, three businesses, a fire station and a bridge. The failure caused lakeside property values to plunge, and prompted a $100 million lawsuit against the dam owner.
- 2005 - In July, the Hadlock Pond Dam in Washington County, New York failed, displacing residents and causing over $1 million in damages to residences and transportation arteries.
- 2005 – The cataclysmic flooding of New Orleans in September demonstrated the deadly potential posed by water retention structures.
- 2005 – In October, approximately 2,000 people were evacuated from Taunton, Massachusetts when the 173-year-old dam at Whittenton Pond threatened to break. Emergency construction of a second dam downstream of the failing structure averted a disastrous flooding of the downtown area.
- 2005 – Around the same time as the Taunton crisis, residents of Schoharie County, New York became aware of serious problems with Gilboa Dam, which impounds roughly 19 billion gallons of water. Engineers say that the dam could collapse under extreme weather conditions. If this happened, many residents would have only minutes to escape; the villages of Schoharie and Middleburgh would be submerged under 30 to 40 feet of water, and the floodwaters would carve a path of destruction up to 60 miles long. Action is being taken: Local officials have issued flood preparedness manuals and are working to identify residents who may have trouble evacuating if the dam fails, and crews are working on emergency repairs for the dam. The long-term plan calls for a $200 million rehabilitation project.
- 2005 - In December, the sudden failure of Taum Sauk Dam in Missouri released a wall of water through Johnson's Shut-Ins State Park. The flood demolished the home of the park superintendent and his family, who were swept at least a quarter-mile away into the early morning darkness. Miraculously, all five members of the family survived. Had the dam failed during the summer months, it is likely that many lives would have been lost, as the park is a popular destination for campers and swimmers.
- 2006 - In March, the failure of Kaloko Dam on the Hawaiian island of Kauai killed seven people and caused significant damage to property and the environment.
- 2006 –In late July, following a ten-hour storm that dumped a foot of rain in an area near Gaithersburg, Maryland, the Lake Needwood dam developed severe leakage as the lake rose 23 feet

above normal pool. Roughly 2,200 people were evacuated from their homes for up to three days as workers labored feverishly to lower the lake.

Potential dam failures are not merely a local or state concern, as a dam failure in one state may cause loss of life and property damage in an adjacent state. Including recovery costs from the President's disaster relief fund and the National Flood Insurance Program, the cost of one small dam failure can easily exceed the annual costs of the National Dam Safety Program. Continuation and full funding of the National Dam Safety Program is an investment in public safety that will be repaid many times over in fewer dam failures, reduced federal expenditures for dam failure recovery and, most importantly, fewer lives lost.

Benefits of the National Dam Safety Program

The National Dam Safety Program has been successful in assisting the state programs. The training program is one aspect of this success. This training provides access to technical courses and workshops that state engineers could not otherwise attend. Examples include Dambreak Analysis, Concrete Rehabilitation of Dams, Slope Stability of Dams, Earthquake Analysis, Emergency Action Planning and many others including recent training in Dam Site Security.

The Research Program is an important program to all within the dam safety community. Its funds have been used to identify future research needs such as inspections using ground penetrating radar or risk analysis. In addition, these funds have been used to create a national library and database of dam failures and dam statistics at the National Performance of Dams Program at Stanford University as well as a national clearinghouse and library of dam safety bibliographic data at ASDSO.

Research funds are currently being used to provide security training, security assessment tools and best management practices for states to utilize in addressing potential terrorist actions against the 75,000 non-federal dams.

The most valuable benefit to the state programs comes from the State Assistance Program. The assistance is based on the number of dams in each of the participating states and is used as an incentive to encourage states to improve their program by meeting basic criteria such as:

- State statutory authority to conduct inspections of dams;
- State authority to require repairs to unsafe dams; and
- State policies that address dam site security at non-federal dams.

Use of these funds helps states meet their own unique challenges. States have utilized funds to perform dam failure and dam stability analyses, to hire additional staff to conduct inspections and to conduct owner education workshops. In addition, funds have enabled states to provide additional staff training, and to purchase equipment such as computers, field survey equipment and software, and remote operated cameras for internal inspections.

It is disappointing to see that appropriations and FEMA's budgeting priority for the Program over the past few years are well below the authorized levels, just as we begin to realize the benefits of the state assistance program—dam safety inspections have increased, the number of Emergency Action Plans, used to notify and evacuate downstream populations in the event of a failure, have increased. Despite the growing number of unsafe dams, the increase in dam failures, and the increase in funding approved by Congress in the Dam Safety and Security Act of 2006 to $9.3 million, there is no line item within FEMA's budget for the National Dam Safety Program and budgeting at FEMA has not been close to authorized levels. States have not realized any increase in assistance. Budget reductions and stiff

competition with other FEMA mitigation programs such as earthquake and hurricane planning have further reduced the state grant assistance funds.

Table 2, attached to this testimony, provides information on the amount of state assistance received for each state, the potential funding if fully appropriated at authorized levels and the amount each state will lose as a result of the reduced funding. Many state dam safety officials offered their thoughts on how additional grant funds could improve dam safety in their state (Table 3). The lost funds come at a difficult time when development below dams creates additional high hazard potential dams, dams continue to age and deteriorate and, now, security issues must be addressed by the states.

Need for a National Rehabilitation Program for Dams

While there have been modest gains in the number of dams being repaired, the number of state regulated dams identified as unsafe is increasing at a faster rate than those being repaired. The number of unsafe dams has risen by 80% since 1998 to more than 3,200. This condition will undoubtedly continue to worsen without federal leadership and an investment in the safety of our country's dams.

The Association of State Dam Safety Officials, in its October 2003 report entitled *The Cost of Rehabilitating Our Nation's Dams*, estimated that $10 billion would be needed to repair the most critical dams over the next 12 years. Out of this, needed repairs at publicly owned dams are estimated at $5.9 billion with the remaining $4.1 billion needed for privately owned dams.

ASDSO endorses passage of H.R. 1098 to create a federally administered dam rehabilitation funding program. This federally sponsored program would provide funds to be cost-shared at 65 percent federal to 35 percent state/local for non-federal publicly owned dams. The legislation would provide funds to states based on the number of high hazard dams in each of the participating states. Table 4 shows state-by-state potential funding amounts.

While HR 1098 is a good start, it does not address privately owned dams. There are more than 52,000 privately owned dams in the US. ASDSO estimates that approximately 45% of these may be in need of rehabilitation. There is a great need to begin an assistance program at both federal and state levels to help private dam owners with their rehabilitation needs. It is a public safety issue since privately owned dams are at risk of failure just as are publicly owned dams.

The dams across the United States are aging. Of the 74,286 NID dams with a reported date of completion, nearly 33,000 were built prior to 1960. In other words, nearly half of our nation's dams are already fifty years old. Approximately 19,000 more dams were built during the 1960s; thus by 2020, over 70% of dams in the U.S. will have reached the half-century mark

Downstream development within the dam failure flood zone places more people at risk. When homes are built in the dam failure flood zone, a "low hazard potential" dam (low hazard: failure is not expected to cause loss of life or significant property damage) becomes a high hazard potential dam. Therefore, the dam no longer meets dam safety criteria as the potential consequences of a failure now include loss of life.

Does the country want the number of unsafe dams to continue increasing? Will the federal government find a way to assist dam owners or will future catastrophic dam failures with resulting loss of life continue to occur? It is a reasonable expectation of every American to be protected from preventable disasters such as dam failures.

ASDSO strongly urges the Subcommittee's support for H.R. 1098 to create a federally administered dam rehabilitation program in order to repair our nation's unsafe dams.

The Future of a National Dam Safety Program

Dams are a vital part of our aging national infrastructure that provide many vital benefits, but that also pose a threat to life and property if they fail. The National Dam Safety Program is a valuable program that offers assistance to states as an investment in public safety. The Program needs to continue and to be funded properly to meet public safety expectations and prevent more loss of life from dam failures.

Our country's dams are aging and deteriorating, the number of dams determined to be unsafe is increasing and there is a tremendous demand for funds to repair unsafe dams.

Madam Chairwomen and members of the Subcommittees, the Association requests, in the strongest terms possible, that you provide the necessary priority to the safety of our nation's dams by passing HR 1098, and that you demand aggressive management of the National Dam Safety Program to achieve the results that the people who live below our dams expect.

The Association stands ready to assist the Subcommittees and staff in any way to advance the cause of dam safety. Toward that goal, please contact me or our Executive Director, Lori Spragens at 859-257-5140 if we can support the Subcommittee's important work.

The Future of a National Levee Safety Program

The Association of State Dam Safety Officials endorses a federally administered National Levee Safety Program. ASDSO supports the work of our colleagues within the Association of State Floodplain Managers and the National Association of Flood and Stormwater Management Agencies, along with the members of these Subcommittees, FEMA and the Corps of Engineers to develop a roadmap toward making this a reality.

ASDSO passed a resolution in 2006 supporting the establishment of a National Levee Safety Program. This resolution acknowledges that levee safety is critical to public safety and the environment, and that levees and dams share many aspects of design, construction, maintenance, hazard potential, emergency action planning and security. Many of the state dam safety programs represented by ASDSO also have regulatory responsibility for levee safety. ASDSO offers the following principles for the development and implementation of a National Levee Safety Program.

1. Because of their expertise in the design, construction, operation and maintenance of levees, the U.S. Army Corps of Engineers should be tasked as the lead agency to develop and implement the program.

2. There should be a National Levee Safety Committee led by the Corps of Engineers with representatives from federal agencies that design, own, operate or maintain levees and that have responsibility for emergency preparedness or response. The committee must also have representation from state levee safety programs and local governments that own and operate levees. This committee should participate in the development of the strategic plan and goals of the program and advise the Corps on implementation.

3. The program must develop and maintain a comprehensive inventory of all current and future levees both federal and non-federal.

4. The program must provide national standards for the design, construction, inspection, maintenance and operation of all levees. Federal agencies that design, own, operate or maintain levees and state programs that participate in the program must be working toward those standards, with measurable steps and goals to determine acceptable performance in levee safety. As part of the national standards and because of the clear residual flood risk to natural flood plain areas behind levees, ASDSO supports reevaluation of the practice of levee certification and removing floodplain areas behind levees from national flood insurance requirements.

5. The program should encourage strong levee safety programs administered by the states to protect public safety and mitigate economic and environmental risks related to the failure of all levees not in the federal system. These programs should be fully integrated with state and local programs of flood risk management, especially floodplain management and dam safety.

6. There must be financial and other incentives to encourage states to undertake effective state levee safety programs.

7. The program must support research and training in levee safety engineering.

Table 1 Association of State Dam Safety Officials
2005 Statistics on Dams and State Safety Regulation

State	Total Dams in National Inventory	Dams Under State Regulation[2]		State-Determined Deficient Dams[3]			State Dam Safety Budget	Staff Dedicated to Dam Safety Regulation	
		Total	HH	Total	HH	SH		Total FTEs	Dams Per FTE
Alabama	2218	0	0	0	0	0	0	0	NA
Alaska	100	82	18	29	7	7	100,500	1	82
Arizona	328	252	93	34	28	6	715,801	9	28
Arkansas	1208	403	102	21	19	1	338,700	3.5	335
California	1495	1253	334	53	32	18	8,145,000	60	21
Colorado	1808	1898	340	19	7	3	1,735,600	15	127
Connecticut*	723	3086	227	22	9	10	472,000	4.3	164
Delaware	61	37	9	4	3	NR	317,230	0.5	74
Florida	853	805	72	45	8	30	NR	NR	10
Georgia	4814	4480	437	112	112	NR	704,013	9	542
Hawaii	132	135	96	48	30	6	164,000	1.75	75
Idaho	407	430	96	5	2	3	317,547	7.5	50
Illinois	1462	1464	184	NR	NR	NR	306,000	4.8	299
Indiana	1047	993	241	445	76	154	425,000	5	188
Iowa	3340	3469	78	18	10	8	110,000	1.25	2,618
Kansas	5707	5923	183	41	15	15	616,540	7.16	837
Kentucky	1057	1049	177	90	30	41	1,550,420	14	79
Louisiana	554	534	29	24	14	5	480,316	8	67
Maine	337	831	25	13	3	10	36,914	1.5	561
Maryland	319	376	66	27	8	5	468,020	4.75	82
Massachusetts*	1624	2977	296	40	22	18	500,000	4.0	744
Michigan	985	987	79	23	5	7	282,550	2.8	414
Minnesota	1030	1280	39	79	5	22	305,000	3.4	375
Mississippi	3433	3629	310	16	14	NR	267,767	4.3	845
Missouri	5206	653	455	36	35	1	254,464	5	132
Montana	3256	2880	102	15	11	4	366,531	5.25	549
Nebraska	2284	2227	129	NR	NR	NR	434,652	5.7	378
Nevada	461	637	147	25	4	2	225,514	2	265
New Hamp.	629	3017	75	8	0	4	677,294	8	383
New Jersey	820	1703	202	193	48	116	1,254,000	20	85
New Mexico	500	393	170	104	77	27	484,100	6	66
New York	1971	1861	384	51	51	NR	977,072	8.21	613
North Carolina	2892	4478	1006	143	93	28	1,162,608	16	280
North Dakota	838	1140	28	22	5	13	200,000	4.5	761
Ohio	1587	1672	411	825	170	285	1,415,024	12.5	133
Oklahoma*	4701	4527	166	31	8	3	122,000	2.5	1,811
Oregon	896	1204	122	3	2	1	NR	2.2	562
Pennsylvania	1517	3139	785	325	225	46	2,039,600	24	131
Puerto Rico	35	35	34	NR	NR	NR	600,000	9	4
Rhode Island	181	657	17	5	NR	1	113,976	1.2	548
South Carolina	2419	2317	153	4	2	1	200,000	2.5	951
South Dakota	2503	2349	47	61	8	7	NR	1.5	1,569
Tennessee	1168	646	148	7	3	2	339,278	8	78
Texas	6975	7022	815	108	103	3	552,886	7	1,073
Utah	858	665	188	NR	NR	NR	657,900	6	970
Vermont	357	567	57	1	1	NR	299,000	2.2	256
Virginia	1640	1421	136	120	49	38	678,569	6.25	224
Washington	745	954	145	28	16	12	1,967,028	8.2	117
West Virginia	558	359	267	36	33	3	479,773	6	95
Wisconsin	1140	3571	214	2	NR	NR	518,750	6.25	150
Wyoming	1468	1410	79	NR	NR	NR	2,039,600	4.98	283
TOTAL	82,647	87,877	10,013	3,361	1,403	966	36,418,537	363.45	415 (av)

*CT, MA, and OK did not submit budget, FTE, or deficient dams data for 2005. Figures shown are from 2004.

Table 2 FEMA National Dam Safety Program State Grant Assistance Funds

Reduced Grant amounts in FY 2003 and FY 2004, Grants at full funding and
Estimated cumulative state grant losses over four year period FY 2003 through FY 2006

STATE	FY 2003 Reduced Grant Authorized at $ 6 M Appropriated at $4 M	FY 2004 Reduced Grant Authorized at $ 6 M Appropriated at $4 M	FY 2003-2006 Annual Grant if fully funded at $ 6 M	FY 2003 & 2004 Lost grant assistance over past two years	FY 2003 thru FY 2006 Projected grant loss over four years at current levels
Alabama*	$0	$0	$0	$0	$0
Alaska	$25,715	$22,990	$44,091	-$39,477	-$81,680
Arizona	$29,834	$26,672	$51,153	-$45,800	-$94,762
Arkansas	$35,898	$32,093	$61,550	-$55,109	-$114,022
California	$64,139	$57,340	$109,971	-$98,463	-$203,724
Colorado	$74,716	$66,797	$128,108	-$114,702	-$237,323
Connecticut	$46,113	$41,226	$79,065	-$70,791	-$146,470
Delaware*	$0	$0	$0	$0	$0
Florida	$41,730	$37,307	$71,550	-$64,063	-$132,548
Georgia	$144,571	$129,248	$247,880	-$221,940	-$459,204
Hawaii	$27,099	$24,227	$46,464	-$41,602	-$86,076
Idaho	$36,886	$32,977	$63,245	-$56,626	-$117,162
Illinois	$64,303	$57,487	$110,253	-$98,716	-$204,247
Indiana	$61,074	$54,601	$104,717	-$93,758	-$193,990
Iowa	$123,487	$110,398	$211,728	-$189,572	-$392,232
Kansas	$229,727	$205,378	$393,887	-$352,668	-$729,686
Kentucky	$56,460	$50,476	$96,806	-$86,675	-$179,335
Louisiana	$33,064	$29,559	$56,691	-$50,759	-$105,022
Maine	$43,774	$39,134	$75,054	-$67,200	-$139,040
Maryland	$35,371	$31,622	$60,647	-$54,300	-$112,349
Massachuettes	$74,485	$66,590	$127,712	-$114,347	-$236,589
Michigan	$44,993	$40,224	$77,144	-$69,071	-$142,910
Minnesota	$50,726	$45,350	$86,975	-$77,873	-$161,123
Mississippi	$135,482	$121,121	$232,295	-$207,986	-$430,332
Missouri	$43,280	$38,692	$74,207	-$66,441	-$137,470
Montana	$117,226	$104,801	$200,994	-$179,961	-$372,347
Nebraska	$90,205	$80,644	$154,664	-$138,479	-$286,518
Nevada	$36,063	$32,241	$61,833	-$55,362	-$114,547
New Hampshire	$49,639	$44,377	$85,110	-$76,204	-$157,669
New Jersey	$76,002	$67,946	$130,311	-$116,675	-$241,405
New Mexico	$37,842	$33,831	$64,884	-$58,094	-$120,199
New York	$87,074	$77,844	$149,295	-$133,672	-$276,573
North Carolina	$164,711	$147,253	$282,411	-$252,858	-$523,174
North Dakota	$41,368	$36,983	$70,929	-$63,507	-$131,398
Ohio	$79,857	$71,393	$136,922	-$122,593	-$253,651
Oklahoma	$170,676	$152,585	$292,638	-$262,015	-$542,120
Oregon	$61,634	$55,101	$105,677	-$94,618	-$195,769
Pennsylvania	$63,678	$56,928	$109,181	-$97,755	-$202,260
Puerto Rico	$24,031	$21,484	$41,204	-$36,892	-$76,331
Rhode Island	$31,097	$27,801	$53,319	-$47,739	-$98,775
South Carolina	$96,762	$86,506	$165,906	-$148,545	-$307,345
South Dakota	$97,619	$87,272	$167,376	-$149,861	-$310,069
Tennessee	$42,027	$37,572	$72,059	-$64,518	-$133,490
Texas	$245,643	$219,607	$421,176	-$377,102	-$780,240
Utah	$40,314	$36,041	$69,122	-$61,888	-$128,049
Vermont	$33,986	$30,384	$58,272	-$52,174	-$107,950
Virginia	$38,930	$34,804	$66,749	-$59,764	-$123,653
Washington	$40,215	$35,952	$68,952	-$61,736	-$127,735
West Virginia	$33,064	$29,559	$56,691	-$50,759	-$105,022
Wisconsin	$54,681	$48,885	$93,755	-$83,943	-$173,683
Wyoming	$67,632	$60,463	$115,961	-$103,826	-$214,820

* No state dam safety program

Table 3

State Dam Safety Program Responses When Asked How They Could Use of Fully Funded National Dam Safety Program State Assistance Grant

Idaho

Our largest obstacle facing us now is the fleet of vehicles that we utilize to travel to dams. Due to state cut backs and restrictions on FEMA grant funds we have an aging fleet of trucks that have well over 100,000 miles. We are desperately in need of new vehicles to get inspectors out in the field to perform their work.

Missouri

The State of Missouri will lose roughly $93,000. Without this funding training opportunities for our engineering staff will have to be curtailed, educational programs for dam owners that were paid for using these funds will have to be reduced, and staff used to help with the data collection and updating of the National Inventory of Dams will not have adequate funding. Equipment purchases and upgrades will also have to be cut back.

Utah

Could have funded a full time construction inspector for last years very busy season or replaced the mid level engineer that our program lost 2 years ago. It's about 20% of our budget and could have helped heaps.

Alaska

The full amount proposed for Alaska would be marginally adequate to fund an assistant engineer, which I could use. The current amount is inadequate.

Illinois

Illinois had a program to hire-back a senior dam safety engineer to train junior engineers and assist in the analysis of highly technical dam permit applications and assist in field inspections. The full funding would have allowed additional hours of assistance and field inspections. All of the unfunded amount could have been directed to that program. As all funding was spent in FY 2006, the contract was not renewed. The funds available in the 2007 grant are only sufficient to pay the 1 staff engineer employed using the grant funds. Full funding would allow the reestablishment of the hire-back contract. We have only 1 senior (15+ yrs experience) dam safety engineer remaining after several retirements.

North Carolina

Had the grants been fully funded, North Carolina could have developed a comprehensive guidance document and made it available on the web site for engineers to assist them in developing plans, specifications, and documentation to construct, repair, modify and breach dams in the state. More specific guidance on developing emergency action plans could have been developed, and a system for reviewing, filing, and requesting updates for emergency action plans could have been implemented, along with working with the owners of all high hazard potential dams to develop EAPs. Two or more dam owner workshops per year could have been conducted to assist owners in operating and maintaining their dams. Also, we could have completed scanning of plan sheets of existing dams into our database to make them more accessible to our staff across the state and consultants working on repair plans. Each staff member could have attended more training such as that provided by ASDSO, EMI, and Bureau. This would have made our plan reviews more thorough and faster.

Kentucky

1. We would have purchased a siphon pump system, about 200 feet of 6" dia. flexible pipe, and a trailer. This would have been used for emergency dewatering of dams.

2. Due to limited staff, presently we inspect high hazard dams once every two years. Kentucky has over 175 high hazard regulatory dams. This money could have been spent in obtaining services of an outside contractor (an engineer) in order to inspect these dams every year.

West Virginia

WV could have hired a part-time technician to review EAPs - resulting in a measurable increase in public safety.

Texas

If we had an additional $526,000 over the last 3 years, we could have done the following:

Provided additional training to owners.

Outsourced additional inspections, possibly as many as 200 more. This would have helped us get all of the high hazard dams in Texas inspected over a 5 year period. This could have also helped us complete our security inspections.

Purchased another vehicle to perform inspections.

Vermont

In Vermont, the largest amount of grant money has been spent to hire part-time and temporary help to increase the number of inspections which we do—it has enabled us to get from about 30 inspections per year to 130 inspections per year. An inventory of emergency action plans has also been developed with the existing grant funding.

Inspections are important to open communications between dam owners and the state, and to identify urgent problems to the owners for correction.

The next most important thing is to develop, maintain, and exercise emergency action plans—for both safety and security reasons.

In Vermont, with additional funding, we would hire temporary or part time help to develop EAP templates, and work with owners to develop and maintain current EAPs. Updating notification flowcharts would be an important task.

Nebraska

The additional funding would certainly have had a major positive impact on our program. It would have allowed for additional staff, which would have positively impacted our construction inspection program and allowed for development of an owner outreach/education program. Also, we are in need of additional resources for hazard classification updates for certain low and significant hazard dams in metropolitan areas that may in fact be high hazard. We are working on this now, but the added funding would allow for a more timely resolution of this issue.

New Jersey

We could have utilized the funds for various projects including:

-digitizing inundation maps

-digitizing archival information

-additional student interns

-conduit inspection equipment

-additional staff training

-additional public outreach

Mississippi

As you know from the last National Dam Safety Performance Report, Mississippi ranks 45th in the nation in both FTEs and Dollars devoted to the Dam Safety program. The additional $96,000 per year for FY03 to FY06 would have allowed us to keep our part time contract inspectors on board to perform inspections during construction of new dams and to perform random follow-ups for quality assurance on inspections performed by registered professional engineers. With current staffing of only about 3.5 FTE capable of

doing field work, we can do little more than process applications, respond to complaints, and review design work performed by engineering firms without the benefit of independent field investigation or analysis.

New Mexico

With the additional funds New Mexico would hire a half-time engineer to work on preparing EAPs.

Tennessee

Our grant amount wound up at about $38,000/yr instead of $72,000/yr. Tennessee had 7 positions its dam safety program until 2005, when we had to give up one due to budget considerations. I believe we would still have that position if we had received the full grant amount. And of course, once you lose a position it becomes extremely difficult to get it back

Georgia

the additional money would have meant at least one more engineering position which could have done the following each year:

1. 50 inspections of high hazard dams and assisted on another 35 inspections

2. 20 plus dam break analyses to correctly classify dams as to potenial hazard or reviewed 10 plus sets of engineering reports and plans for bringing high hazard dams into compliance.

3. Produced 5 detailed engineering evaluation reports for non-compliant high hazard dams for compliance with state requirements.

4. Other duties as assigned

The net result would be more high hazard dams being safe.

Montana

- Revise and update our state minimum design standards.
- EAP's for significant dams.
- Training for dam owners—plant and animal management.
- Training for professional engineers on dam safety standards.
- Update repair and rehabilitation needs data on high hazard dams.
- Update the state inventory of dams.

Nevada

The Safety of Dams Program for the State of Nevada lost out on much needed enhancements due to less funding. The additional funding would have provided Nevada's program with the ability to possibly hire an additional staff person for at least a year. If we could look at possible funding over the three year period to be a very similar amount then we might be able to plan long range for additional augmentation and further development of the dam safety program. Any additional funds can only improve Nevada's as well as other state programs.

Table 4

Dam Repair & Rehabilitation Act of 2007
Funding Table by State
(Total Funding over 4 year program)

2005 NID ('03 data)	Total Funds=	$200,000,000	1/3 of funds	ratio 2/3 of funds	Total Grant
State	No. of HH Dams	Ratio of No. in State/Total			Amount
Alabama	18	0.0037	$1,307,190	$499,479.71	$1,806,669.25
Alaska	11	0.0023	$1,307,190	$305,237.60	$1,612,427.14
Arkansas	74	0.0154	$1,307,190	$2,053,416.58	$3,360,606.12
Arizona	43	0.0089	$1,307,190	$1,193,201.53	$2,500,391.07
California	365	0.0760	$1,307,190	$10,128,338.54	$11,435,528.08
Colorado	131	0.0273	$1,307,190	$3,635,102.32	$4,942,291.87
Connecticut	113	0.0235	$1,307,190	$3,135,622.62	$4,442,812.16
Delaware	1	0.0002	$1,307,190	$27,748.87	$1,334,938.42
Florida	1	0.0002	$1,307,190	$27,748.87	$1,334,938.42
Georgia	179	0.0373	$1,307,190	$4,967,048.21	$6,274,237.76
Hawaii	15	0.0031	$1,307,190	$416,233.09	$1,723,422.63
Idaho	14	0.0029	$1,307,190	$388,484.22	$1,695,673.76
Illinois	78	0.0162	$1,307,190	$2,164,412.07	$3,471,601.61
Indiana	62	0.0129	$1,307,190	$1,720,430.11	$3,027,619.65
Iowa	51	0.0106	$1,307,190	$1,415,192.51	$2,722,382.05
Kansas	111	0.0231	$1,307,190	$3,080,124.87	$4,387,314.41
Kentucky	84	0.0175	$1,307,190	$2,330,905.31	$3,638,094.85
Louisiana	9	0.0019	$1,307,190	$249,739.85	$1,556,929.40
Maine	28	0.0058	$1,307,190	$776,968.44	$2,084,157.98
Massachusetts	234	0.0487	$1,307,190	$6,493,236.21	$7,800,425.75
Maryland	41	0.0085	$1,307,190	$1,137,703.78	$2,444,893.32
Michigan	105	0.0219	$1,307,190	$2,913,631.63	$4,220,821.18
Minnesota	40	0.0083	$1,307,190	$1,109,954.91	$2,417,144.45
Mississippi	62	0.0129	$1,307,190	$1,720,430.11	$3,027,619.65
Missouri	74	0.0154	$1,307,190	$2,053,416.58	$3,360,606.12
Montana	64	0.0133	$1,307,190	$1,775,927.85	$3,083,117.40
Nebraska	59	0.0123	$1,307,190	$1,637,183.49	$2,944,373.03
Nevada	54	0.0112	$1,307,190	$1,498,439.13	$2,805,628.67
New Hampshire	34	0.0071	$1,307,190	$943,461.67	$2,250,651.21
New Jersey	110	0.0229	$1,307,190	$3,052,376.00	$4,359,565.54
New Mexico	61	0.0127	$1,307,190	$1,692,681.23	$2,999,870.78
New York	287	0.0597	$1,307,190	$7,963,926.47	$9,271,116.01
North Carolina	158	0.0329	$1,307,190	$4,384,321.89	$5,691,511.43
North Dakota	18	0.0037	$1,307,190	$499,479.71	$1,806,669.25
Ohio	240	0.0499	$1,307,190	$6,659,729.45	$7,966,918.99
Oklahoma	70	0.0146	$1,307,190	$1,942,421.09	$3,249,610.63
Oregon	40	0.0083	$1,307,190	$1,109,954.91	$2,417,144.45
Pennsylvania	356	0.0741	$1,307,190	$9,878,598.68	$11,185,788.22
Puerto Rico	29	0.0060	$1,307,190	$804,717.31	$2,111,906.85
Rhode Island	1	0.0002	$1,307,190	$27,748.87	$1,334,938.42
South Carolina	75	0.0156	$1,307,190	$2,081,165.45	$3,388,355.00
South Dakota	34	0.0071	$1,307,190	$943,461.67	$2,250,651.21
Tennessee	80	0.0166	$1,307,190	$2,219,909.82	$3,527,099.36
Texas	542	0.1128	$1,307,190	$15,039,889.00	$16,347,078.55

Utah	73	0.0152	$1,307,190	$2,025,667.71	$3,332,857.25
Virginia	92	0.0191	$1,307,190	$2,552,896.29	$3,860,085.83
Vermont	33	0.0069	$1,307,190	$915,712.80	$2,222,902.34
Washington	72	0.0150	$1,307,190	$1,997,918.83	$3,305,108.38
West Virginia	187	0.0389	$1,307,190	$5,189,039.20	$6,496,228.74
Wisconsin	75	0.0156	$1,307,190	$2,081,165.45	$3,388,355.00
Wyoming	17	0.0035	$1,307,190	$471,730.84	$1,778,920.38
	4805			Total	$200,000,000.00

** Bill defines public dams as non-federal publicly owned dams.*

Testimony of
The American Society of Civil Engineers
Before the Subcommittees on
Economic Development, Public Buildings,
and Emergency Management
and
Water Resources and Environment
of the
House Committee on Transportation and Infrastructure
on
National Levee and Dam Safety Programs
May 8, 2007

Mr. Chairmen and Members of the Subcommittees:

Good morning. I am Larry Roth, the Deputy Executive Director of the American Society of Civil Engineers (ASCE).* I am a licensed Professional Engineer and a licensed Geotechnical Engineer in the state of California. Before joining the ASCE staff, I had 30 years' experience in water resources engineering, including dams, levees, and canals.

Let me start by thanking you for holding this hearing. As someone who has worked in this field for many years, I can say that there are few infrastructure issues of greater importance to more Americans today than dam and levee safety.

So I am very pleased to appear today to testify for ASCE in strong support of **H.R. 1098, the Dam Rehabilitation and Repair Act of 2007**, which would amend the National Dam Safety Program Act to provide critically needed funding for repairs to publicly owned dams across the United States.

ASCE also supports enactment of a national levee safety program modeled on the National Dam Safety Program. We believe that **H.R. 1587, the National Levee Safety Program Act of 2007**, includes all of the necessary components for a vital nationwide levee safety program.

I. Dam Conditions

Like all man-made structures, dams deteriorate. Deferred maintenance accelerates deterioration and causes dams to be more susceptible to failure. As with other critical

* ASCE, founded in 1852, is the country's oldest national civil engineering organization. It represents more than 140,000 civil engineers in private practice, government, industry, and academia who are dedicated to the advancement of the science and profession of civil engineering. ASCE is a 501(c) (3) non-profit educational and professional society.

infrastructure, a significant investment is essential to maintain the benefits and assure the safety that society demands.

In 2005, ASCE issued the latest in a series of assessments of the nation's infrastructure. Our *2005 Report Card for America's Infrastructure* found that that the number of unsafe dams in the United States rose by a stunning 33 percent between 1998 and 2005. There are now more than 3,300 unsafe dams nationwide.

Moreover, the nation's dam safety officials estimate that it would cost more than $10 billion over the next 12 years to upgrade the physical condition of all critical non-federal dams — dams that pose a direct risk to human life should they fail.

The problem of hazardous dams is potentially enormous. As the Congressional Research Service (CRS) stated last September, unsafe dams represent a serious risk to public safety. The CRS study said: "While dam failures are infrequent, age, construction deficiencies, inadequate maintenance, and seismic or weather events contribute to the likelihood [of failure]. To reduce the risk, regular inspections are necessary to identify deficiencies and then corrective action must be taken."

Although catastrophic failures are rare, the states reported 1,090 dam safety incidents — including 129 failures — between 1999 and 2006. A number of factors, including age, construction deficiencies, inadequate maintenance, and seismic or weather events, contribute to the likelihood of dam failure, according to the CRS.

The recent dam failures in Hawaii, Missouri, New Jersey and New Hampshire, and the near failure in Massachusetts in 2005 have brought into tragic focus the potential consequences of aging and unsafe dams. Recent extreme rainfalls in the Northeast this spring brought further attention to the vulnerability of dams in New Jersey, and Pennsylvania.

The number of high-hazard dams — dams whose failure would cause loss of human life — is increasing dramatically. By 2005, the number of high-hazard-potential dams totaled more than 11,000 nationally. As downstream land development increases, so will the number of high-hazard potential dams. As these dams often require major repair to accommodate more stringent inspection, maintenance and design standards, financial support for state dam safety programs must keep pace.

Even more alarming, states presently report more than 3,300 "unsafe" dams, which have deficiencies that leave them more susceptible to failure. Many states have large numbers of unsafe dams, including Pennsylvania (325), New Jersey (193), and Ohio (825). The actual number is potentially much higher; some state agencies do not report statistics on unsafe dams.

The combined effect of rapid downstream development, aging or non-compliant structures, and inadequate past design practices—coupled with a predicted increase in extreme events—demands fully funded and staffed state dam safety programs, as well as substantial and proactive funding for dam repairs.

II. Dam Rehabilitation and Repair

The National Dam Safety and Security Act of 2002, as amended by the Dam Safety Act of 2006, provides funding through grants and has improved state dam safety programs. Unfortunately, it does not provide financial assistance for needed repairs. To be sure, some progress is being made through the repair of small watershed dams constructed with assistance from the Natural Resources Conservation Service in the Department of Agriculture. But this is only a small portion of the total number of non-federal dams. On the federal side, federally owned and federally regulated hydropower dams are in good condition; however, continuing budget restrictions and increased attention to security are placing pressure on and limiting many agency dam safety programs.

We need to establish programs by which the federal government can carry out its legitimate task in protecting the public safety and welfare from obsolescent dams. We know that the 83,000 dams in the U.S. National Inventory of Dams continue to age and deteriorate, yet there is no national funding program to fund the repair of unsafe dams.

According to results of a study by the Association of State Dam Safety Officials, the total investment to bring U.S. dams into safety compliance or to remove obsolete dams tops $30 billion.

That is why the bill sponsored by Representatives John Salazar and Randy Kuhl, **H.R. 1098, the Dam Rehabilitation and Repair Act of 2007**, is so badly needed. The bill would provide a modest $200 million over five years for the repair, rehabilitation, or removal of non-federal, high-hazard, publicly owned dams. ASCE strongly recommends that federal and state legislation like H.R. 1098 be enacted to provide a funding source for repair and rehabilitation of dams in the United States.

In addition, ASCE supports —

- Enactment of state and federal regulations and legislation to protect the health and welfare of citizens from the catastrophic impact of dam failure. The federal government must accept the responsibility for the safety of all federal dams and federally regulated dams.
- Adequate funding for federal agencies, including the Departments of Defense and Interior, in order to operate and maintain federal dams and to provide them with sufficient security improvements.
- A fully funded National Dam Safety Program, administered by the DHS, which provides leadership through technical assistance from federal agencies and funding to assist states with assuring the safety and security of state-regulated dams.

III. The National Dam Safety Program

Congress has been committed to dam safety for more than 30 years. It enacted the National Dam Inspection Act of 1972, which created the National Inventory of Dams

(NID). The NID, last updated in 2005, now lists more than 83,000 U.S. dams of varying purposes, ownership, and condition. More than half are privately owned; less than five percent are owned by the federal government.

In 1974, Congress approved the first comprehensive federal system for enhancing dam safety through the National Dam Safety Program Act.

The National Dam Safety Program, administered by the Director of the Federal Emergency Management Agency (FEMA), applies to federal and non-federal dams. Although the legislation targets dams at least 25 feet high and impounding at least 25 acre-feet of water, it can encompass any barrier that FEMA determines is likely to pose a significant threat to human life or property if the barrier fails.

One of the final actions of the 109th Congress was to reauthorize the National Dam Safety program for five years by enacting Public Law 109-460.

IV. History of the National Dam Safety Program

FEMA has the authority to establish an advisory National Dam Safety Review Board to advise and assist the Director on implementation of the program. The legislation also established an Interagency Committee on Dam Safety (ICODS) to encourage the establishment and maintenance of effective federal and state programs, policies, and guidelines intended to enhance dam safety for the protection of human life and property. FEMA, in consultation with ICODS and state dam safety agencies, and the Board are responsible for establishing and maintaining a coordinated national dam safety program.

The objectives of the program are to ensure that new and existing dams are safe through the development of technologically and economically feasible programs and procedures for national dam safety hazard reduction; encouragement of acceptable engineering policies and procedures to be used for dam site investigation, design, construction, operation and maintenance, and emergency preparedness; encouragement of the establishment and implementation of effective dam safety programs in each state based on state standards; development and encouragement of public awareness projects to increase public acceptance and support of state dam safety programs; development of technical assistance materials for federal and non-federal dam safety programs; and development of mechanisms with which to provide federal technical assistance for dam safety to the non-federal sector.

The U.S. Army Corps of Engineers continues to have the authority to carry out a national program of inspection of dams originally authorized in August 1972, and now incorporated in the National Dam Safety Program. But this Corps inspection program is currently unfunded and inactive because of the establishment of state programs for inspection of non-federal dams.
Under this authority, the Corps can inspect all dams in the United States (as defined by the legislation) except those under the jurisdiction or authority of certain other federal agencies, certain dams inspected by state agencies which the governor requests be

excluded from the inspection, and those dams which the Secretary of the Army determines do not pose any threat to human life or property.

The Secretary of the Army would immediately notify the governor of the state in which a dam is located of any hazardous conditions found during an inspection and may, under these circumstances and at the request of the owner, perform detailed engineering studies to determine the structural integrity of the dam. The Corps updates the National Inventory of Dams every two years depending upon the availability of appropriated funds. As we stated previously, the last update occurred in early 2005.

V. National Levee Safety Program

ASCE supports the enactment of federal and state legislation and regulations to protect the health and welfare of citizens from the catastrophic effects of levee failures. Congress should enact legislation to establish a national levee safety program that is modeled on the successful National Dam Safety Program.

The federal government must accept the responsibility for the safety of all federally funded and regulated levees. Similarly, state governments must enact legislation authorizing an appropriate entity to undertake a program of levee safety for non-federal levees. The act should require the federal and state governments to conduct mandatory safety inspections for all levees and establish a national inventory of levees.

A. Inventory

The government needs to create a central levee inventory. At a minimum, the data base should include the location, date of construction, local sponsor of the original project, and current physical condition based on the most recent inspection.

The inventory is essential. The federal government needs to account for every federal, state, local, and privately owned levee in the country. Without such an all-inclusive inventory, there is a risk of missing potentially life-threatening conditions at levees that are not registered by the government.

B. Inspections

The government needs to establish a program to inspect every levee that has been wholly or partly constructed with federal funds. This would apply to any levee under the control of any federal agency that designs, finances, constructs, owns, operates, maintains, or regulates the construction, operation, or maintenance of a levee. Federal inspections need to be conducted at least once every five or 10 years. Federal inspections may be carried out at every state-funded levee at the governor's request.

In setting priorities, the inspections should first be carried out at those levees where the federal government determines that the levee poses an imminent and substantial threat to human life and property through failure.

Whether a levee constitutes an imminent and substantial threat to human life or property will be based on the possibility that the levee may be in danger of failing due to disparities in floodwall height or construction materials, overtopping due to storm surges, seepage, settlement that alters the design elevation of the levee, piping or internal erosion, sediment, cracking, earth movement, earthquakes, hurricanes, the failure of floodwalls or sheet walls, flashboards, gates on conduits, or other conditions that exist or may occur in any area in the vicinity of the levee.

C. Financial aid

The legislation should authorize federal financial assistance for the rehabilitation of existing levees wholly or partially funded by the federal government. The term "rehabilitation" means the repair, replacement, reconstruction, or removal of a substandard levee. The authorization also should fund state levee safety programs where there is an imminent and substantial threat to human life, property, or public safety.

D. Independent Peer Review

The national levee safety program legislation should require that the design of every levee project or significant modification to an existing levee system must undergo outside peer review whenever (1) performance is critical to the public health, safety and welfare; (2) reliability of performance under emergency conditions is critical; (3) the design calls for using innovative materials or techniques; or (4) the project design is lacking in redundancy—that is, the project lacks a built-in failure-resistant system to prevent total design or operational failure—or the project has a unique construction sequencing or a short or overlapping design construction schedule.

An independent project peer review should occur throughout the design process if any of these four principles applies to the levee project. The peer review ought to be conducted on each project regardless of cost.

E. State levee safety programs

The legislation should require the creation of a federal program to assist the states in the establishment of their own levee safety programs. At a minimum, there should be a levee safety program for every state in which a state agency has designed, financed, built, owned, operated, or maintained a levee.

To qualify for federal aid, the state must have a federally approved levee safety program in place that approves plans and specification for the construction or removal of levees; performs periodic inspections, requires inspections every five years for levees that may pose a substantial threat to human life and public property in the event of a failure; requires all state inspections to be carried out by a licensed Professional Engineer; and provides money to assure timely repairs to these levees.

A bill introduced by Mrs. Schmidt of Ohio would satisfy virtually all of these important requirements. The National Levee Safety Program Act of 2007 (H.R. 1587) contains the necessary elements of a sound, well-balanced levee safety program for the nation.

The bill does not contain a requirement for independent peer review of levee engineering or a financial aid program to repair or replace aging or deficient levees, however, and we encourage you to consider including these in the final bill.

Thank you, Mr. Chairman. That concludes my statement. I would be pleased to answer any questions that you may have.

# # #

COMPLETE STATEMENT OF

MR. STEVEN L. STOCKTON, P.E.
DEPUTY DIRECTOR OF CIVIL WORKS
U.S. ARMY CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY

BEFORE THE

Committee on Transportation and Infrastructure
Subcommittee on Economic Development, Public Buildings and Emergency Management
and the
Subcommittee on Water Resources and Environment
UNITED STATES HOUSE OF REPRESENTATIVES

May 8, 2007

Introduction

I am Mr. Steven L. Stockton, Deputy Director of Civil Works for the U.S. Army Corps of Engineers and a registered Professional Engineer. I am pleased to be here today and to have the opportunity to speak to you about the National Dam Safety Program and proposed National Levee Safety Program. My testimony today will provide a brief discussion of the benefits of the programs, the need for establishment of a National Levee Safety Program, update for the current USACE Levee Safety Program, and the coordination efforts between the Corps, FEMA, and others in the Flood Risk Management Program.

Background

In the 1970's the failure of Teton Dam, Kelly Barnes Dam, and others emphasized the need for a coordinated Federal and State program for dam safety. Starting with inspections and inventory of dams across the nation, this program developed into the National Dam Safety Program that exists today with 49 of the 50 States having state agencies that regulate dams, the Interagency Committee on Dam Safety (ICODS), and the National Dam Safety Review Board (NDSRB). Like the dam failures in the 1970's, the levee and floodwall failures associated with Hurricane Katrina and the major levee repair needs in California, emphasize the need for a National Levee Safety Program and state levee regulatory agencies.

Benefits of the Programs

The National Dam Safety Program provides benefits to the nation by reducing risks to life and property from dam failure through an effective program that brings together the expertise and resources of the Federal and non-Federal communities in achieving hazard reduction. These benefits are being achieved through the publication of various technical guidelines for the dam owner; training of dam safety professionals on inspection and evaluation of dams; cooperative research; and publication of the National Inventory of Dams. The program has allowed the

Corps to leverage its resources through work with other Federal agencies and with the various states. The Program has improved state dam safety programs by providing a forum for the states to share information. The National Inventory of Dams provides valuable information for over 80,000 dams in the United States.

Just as the National Dam Safety Program has improved dam safety across the country, the establishment of a parallel National Levee Safety Program would improve levee safety across the country. Such a program would provide support to new state agencies being established to regulate levees. This program would bring the expertise and resources of the Federal and non-Federal communities together in achieving levee safety hazard reduction. The program would not be an overnight fix for levee safety but would take some time to grow to maturity; just like it has taken 25 years for the dam safety program to grow to maturity. The first step in establishing a levee safety program will be inventorying and assessing the levees. The Corps is taking that first step with supplemental appropriations provided in Fiscal Year 2006 to inventory levees in the Corps program and develop risk based methodology for the assessment of these levees. Just like the National Inventory of Dams, the National Inventory of Levees would be dynamic and would require the cooperation of all Federal levee owning agencies, the States, the Indian tribal governments, local government agencies, and the private sector to account for all the levees that provide both protection and present a hazard to the public.

Current USACE Inventory & Assessments

The current Corps inventory is being completed in phases. The initial phase consisted of a survey questionnaire to determine vital information for the levees, such as number of levees, location, level of protection, most recent rating, and more. Of the approximately 2000 levee segments from the initial survey, approximately 56% were found to be acceptable, 38% minimally acceptable, and 6% unacceptable or of maintenance concern. This fiscal year, we have continued with phases II and III. Phase II consisted of five pilot districts, including Sacramento, where detailed survey work was performed and subsequent population of the geospatial database. Lessons learned from the pilot districts have been used to estimate the number and miles of levees that could be surveyed with the remaining funding from the supplemental appropriation. Based on the analysis of the results, the remaining funding would provide for surveying and geospatial database work for approximately 6,500 miles in addition to the surveys performed in Phase II. By the end of fiscal year 2007, approximately two-thirds of the Corps levee inventory will have been surveyed and information uploaded into the National Levee Database.

USACE is currently developing a risk based methodology for the assessment of the levee inventory. Currently the methodology is undergoing field testing through the spring and summer. Methodology is being tested at the pilot Districts where information is available in the new geospatial database. This risk assessment methodology will be ready to use on all levees in Fiscal Year 2008.

Coordination with FEMA

From the onset we have been coordinating our Inventory and Assessment Program with FEMA's National Flood Insurance Program map modernization program. Levees have been the primary nexus that brought about this coordination. Corps program decisions can have major impacts to FEMA programs and vice versa. Guidance documents, program guidance memoranda, and other critical decisions have been coordinated among the two agencies prior to implementation.

More specifically, the Corps has been collaborating with FEMA on levee certification for their National Flood Insurance Program. Under that program, the levee owners are responsible for

completing the necessary requirements for certification. The Corps has the authority to complete this work on levees that the Corps owns and operates; however although we have the authority to do the certifications for others, we have no simple mechanism to receive funds from levee owners who request our engineering support for levee certification.

We have also established the Flood Risk Management Program that goes beyond coordinating our levee activities with FEMA. The program will integrate and synchronize the ongoing, diverse flood risk management projects, programs and authorities of the US Army Corps of Engineers, and with counterpart projects, programs and authorities of FEMA, other Federal agencies, state organizations, and regional and local agencies. Coordination is occurring with FEMA and major non-federal flood risk management stakeholders.

Proposed National Levee Safety Program

Notwithstanding the Administration's concerns with the proposed Water Resources Development Act currently under consideration by Congress, I would like to present the Corps' factual assessment of that bill's proposed National Levee Safety Program (S1248, Subtitle C, sections 2051 through 2055). The proposed program is modeled after the current National Dam Safety Act. The legislation would establish a national committee of Federal, State, Tribal, local, and private representatives to advise the Secretary of the Army on levee safety matters. This committee would lead the development of Federal and State standards for levee safety and the establishment of a model for State levee safety programs. The committee would draw on the expertise and knowledge of the National Dam Safety Review Board and the Interagency Committee on Dam Safety in the development of the program. Substantial changes that were added to the National Dam Safety Act in 2006 would be included in the levee program from its beginning.

The inclusion of an assessment of each levee in the inventory could enhance the value of the inventory when used by various emergency agencies and local governments during times of natural disasters. The assessments could allow the first responders to focus their actions in critical areas where failures are most likely to occur, potentially saving time and lives in emergency situations. In addition, these assessments could provide information to assist local governments, public utilities, and private individuals when making investment decisions concerning property protected by the levees.

If the proposed legislation is enacted in its current version, authorization of appropriations would be included for a national levee inventory ($50,000,000), levee assessments ($424,000,000), assistance to state programs ($35,000,000), levee research ($2,000,000), and for levee safety training ($1,000,000).

Conclusion

We are committed to continuing to improve the safety of Federal dams and levees; continuing to cooperate with the other Federal and non Federal agencies to reduce the risk to public safety in areas located below dams and behind levees; continuing to help decision makers set priorities for future dam and levee safety investments; and continuing to ensure that all Americans can make more informed decisions on building homes, locating businesses, and purchasing flood insurance based on the actual risk of flood and storm damages where they live.

This concludes my statement. Again, I appreciate the opportunity to testify today. I would be pleased to answer any questions you may have.

NATIONAL ASSOCIATION OF FLOOD AND STORMWATER MANAGEMENT AGENCIES
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Testimony of the National Association of Flood
And Stormwater Management Agencies

Presented by Warren D. "Dusty" Williams
General Manager – Chief Engineer
Riverside County Flood Control & Water Conservation District

National Levee Safety Issues

U.S. House of Representatives
Transportation and Infrastructure Committee

Public Buildings, Economic Development
and Emergency Management Subcommittee
Eleanor Holmes Norton, Chair

Water Resources and Environment Subcommittee
Rep. Eddie Bernice Johnson, Chairwoman

May 8, 2007

I am very pleased to present this testimony on national levee safety issues on behalf of the National Association of Flood and Stormwater Management Agencies (NAFSMA).

Background on NAFSMA

NAFSMA is a national organization based in the nation's capital that represents more than 100 local and state flood and stormwater management agencies. Its members serve a total of more than 76 million citizens and as a result, we have a strong interest in the issues the committee is discussing today.

The mission of the Association is to advocate public policy on issues relating to flood protection, stormwater and floodplain management in order to enhance the ability of its members to protect lives, property, and economic activity from the adverse impacts of storm and flood waters. Many of NAFSMA's members are currently non-federal partners with the U.S. Army Corps of Engineers in water resources projects, including flood damage reduction and environmental restoration projects.

Formed in 1979, NAFSMA works closely with the Corps, as well as the Federal Emergency Management Agency and the U.S. Environmental Protection Agency to carry out its mission. NAFSMA members are on the front line protecting their communities from loss of life and property. Our membership is keenly aware that flood risk management is a wise and necessary investment required first to prevent loss of life and ensure the safety of our citizens and secondly, to reduce the risk of damages to peoples' homes and businesses and protect them from economic disruption. Flood management has proven to be a wise investment that pays for itself by preserving life and property, thereby reducing the probability of repeat requests for federal disaster assistance.

We appreciate the committee's interest in the role of national levee safety in this arena and we share the commitment to protect our citizens from the risk of flooding and hurricanes. On behalf of NAFSMA, I also want to take this opportunity to thank both David Maurstad and Steve Stockton for their dedication to resolving these critical national issues. Although we still have a long way to go to establish a national levee safety program, we would not be where are today if not for the personal commitment of Director Maurstad, Assistant Secretary of the Army (Civil Works) John Paul Woodley and the

leadership in Corps headquarters to address this issue head on and to work to develop one federal voice on this issue.

Well before August 2005 and the tragic flooding events in the Gulf Coast as a result of Hurricane Katrina, NAFSMA was concerned about the impacts of levee safety on both the Corps of Engineers' flood management program and FEMA's Map Modernization program. We commend both FEMA and the Corps for their commitment to tackle these difficult issues and for their efforts to work closely together to define and coordinate their messages to the local and state flood management agencies.

NAFSMA Supports the National Levee Inventory Program

NAFSMA has strongly stressed the need for and supported the creation of a national levee inventory program. Our members feel that this inventory should be federally-funded and should be housed with and maintained by the U.S. Army Corps of Engineers. Since this issue was first raised, prior to Katrina, the Corps and FEMA have made a great deal of progress to identify where levees are located throughout the country, who has responsibility for those levees and which levees are most deficient from a maintenance perspective. In addition, they have set up a process for certification of levees for the purposes of their agency programs and established ongoing interagency communication in the arena of flood risk management at both the headquarters and regional levels. By any standard, these are huge accomplishments in a relatively short period of time.

In this past year, FEMA and the Corps have worked closely to identify those levees with critical maintenance deficiencies. A list of the levees that have been identified as having the most pressing deficiency issues was released in January of this year and the Corps has contacted those levee owners, as well as the appropriate local officials and congressional delegations, to inform them that these maintenance deficiencies must be corrected within a year. While NAFSMA applauds the interagency efforts in this direction and the development of an inventory that can identify where such problems exist, we are concerned that a one-year correction period is not a long enough period to meet these requirements and that there is a lack of resources available to help with this effort.

A number of NAFSMA local, state and regional flood control agencies fall into another category where they are in a provisionally accredited levee (or

PAL) status. This category provides a two-year period for the local agency to provide the required certification to the Corps and FEMA that adequate maintenance requirements have been met and the structural integrity and level of protection verified.

While this may seem like a reasonable period of time to meet this requirement, different interpretations of the Corps and FEMA guidance documents have already developed in the field and these documents have not even been out for a year's time. Funding resources are not available at the federal level to carry out these certifications and in some areas. Local governments and regional entities are concerned about where to get the funds to perform the certification and whether they will be able to find private engineering firms willing to sign the needed certification documents due to liability concerns.

At this point, it is clear that we need to move forward with a national levee inventory and ensure that a realistic certification process continues. The process needs to ensures both public safety and provide realistic expectations that can be met by the owners and operators of these levees.

NAFSMA also supports the need for assessments to move forward where there is clearly a demonstrated need for such action – either maintenance deficiencies have been exhibited or potentially dangerous situations have been identified in the ongoing certification process.

NAFSMA Supports the Establishment of a National Levee Safety Commission Charged with the Development of a National Levee Safety Program.

NAFSMA strongly supports the establishment of a National Levee Safety Commission with a charge that by a date certain this group will report back to Congress on the need, potential structure, and federal, state and local resources that should be directed to this program. Federal representatives, as well as appropriate representatives from states and local and regional governments, as well as the engineering community, need to be involved in this effort.

NAFSMA is concerned about moving too quickly to develop a national levee safety program, such as the one outlined in the pending Senate water resources legislation. Legislation has been proposed to direct "the Secretary,

in consultation with the Committee and State levee safety agencies, shall establish and maintain a national levee safety program." Since state levee safety agencies do not presently exist in most states, this is really putting the cart ahead of the horse. If we want to design a program that truly fits the needs of this country and addresses the national levee safety issue, we must first develop an understanding of the current situation and then design a national program to address those issues.

The fact that a state may have a dam safety program in place does not mean it's ready to take on responsibility for a levee safety program that has yet to be developed. There are differences between dam and levee safety issues that need to be addressed. According to the Association of Dam Safety Officials website, 58% of the country's dams are privately owned. Although we have a number of privately owned levees, primarily for agricultural protection, the majority of levees that protect our urban populations are owned, operated and maintained by public agencies. Any national levee safety program should reflect this difference. Identification and communication of risk and emergency management strategies need to be part of our national levee safety strategy.

Levee safety, and the broader flood risk management issues, are critical and represent responsibilities that are shared by local, regional, state and federal levels of government. While some of the nation's levees are owned and operated by the federal government, many are owned, operated and maintained by regional entities with more resources and capability than exist at the state level. Although this is not the same in every state, we cannot at this point call for the implementation of a program without adequate discussion of how that program should be designed to meet the need for enhanced protection.

We urge you at this point to first authorize a federally-funded Commission, with the U.S. Army Corps of Engineers and FEMA taking the lead roles in federal agency participation. The U.S. Environmental Protection Agency and Department of Interior, especially the U.S. Fish and Wildlife Service, and local, regional and state representatives with expertise in levee safety issues need to be represented on the Commission.

The majority of flood control projects and levees that are owned and operated by NAFSMA members (public works agencies, special flood control districts and other regional entities, as well as the states) have been

built in partnership with the U.S. Army Corps of Engineers. In these cases, a national interest was determined to exist with these projects and the efforts to study and construct these projects were cost shared.

It is important to understand that there is a necessary role for the federal government in these issues. Since many of these projects affect interstate waters, there is a national interest in making sure that these interstate water management issues are addressed.

NAFSMA Supports Streamlined, Or Facilitated, Permitting for Flood Management Operations and Maintenance Activities

While NAFSMA members understand that once a project is completed they become the owners and operators of these partnered flood control projects, there are a number of issues that complicate this matter. First, although maintenance issues such as addressing vegetation on levees seem simple, it is important to note that it is often difficult to secure necessary regulatory permits to carry out this work. These issues become even more difficult to address when the vegetation provides habitat for a federally listed endangered species.

Another critical issue for maintenance of levees is burrows in the levees. This can be an especially complicated issue if the burrowing animal happens to be an endangered species. This problem of meeting federal Clean Water Act and Endangered Species Act requirements is extremely difficult to resolve and becomes even more complicated when state water quality and fish and wildlife certifications are involved. Many of these levees are in areas with numerous identified and listed endangered species. In Riverside County, California alone, for example, there are 91 species with a status of either endangered, threatened, or proposed for listing.

For completed flood control projects, we need to develop a mechanism to review and modify some of the existing operations and maintenance manuals for these projects to ensure the necessary regulatory permits will be provided for operations and maintenance in a timely manner; and that endangered habitat and species are protected and water quality regulations are met.

For new federally-partnered flood management projects, the needed regulatory permits and mitigation for maintenance should be provided as

part of the operations and maintenance manual when a project is turned over to the non-federal sponsor. A review process could be established to this end. NAFSMA recommends a five year cycle, which we feel would allow for these permits to move through the state and federal review process.

In cases where emergencies exist, or potentially could exist, due to threats to the existing flood management system, streamlined permitting processes must be made available to local agencies. Our agencies have often been delayed in carrying out routine maintenance activities needed to keep their flood management systems operating at optimal levels, by their inability to obtain necessary federal permits in a timely manner, if at all.

Extreme examples have involved the inability of our agencies to clear flood channels of vegetation because of the time and mitigation needed to apply for and receive a section 404 permit. Local and regional agencies have even been faced with one federal agency telling them that flood control channels in their systems must be cleared or any National Flood Insurance claims would be subrogated against them, while another federal or state agency was preventing them from obtaining the necessary permits to do the work. Clearly there must be a means to coordinate these conflicting concerns to meet the overarching national and interstate responsibility of ensuring protection.

Continue Adequate Funding of FEMA's Map Modernization and Mitigation Programs

Although we have focused much of our testimony on the Corps' role in a national levee safety program, it is critical to note that accurate Flood Insurance Rate Maps are an essential part of national levee safety and flood risk management activities. To ensure that these maps are available to all levels of government as soon as possible, NAFSMA strongly supports continued adequate funding of FEMA's Map Modernization Program and its mitigation programs.

The FY03 budget for FEMA reduced the Hazard Mitigation Grant Program (HMGP), which is used for post-disaster mitigation, from the previously authorized 15% of disaster relief funds to 7.5%, and also established a competitive pre-disaster mitigation grant program. NAFSMA believes that the HMGP authorization should be returned to 15%, and that both pre- and post-disaster mitigation must be adequately funded.

We are concerned not only that these federal funds must be appropriated, but also that the process for local governments to obtain these funds must be streamlined. For many of the nation's smaller communities that could benefit from mitigation dollars, the applications and necessary coordination requirements at both the state and federal levels are much too daunting. They just don't have the staff or financial resources to put together a competitive application. Meanwhile, properties that could be bought out and moved from the 100-year floodplain remain in harm's way. We urge you to not only provide adequate resources for mitigation, but to work with local communities to look for better ways to distribute these limited funds on a national basis.

In closing, NAFSMA very much appreciates the opportunity to present our thoughts on these critical national issues to the Subcommittee for consideration. We stand ready to work with you on these important issues and would welcome any of your questions.

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