

NEWS & VIEWS

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ASSOCIATION OF STATE FLOODPLAIN MANAGERS

*Dedicated to reducing flood losses
and protecting
floodplain resources . . .*

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Levees and Flood Risk Management

By ASFPM's Policy Leadership Team

Flood risk management entails the evaluation of the broad range of actions to assess and reduce the risk of flooding, and to alter event probability, consequences, or both. For decades, levees have been extensively used to attempt to control floodwaters and to remove lands behind levees from the federal insurance and land use regulation requirements associated with the National Flood Insurance Program (NFIP). People have built homes and businesses behind levees assuming that their property will never flood. Local officials and property owners generally are unaware of their residual risk when levees fail or overtop. As levees and systems are assessed to determine levels of protection and condition, many communities learn that their levees are not designed for large flood events, do not protect to the level of moderate floods like the 100-year, or will not perform as anticipated, and that additional actions are necessary to manage risk, including flood insurance and management of development in flood prone areas.

Despite enormous past investment in flood "control" structures, that spending has been outpaced by development in risky areas and development in the watershed that increases runoff and flooding, and by the steady deterioration of those levee structures. As the public grows to recognize the risks associated with levees, communities are working to evaluate the various actions they can take in response to those risks: levees can be repaired and improved or set back from the river to relieve pressure and erosion on the levee; homes, businesses, and infrastructure at risk can be relocated to reduce risk and restore floodplain function; waters can be detained upstream; and measures can be combined to achieve the most effective results with scarce public dollars.

ASFPM has indicated there is a need for a National Flood Risk Management program, of which a levee risk management program is one part. Features of a program should include:

Development of a National Flood Risk Management Program, to address levee safety among the broader range of flood risk management challenges and opportunities.

Residual risk areas behind levees must be mapped and all properties therein insured for flood at full risk premiums (that reflects the real probability of flooding with the levee analysis).

Minimum performance standards for communities to qualify for federal funding to construct new levees, rehabilitate or repair existing levees, and develop infrastructure in residual risk areas.

To have a recognized State Levee Safety Program and qualify for federal funding to support flood risk management and levee safety grant funds, including PL 84-99 and recovery and mitigation assistance, States must demonstrate their leadership and commitment to identify, manage, and reduce flood risk.

Currently, national levee policy is a hodgepodge of policies in different agencies and programs, lacking a unified and cohesive national approach to the broad range of flood risk management issues. Most states, who should be the focal piece in this national policy rely on federal agencies and funding to address levees and the associated risk. Modern levees are designed to provide relatively low protection – to the 1%-annual-chance or 100-year flood - because the NFIP credits these relatively small levees as being adequate to remove the requirements for flood insurance and land development review. FEMA and the U.S. Corps of Engineers (USACE) are trying to integrate their approaches to levees, but the mapping, construction, inspection and accreditation of levees continues to have disconnects. In the meantime, Congress gives contravening mandates, direction and requirements to both agencies that slows the process, confuses the real issues and frustrates communities, agencies and citizens.

As part of the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12), Congress created the Flood Protection Structure Accreditation Task Force to study and report back to Congress with recommendations to better align levee-related policies and practices among FEMA and USACE. That Task Force worked closely with the National Committee on Levee Safety to examine the issues and identify specific actions to improve alignment between 44 C.F.R. 65.10, the section of the Code of Federal Regulations that governs treatment of levees in the NFIP, and the USACE Inspection of Completed Works program, under which USACE conducts inspections, evaluations, and associated procedures for levees within its authorities. That report is anticipated to be available soon, and will provide Congress with important insights into how these two federal policies and programs operate, and specific steps to improve alignment with steps toward a more national, risk-based approach to the identification of flood risks associated with levees.

The task of mapping lands on either side of the levee for flood risk falls on the NFIP, but the technical process of how to do that keeps changing. FEMA has until recently used an “all or nothing” approach in depicting levees on flood insurance rate maps, whereby a levee must meet the 1% flood standard for any credit, and if it did not, it gets no credit. Under FEMA’s prior levee approach, a levee system that did not meet the NFIP requirements was analyzed and mapped as if it had no effect on the landward side of the levee system during the 1%-annual-chance or base flood. This was known as the “without levee” approach, and led many stakeholders and lawmakers to call for a new approach to analyzing and depicting levee risk on flood insurance rate maps. In response to these concerns, FEMA developed a process that provides some partial credit for unaccredited levees, known as the Levee Analysis and Mapping Procedure.

Given recent technological advances in data collection and hydrologic and hydraulic modeling, FEMA is now piloting a more refined approach to mapping flood hazards in areas landward of levee systems. The LAMP articulates four specific procedures, with the steps and applicability for each:

Sound Reach Procedure. A Sound Reach is defined as a continuous section of a levee system that has been designed, constructed, and maintained to withstand the flood hazards posed by a 1-percent-annual-chance flood, in accordance with sound engineering practices.

Freeboard Deficient Procedure applies where the 1%-annual-chance flood is contained within the top of levee but the levee does not meet the freeboard standard.

Overtopping Procedure. The Overtopping Procedure can be applied when the 1-percent-annual-chance flood is above the levee crest for a reach, and the community or levee owner has provided appropriate technical justification that the 1-percent-annual-chance flood event will not cause structural failure.

Structural-Based Inundation Procedure is applicable where levee systems have reaches with either structural deficiencies that are known or structural integrity that is unknown (a common occurrence for older levee systems).

Natural Valley Procedure can be used in two ways: first, landward of the entire levee system to determine the outer limits of any Zone D areas used. Second, as a potential procedure applied to individual levee reaches to determine the SFHA on the landward side of the levee reach.

FEMA is currently piloting the LAMP in communities throughout the nation to test-drive the various approaches to help identify risk in various landscapes and levee configurations and levels of protection. We anticipate that under the LAMP, some SFHAs behind levees will expand and others will shrink as compared to “without levee” depiction of risk. In order to qualify to apply the methodologies that would potentially show smaller SFHAs, the levee owner or community must provide the technical data necessary to demonstrate that the levee system is geotechnically sound.

In the meantime, FEMA asked the National Research Council to study how levees should be mapped, and that report recommended scrapping the LAMP process, and instead using a risk and uncertainty analysis. Few engineers in the nation are even capable of performing such an analysis, so FEMA will apparently proceed with the LAMP process. With all of this confusion, the mapping of hundreds of flood maps has been interrupted while some consensus was reached.

The Senate has language in its WRDA to establish a national levee safety program that closely tracks recommendations of the National Committee on Levee Safety and specific suggestions from ASFPM. The House Transportation and Infrastructure Committee has indicated that it will mark-up its WRDA bill in September. All indications are that there will be significant differences between the House and Senate approaches to levee risk management, as well as other aspects of the WRDA, which will need to be resolved in a WRDA conference committee.

In summary, it appears we will continue to muck along, trying to map levees in a manner communities will accept, but with no means to prevent communities from increasing levee risk because they have no incentive or disincentive to not increase development behind the levee, nor to build levees to a better standard than the 1 % Chance flood, even in highly urbanized areas. As such, we will get the same result we have always gotten, small levees with no restrictions or flood insurance behind them will continue to overtop in large events or fail. The taxpayers will bail out the property owners and communities for the damages, levee rebuilding, health impacts and infrastructure costs. Communities who develop behind levees will gain the real estate taxes, and externalize the consequences to federal taxpayers. Members of Congress who refuse to spend money to prevent disasters will either willingly or begrudgingly approve huge disaster supplemental funding from the taxpayers after the levee fails and floods new and old developments. *Deja vu all over again!*

While USACE and FEMA can achieve much to better address the nation's levee crises, only Congress can create a unified, aligned, and effective national program to reduce risks associated with levees as part of a broad, complete approach to managing flood risk. It appears WRDA presents the next opportunity to achieve that.

Compiled by ASFPM Policy Leaders [Sam Medlock](#), [Larry Larson](#), and [Chad Berginnis](#)

FEMA Finalizes Analysis and Mapping Procedures for Non-Accredited Levees

The Federal Emergency Management Agency (FEMA) has released its updated procedures for analyzing and mapping flood hazards in the vicinity of non-accredited levee systems. These updated procedures are a part of an on-going effort to reform the National Flood Insurance Program (NFIP). The new procedures are repeatable, flexible, and comply with statutory and regulatory requirements.

FEMA recognizes that levee systems that do not fully meet the requirements for accreditation may still provide a measure of flood risk reduction; for that reason, the Agency has developed a new approach and procedures for providing a more refined and realistic depiction of flood risks. The adopted procedures have gone through an extensive process of scientific review and public input. Further details were provided by engineering staff from FEMA's Federal Insurance and Mitigation Administration (FIMA) during a webinar on July 25.

FEMA's new approach, accompanied by operating guidance, will be applied to a limited number of projects during Fiscal Year 2013. The projects were selected considering a number of factors including data availability and selecting a wide range of levee scenarios to properly pilot the new process. Future mapping projects will be prioritized as the first phase of projects are completed. The first phase will begin the process of compiling the necessary additional data in the coming weeks.

Documents are posted on the Agency's website at:

<http://www.fema.gov/living-levees-its-shared-responsibility/fema-revising-its-levee-analysis-and-mapping-approach>

Find their fact sheet here: http://www.floods.org/ace-files/documentlibrary/committees/ME/LAMP_FactSheet.pdf

Contact FEMA's Intergovernmental Affairs Division at 202-646-3444 or FEMA-IGA@fema.dhs.gov.



From the Chair

William S. "Bill" Nechamen, CFM

A flood hits. It may be a hurricane, a tropical storm, the remnant of a tropical system, heavy thunderstorms, snow melt, an ice jam, or a long period of steady rain. The politicians are quick to respond. There are press conferences, always with the political leaders in dressed down, ready to help mode. The residents of the suffering community are tough, resilient and helpful. We get through it because we're New Yorkers, Floridians, North Carolinians, Louisianans, easterners, westerners, southerners, mid-westerners, New Englanders. We're a tough people. A resilient people. A compassionate people.

The government will bring all of its resources to bear. We'll cut through the red tape and get you back in your homes and businesses. We'll waive permits and requirements. We'll spare no expense.

Sound familiar? I was recently looking at my file directory structure and noticed that I have directories for flood '05, flood '06, flood '07, flood '08, flood '09, flood '09 November Northeaster, flood '10, flood 2011, flood 2011 Irene Lee, flood 2012 Sandy, and now, flood 2013. And that's just in my own state of New York. Each of those events took homes and businesses. Some took lives. Each took public resources. Each resulted in rebuilding. In some cases the rebuilding was done right. In many cases, it was not. Some communities were hit more than once. Often on the second hit, local officials suddenly get religion.

This summer, our Northern neighbors in Alberta, Canada got hit hard. 120,000 people in Calgary, or about 10 percent of the municipal population, were evacuated. Canadian news media said that only the Winnipeg flood of 1950 comes close. That event caused 107,000 to be evacuated. It's interesting that the report compared events not by cost but by the number of people directly affected.

The government of Alberta has offered financial assistance to families and businesses that suffered uninsured damage. That figure may surpass \$3 billion Canadian. The Premier called Albertans a "resilient people." She said that "No eligible home owner with flood damage will go without financial support." But she also said, "There are people who have homes on the floodway that they love and we're saying, 'really, if you want to choose to stay there, you have to understand there are consequences.' That's going to be hard for people to hear, but I also think that most people are going to realize that makes sense."

The provincial government has announced that while they will pay for repair and rebuilding in floodways, they will not pay for damage from future floods for any homes in floodways that received repair or rebuilding funds. However, there will be financial assistance for floodway residents to relocate. The province will require notification on land titles for properties in floodplains that have not been protected against flooding.

Meanwhile, it appears that a provincial report written in 2006 recommended that the province stop allowing floodplains to be developed. That report was only brought to light after this year's massive floods.

People are indeed compassionate. But will we as a society really learn from these destructive events? Can we learn to say that we'll provide real help once but not again? When the next great flood hits Calgary, will their deed restrictions go unheeded? What about when the next Sandy or Katrina? Or that ice jam flood that hits a low lying neighborhood every three or four years?

As floodplain managers, we often carry the news that's hard for people to hear, whether it is about the requirements and standards for reconstruction or clarifying what the true flood risk is for an area. The hard news is about the need for sensible mitigation, including relocation from the most hazardous areas. The hard news is that the government can help but cannot stop the flooding or make everybody whole again, and that individuals also have to take responsibility. The hard news is that some places truly belong to Mother Nature and should not be developed. People understandably don't want to hear the hard news. But the hard news is truly the most compassionate, sustainable and economically viable approach.

Sincerely,
Bill Nechamen, Chair

From the Director's Desk

Chad Berginnis, CFM
Executive Director, ASFPM



Recently, while attending a meeting on the NFIP in Washington DC, a colleague made what I thought was a profound statement “Part of owning a home is accepting the volatility of home ownership.” As many of us in the profession of floodplain management have been seeking to understand the ramifications of the 2012 NFIP Reform Act (Biggert-Waters or BW-12), these words seemed to be particularly applicable. Somewhere along the way we have forgotten this basic concept as it relates to flood risk, flood hazard areas, and the NFIP.

From a flood risk perspective, we understand that flood risk changes, yet a lot of the public seems to think that the flood risk remains static over time. Of course we know that there are many factors that change flood risk: Upstream development, downstream development, changing weather patterns, climate change, changes in streams and rivers themselves (natural or manmade), and of course risk changes associated with more development in hazard areas. Heck, with every year’s streamgauge data, we get a more precise understanding of what a 100-year flood really is. The USGS has an good fact sheet on this titled [100-Year Flood–It’s All About Chance](#) that explains this interesting phenomena.

From a flood hazard area perspective, nothing has done more to reinforce this notion than the actual publication and infrequent update of flood maps. While great pains are taken to explain that the data on a FIRM or in a Flood Insurance Study is only for a given frequency and all of the other disclaimers are made, too many people see flood risk as something they are either “in” or “out” of based on a map.

At the same time, the United States has one of the best national inventories of flood maps in the world; however, we have not invested the resources to neither map the entire country nor keep the mapping inventory updated (and the past few years of huge budget cuts in flood mapping have not helped). While I do believe that we are better off having flood maps and actually knowing where some of our flood hazard areas exist; our citizens, potential and existing homeowners, and I daresay even many of our local officials only look at the effective FIRM to decide what flood risk is or is not in their area and do not undertake the needed level of due diligence to determine what flood risk really is. This is one of the promising directions of RiskMAP.

But nothing has caused more consternation among ASFPM members based on conversations I have had as the changes enacted in Section 207 of BW-12. A longstanding notion in the NFIP is one where property owners shouldn’t be penalized on flood insurance rates for building in compliance with standards-and the known flood risk at the time. During Map Modernization this was very heavily reinforced as thousands of new map panels were being produced and administrative grandfathering exploded. The problem is that while some element of fairness may have been addressed, it ignored the concept that flood risk changes over time. This concept is also totally inconsistent with how the insurance market deals with other perils. Your homeowners insurance rates will be guaranteed to change if your area has more frequent wildfires, hailstorms, and tornadoes in your area. If for some reason your community had to close a fire station in your neighborhood or if the closest hydrant to your house was removed, your rates would go up because your risk has increased.

The Congress was focused like a laser on the debt of the NFIP which now stands at almost \$25 billion, and the resulting reforms of the NFIP were significant if not downright painful to some. They chose a 4-5 year

window where many pre-FIRM subsidies will go away including grandfathering. This pain was made more acute as the legislation had no provisions to actually deal with affordability for those that will struggle with significant premium increases. Many fear that the insurance rate changes will cause even more resistance new and updated flood maps and I am sure that there will be more scrutiny of new maps than ever before. It will be interesting to see what eventually comes of the Section 207 changes as FEMA has indicated that those will not be effective until 2014 at the earliest and there are many Congressional proposals looking at delaying this even further.

The root cause of the concern about 207 though has less to do with the actual flood insurance rates versus the very transformation of the way that the NFIP – and by extension property owners - will look at flood risk for existing homes versus how it had in the Program's 40 year history. That means that all of us – whether we are floodplain management professionals, local elected officials or homeowners - have to do a better job at due diligence and decision making in the future. In the meantime, we need to come up with viable solutions to help ease the pain of the transition into this new way of looking at and accepting flood risk. ASFPM will continue to educate policy makers on the implications of BW-12 and push for measures that address affordability as the NFIP undergoes this very important transformation.

Your partner in loss reduction,

Chad

ASFPM Washington Liaison Report

-Meredith R. Inderfurth, Washington Liaison

This report will now appear regularly in the INSIDER, ASFPM's member newsletter produced in the odd months. Please see [ASFPM 2013 Legislative and Policy Priorities](#) on ASFPM's website. This and other documents are also available at [National Policy and Programs > Working with Congress](#).

National Preparedness Month 2013 Toolkit

September is National Preparedness Month! If you haven't downloaded this resource here is your opportunity. The toolkit includes a press release, media advisory, articles, blogs, posters and social media posts for you to share within your states. Many are targeted segments such as information for business owners, seniors, pet owners or those with disabilities. Other topics address emergency alerts and preparedness on a budget. Here's the website link and toolkit examples:
<http://community.fema.gov/connect.tl/readynpm/view?objectId=3200688&exp=e2>

FIFMTF Releases Report on Recent Activities and Work to Date

The Federal Interagency Floodplain Management Task Force has released a report designed to inform floodplain management professionals, interest groups, the public, and other stakeholders about their work and to highlight key floodplain management issues. You can find this important report and more information about the Task Force [here](#).



Policy Matters!

Larry Larson, P.E., CFM
Director Emeritus – Senior Policy Advisor, ASFPM

How can all of us help residents and business owners, community officials, insurance and real estate agents and others fully understand how the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) really works? We have all seen the news articles quoting exorbitant flood insurance premiums of \$20,000 or more a year. We have all seen how the backlash from these often misquoted premiums is causing the politicians to introduce bills to roll back or delay the provisions of BW-12 that move premiums to full risk rates. All of this despite the fact the NFIP is at least \$25 billion in debt, with no chance of ever paying back the federal taxpayers for the debt, and despite the fact that many in Congress are insisting the nation must spend less money, quit subsidizing food stamps and slashing federal agency spending for everything else.

Let's pick apart the issues that lead to this angst, and identify some things all of us can do to address them.

1. How can property owners find out what the correct premium should be for their policy? Flood insurance is a complicated enough program where we hear stories of insurance agents misquoting rates or coverages. Now add to that the changes brought on by BW-12 and with it the added complexity. For example, the insurance agents will need to know:
 - Which changes occur when (January? May? October? Next year?);
 - What changes apply to what situation (25% rate increase? 20% rate increase? full-risk rate?);
 - Who they will affect (pre-FIRM vs. post-FIRM?—this is absolutely key for primary homes; secondary vs. primary residences? Businesses? Other uses? New purchases?); and
 - How to correctly explain it to their clients and prospects

Too often, insurance agents are incorrectly rating the policy, starting with their failure to determine if the structure is pre-FIRM or post-FIRM. That is key, because pre-FIRM Primary home structures move toward actuarial under BW-12 when remapped or sold, but not Post-FIRM. In one particular case, the correct application of BW-12 resulted in the premium going from over \$20,000 to \$483 per year.

ACTION: Insurance agent training—by more than just FEMA, who we know is spread very thin. ASFPM is looking at how we can help with webinars as well as assist Chapters and members to do training in their state.

2. How can real estate agents become mitigation champions? With the concern of high premiums being created by BW-12 (e.g., sale of pre-FIRM homes; homes affected by map changes), real estate agents and associations are fighting to roll back the rates because of their fear of losing potential buyers due to the high cost, or not qualifying for the loan.

ACTION: Invite real estate agents and their state association to Chapter meetings or put on training at their meetings so they understand the changes and how mitigating the structure to reduce the risk and rate is a win-win for the current or future property owner and for the community. When structures are elevated or moved to higher ground, the premium is greatly reduced, the flood damage is greatly reduced and lives are saved and the property is safer. From a community standpoint, mitigated properties have a higher tax base and do not fall into that declining neighborhood spiral that can happen when people will not invest in property that is continually flooded.

3. How can property owners readily find out their future premium and how they can reduce it? FEMA has struggled getting out information to show property owners what the rates are and will be under BW-12. There were many, many provisions in BW-12 so it is understandable that it takes some time to get rate tables and information out there. Unfortunately, thousands of property owners in the Sandy area and elsewhere in the nation are at a decision point in rebuilding their structure (those who were substantially damaged [more than 50%] have no choice). How high to build it or which other mitigation options to undertake can be determined if they know what their premium will be under all options, including: do nothing, elevate to the current flood map's Base Flood Elevation (BFE), elevate to higher freeboard, or seeking acquisition so they can move to a lower flood risk zone. For example, if their premium for leaving the structure as-is calculates to be \$9,000/year, but elevating it 5-8 feet drops to \$400/year, and the cost of elevation is \$40,000, it can be easily shown they will see a return on that investment in a few short years. Furthermore, the risk has been significantly reduced and the house will retain its value at resale.

ACTION: Work with FEMA HQ and Regions to get simple rating systems out and available so property owners can make knowledgeable decisions on mitigation. Additionally, FEMA has been asked to look at how they can credit partial mitigation actions on structures. For example, if electrical equipment and other costly parts of the structure are elevated above the BFE, how much should that reduce the premium? Fire insurance does that for smoke alarms and other measures, so FEMA will need to determine which actions truly reduce claims, and consider commensurate premium reductions.

These ideas build off the ASFPM paper on "[Flood Insurance Affordability](#)". This paper points out the importance of true risk premiums, but also states the importance of support for those who truly can't afford the premiums, and to help them transition to a mitigated structure where they are safer and with a greatly reduced premium. ASFPM will be looking at undertaking many of the actions above, and urges our members to do the same. We must help people and communities break the cycle of flooding—damage—rebuild—and getting flooded again.

Community Rating System – What's New Online

If you haven't checked the website at www.CRSresources.org lately, now would be a good time to take another look. Besides the new Dam Failure Inundation Guidance (see page 7) and the FMP credit changes (see page 5), several other new items have been added—and more are being introduced all the time. Among the recent additions are

- CRS Credits Crosswalk—a table showing each element and its credit under the previous (2007) *Coordinator's Manual* and the new, 2013 edition (www.CRSresources.org/manual/)
- "Master List of Elements and Credit Points"—a comprehensive list of all the credit elements in the CRS, and the maximum points for each (www.CRSresources.org/manual/)
- "330 CRS Credit for Planning Committees"—a handout explaining the criteria for committees under Activities 330, 370, and 510 (www.CRSresources.org/300)
- "CRS Activity Checklists"—worksheets that include the credit criteria and documentation requirements for all CRS credit activities (www.CRSresources.org/200). ≡ ≡ ≡

The *NFIP/CRS Update* is a publication of the National Flood Insurance Program's Community Rating System. It provides local officials and others interested in the CRS with news they can use. The *NFIP/CRS Update* is produced in alternate months. It is distributed electronically, at no cost, to local and state officials, consultants, and other interested persons. Communities are encouraged to copy and/or circulate the *Update* and to reprint its articles in their own local, state, or regional newsletters. No special permission is needed. To become a subscriber or to suggest a topic that you would like addressed, contact: *NFIP/CRS Update*, P.O. Box 501016, Indianapolis, IN 46250-1016 (317) 848-2898 fax: (201) 748-1936 NFIPCRS@iso.com

Addressing Affordability in the National Flood Insurance Program

The Wharton Risk Center and Resources for the Future have jointly published a new issue brief, "Addressing Affordability in the National Flood Insurance Program," authored by Carolyn Kousky of RFF and Howard Kunreuther of Wharton. They have asked us to share it with our readers.

The Biggert–Waters Flood Insurance Reform Act was passed last year with overwhelming bipartisan support from Congress and signed by President Barack Obama in July 2012. The bill included provisions to phase-out longstanding premium subsidies -- starting with those for vacation homes, business properties and repeatedly flooded properties -- and move the National Flood Insurance Program onto more sound financial footing.

Today, however, some in Congress are wavering on their commitment to risk-based pricing for flood insurance because of concerns their constituents will not be able to afford flood insurance. A delay in implementing the flood reform legislation could impede the financial soundness of the NFIP and discourage policyholders from cost-effective risk mitigation measures. As the issue brief indicates, the NFIP should not address affordability through discounted insurance premiums. The authors propose a means-tested voucher program coupled with a loan program for investments in loss reduction measures, made affordable by reductions in the NFIP risk-based premium.

The brief, linked [here](#) (22 pages) begins with a discussion of the history of premium discounts in the NFIP and features a case study of take-up rates, policy discounts and low-income households in Ocean County, New Jersey, where 40,000 buildings were damaged by Hurricane Sandy. The brief also describes the authors' proposal for an insurance-loan-voucher program to encourage homeowners to undertake risk-reduction measures. The section on "Designing a Coupled Voucher and Mitigation Program" includes an example calculation of costs of mitigation loan and NFIP premiums, cost of the program to the federal government and a homeowner, and estimates of program costs for Ocean County coastal communities that experienced storm surge by Hurricane Sandy.

An abridged version linked [here](#) (4 pages) in the Wharton Risk Center's issue brief series, summarizes the affordability issues stemming from the flood reform legislation and describes the authors' proposal for an insurance-loan-voucher program to encourage homeowners to undertake risk-reduction measures. It includes an example calculation of costs of mitigation loan and NFIP premiums, cost of the program to the federal government and a homeowner, and estimates of program costs for Ocean County coastal communities that experienced storm surge by Hurricane Sandy.

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Streamlined BCA Policy Released in time for FY13 HMA Projects

In late August, FEMA Headquarters released a new policy that will significantly streamline the time frame and paperwork for benefit-cost analyses for flood mitigation acquisition and elevation projects. This policy is a game changer not only for the FY13 Hazard Mitigation Assistance (HMA) grant cycle (that includes the Flood Mitigation Assistance Program) but appears to be applicable to all FEMA hazard mitigation grants going forward. It is our understanding that the policy was released now to help ease the paperwork and effort burden for the FY13 HMA grant applications since the application period is so short. Please contact your State Hazard Mitigation Office (for a list of state contacts, click [here](#)) for additional information and state specific deadlines for the 2013 HMA Grant Application Period. To read the letter to FEMA Regional Administrators, click [here](#).

FLOODPLAIN DEVELOPMENT BRINGS DISASTROUS COSTS

Leslie Bond, CFM

Leslie Bond is the 2005 recipient of the ASFPM's Goddard-White Award. Other Goddard-White Award recipients who share these concerns and contributed to these pieces are David Conrad (2003); Jon A. Kusler (1988); Jacquelyn L. Monday (2001); Rebecca C. Quinn, CFM (2000); and James M. Wright (1994). This editorial does not necessarily reflect the views or positions of the ASFPM.

Editor's note: This is the first of three editorials describing how federal policies that are intended to reduce the cost of flood disasters have actually had the effect of driving these costs higher. Fundamental changes in federal policy are needed to reverse this trend. These thoughts are explored more fully and supported with extensive analysis and data in the recently released book, Federal Flood Policy: The Cause of Flood Disasters, by Leslie A. Bond (see his book at www.federallooddisasters.org).

Flood disasters cost Americans more than we ever imagined. Flooding not only saps the nation of dollars that are sorely needed for other purposes, but also imposes constantly repeated disruption and suffering; recurring blows to local businesses and economies; and other unquantified impacts.

Although we do not know what flood disasters actually cost Americans, a fresh look at readily available statistics has shown that the costs are much higher than we have thought, and that they are also rising more rapidly now than in prior decades. The National Weather Service has provided flood damage estimates since 1931 as summarized in this table.

Average Annual Flood Damage, by Decade

Period	(Billions of 2011 \$)
1931-1940	\$1.452
1941-1950	\$1.343
1951-1960	\$2.437
1961-1970	\$2.100
1971-1977	\$6.160
1983-1990	\$4.225
1991-2000	\$7.051
2001-2010	\$18.658

Average annual flood damage increased at an annual rate of about 1% from 1931 through 1970 (the "Flood Control Era"). But it increased 5.6% annually from 1970 through 2010 (the "Building Regulation and Flood Insurance Era"), at a rate of 8.1% per year from 1988 through 2010, and at a rate of 10.2% per year from 2000 through 2010. Since the inception of the National Flood Insurance Program (NFIP), flood damage has risen almost six times as fast as the U.S. population.

At those rates, the annual cost of *flood damage* today is between \$27 billion (at a 5.6% increase) and \$37 billion (at a 10.2% increase). This is 2 ½ to 3 ½ times the entire FEMA budget for 2013.

The Consequences of Floods Have Been Understated

To assess the "cost" of flooding, floodplain managers have long used estimates of "flood damage" – generally what we think it costs to repair buildings and infrastructure after a flood. We know, but often overlook, the fact that those types of damage are only a small part of what floods cost us. Flood disasters mean economic losses and reduced tax revenues. The nation endures reduced funding for other programs or increased deficit spending as a result of tax revenue lost after a flood disaster. "Recovery"--paid for by federal taxpayers--frequently is more expensive than the costs of repairing damage. Economic losses range from 100% to 200% or more of the estimated flood damage and encompass the cost of many kinds of disruptions and actual losses, from ruined crops to business closures to psychological and emotional distress. Most economic losses are passed on to consumers as inflated prices for goods and services. Lost tax revenues are seldom mentioned; neither are numerous intangible harms, such as resource degradation.

When we add economic losses and lost tax revenue to the estimates of flood damage, the *total average annual cost of floods* in 2013 is on the order of \$75 billion to \$110 billion or more, and increasing by 5.6%

to 10.2% every year. The average annual cost of flood disasters is 7 to 10 times the FEMA budget for 2013. These projections do not include inevitable increases in the cost of coastal flood disasters that will result from a rise in sea level and from climate change. It's obvious that our efforts to curb the costs of flooding have failed miserably, and we have refused to face the true toll that floods take on our nation.

The Costs of Floods Go Up As Floodplain Development Increases

In coastal areas, apparent increases in flood damage over the last century can be explained entirely by increases in coastal population, per capita wealth, and the value of the dollar. For more than 100 years, hurricane damage increased in proportion to the population of the affected coastal counties. In fact, after adjusting for inflation, per capita wealth, and numbers of residents, damage from hurricanes has been relatively constant since 1900.

Also, although only 15% of the hurricanes during those decades were larger storms (Category 3, 4, and 5), they caused 85% of the total damage. Since the area inundated by a Category 3 hurricane approximates the 100-year floodplain in many areas, a lot of damage has occurred outside of mapped and regulated flood hazard areas. In other words, more people and their accompanying development in coastal areas have brought higher and higher levels of disaster damage, in spite of federal, state, and local efforts to manage the hazard. This situation will only worsen if we continue on our current path.

The 10 coastal counties with the highest growth rates (all in Florida), have increased in population 588%, from 378,000 to 2.6 million people since 1970. This is almost five times the national average growth rate, which was 1.0% during that period. The population growth rate for the coastal counties on the Gulf Coast (including all of Florida) was almost twice that of the nation as a whole--1.98%. Today, as many as 160,000 to 220,000 new floodplain buildings are going up in these coastal communities every year. Further, between 1991 and 2010, coastal storms caused 24 of the nation's 34 most-damaging floods.

If we were to examine historic increases in damage from riverine floods, it is likely that we would find that growth in floodplain population and per capita wealth would explain much, if not all, of those figures as well. Even if the regulatory standards of the NFIP worked perfectly, we can expect to see a similar damage pattern in riverine floods:

- It has been estimated that there are 3.5 million to 7 million buildings outside the 100-year floodplain but within the 500-year floodplain. Many of these buildings will be damaged by floods slightly larger than the 100-year flood as it is currently determined.
- For more than 45 years we have been filling our riverine floodplains with buildings that, for the most part, are protected only to the 100-year flood level. While that avoids damage from smaller, more frequent floods, a larger flood affects all of those "protected" buildings. This is because, if you map 1,000 streams with 100-year floodplains, 1% of them (10 streams), on the average, will experience a 100-year flood each year. Thus we can expect that at least 1% of all floodplain development built to NFIP standards will be flooded every year.
- Likewise, we can anticipate that about 1% of all levees that provide protection just to the 100-year level will be overtopped every year, and the spillways of 1% of all dams built to contain just the 100-year event will operate every year.

If we continue to develop and redevelop throughout our floodplain areas, we cannot escape increasingly costly flood disasters.

The Bottom Line on Flood Costs

American taxpayers and consumers pay at least two to three times the amount of reported flood damage for flood disasters. That means that in 2013, Americans are paying an average of \$50 to \$100 billion or more per year for flood disasters (flood damage, economic costs, plus an unknown loss of tax revenue to the U.S. Treasury). We should be as concerned about the rate of increase in average annual flood damage as about the actual average annual cost today.

Some people think of floodplain redevelopment as the replacement of a few buildings that are condemned, obsolete, or burned out, with occasional larger areas being cleared for the construction of residential or commercial complexes. However, redevelopment also includes replacing buildings after flood disasters. Tens of thousands of new buildings have been constructed to replace those destroyed by floods of the 2005 hurricanes, Tropical Storm Sandy, and other storms.

The cumulative cost of floods is startling. From 2011 through 2020, we can expect floods to affect our national economy to the tune of from \$375 billion to \$475 billion. Given the current annual cost of floods and the current rate of increase, we will pay between \$2.4 and \$4 trillion between 2011 and 2050.

Based on the average cost of a new home, a reasonable estimate is that during 2010 \$100 billion was invested in new development in coastal counties. The number of new homes in 2004 (when the economy was good) was almost twice the number of new homes in 2010, when the economy was much weaker. So, during periods when we have a strong economy, we may be adding \$200 billion or more at-risk properties to our coastal counties each year, and more in our riverine floodplains.

The Federal Emergency Management Agency (FEMA) claims that its mitigation programs are saving more than \$1 billion per year and that the NFIP floodplain management standards save a similar amount in avoided damage. After many major disasters, the U.S. Army Corps of Engineers calculates that billions of dollars have been saved by its flood control structures.

But the simple reality is that mitigating \$2 billion, or even \$20 billion, of existing flood hazard risk per year can never offset the \$200 billion in new development that we are placing at risk in that same year.

We have to ask ourselves, How did we get to this point? And, Is there any hope of a turnaround?

In the next issue: Federal Policies and At-Risk Development Go Hand in Hand

EDITOR'S NOTE: We are very sad to report that Les Bond passed away suddenly and unexpectedly on Sunday September 15. For those of you that didn't know Les, he was a true floodplain management leader, dedicated ASFPM member, and a good friend to many. When you saw Les, you never forgot him – grizzled is as good a word as any to describe him, walking around in his cowboy boots and hat, his deeply lined and weather worn face lighting up when you talked to him about any kind of flood issue! If you were at the ASFPM Hartford conference this year, you saw him showcasing his recently published the book, *FEDERAL FLOOD POLICY: The Cause of Flood Disasters*. Les was an active ASFPM member since 1982, when he attended our first national conference! He served in numerous Board and Committee leader capacities over these 30 years, including our first webmaster. He received our prestigious Goddard-White Award in 2005 “for 25 years advocating effective national and state policy and practice in floodplain management”, as well as our Jerry Louthain Service to Members Award and ASFPM Pioneer. Les also received awards from Arizona and New Mexico for his longtime work with those state associations. Here are his [obituary](#) and [vitae](#); a memorial service is being held Saturday September 28 in Alamogordo, New Mexico. Rest in peace, dear friend.



Les accepts the Goddard White award in Madison 2005.

ASFPM 2014 – Seattle, Washington

The Call for Presenters has been released for the next ASFPM annual national conference in Seattle! The Northwest Regional Floodplain Management Association (NORFMA) will be our host when we convene June 1-6, 2014, at the Washington State Convention Center in downtown Seattle to discuss issues relevant to our theme: "**Making Room for Floods & Fish.**" It can be downloaded by [clicking here](#). As always, the submittal deadline is October 31 to get into next year's concurrent session or workshop program. We hope to see you in Seattle!



13th Triennial ASFPM Arid Region Conference

Please join us for the 13th Triennial ASFPM Arid Region Conference, to be held at the Radisson Fort McDowell Resort in Scottsdale, Arizona, October 15 – 18, 2013. The Arid Regions Policy Committee of ASFPM is putting on this exclusive conference in partnership with the Arizona Floodplain Management Association. Knowing that droughts typically end with floods, flooding in arid regions can create unique challenges for floodplain managers. This triennial Conference focuses on topics and challenges that are relevant to arid regions floodplain management, including Risk Awareness, Climate Change and Drought, Mitigation, and Levees, Dams, Canals and Stormwater Management. Panel discussions are planned focusing on Risk MAP and technical and policy issues pertaining to managing development on Alluvial Fans. Several day-long field trips are planned to view mitigation and restoration projects throughout the Phoenix Metro area. Conference registration is now open, click on the link to register at www.azfma.org.

ASFPM Calendar

The events listed below are only the highlights of events of interest to floodplain managers. A complete list of flood-related training, conferences, and other meetings, including ALL the workshops and conferences of State Chapters and associations is always posted at http://www.floods.org/n_calendar/calendar.asp

June 1–6, 2014: 38TH ANNUAL CONFERENCE OF THE ASSOCIATION OF STATE FLOODPLAIN MANAGERS, Seattle, Washington. Contact (608) 828-3000 or see <http://www.floods.org>

May 31–June 5, 2015: 39TH ANNUAL CONFERENCE OF THE ASSOCIATION OF STATE FLOODPLAIN MANAGERS, Atlanta, Georgia. Contact (608) 828-3000 or see <http://www.floods.org>

Are you looking for training opportunities to earn CECs for your CFM? If so, be sure to check out our web calendar, which already has LOTS of training opportunities listed for 2013! You can search the calendar by state using the directions below. Or you can use the category drop down menu to search by category.

<http://www.floods.org/n-calendar/calendar.asp>

- Go to the calendar and click on the search feature icon at the top of the calendar. Type your state's initials in parenthesis (for example "(WI)") into the search field and it will pull all the events (training, conferences, etc.) that are currently listed on the calendar for your state. What a great way to find upcoming training for CECs! The only events without a state listed in the event title are EMI courses which are all held in Emmitsburg, MD.

NEWS & VIEWS

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