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Re: Docket FEMA-2015-0006

Regulatory Affairs Division
Office of the Chief Counsel
Federal Emergency Management Agency
500 C Street SW, Room 8NE
Washington, DC 20472-3100

Dear Sir or Madam:

Thank you for the opportunity to submit comments on the draft “Revised Guidelines for Implementing Executive Order 11988, Floodplain Management.”

On behalf of the Pew Charitable Trusts, we offer strong support for the proposed guidelines and the new Federal Flood Risk Management Standard (FFRMS) embodied in Executive Order 13690. Thoughtful application of the revised guidelines to the wide range of federal actions that affect the nation’s floodplains will help to protect people and property, curtail both federal and private cost associated with flood losses, and promote the conservation and restoration of resources that act as natural defenses to flood and storm events.

We concur with the revised guidelines’ conclusion that “people are never fully ‘protected’ from flood waters” and note that despite significant advances in technology, flood and storm risk will never be entirely predictable. Thus, we applaud the new commitment to enhanced flood risk management that relies not solely on traditional control structures but on an integrated and forward-looking program.

The rising costs of flood disasters are a clear indication of the need for a new federal approach to floodplain management.¹ Significant costs have been incurred and are increasingly borne by federal taxpayers—through both loans to the National Flood Insurance Program² and disaster expenditures.³

¹ See, for example, Brody, et al, in the *Journal of the American Planning Association*, Summer 2007. The article entitled “The Rising Costs of Floods” notes that “[a]mong all natural hazards, floods pose the greatest threat to the property, safety, and economic well-being of human communities in the United States” and “[t]he current average annual damage from floods is \$5.2 billion and over 80 deaths per year.”

² See, for example, the US Government Accountability Office’s “Overview of GAO’s Past Work on the National Flood Insurance Program, April 9, 2014, which states that “...the program [NFIP] is unlikely to generate sufficient revenue to cover catastrophic losses or repay billions of dollars borrowed from the Department of the Treasury...to cover insurance claims from previous disasters,” and “[a]s of December 31, 2013, FEMA owed Treasury \$24 billion.”

Those costs stand as evidence of the failure of a policy that has relied too heavily on a single and narrow view of flood risk embodied in the 1% or 100-year storm event.

While the statistical construct of a “100-year storm” can be useful in some circumstances, the over-reliance on that specific predictor of risk has led to serious underestimation of hazard and often promoted unwise development in flood-prone areas. As several researchers⁴ have pointed out, people are often “overly optimistic” about flood risk and do not accurately grasp or act on the probabilities and risk factors underlying the 100-year flood calculations.

As we read the new standard and the revised guidelines, the 100-year or 1% chance occurrence flood will continue to serve as the basis of certain decision-making—including the determination of who is required to buy federal flood insurance—but this will be supplemented in all appropriate instances by additional safety factors. This approach will assure that policymakers deciding on federal investments as well as the general public will better understand that the delineation of a 100-year floodplain does not imply a bright line distinction between those areas that have a high chance of major flooding and those that would likely never flood.

In our view, the guidelines incorporate several important points that are critical to sound flood risk management.

- Scientific understanding of flood risk and the technical capacity to map flood hazard areas has improved dramatically over time, but floodplain delineation is still subject to considerable uncertainty.⁵ This uncertainty can be limited but not eliminated, and its existence must be recognized and accounted for in flood risk management policies. The new standard’s approach of incorporating freeboard into construction projects involving federal funds or permitting is an important step in addressing this uncertainty and developing more cost-effective mitigation policies.
- Scientists involved in flood mapping understand well that the risk for flooding can change over time due to erosion, changes in land use, construction or degradation of flood control structures, weather events, sea level rise, and other factors.⁶ However, many state and local

³ See for, example, “Stafford Act Declarations 1953-2011: Trends and Analyses, and Implications for Congress,” Congressional Research Service, August 31, 2012. This pre-Sandy report notes that the “majority of incidents declared as major disasters are issued because of some form of flooding.”

⁴ See Kousky and Kunreuther, 2009, “Improving Flood Insurance and Flood Risk Management: Insights from St. Louis, Missouri”; Bell and Tobin, “Efficient and effective? The 100-year flood in the communication and perception of flood risk,” 2007, in *Environmental Hazards*; Petrolia, et al, “Risk Preferences, Risk Perceptions, and Flood Insurance,” 2013, in *Land Economics*.

⁵ See, for example, “**Mapping the Zone: Improving Flood Map Accuracy**,” 2009, National Academies Press, which states that “...even at locations with long records of measured peak floods, the BFE [Base Flood Elevation] cannot be estimated more accurately than approximately 1 foot....At ungaged sites, uncertainties in BFE are necessarily higher,” and “...coastal flood mapping is much more complex and uncertain than riverine flood mapping, and its accuracy is less able to be characterized quantitatively.”

⁶ See, for example, National Oceanic and Atmospheric Administration, “Future Flood Zones for New York City,” dated March 18, 2014, which states that “[i]f mid-century projections of sea level rise prove true for New York City,

policymakers as well as members of the general public, including some of those making important land use decisions, fail to recognize, underestimate or even dismiss the consequences of such changes. When investment and location decisions ignore the likelihood of expanding flood hazard zones, even more people and assets are put in harm's way and the future financial risks for the federal flood insurance and disaster programs are increased. By requiring a consideration of future conditions, the guidelines will instill a much-needed fiscal prudence into federal decision-making and help others to better understand the dynamic nature of flood risk.

- The cumulative impact of multiple activities—even those involving modest alterations to topography or land cover—can increase the risk of flood damages, creating or exacerbating flooding problems for neighboring or downstream properties. Application of the guidelines to the full range of activities financed by or otherwise supported by the federal government should help to assure that future federal investments support projects capable of enduring storm events and that such projects do not transfer increased risks onto existing communities.

We are pleased to see that the guidelines will be applied to all agency actions. We support the effort to integrate the consideration of floodplain impacts into each agency's regulations and procedures for licenses, permits, loans, grants, and financial support as well as direct management of land and structures. As these considerations become ingrained in standard agency operating procedures—rather than added as stand-alone reviews by a single entity, the methodologies for identifying what lies in a floodplain will become more widely understood and streamlined and the utility of protecting floodplain values and natural storm defenses will be more widely appreciated.

We strongly disagree with characterizations of the Order and the guidelines as a “one-size-fits-all” approach or unduly unpredictable. Rather, we believe the new standard offers a practical approach that can be tailored to promote “wise use, conservation, development, and utilization of interrelated land and water resources” for environmental and economic benefit—as envisioned in the 1994 “Unified National Program for Flood Plain Management.” The guidelines comprise the framework under which each agency considers its actions and policies but do not dictate a specific response in all cases. Instead, each agency will determine how to adapt its decision-making to conform to the new standard, and—in

four times as many people may be living in the 100-year floodplain than were previously estimated based only on observed changes”; National Academies Press, **Disaster Resilience: A National Imperative**, 2012: “Even without impacts of climate change, farm practice ... has significantly increased the flood potential in the Midwest. The overall effect of facilitating the drainage of millions of acres of farm fields through underground drains, combined with the shift from sod crops to row crops and the encroachment of many communities into the floodplain, was to reduce the resilience of cities and towns along Midwestern rivers by increasing the likelihood and intensity of flooding”; Vogel, et al, “Nonstationarity: Flood Magnification and Recurrence Reduction Factors in the United States,” 2011, **Journal of the American Water Resources Association**: “...we obtain flood magnification factors in excess of 2-5 for many regions of the United States, particularly those regions with higher population densities. Similarly, we compute recurrence reduction factors which indicate that what is now considered the 100-year flood, may become much more common in many watersheds. Nonstationarity in floods can result from a variety of anthropogenic processes including changes in land use, climate, and water use....”

doing so—will solicit public input. We look forward to engaging in these discussions. In our view, this is the point in the process at which important distinctions among project types can be made. As the guidelines correctly note (beginning on line 834), the tolerable risks for projects may differ, and we would expect different agencies and programs within agencies to consider a range of important factors as they implement the Order.

The following are more specific comments regarding certain sections of the guidelines.

Section 2

We support the overall intent of Section 2—to require a careful analysis of the potential impacts of any actions an agency may take in a floodplain—and applaud the decision to require such evaluations for all actions, even those that do not result in a physical change.

We would recommend an addition to this sub-section, however, to bring the element of time forward in the document. While the order references the need to “address current and future flood risk” [emphasis added] and calls for the use of data that integrates “current and future changes in flooding” [emphasis added], lengthening the time-horizons for evaluations is not prominent early in the document. The need for a longer planning period could be underscored by making modest changes to this section. Options might include inserting on line 331 after “impacts to or within the floodplain” the words “as delineated in conformance with Section 6 of this Order and the best available information regarding future conditions.” Also, it may be useful to insert the words “over the expected lifetime of the project or activity” on line 459 after “flood hazards,” for example.

Section 2 is a critical section requiring consideration of “alternatives to avoid adverse effects and incompatible development in the floodplain.” Again, though “harm” and “adverse effects” are explained later in the guidelines, it may be useful to provide some brief explanation earlier. It may be useful to clarify that impairment of natural floodplain functioning in terms of water retention, storm surge buffering, or creation of impediments to natural migration of critical wetlands should be considered a harmful or adverse effect.

We agree with the Order’s requirement for agencies to consider alternatives that rely on natural systems, ecosystem processes, and nature-based approaches “where possible” [emphasis added]. This requirement should be reflected accurately in the guidelines. To assure that the evaluation of nature-based solutions is not eliminated at the start, the words “where practicable” on line 360 should be deleted. If desired, the notion of practicality could remain in this paragraph by adding a fourth item to the current list of three, with wording such as: “selection of workable and practicable alternatives that avoid or minimize adverse impacts to the natural functioning of floodplains and ecosystem-based storm defenses.” This re-write would assure that nature-based solutions are given full and fair consideration and still allow questions of practicality and cost to enter into the final selection of a preferred alternative.

An additional area that may need clarification is the paragraph that says “agency procedures are intended to be consistent with the standards in the National Flood Insurance Program” (lines 374 and 375). We understand the need for agencies to consult with the mapping experts in FEMA before issuing new procedures. However, we are concerned that this section of the guidelines could also be read to require simple compliance with the FEMA established Base Flood Elevations (as currently mapped) and straightforward application of the 100-year flood map. The intent of the new Executive Order is to offer greater protections than would be provided by these delineations, so we recommend a re-writing of these lines to underscore that point.

Section 3

The issue of conformance with the current NFIP arises in this section as well. Again, a careful review should be undertaken to assure that the term “consistent” (line 552 and 578, for example) cannot be read as limiting agency reviews to the current FEMA base flood elevation or 100-year flood zone. This is particularly important given that the NFIP maps—with exceptions made for some communities—do not yet consider future conditions.

This section should also reflect the intent of the Executive Order (addressed later in the guidelines) that federal agencies adhere to more protective local or state requirements where those exist. One option for addressing this point might be to change line 564 from “the NFIP is not undermined” to “neither the NFIP nor the flood mitigation and floodplain management efforts of state and local governments are undermined....”

We strongly concur with the wording in Section 3(a) which states that the proposed structure or facility “must not endanger existing development, encourage development which would result in harm to or within the floodplain, or itself be vulnerable to flood damage.” This language should remain as written.

Section 3(c) offers an important public education component with the call for flood height markers on property used by the general public. We support markings for the various flood stages and would suggest that all of those be dated, where feasible, to help convey the fact that flood risks change over time.

Section 4

This section is, again, important in terms of public education, and we support the requirement for flood risk disclosure. To the extent that future risk information is available, we believe this risk information should be shared with private parties. In the paragraph beginning on line 717, we would recommend adding after “chances of being flooded”, the words “over the lifetime of the structure,” and substituting the words “if the property is in a floodway or coastal high hazard area” with “if the property is in or is likely to be in a floodway....”

Section 6

Section 6—with its expanded definition of floodplain—offers a reasonable and valuable approach for using the best scientific information available to lessen flood risks and costs into the future. We strongly support the three key options: (1) using the “best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding” [emphasis added]; (2) adding a freeboard safety factor of 2 feet for non-critical actions and 3 feet for critical actions; or (3) utilizing the information on the limits of the .2 percent or 500-year flood. This approach will help to assure that direct federal investments and federal policies do not promote the unnecessary occupation of high flood hazard areas.

In closing, the Pew Charitable Trusts strongly supports the new Executive Order and the thrust of the revised guidelines for floodplain management. They are important steps in curtailing the loss of life and property in flood prone areas. We look forward to commenting on the specific plans for implementation that will be forthcoming from the federal agencies.

Sincerely,



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