

May 6, 2015

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

***Re: Seeking public comment on the draft Guidelines for Implementing the Federal Flood Risk Management Standard: Docket ID FEMA-2015-0006***

Dear Mr. Sevier:

The Natural Resources Defense Council (NRDC) and American Rivers are pleased to submit this letter of comment to the Federal Emergency Management Agency (FEMA) on the proposed *Guidelines for Implementing the Federal Flood Risk Management Standard* (80 Fed. Reg. 6530, Feb. 5, 2015) (Draft Guidelines). We applaud the Administration's issuance of Executive Order 13690 establishing the Federal Flood Risk Management Standard (Updated Standard), and agree that the federal government must act to improve our nation's resilience to flooding. Carrying out EO 13690 will yield enhanced protection to people and property, result in cost savings on damages avoided and lead to environmental improvements. As such, NRDC and American Rivers support robust implementation of the Draft Guidelines.

### **Our Nation's Increasing Vulnerability to Disastrous Flood Events Demands Action**

Flooding presents serious economic, environmental and societal consequences for the United States. In particular, flood events and climate change pose risks to physical infrastructure, such as roads, bridges, and water treatment facilities, essential to the economic well-being of the United States.<sup>1</sup> Between 1980 and 2013, flooding cost the US economy \$260 billion with more than 20 individual flood events exceeding \$1 billion in damage.<sup>2</sup>

Climate change is exacerbating our nation's susceptibility to disastrous flood events. As climate change raises sea levels and alters precipitation patterns, coastal areas and riverine communities will become increasingly susceptible to flooding.<sup>3</sup> The United States Global Change Research Program has reported that the impacts and costliness of weather disasters, like flooding, are increasing; events considered "rare" today will become more common in the future due to

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<sup>1</sup> See U.S. GOV'T OFFICE, GAO-13-242, *Climate Change: Future Federal Adaptation Efforts Could Better Support Local Infrastructure Decision Makers* 1 (2013)(hereinafter *GAO-13-242*).

<sup>2</sup> NAT'L OCEANIC & ATMOSPHERIC ADMIN, *BILLION-DOLLAR U.S. WEATHER AND CLIMATE DISASTERS 1980-2014* (2014).

<sup>3</sup> See generally AECOM, *THE IMPACT OF CLIMATE CHANGE AND POPULATION GROWTH ON THE NATIONAL FLOOD INSURANCE PROGRAM THROUGH 2100* (June 2013) (assessing climate change and population growth impact on floodplains throughout the United States).

climate change.<sup>4</sup> Major storm events, like Super-Storm Sandy, which resulted in the loss of life and billions of dollars in damage to transportation systems, utilities, and other critical infrastructure, will be more frequent and intense in a warming climate.<sup>5</sup> Compounding this risk to coastal areas, sea level rise means storm events less severe than Super-Storm Sandy will be capable of producing similar impacts.<sup>6</sup>

As the above-mentioned climate change predictions indicate — our nation’s federally-funded infrastructure is ill-prepared to weather the flood risks of the future. Prior to the January 30, 2015 executive order, the federal flood protection standard only required federally-funded infrastructure to be protected to the elevation of the 100-year flood (a flood that has a 1 percent probability of occurring in any given year).<sup>7</sup>

Yet, reliance on this standard assumed that historical flood records were statistically static, and thus, would be representative of future conditions. However, as the climate changes, historical patterns — particularly those related to extreme weather events — no longer provide reliable predictions of the future. Infrastructure is typically designed to withstand and operate within these historical patterns; as such, current infrastructure designs likely underestimate their true risk of exposure to flood damage.<sup>8</sup> Thus, continuing to design federally-funded infrastructure according to the traditional federal flood protection standard, which fails to account for future conditions, like sea level rise or more frequent precipitation events,<sup>9</sup> will adversely affect the longevity of the infrastructure’s design life, which for many critical infrastructure can range as long as 50 to 100 years.

Federal floodplain management policy, though not always practice, has long aimed to achieve a reduction in the loss of life, disruption and damage caused by floods; and the preservation and restoration of the natural resources and functions of floodplains through the Unified National Program for Floodplain Management. It is a wise use of the floodplain to achieve both of these goals.<sup>10</sup> Ideally, federal actions should avoid direct or indirect support of floodplain development

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<sup>4</sup> U.S. GLOBAL CHANGE RESEARCH PROGRAM, *Extreme Weather Events*, <http://www.globalchange.gov/explore/extreme-events> (last visited Apr. 10, 2015).

<sup>5</sup> Sweet, Zervas, Gill & Park, *Hurricane Sandy Inundation Probabilities Today and Tomorrow*, in *Explaining Extreme Events of 2010 From a Climate Perspective*, 94 (9) BULL. AM. METEOROLOGICAL SOC’Y (SPECIAL SUPPLEMENT) S17 (2013).

<sup>6</sup> *Id.* at S20.

<sup>7</sup> Exec. Order No. 11988, 3 C.F.R., 1977 Comp., p. 117.

<sup>8</sup> *GAO-13-242*, *supra* note 1, at 15.

<sup>9</sup> *But see* FED. EMERGENCY MGMT. AGENCY, TECHNICAL MAPPING ADVISORY COMMITTEE, <https://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/technical-mapping-advisory-council> (stating FEMA to consider how to incorporate climate change data into future conditions hydrology per Biggert-Waters Flood Insurance Reform Act of 2012).

<sup>10</sup> FED. INTERAGENCY FLOODPLAIN MGMT. TASKFORCE, UNIFIED PROGRAM FOR FLOODPLAIN MANAGEMENT 1994 VIII (1994) *available at* [http://www.fema.gov/media-library-data/20130726-1733-25045-0814/unp\\_floodplain\\_mgmt\\_1994.pdf](http://www.fema.gov/media-library-data/20130726-1733-25045-0814/unp_floodplain_mgmt_1994.pdf).

where a practicable alternative exists — both to mitigate the growing exposure of our nation’s infrastructure to flood risk, and to preserve the ecosystem benefits and services that floodplains provide. Limiting development within a floodplain increases the room available for floodwaters, thereby lowering floodwater elevations upstream and downstream, and preserves natural processes of infiltration, which improves water quality and wildlife habitat.

Thus, NRDC and American Rivers agree with the overarching objective of the Updated Standard and Draft Guidelines to direct federal actions away from the floodplain and to preserve their beneficial and natural values.<sup>11</sup> We adamantly reject the contention that implementation of the Updated Standard is unnecessary and detrimental to the US economy. Conversely, the Updated Standard and Draft Guidelines provide a pivotal framework for reducing our economy’s exposure to flood risk and better attain the original intention of Executive Order 11988 to restore and preserve the natural and beneficial values served by floodplains.

### **The Updated Standard Is a Necessary and Economically-Beneficial.**

Claims that the Updated Standard is unnecessary, detrimental to the US economy, and increases National Flood Insurance Program (NFIP) rates are over-blown.<sup>12</sup>

#### *Executive Order 11988’s 100-Year Flood Event Standard Is Obsolete*

Prior to the amendment, EO 11988 specified that a determination of whether a proposed action would occur in the floodplain shall be made according to a Department of Housing and Urban Development floodplain map — the early versions of Flood Insurance Rate Maps (FIRMs). Due to climate change, relying on the 100-year floodplain depicted on FIRMS as the flood risk standard for protecting federally-funded infrastructure is rapidly becoming obsolete. Riverine communities throughout the country are entering a future in which flood events will not only become more frequent, but more severe. Flood frequency has already started to increase for many regions. A recent study, *The Changing Nature of Flooding across the central United States*, by researchers from the University of Iowa found that the frequency of floods in Iowa is already on the rise. The study examined data from hundreds of stream monitoring stations throughout the Midwest and found that floods were becoming more frequent in a band stretching from North Dakota south to Iowa and Missouri and through Illinois, Indiana and Ohio.

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<sup>11</sup> Exec. Order No. 13690, 80 FR 6425 (Feb. 4, 2014).

<sup>12</sup> See Mark Schleifstein, *New Federal Flood Risk Management Standards Anger Senators David Vitter and Bill Cassidy*, THE TIMES-PICAYUNE, Jan. 30, 2015, available at [http://www.nola.com/environment/index.ssf/2015/01/new\\_federal\\_flood\\_risk\\_managem.html](http://www.nola.com/environment/index.ssf/2015/01/new_federal_flood_risk_managem.html) (reporting criticisms of the Senators that the proposed standard will cost jobs and raise insurance rates); see also Letter from Senator David Vitter to President Barack Obama (Jan. 26, 2015) (alleging the proposed standard is unnecessary and will harm the middle-class through increased insurance rates).

Additionally, on a national average, riverine environments may experience a 45% expansion of the typical 1% percent annual chance floodplain.<sup>13</sup> This enlargement of the floodplain is attributed to the changing precipitation patterns, and varies widely on a regional basis; areas like the Great Lakes and the Northeast are forecasted to have a major expansion, whereas areas like the Southwest, a smaller expansion.<sup>14</sup> Further, within developed areas, approximately 30% of the increases in flood discharge, the Special Flood Hazard Area, and base flood depth will occur due to normal population growth, while the remaining 70% of the changes are from climate change. Even ignoring the effects of climate change, there will be 13.5% expansion in the 1% annual chance floodplain due solely to population growth.<sup>15</sup> Thus, federal policy that discourages non-sustainable riverine floodplain development, like the Updated Standard, is important for reducing our nation's fiscal exposure to flood risk.

For coastal populations along the Eastern seaboard, flood risk is projected to increase substantially within the next 100 years.<sup>16</sup> This projection portends serious consequences for US coastal regions, especially as eight U.S. cities (Miami, the New York-Newark region, New Orleans, Tampa- St. Petersburg, Boston, Philadelphia, Virginia Beach, and Baltimore) rank within the world's top 20 in terms of estimated potential average annual losses from coastal flooding.<sup>17</sup> Global average sea level is rising; on average sea level rise is projected to increase between 1.05 to 2.00 feet by 2050 along US coastlines,<sup>18</sup> and may be as high as six feet by the end of the century for certain regions.<sup>19</sup> A 1.05 foot SLR by 2050 could cause the level of flooding that occurs during our current understanding of a 100-year storm to occur more frequently, in some regions on the East Coast as often as once a decade.<sup>20</sup>

Thus, continuing to adhere to the currently defined 100-year flood as the standard level of protection for federal actions, while simultaneously failing to account for future conditions, ensures that federal projects will be vulnerable and will likely sustain costly damage or contribute to continued floodplain loss and environmental degradation as a result. In contrast, the proposed *Guidelines for Implementing the Federal Flood Risk Management Standard* will require federal agencies to make safer assumption about future flood risks, and hence, better

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<sup>13</sup> AECOM, *supra* note 3, at S6.

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

<sup>16</sup> *See generally*, U.S. ARMY CORPS OF ENG'RS, *Potential Impact of Anticipated Sea Level Change on Coastal Areas by 2100*, <http://www.nad.usace.army.mil/compstudy> (last visited Apr. 10, 2015).

<sup>17</sup> U.S. ARMY CORPS OF ENG'RS, *REDUCING COASTAL RISK ON THE EAST AND GULF COASTS* 1 (Nat. Acad. Of Science 2014) (*hereinafter* USACE).

<sup>18</sup> U.S. GLOBAL CHANGE RESEARCH PROGRAM, *CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT* 583 (Jerry Melillo, Terese Richmond, & Gary Yohe eds., 2014).

<sup>19</sup> *Id.* at 10.

<sup>20</sup> *Id.* at 583.

protect tax-payer funded infrastructure.<sup>21</sup> This is the right move for the nation, and will be beneficial to our economy in the long-run.

*The Updated Standard provides long-term cost savings*

Over the long-term, the new standards will reduce the costs of post-flood recovery. As mentioned above, flooding has cost the US economy an estimated \$260 billion within the last 30 years. Dollar losses due to tropical storms and other flood events have tripled over the past 50 years, and currently comprise approximately half of all natural disaster losses.<sup>22</sup> The federal government has assumed an increasing proportion of the financial responsibility associated with recovery after a flooding event,<sup>23</sup> and as 85% of all disaster declarations are flood-related,<sup>24</sup> this puts a heavy burden on the taxpayer.

While building to a higher standard may raise upfront costs, a significant reduction or complete avoidance of the potential damage that could be caused by a flood often greatly outweighs the higher upfront cost.<sup>25</sup> For example, in Maricopa Arizona, State legislatures enacted legislation requiring builders and developers to comply with strict standards for flood control and storm water management. The statute applied to residential, commercial, and industrial properties, and required all building be built one foot above the base flood elevation.<sup>26</sup> Due to the higher building standard, it is estimated \$2.9 billion was saved as avoided damages after an October 2000 flood.<sup>27</sup>

Pre-disaster mitigation efforts, which include building to a higher standard, are proven to reduce the associated costs of post-disaster recovery. The benefit-cost ratio of FEMA Hazard Mitigation grants is illustrative of this assertion: every dollar spent on a FEMA hazard mitigation grant produced, on average, four dollars of benefits—a significant return on public dollar expenditures. For floods, the average benefit increases to five dollars for

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<sup>21</sup> Exec. Order No. 13690, 80 FR 6425 (Feb. 4, 2014) (requiring federal agencies to account for future climate-related flood risk and build higher when funding infrastructure in coastal floodplains).

<sup>22</sup> USACE, *supra* note 17, at 12.

<sup>23</sup> *Id.* at 1; see also Daniel Weiss & Jackie Weidman, *Disastrous Spending: Federal Disaster-Relief Expenditures Rise Amid More Extreme Weather*, Center for American Progress, Apr. 29, 2013 available at <https://www.americanprogress.org/issues/green/report/2013/04/29/61633/disastrous-spending-federal-disaster-relief-expenditures-rise-amid-more-extreme-weather> (From 2011-2013 extreme weather events cost \$188 billion in economic damages; the federal government spent \$136 billion on disaster relief during the same time period).

<sup>24</sup> *Id.*

<sup>25</sup> See generally, ASS'N OF STATE FLOODPLAIN MANAGERS, *MITIGATION SUCCESS STORIES IN THE UNITED STATES* (4th ed. 2002) (Multiple case studies demonstrate the cost savings achieved by elevating residential structures above the base flood elevation in floodplains).

<sup>26</sup> *Id.* at 3.

<sup>27</sup> *Id.* at 4.

every dollar invested.<sup>28</sup> The benefits of hazard mitigation are the avoided losses, losses that would have occurred if mitigation had never been implemented. In addition, the new standards should encourage project managers to consider moving the project to higher ground, where the flooding risk is significantly reduced and where less flood protection would be required, offering a potential decrease in capital costs.

As a testament to the feasibility of such standards, a number of states and local jurisdictions have implemented similar measures. Five States: Indiana, Maryland (State-owned structures), Montana, New York, and Wisconsin, have a minimum statewide freeboard standard of 2 feet.<sup>29</sup> In addition, over 230 local jurisdictions have similarly adopted standards, with 42 local jurisdictions requiring a freeboard standard of 3 feet for all infrastructure, not just infrastructure deemed critical.<sup>30</sup> Clearly, states and local jurisdictions have not found such measures to be economically detrimental.

#### *The Updated Standard Will Not Increase National Flood Insurance Program Premiums*

The implementation of the Draft Guidelines likely will not raise NFIP rate premiums. The definition of a “federal action” is unchanged from Executive Order 11988,<sup>31</sup> which has not applied to local floodplain development standards, flood hazard mapping procedures, or federal insurance in the past. The premiums that NFIP policy holders pay for flood insurance are determined by their level of flood risk as indicated on FEMA’s Flood Insurance Rate Maps (FIRMs). Based on precedent, the Updated Standard should have the same effect on FIRMs, which is no effect as it does not apply. As such, the issuance of FIRMs will not change, hence, NFIP premium rates will not change.

Moreover, the executive order neither directly applies to state or local governments, nor the floodplain management ordinances they may have adopted. Hence, the Updated Standard will not trigger a need to update local floodplain management ordinances. In general, private development will not be affected.

However, if NFIP communities mirror the requirements of the Executive Order 13690 in their local ordinances, a likely result would be reduced flood insurance premiums per resident - not more expensive flood insurance. Property owners pay lower rates if their properties are elevated

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<sup>28</sup> Adam Rose, et al., *Benefit-Cost Analysis of FEMA Hazard Mitigation Grants*, 8(4) NAT. HAZARDS REV. 97, 98 (2007).

<sup>29</sup> See ASS’N OF STATE FLOODPLAIN MANAGERS, STATES AND OTHER COMMUNITIES IN FEMA CRS WITH BUILDING FREEBOARD REQUIREMENT (2015) (compiling a list of states and communities with freeboard above 2 feet).

<sup>30</sup> Id.

<sup>31</sup> Compare Exec. Order No. 11988, 3 C.F.R., 1977 Comp., p. 117 (listing federal responsibilities to which the standard applies) with Fed. Emergency Mgmt. Agency, Revised Guidelines for Implementing Executive Order 11988, Floodplain Management 22 (2015) available at <https://www.fema.gov/media-library/assets/documents/101761>. (defining the term “action”).

higher than the base flood elevation or are located outside the special flood hazard area. In fact, the Updated Standard will likely decrease NFIP premium rates significantly for buildings subject to the Updated Standard.<sup>32</sup>

### **The Standard and Draft Guidelines Provide a Pivotal Framework for Reducing our Nation’s Exposure to Flood risk.**

#### *Flexibility of Three Option Approach*

NRDC and American Rivers approve of the flexible, three-option approach established within the Updated Standard.<sup>33</sup> For federal agencies, this framework provides a reasonable model to delineate flood elevation and flood hazard area in order to best mitigate their flood risk. Each option ensures that the more frequent uncertainties associated with climate change and other future changes are adequately accounted for when federal agencies engage in an action that will affect the floodplain.

The climate-informed science approach is vital improvement to Executive Order 11988. NRDC and American Rivers strongly recommend the provision for using the “best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science” be clearly defined and explained in the Draft Guidelines. As discussed in Part II Section 1.B.1,<sup>34</sup> each agency is permitted to conduct their own hydrology study informed by expected changes in climate and land-use standards to delineate the riverine floodplain. However, a detailed account of the various factors for which the study should account are lacking. Developing a minimum set of factors that should be accounted for in the hydrology study recommended under Part II Section 1.B.1 is necessary to ensure that all federal actions are in fact attaining the minimum intentions of the revised Executive Order. However, this proposed set of factors should not be exclusive to allow for advances in climate science. A more developed explanation in this section will not compromise the benefits that the flexible framework approach provides.

Additionally, the Freeboard Value Approach is a requisite update. While a significant amount of climate science has already been developed, there are still uncertainties as to how climate change will affect flood conditions. As noted above, SLR coastal science is generally more advanced and defined, with greater confidence than riverine climate science. As such, the freeboard value approach provides a flexible and effective option for federal agencies to account for the uncertainties of climate change when their actions may negatively affect riverine floodplain. The

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<sup>32</sup> See ASS’N OF STATE FLOODPLAIN MANAGERS, FEDERAL FLOOD RISK MANAGEMENT STANDARD AND EO 13690-ANALYSIS 2 (2015) *available at* <http://www.floods.org/index.asp?menuID=810&firstlevelmenuID=187&siteID=1>.

<sup>33</sup> FED. EMERGENCY MGMT. AGENCY, REVISED GUIDELINES FOR IMPLEMENTING EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT 22 (2015) *available at* <https://www.fema.gov/media-library/assets/documents/101761> (*hereinafter* FEMA).

<sup>34</sup> *Id.* at 43.

importance of the freeboard value approach is that it expands the floodplain area beyond the footprint of the traditional Special Flood Hazard Area (SFHA). The higher vertical elevation and expanded footprint ensure that the uncertainties associated with climate change and other future conditions are adequately accounted for in federal agency planning. Currently, almost all state and local governments apply the requirement for higher freeboard to the footprint of the SFHA. Cutting the elevation requirement off at the current SFHA creates artificial islands of protection because future conditions are not addressed. Future flooding will be influenced by factors such as altered precipitation patterns and land use decisions. By solely adding a higher elevation standard to the current understanding of the SFHA, infrastructure located at the fringes will remain susceptible. Thus, expanding horizontally, in addition to vertically, ensures that future conditions, in particular the effects of climate change, are accounted for when federal agencies are carrying out actions that will affect a floodplain.

As for the 500-year flood level option, we support its use in riverine environments. However, as current data produced by FEMA for coastal regions neither addresses local wave action nor storm-induced erosion; we recommend the Draft Guidelines prohibit a federal agency from selecting this option if they will be directly vulnerable to these hazards. Instead, agencies in this type of scenario should be encouraged to use the climate-science data approach if the information is readily available, and if not the freeboard value approach.

In critique, NRDC and American Rivers recommends that the term “floodplain” not be used to reference the three options, described in Part 1, Section 6, from which an agency may select to establish the FFRMS elevation and flood hazard area. The definition of the term “floodplain” in the guidelines is inconsistent, and may cause confusion upon implementation at the agency level. For example, under the Glossary section, line 84, a floodplain is defined as follows: “the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands. For the purposes of this Order, the floodplain shall be established using the FFRMS.” Yet, in Part II, Step 1.A, a floodplain is described as any land area susceptible to being inundated from any source flooding, including those which can be flooded from small and often dry watercourses. Instead, we propose that the three approaches for establishing the FFRMS elevation and flood hazard area be referenced in terminology that is more representative of their aim – flood risk reduction. However, to reiterate we are strongly supportive of expanding the flood-hazard area as the freeboard value approach requires.

#### *Addition of a Critical Action Definition*

NRDC and American Rivers agree that the addition of subsection (d) to Section 6 of Executive Order 11988, which requires a higher standard for critical actions, will provide an extra layer of protection to infrastructure that is involved in human safety, health and welfare. We recommend MitFIG and the Water Resources Council maintain this important provision in the final rule, and expand upon how it should be implemented and whether infrastructure that directly supports a critical action should also be subject to additional scrutiny.



*The Determination of Substantial Damage on a Cumulative Basis is an Important Mechanism to Update Our Existing Infrastructure.*

NRDC and American Rivers support the provision in the Updated Standard that encourages federal agencies to make a substantial damage/improvement determination on a cumulative basis, in which federal investments are tracked over a specific period of time.<sup>35</sup> We recommend MitFLG and/or the Water Resources Council go one step farther, and mandate that substantial damage/improvement determinations must be calculated on a cumulative basis. Implementing the determination of substantial damage/improvement on a cumulative basis is key for upgrading billions of dollars' worth of existing federal infrastructure that is increasingly exposed to flooding risk due to climate change.

### **The Natural Systems and Nature-based Approaches Requirement Provides Floodplain Preservation and Habitat Protection:**

NRDC and American Rivers strongly recommend a bold articulation of the amendment to section 2(a)(2) of Executive Order 11988 during finalization of the Draft Guidelines.<sup>36</sup> The amendment asserts federal agencies, where possible, shall use natural-systems, ecosystem processes and nature-based approaches when developing alternatives for consideration. Wise floodplain management achieves the dual goals of flood loss reduction, and the conservation and protection of the natural and beneficial functions of floodplains.<sup>37</sup> Natural systems and nature-based risk reduction strategies provide multiple benefits, inclusive of but not limited to mitigating flood levels and generating economic revenue.<sup>38</sup>

Flooding is a natural occurrence in which floodplains and coastal zones are formed.<sup>39</sup> As such, these natural systems allow for increased carrying capacity during high-water periods.<sup>40</sup> Additionally, floodplain and coastal zones help stabilize the shoreline and riverbanks, provide habitat for terrestrial and aquatic wildlife, control erosion, and improve water quality by filtering pollutants.<sup>41</sup> These biologic processes in return provide ecosystem services benefits by providing the habitat necessary for commercial and recreational fisheries, better quality drinking water, and the promotion of tourism.<sup>42</sup>

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<sup>35</sup> FEDERAL FLOOD RISK MANAGEMENT STANDARD 3 (2015) *available at* <https://www.fema.gov/media-library/assets/documents/101759>.

<sup>36</sup> FEMA, *supra* note 31, at 3.

<sup>37</sup> ASS'N OF STATE FLOODPLAIN MANAGERS, NATURAL AND BENEFICIAL FLOODPLAIN FUNCTIONS: FLOODPLAIN MANAGEMENT – MORE THAN FLOOD LOSS REDUCTION 1 (2008) (*hereinafter* ASFPM).

<sup>38</sup> USACE, *supra* note 17, at 96.

<sup>39</sup> ASFPM, *supra* note 35, at 2.

<sup>40</sup> USACE, *supra* note 17, at 96.

<sup>41</sup> ASFPM, *supra* note 35, at 3.

<sup>42</sup> USACE, *supra* note 17, at 96.

Numerous states and local jurisdictions have adopted similar measures for coastal and riverine developments.<sup>43</sup> For example, Delaware Executive Order 41 the use of natural systems or green infrastructure where practical and effective for any state new construction or reconstruction.<sup>44</sup> Hence, limiting floodplain development, and encouraging economic growth do not have to be mutually-exclusive if a natural-systems approach is pursued.

Use of natural approaches to reduce flood risk is proven to work and examples can be found across the country.

- The award-winning Napa River Flood Management Plan uses “living river principles” including restoration of marsh plain and floodplain terraces, lowering old dikes, and using dry oxbows as flood bypasses to reduce flood risk, while restoring the river ecosystem and boosting the local riverfront economy.<sup>45</sup>
- Following Hurricane Irene in 2011, many local roads washed out where stream culverts failed to handle increased water flow. However, road-stream crossings that were constructed using stream simulation design which encompasses the entire stream channel and have increased flow capacity, did not wash out and did not have to be rebuilt.
- The Coastal Barrier Resources Act makes undeveloped coastal barriers along the Atlantic and Gulf Coasts ineligible for federal expenditures and financial assistance in order to ensure these areas remain undeveloped. This ensures that taxpayers do not end up paying for flood damage in high-risk areas and that ecologically-sensitive coastal floodplains are preserved in their natural state.

### **Higher State and Local Standards Must Not Be Weakened by Implementation of the Updated Standard.**

If a state or local government has and/or will implement a higher standard than the proposed federal standard, then federally built or funded infrastructure should be required to build to the higher local standard. Per section 3(a), federally built or funded infrastructure must be in accord with the standards of the National Flood Insurance Program, which includes that the cumulative effect of a proposed action will not increase the water surface elevation more than one foot any point within the community wherein the action is proposed. The explanatory comments state that if a more restrictive rise standard is in effect in States and Local communities, then those standards take precedence. Additionally, we support the concept in Part II, lines 1309-1319 that asserts the Updated Standard is not intended to supplant state or local floodplain protection

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<sup>43</sup> Living Shoreline Protection Act of 2008, *available at* <http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/Pages/TidalRegsLivingShoreline.aspx> .

<sup>44</sup> *Preparing Delaware for Emerging Climate Impacts and Seizing Economic Opportunities from Reducing Emissions*, Exec. Order 41 (Del. 2013).

<sup>45</sup> NAPA COUNTY, *Napa River and Creek Flood Project*, Flood Control and Water Conservation District, <http://www.countyofnapa.org/FloodDistrict> (last visited Apr. 14, 2015).

standards. We encourage strong articulation of the statement “if [state or local] standards exceed the [Updated Standard] the federal agency should apply such standards if the agency determines the application of the standards is reasonable in light of the goals of E.O. 11988.”

### **The Updated Standard Should be Quickly Implemented**

Finally, NRDC and American Rivers recommend that the Water Resource Counsel adopt the Draft Guidelines in a timely manner, and does not bow to pressure to weaken or delay their implementation. As discussed above, climate change is exacerbating the exposure of our nation’s infrastructure to flood risk. Over the long-term, the Executive Order 13690 and the Updated Standard will significantly reduce the costs of post-flood recovery and promote sound investment of taxpayer dollars. We appreciate the opportunity to offer these comments and greatly commend the proposal of the Updated Standard as it represents a significant step forward in making our nation resilient to climate change.

Sincerely,

Joel Scata  
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