

Revised Guidelines for Implementing Executive Order 11988, Floodplain Management

DRAFT FOR PUBLIC COMMENT

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Revised Guidelines for Implementing Executive Order 11988, *Floodplain Management* (Updated January 28, 2014)

Glossary

Throughout this document, the following basic definitions shall apply:

- *1-percent-annual-chance Flood* – the flood having a one chance in 100 of being equaled or exceeded in any one-year period (also known as the “100-year” flood or “base flood”).
- *1-percent-annual-chance Flood Elevation* – the computed elevation to which floodwater is anticipated to rise during the 1-percent-annual-chance flood (also known as the “100-year flood” elevation or the “base” flood elevation).
- *1-percent-annual-chance Floodplain* – the area subject to flooding by the 1-percent-annual-chance flood (also known as the “100-year” floodplain or “base” floodplain).
- *0.2-percent-annual-chance Flood* – that flood which has a 0.2-percent chance of being equaled or exceeded in any given year (also known as the “500-year” flood).
- *0.2-percent-annual-chance Flood Elevation* – the computed elevation to which floodwater is anticipated to rise during the 0.2-percent-annual-chance flood (also known as the “500-year” flood elevation).
- *0.2-percent-annual-chance Floodplain* – the area subject to flooding by the 0.2-percent-annual-chance flood (also known as the “500-year” floodplain).
- *“500-year” Elevation Approach* (See definition under *Federal Flood Risk Management Standard*.)
- *Action* – any Federal activity including “(1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.” (from E.O. 11988 Section 1)
- *Agency* – an executive department, a government corporation, or an independent establishment and includes the military departments.
- *Base Flood* – that flood which has a one percent chance of being equaled or exceeded in any given year (also known as a “100-year” flood).
- *Base Flood Elevation* – the computed elevation to which floodwater is anticipated to rise during the base flood. Base Flood Elevations (BFEs) are shown on the Flood Insurance Rate Maps (FIRMs) and on the flood profiles in the Flood Insurance Study (FIS).
- *Base Floodplain* – the area subject to flooding by the base flood (also known as the “100-year” floodplain).

- 74 • *Climate-informed Science Approach* (See definition under *Federal Flood Risk*
75 *Management Standard*.)
- 76 • *Critical Action* – any activity for which even a slight chance of flooding would be too
77 great.
- 78 • *Facility* – any man-made or man-placed item other than a structure.
- 79 • *Flood or Flooding* – a general and temporary condition of partial or complete inundation
80 of normally dry land areas from the overflow of inland and/or tidal waters, and/or the
81 unusual and rapid accumulation or runoff of surface waters from any source.
- 82 • *Flood Fringe* – that portion of the floodplain outside of the regulatory floodway (often
83 referred to as “floodway fringe”).
- 84 • *Floodplain* – the lowland and relatively flat areas adjoining inland and coastal waters
85 including flood prone areas of offshore islands. For the purposes of this Order, the
86 floodplain shall be established using the Federal Flood Risk Management Standard
87 (FFRMS).
- 88 • *Federal Flood Risk Management Standard (FFRMS)* – When complying with this Order,
89 the floodplain shall be established using one of the following approaches:
 - 90 ○ *Climate-informed Science Approach* – The elevation and flood hazard area that
91 result from using a climate-informed science approach that uses the best-
92 available, actionable hydrologic and hydraulic data and methods that integrate
93 current and future changes in flooding based on climate science. This approach
94 will also include an emphasis on whether the action is a critical action as one of
95 the factors to be considered when conducting the analysis.
 - 96 ○ *Freeboard Value Approach* – The elevation and flood hazard area that result from
97 using the freeboard value, reached by adding an additional 2 feet to the base flood
98 elevation for non-critical actions and from adding an additional 3 feet to the base
99 flood elevation for critical actions.
 - 100 ○ *“500-year” Elevation Approach* – The area subject to flooding by the 0.2-
101 percent-annual-chance flood.
- 102 • *Floodproofing* – the modification of individual structures and facilities, their sites, and
103 their contents to protect against structural failure, to keep water out or to reduce the
104 effects of water entry.
- 105 • *Freeboard Value Approach* (See definition under *Federal Flood Risk Management*
106 *Standard*.)
- 107 • *Minimize* – to reduce to the smallest possible amount or degree.
- 108 • *National Security* – a collective term that encompasses both national defense and foreign
109 relations of the United States. Specifically, national security is a condition that is
110 provided by either (a) a military or defense advantage over any foreign nation or group of
111 nations; (b) a favorable foreign relations position; or (c) a defense posture capable of
112 successfully resisting hostile or destructive action from within or without, overt or covert.

- *Natural Features* – characteristics of a particular environment (e.g. barrier islands, sand dunes, wetlands) that are created by physical, geological, biological and chemical processes and exist in dynamic equilibrium. Natural features are self-sustaining parts of the landscape that require little or no maintenance to continue providing their ecosystem services (functions).
- *Nature-based Approaches* – features (sometimes referred to as “green infrastructure”) designed to mimic natural processes and provide specific services such as reducing flood risks and/or improving water quality. Nature-based approaches are created by human design (in concert with and to accommodate natural processes) and generally, but not always, must be maintained in order to reliably provide the intended level of service.
- *Natural and Beneficial Values of Floodplains* – features or resources that provide environmental and societal benefits. These values include, but are not limited to, storing and conveying floodwaters, maintaining water quality, providing habitats and enhancing biodiversity, creating rich soils for agriculture, and providing open space for recreation and environmental education. (Note that water and biological resources are often referred to as “natural functions of floodplains.”)
- *Practicable* – capable of being done within existing constraints. The test of what is practicable depends upon the situation and includes consideration of the pertinent factors, such as environment, cost or technology.
- *Preserve* – to prevent modification to the natural floodplain environment or to maintain it as closely as possible to its natural state.
- *Regulatory Floodway* – the channel of the river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
- *Resilience* – the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.
- *Restore* – to re-establish a setting or environment in which the natural functions of the floodplain can again operate.
- *Structures* – a walled and roofed building, including a gas or liquid storage tank, that is principally aboveground, as well as a manufactured home (as defined by the NFIP).
- *Wetlands* – “those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that require saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mudflats, and natural ponds” (as defined in Executive Order 11990, *Protection of Wetlands*).

Introduction

Executive Order 11988 – Floodplain Management (E.O. 11988) signed May 24, 1977, revoked and replaced Executive Order 11296 (E.O. 11296), issued August 10, 1966. It establishes a general policy and cites specific requirements for compliance by Federal executive agencies (hereafter referred to as agencies). Executive Order 11988 (hereafter referred to as the Order) requires agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid the direct or indirect support of floodplain development whenever there is a practicable alternative. The preferred method for satisfying this requirement is to avoid sites in the base floodplain. If an action must be located in the base floodplain, the Order requires that agencies minimize potential harm to people and property and to natural and beneficial floodplain values. Losses caused by flooding affect the environment, our economic prosperity, and public health and safety, each of which affects our national security.

E.O. 11988 is based in part on the National Environmental Policy Act of 1969. When the Order was issued, it added new prominence to the environmental aspects of floodplain management that were not present in the Executive Order it replaced (E.O. 11296). E.O. 11988 achieved this by requiring that decision-making by Federal agencies clearly recognize that floodplains have unique and significant public values. Because of the Order, consideration must be given to natural and beneficial floodplain values and to the public benefit to be derived from their restoration or preservation.

E.O. 11988 also directs implementation of *A Unified National Program for Flood Plain Management* (originally published in 1976 and updated in 1979, 1986, and 1994), which sets forth a conceptual framework and recommends Federal and State actions for a continuing unified program for planning and action at all levels of government to reduce the risk of flood losses through floodplain management. The Unified National Program includes a broad Federal effort, both directly and by example, to pursue the wise and nonhazardous use of floodplains including recognition of natural and beneficial floodplain values.

To assure compliance with the Order, provision is made for both public and Federal review of proposed actions. Early public notice, an environmental impact statement or its equivalent, and notice of findings are vehicles for providing information and opportunity for public participation. Budgetary review of compliance with the Order and periodic review of agency procedures provide for further review. In providing opportunity for these reviews, the potential for withholding of budget approval should be minimized.

E.O. XXXXX – *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, issued January XX, 2015, amended E.O. 11988 to improve the Nation’s resilience to current and future flood risk, which is anticipated to increase over time due to the effects of climate change and other threats. E.O.

XXXXX, and the Federal Flood Risk Management Standard (FFRMS), reinforce the important tenets and concepts articulated in E.O. 11988, such as avoiding actions in or impacting the base floodplain and minimizing potential harm if an action must be located in the base floodplain. E.O. XXXXX and the FFRMS, however, call for agencies to use a higher flood elevation and expanded flood hazard area than the base flood previously described in the Order to ensure that climate change and other future changes are more adequately accounted for in agency decisions.

These Guidelines are advisory. They provide broad guidance in the implementation of the Order and offer a common point of reference for each agency to prepare implementing procedures for compliance with the Order. The interpretations in the Guidelines are built upon a strong Executive Order and directed at development of demonstrable Federal leadership in floodplain management. These Guidelines recognize: (1) the impossibility of anticipating the full range of individual program situations affected by the Order, and (2) the responsibility for individual agencies to tailor their procedures to meet both their legislatively prescribed missions and the requirements of the Order. The Guidelines also recognize other requirements governing agency decisions, including the *Principles and Guidelines for Water and Land Related Resources Implementation Studies* (now updated and referenced as *Principles, Requirements and Guidelines or PR&G*), FEMA’s *Federal Guidelines for Dam Safety*, and the Federal Energy Regulatory Commission *Engineering Guidelines for the Evaluation of Hydropower Projects*.

E.O. XXXXX states that prior to any action to implement the Standard, additional input from stakeholders shall be solicited and considered. To carry out this process, the Federal Emergency Management Agency, on behalf of the Mitigation Framework Leadership Group, shall publish for public comment a draft version of these Implementing Guidelines and hold public meetings to further solicit stakeholder input. At the conclusion of the public comment period, the Mitigation Framework Leadership Group shall revise the draft Implementing Guidelines, based on comments received during the public comment period, and provide recommendations to the Water Resource Council. The Water Resources Council shall issue amended Guidelines to provide guidance to agencies on the implementation of Executive Order 11988, as amended, consistent with the Standard. Agencies shall not issue or amend existing regulations or procedures until after the Water Resource Council has issued amended Guidelines informed by stakeholder input.

These Guidelines are advisory. To the extent permitted by law and consistent with their statutory authority, each agency shall draft or update their own rules and regulations in consultation with the Water Resources Council, Federal Interagency Floodplain Management Task Force, Federal Emergency Management Agency, and the Council on Environmental Quality. E.O. XXXXX provides agencies with a 30-day timeframe from the close of the public comment period for the Implementing Guidelines to develop an implementation plan for updating their procedures. The implementation plan will be submitted to the National Security Council and contain milestones and a timeline for implementation. Information about the

FFRMS has been incorporated into the Guidelines to aid agencies in development of their revised or new procedures and to promote consistency among agencies.

The Guidelines are presented in two sections. Part I: Interpretation of Executive Order 11988, provides a section-by-section explanation and interpretation of the Order. Part II: Decision-Making Process, discusses the decision-making process required by Section 2 of the Order and is critical to the development of agency procedures. Part II also includes more detailed explanations of how the FFRMS should be incorporated into this decision-making process. The Guidelines do not intend to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances.

Appended to the Guidelines are descriptions of agency programs providing floodplain information, related programs and references, and the President's Policy Statement and copies of the complete Executive Orders – *Floodplain Management*, *Protection of Wetlands*, and *Protection and Enhancement of Environmental Quality*, and *Preparing the United States for the Impacts of Climate Change* as well as E.O. XXXXX – *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* and the *Federal Flood Risk Management Standard*.

Executive Order 11990 – *Protection of Wetlands* has been included because most of the Nation's wetlands are located on floodplains. Also, both the floodplain and wetland orders were issued as part of the *President's Message on the Environment*, May 24, 1977. Thus the guidance provided in this document and the agency procedures for floodplain management will frequently apply to wetlands. Agencies may wish to develop a single set of procedures for these orders.

Executive Order 11514 – *Protection and Enhancement of Environmental Quality* has been included to clarify the public notice aspects of the Order.

Executive Order 13653 – *Preparing the United States for the Impacts of Climate Change* has been included to provide context for Federal efforts to improve the Nation's preparedness and resilience in response to the impacts of climate change.

Executive Order XXXXX – *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* and the *Federal Flood Risk Management Standard* have been included, which expands management from the base flood level to a higher vertical flood elevation and corresponding horizontal floodplain to address current and future flood risks. The language used in E.O. XXXXX and the FFRMS reflects a transition beyond a former emphasis on *flood control and protection* to a broader focus on *flood risk management*. This includes an array of methods for managing floodwaters to reduce the risk of flooding and managing and regulating floodplain development to reduce the impacts of flooding. Changes in terminologies from “protection” to a broader focus on resilience and risk management reflect the recognition that floodwaters cannot be fully controlled, full protection from floods cannot be provided by any measure or combination of measures, and risk cannot be

262 completely eliminated. Instead, management techniques involving coordinated efforts of
263 individuals, property owners, businesses, and Federal, State and Local governments can be used
264 to manage the level of risks in a floodplain. The term “resilience” was not commonly used when
265 E.O. 11988 was originally written, but the Order’s emphasis on avoidance, minimization,
266 preservation, and restoration align well with this concept of resilience.

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Part I: Interpretation of Executive Order 11988

This part of the Guidelines provides a detailed, section-by-section discussion of the Order. Although the original interpretations in the Guidelines were developed by CEQ, WRC, and HUD/FIA, the current Guidelines were developed through a broader interagency process to reflect a unified Federal perspective. Key concepts are discussed and reference is made to the decision-making process (Part II).

INTRODUCTION

By virtue of the authority vested in me by the Constitution and statutes of the United States of America, and as President of the United States of America, in furtherance of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4001 et seq.), and the Flood Disaster Protection Act of 1973 (Public Law 93-234, 87 Stat. 975), in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, it is hereby ordered as follows:

The introduction establishes the broad scope of the Order derived from NEPA and the flood insurance legislation. (Part II – Step 4 discusses impacts associated with the occupancy and modification of floodplains and support of floodplain development. Part II – Step 3 discusses the practicability of alternatives.) Agencies are reminded that they are required to comply with E.O. 11988 for Federal actions in a floodplain that are not significant enough to require the preparation of an environmental impact statement (EIS) under Section 102(2)(C) of NEPA. (See Part II – Step 2) For actions in the floodplain requiring an EIS, or Environmental Assessment (EA), or documented Categorical Exclusion (CE) under NEPA, the agencies can run the NEPA process in parallel with the Order’s public notification and comment process. In such cases, agencies should include the results of the evaluation of a proposed action’s impacts on the floodplain in any environmental assessment prepared under NEPA. (See Part I – Section 2 and Part II – Step 7).

SECTION 1

Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

The basic concepts expressed in Section 1 of the Order are: (1) all agencies are covered; (2) all actions are covered; (3) all agencies are to affirmatively carry out efforts to, and provide a good example of, sound floodplain management practices; and (4) all agencies are required to act, not merely consider, reducing risk, minimizing adverse impacts, and restoring and preserving floodplain values.

The comprehensiveness of the Order recognizes that each agency, in carrying out the various types of actions enumerated in this section, can affect the floodplain through any of its actions. The mandate that the agencies take a leadership role places them in a unique position relative to State, Tribal, Regional, and Local levels of government in carrying out actions which affect the floodplain. This role requires the agencies to lead other public and private entities in achieving the goals of the Order by setting a good example. (The concepts of reducing risk, minimizing impact, and restoring and preserving floodplain values are discussed in Part II – Step 5.)

SECTION 2

In carrying out the activities described in Section 1 of this Order, each agency has a responsibility to evaluate the potential effects of any actions it may take in a floodplain; to ensure that its planning programs and budget request reflect consideration of flood hazards and floodplain management; and to prescribe procedures to implement the policies and requirements of this Order, as follows, to the extent permitted by law:

Three concepts are introduced in this section: evaluation, construction vs. planning programs, and implementation. Evaluation as discussed in these Guidelines goes beyond identifying the impacts of a specific proposal and includes an ongoing analysis of the effects of agency policies and programs and the development of new or improved policies and programs to carry out this Order. (The analysis of the full range of their effects is discussed in Part II-Step 4.A.) By including planning programs as a separate item, the Order emphasizes that all actions, even those which do not result in a physical change, must be evaluated for their impacts to or within the floodplain. Implementation means that agencies must adopt and carry out evaluation procedures. The results of this evaluation should be included in any environmental documents (EIS, EA, or documented CE) prepared under NEPA. (See Part II – Step 7.)

SECTION 2(a)(1)

Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain – for major Federal actions significantly affecting the quality of the human environment, the evaluation required below will be included in any statement prepared under Section 102(2)(C) of the National Environmental Policy Act. To determine whether the action is located in a floodplain, the agency shall use one of the approaches in Section 6(c) of this order based on the best-available information and the Federal Emergency Management Agency's effective Flood Insurance Rate Map.

The intent of this subsection is that agencies use the best available information in determining whether a proposed action will be located in a floodplain. Section 6(c) as amended by E.O. XXXXX describes how the flood elevation and flood hazard area should be determined for purposes of the Order. (See Part II – Step 1 for more information about how to determine the flood elevation and flood hazard area.)

SECTION 2(a)(2)

If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplain. Where possible, an agency shall use natural systems, ecosystem processes, and nature-based approaches when developing alternatives for consideration. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this Order requires siting in a floodplain, the agency shall, prior to taking action, (i) design or modify its action in order to minimize potential harm to or within the floodplain consistent with regulations issued in accord with Section 2(d) of this Order, and (ii) prepare and circulate a notice containing an explanation of why the action is proposed to be located in the floodplain.

The major issues here include: (1) consideration of alternatives which will avoid the floodplain, wherever practicable, and alternatives which will avoid adverse effects and incompatible development (development which has adverse effects); (2) minimization of harm to or within the floodplain resulting from proposed actions; and (3) circulation of a notice ("finding") to the general public and affected agencies that siting in the floodplain is the only practicable alternative. The notice requirement introduced in this subsection is part of a larger concern for public notice and review carrying through to Section 4.

This section does not provide a standard for minimizing harm because of the great variety of actions and environments subject to the requirement. Instead, the Order expressly recognizes that it is more appropriate for agency procedures to spell this out for specific programs and activities.

Two important points should be noted about the standards to be embodied in agency procedures. First, while minimize means reduce to the smallest amount or degree; there is an implicit acceptance of practical limitations. Agencies are required to use all *practicable* means and measures to minimize harm. The Order does not expect agencies to employ unworkable means to meet this goal. Second, agency procedures are intended to be consistent with the standards in the National Flood Insurance Program. For this reason, agencies are required to consult with FEMA before issuing their procedures, and agencies with control over federal property are required to follow the standards in FEMA's regulations unless they are demonstrably inappropriate.

(Avoidance is discussed in Part II Steps 3 and 4. Minimization is discussed in Part II-Step 5. Findings and public notice are discussed in Part II Steps 2 and 7.)

E.O. XXXXX amended Section 2(a)(2) to encourage the use of natural systems, ecosystem processes, and nature-based approaches when developing alternatives for a proposed action. The use of nature-based approaches, combined with the preservation and restoration of natural systems and ecosystem processes where appropriate, provide numerous benefits and support a system-wide, watershed approach¹ to flood risk management that considers the interdependencies of natural systems. Encouraging the use of natural features and nature-based approaches earlier in the planning and design of Federal actions is consistent with Federal government policies, programs, and best practices including the *Principles, Requirements and Guidelines for Federal Investments in Water Resources*, *Principles and Guidelines for Water and Land Related Resources Implementation Studies*, *E.O. 13653, Preparing the United States for the Impacts of Climate Change*, and the President’s *Climate Action Plan*, and the *Priority Agenda – Enhancing the Climate Resilience of America’s Natural Resources*. These and other documents encourage and support use of natural features and nature-based approaches to reduce flood risks and protect the natural and beneficial values of floodplains.

Nature-based systems can include both natural and engineered features. This could include restoration of a system’s natural processes, for example, lowering or removing levees to allow water to flow naturally, restoring wetland functions along a coastal or riverine system, or creating living shorelines.² Agencies are encouraged to consider nature-based approaches, not limited to the examples provided in this document, early in the planning process. They can be used with other types of measures where appropriate (such as low-impact development measures to reduce runoff), as well as with actions that have already occurred in the floodplain. Where nature-based approaches are used alone, in conjunction with natural features, or in conjunction with a structure, facility, or other action, the agency must consider alternatives when the floodplain cannot be avoided, as well as methods to minimize the impacts such approaches may have on the floodplain. These approaches are further explained in Part II – Steps 3 and 4 of the Guidelines.

SECTION 2(a)(3)

For programs subject to the Office of Management and Budget Circular A-95, the agency shall send the notice, not to exceed three pages in length including a location map, to the State and areawide A-95 clearinghouses for the geographic areas affected. The notice

¹ Additional guidance on watershed approaches can be found in the most current version of the *Principles and Guidelines for Water and Land Related Resources Implementation Studies* now referred to as the *Principles, Requirements and Guidelines (PR&G)*.

² A living shoreline is a shoreline management practice that provides erosion control benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural organic materials (e.g., biologs, oyster reefs, etc.). *NOAA Shoreline Website*

shall include (i) the reasons why the action is proposed to be located in a floodplain; (ii) a statement indicating whether the action conforms to applicable State or Local floodplain protection standards and (iii) a list of the alternatives considered. Agencies shall endeavor to allow a brief comment period prior to taking any action.

Items (i), (ii), and (iii) are the minimum to be included in the notice. (The notice requirements set out in this subsection are discussed in Part II – Step 7.)

NOTE: OMB Circular A-95 was revoked by Executive Order 12372 – Intergovernmental Review of Federal Programs, dated July 14, 1982. E.O. 12372 directs agencies to establish mechanisms to communicate and coordinate with State and Local elected officials based on State-established processes and to send the notices explaining a proposed action to the State single point of contact. This serves as a successor to the A-95 clearinghouse process. Because agencies have developed their own agency-specific approaches for complying with E.O. 12372 and other intergovernmental consultation and coordination requirements, the process for notification should be described in agency-specific procedures for implementing E.O. 11988. See Part II – Step 7 for more information.

SECTION 2(a)(4)

Each agency shall also provide opportunity for early public review of any plans or proposals for actions in floodplains, in accordance with Section 2(b) of Executive Order No. 11514, as amended, including the development of procedures to accomplish this objective for Federal actions whose impact is not significant enough to require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969, as amended.

This section requires public notice much earlier than the finding requirement, including notice for actions which do not require environmental impact statements. (The notice requirements set out in this subsection are discussed in Part II – Step 2.)

SECTION 2(b)

Any requests for new authorizations or appropriations transmitted to the Office of Management and Budget shall indicate, if an action to be proposed will be located in a floodplain, whether the proposed action is in accord with this Order.

This subsection complements the public review element in the Order (Subsections 2(a) (2), (3), and (4)). It provides for Federal review and raises the possibility that agency funds may be withheld from proposed actions which are not in accord with the intent of the Order. "In accord with" means in compliance with the policy and mandatory provisions (the letter and spirit) of the Order.

SECTION 2(c)

Each agency shall take floodplain management into account when formulating or evaluating any water and land use plans and shall require land and water resources use appropriate to the degree of hazard involved. Agencies shall include adequate provision for the evaluation and consideration of flood hazards in the regulations and operating procedures for the licenses, permits, loan or grants-in-aid programs that they administer. Agencies shall also encourage and provide appropriate guidance to applicants to evaluate the effects of their proposals in floodplains prior to submitting applications for Federal licenses, permits, loans or grants.

Each agency shall take floodplain management, as provided for in Section 2(d), into account when: (1) formulating its own water and land use plans, and (2) evaluating the water and land use plans of others.

In the operation of a license, permit, loan, or grant-in-aid program, each agency must make adequate provision for the evaluation and consideration of flood hazards. These provisions shall be included in agency's regulations and procedures. When the action involves more than one Federal agency, the "lead agency" will be responsible and will obtain input from all agencies. In all cases, as a minimum, the "practicability" and "minimization" standards of Section 2(a) of the Order apply. Therefore, as a precondition for an agency's approval of an application for a license, permit, loan, or grant-in-aid, the agency must assure that the requirements of Section 2(a) have been met. To the extent that an agency deems the requirements of Section 2(a) not to constitute adequate provision for evaluation and consideration of the flood hazard, the agency shall impose additional requirements.

The flood hazard aspects and to the degree they are quantifiable, the floodplain value aspects should be expressed in terms of: (1) potential (or residuals) for monetary loss; (2) human safety, health, and welfare; (3) shifting of costs or damage to others; and (4) potential for affecting the natural and beneficial floodplain values.

Agencies shall encourage and provide appropriate guidance to applicants to enable them to evaluate the effects of their proposals in floodplains prior to submitting applications for Federal licenses, permits, loans, or grants. It is important that applicants be made aware early in their planning process of the floodplain management parameters which the agency must consider when reviewing the proposed action. In this way, applicants will not go to the trouble of putting together completed plans and submitting them formally before being made aware of the standards to which the agency is subject in reviewing such plans. Agencies are encouraged to refer applicants to the agencies listed in Part II – Table 1 for guidance on floodplain management matters.

SECTION 2(d)

As allowed by law, each agency shall issue or amend existing regulation and procedures within one year to comply with this Order. These procedures shall incorporate the Unified National Program for Floodplain Management of the Water Resources Council, and shall explain the means that the agency will employ to pursue the nonhazardous use of riverine, coastal and other floodplains in connection with the activities under its authority. To the extent possible, existing processes, such as those of the Council on Environmental Quality and the Water Resources Council, shall be utilized to fulfill the requirements of this Order. Agencies shall prepare their procedures in consultation with the Water Resources Council, the Administrator of the Federal Emergency Management Agency, and the Council on Environmental Quality, and shall update such procedures as necessary.

Agency regulations and procedures will systematically address each section of the Order, and their procedures will define the extent to which responsibility for compliance is to be delegated by the agency head.

Each agency is to reflect the conceptual framework of floodplain management as set out in *A Unified National Program for Flood Plain Management (first published in 1976 and updated in 1979, 1986, and 1994)* in its regulations and procedures developed in response to provisions of the Order. Floodplain management according to the Unified National Program has as its goals the "wise use, conservation, development, and utilization of interrelated land and water resources to serve objectives of economic efficiency, environmental quality, and social well-being as consonant with responsibilities." This concept requires that the floodplain be viewed as having a role to play in the future of its surroundings. Within it, further adjustments in the way floodplain land is used or in the way floods behave must be made in a manner that is supportive of this future. From the standpoint of this Order, the Federal posture in floodplain management would be one of overcoming the apparent inertia in environmental value recognition when the appropriate floodplain role is being determined, as well as one of avoiding hazardous and uneconomic uses as part of this future role. The term "uneconomic" also includes the concept of costs shifted by floodplain users to others, both directly and indirectly.

In order to comply with the requirement that the means to be employed to pursue nonhazardous use be identified, each agency will be required to assess the degree of hazard associated with its program activities under a possible range of flood conditions. Then the agency must state the specific kinds of actions or adjustments that would be employed to comply with this section.

To the extent possible, agencies will utilize existing processes established under the CEQ's NEPA regulations and guidance and WRC's Principles, Requirements and Guidelines (PR&G)³ in addition to these Guidelines.

When E.O. 11988 was originally issued, each agency was directed to consult with WRC, CEQ, and the Federal Insurance Agency (FIA) in the preparation of their initial regulations and procedures in response to the Order. This consultation included any issue relevant to compliance with the Order. WRC was the point of contact, and arranged for consultation as needed with an interagency panel including members from the three agencies cited. Each agency's procedures were to identify those actions, if any, which: (1) typically do not create adverse effects or incompatible development, or (2) normally will not require specific agency and public review under the Order. E.O. XXXXX amended E.O. 11988 and directs agencies to consult with WRC, CEQ, FEMA and the Federal Interagency Floodplain Management Task Force when developing their revised regulations and procedures to help ensure that the new regulations and procedures are consistent with the FFRMS.

Agency regulations or procedures should include relevant material in the following areas: (1) *mechanical requirements* that an agency will use to meet the procedural requirements of the Executive Order, such as timing, routing of documents, preparation and circulation of findings and notices, and specific links between the Order and other planning decision-making processes and requirements (e.g., budget process, NEPA, PR&G); (2) *substantive requirements*, such as the standards for determining which alternatives are practicable, and the criteria and methods for minimizing harm (using FEMA regulations and the FFRMS as a guide wherever applicable); (3) *policy direction*, such as incorporation by reference of the Executive Order, Unified Program, NEPA, and other relevant requirements; general policies on the agency's approach to implementing the Order; program-specific policies and commitments to research monitoring and evaluation; and (4) *other information*, such as appendices identifying the agency contacts in Washington and in the field who are principally responsible for implementing the Order, cross-references to other relevant agency procedures and manuals, and other material that will assist agencies and the public to understand just what the agency is doing to comply with the Order.

SECTION 3

In addition to the requirements of Section 2, agencies with responsibilities for Federal real property and facilities shall take the following measures:

³ The Principles & Standards referenced in the original E.O. 11988 Implementing Guidelines was changed in 1983 to the Principles & Guidelines. In 2014, the Principles & Guidelines was updated and is referenced as Principles, Requirements and Guidelines or PR&G. These documents are referenced in Appendix B. Agency-specific guidance should address the relationship between such requirements, and the Order and Implementing Guidelines. At the time of publication of these Guidelines, some agencies continue to follow the 1983 Principles & Guidelines.

The requirements of this section of the Order are supplemental to those of Sections 1 and 2, and must be met by agencies having responsibilities for Federal real property, structures and facilities.

SECTION 3(a)

The regulations and procedures established under Section 2(d) of this Order shall, at a minimum, require the construction of Federal structures and facilities to be in accordance with the standards and criteria and to be consistent with the intent of those promulgated under the National Flood Insurance Program. The regulations and procedures must also be consistent with the Federal Flood Risk Management Standard (FFRMS). They shall deviate only to the extent that the standards of the Flood Insurance Program and FFRMS are demonstrably inappropriate for a given type of structure or facility.

There are three key concepts expressed in this subsection: (1) the relationship of the NFIP and FFRMS requirements to the Order's minimization requirement; (2) the scope and nature of the NFIP and FFRMS requirements, and (3) situations where the NFIP and FFRMS requirements are not applicable to the agency actions.

The intent of this subsection is twofold; first, to assure that the Federal Government will require itself no less than it requires of non-Federal entities for the protection of property from flood hazards, and second, to assure that the NFIP is not undermined by the actions of the Federal agencies. Both the positioning of the reference to the NFIP requirements following the avoidance and minimization responsibilities set out in Section 2 is most significant in that it recognizes the precedence of the requirements of Section 2 and limited scope of the NFIP requirements. Of the three areas of concern which the Order addresses (minimization of harm to lives, property and floodplain values), the NFIP requirements are primarily directed towards the protection of property. Thus, an agency's application of the NFIP requirements to proposed actions does not comprise full compliance with the minimization responsibilities of the Order.

The standards and criteria of the NFIP are directed towards the protection of structures and facilities from the flood hazard and the protection of existing development from the effects of new development. Under the NFIP, residential structures (including basements) are required to be elevated to or above the base flood level. Nonresidential structures may be elevated as described above, or floodproofed watertight to or above the base flood level. For the protection of existing development, the NFIP standards and criteria rely on a regulatory floodway (see Glossary). Agencies are reminded that elevation of structures should be consistent with E.O. XXXXX and the approaches in Part I – Section 6(c).

Under the NFIP, actions involving the placement of facilities are subject to the requirements that the cumulative effect of the proposed action, when combined with all existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community wherein the action is proposed. It should be

noted that the NFIP's one foot stage rise standard is a minimum standard, and more restrictive stage rise standards that are in effect in States and Local communities take precedence over the NFIP standard as set out in 44 CFR 60.1(d) of the NFIP regulations.

This subsection allows deviation from the NFIP and FFRMS requirements only to the extent that their standards and criteria are "demonstrably inappropriate" for a given type of structure or facility. Where this can be demonstrated, the proposed structure or facility must satisfy the requirements of Section 2, and must not endanger existing development, encourage development which would result in harm to or within the floodplain, or itself be vulnerable to flood damage.

SECTION 3(b)

If, after compliance with the requirements of this Order, new construction of structures or facilities are to be located in a floodplain, accepted floodproofing and other flood protection measures shall be applied to new construction or rehabilitation. To achieve flood protection, agencies shall, wherever practicable, elevate structures above the elevation of the floodplain as defined in Section 6(c) of this Order rather than filling in land.

The key concepts in this subsection are: (1) requirements for new construction and existing structures; (2) accepted floodproofing measures and other flood protection measures; and (3) the requirement to achieve flood protection for structures, wherever practicable, without the use of fill. For the purposes of the Order, the term "new construction" includes construction associated with: (1) new structures and facilities; (2) the reconstruction of existing structures and facilities following damage caused by fire, flood or other hazard; and (3) the improvement of existing structures and facilities by rehabilitation, repair, alteration or addition. The application of the Order's requirements to existing structures is emphasized in this section.

Floodplain management practices have set thresholds for what constitutes a major improvement. Under the NFIP, the threshold that was established was 50 percent of the market value of the structure or facility (see, for instance, the NFIP definition of substantial improvement (44 CFR 59.1). In the case of major improvements, agencies are offered an opportunity to compensate for previous siting and design decisions which did not reflect the intent of the Order. In meeting the responsibility to apply the Order's requirement to existing structures, the agencies shall consider whether the proposed action would: (1) result in an increase in the useful life of the structure or facility in question; (2) maintain the investment at risk and the exposure of lives to the flood hazard; or (3) eliminate an opportunity to restore the natural and beneficial floodplain values.

Accepted floodproofing measures for structures are defined under the NFIP regulations and are set out in the discussion under Subsection 3(a), above. The Order further limits what constitutes accepted floodproofing for structures through additional language in this subsection

which requires that, wherever practicable, all structures shall be elevated using open works, e.g., columns, walls, piles, piers, etc. rather than fill (see Appendix B). Accepted floodproofing measures for facilities vary considerably, since the scope of the term facility, as defined in the Glossary, is extremely broad. Floodproofing measures for certain types of facilities, e.g., sewer interceptor lines and other types of piping, and bridges and roads have been developed, and are familiar to agencies having responsibilities in those areas. Other flood protection measures including warning and evacuation plans, etc. are discussed in the *Unified National Program for Flood Plain Management*.

NOTE: The general concept of flood protection articulated in this section, while current at the time, has evolved since the Executive Order was written and is now reflected in the broader concept of flood risk management. Flood risk management better conveys the fact that people are never fully “protected” from flood waters. The concept of flood risk management is also important in that it includes a broader array of methods for managing floodwaters to reduce the risk of flooding and managing development in the floodplain to reduce the consequences of flooding. This can include natural features and nature-based approaches, which are encouraged in the Order. By considering and applying a broader array of measures in addition to traditional floodproofing measures, agencies may be able to increase the resilience of actions and investments that must occur in a floodplain. These broader approaches may also reduce the level of future risks posed to or by those actions. (See Part II – Steps 3.B. and 5.C. for more information on natural features and nature-based approaches.)

NOTE: The Order acknowledges differences in the way actions are taken in regard to a structure versus a facility. Similarly, these updated Guidelines recognize that certain approaches will be appropriate based upon the type of structure or facility. Where required, agency procedures should align these updated Guidelines with related policies.

SECTION 3(c)

If property used by the general public has suffered flood damage or is located in an identified flood hazard area, the responsible agency shall provide on structures, and other places where appropriate, conspicuous delineation of past and probable flood height in order to enhance public awareness of and knowledge about flood hazards.

The conspicuous delineation of past and probable flood heights is required on property which has been or could be subjected to flooding and is used by the general public. This delineation responsibility applies to all types of property (land, structures and facilities). Agencies must identify in their regulations and procedures the areas where this requirement will be most effective in minimizing the adverse impacts of floods, especially on human safety. The “100-year” flood level and the flood of record should be shown where available. The “500-year” flood should also be shown where appropriate.

SECTION (3)(d)

When property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties, the Federal agency shall (1) reference in the conveyance those uses that are restricted under identified Federal, State or Local floodplain regulations; and (2) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successors, except where prohibited by law; or (3) withhold such properties from conveyance.

Three requirements are set out for agencies which dispose of Federal properties (land, structures or facilities) in the floodplain. Of these three, the agencies must meet both requirements 3(d)(1) and 3(d)(2), or they must meet Section 3(d)(3). That is, if both 3(d)(1) and (2) cannot be satisfied, or if the agency does not choose to implement both, then the property must be withheld from conveyance.

Under Section 3(d)(1), the agencies' regulations or procedures must provide for the identification of those uses that are restricted, and how they are restricted under State, Tribal, Territorial and Local floodplain regulations. Such restrictions are generally set out in State shoreline or coastal management plans or regulations, Local plans and building codes, zoning and subdivision ordinances. If no such restrictions exist, the agency must note this when it implements the finding and public notice procedures (see Part II-Step 7). Then it still must satisfy *either* 3(d)(2) or 3(d)(3).

Under Section 3(d)(2), the agencies are required to provide appropriate restrictions to the uses of properties by the grantee or purchaser and any successors, which would augment those restrictions referred to in (d)(1), above, or if none, adequately stand on their own. For the purpose of this Order, the term "appropriate" as it refers to restrictions, means restrictions equal in scope and strictness to those of this Order. Since the property in question is located in the floodplain, then the agency must assure through these restrictions that harm to lives and property and to floodplain values is identified, and such harm is minimized and floodplain values are restored and preserved. Section 3(d)(2) recognizes that these additional restrictions need not be applied to the conveyance where prohibited by law.

Section 3(d)(3) requires that where an agency cannot or does not choose to meet the requirements of either 3(d)(1) or (2), or both, it is prohibited from making the conveyance. Even where the option is open to meet 3(d)(1) or (2), withholding the conveyance may be the most appropriate approach to meeting the Order's intent. Where, for instance, the existing use is not compatible with the intent of the Order, or the area in question is not subject to meaningful floodplain management requirements, withholding the land or facility from conveyance may be required.

This section makes it clear that each agency now has a mandate to condition or withhold the conveyance of Federal property, unless a specific law expressly prohibits such activity.

SECTION 4

In addition to any responsibilities under this Order and Sections 102, 202 and 205 of the Flood Disaster Protection Act of 1973, as amended (42 U.S.C. 4012a, 4106 and 4128), agencies which guarantee, approve, regulate, or insure any financial transaction which is related to an area located in an area subject to the base flood shall, prior to completing action on such transaction, inform any private parties participating in the transaction of the hazards of locating structures in the area subject to the base flood.

This section applies to the Federal Housing Administration, the Veterans Administration, and the six agencies enumerated in the Flood Disaster Protection Act of 1973: the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, the Comptroller of the Currency, the National Credit Union Administration and the Farm Credit Administration and any Federal entity responsible for the supervision of a lending institution. Other agencies that have responsibilities similar to those described in this section are also subject to its requirements. The notice requirements of this section are in addition to the other responsibilities of these agencies under the Order and under Sections 102, 202, and 205 of the Flood Disaster Protection Act of 1973, as amended (42 U.S.C. 4012a, 4106 and 4128).

This section covers any financial transaction guaranteed, approved, regulated or insured by a federal agency which is and which pertains to an area subject to the base flood. If an agency does not operate on an individual transaction basis with private parties, but rather guarantees, approves, regulates or insures the institutions conducting such transactions, then it is the agency's responsibility to require that the institution provide the requisite notice.

The private parties must be informed of the hazards of locating in an area subject to the base flood. Such notice should be given in a way which: (1) explains the chances of being flooded in language readily understandable to the private party; (2) indicates if the property is in a floodway or coastal high-hazard area; (3) indicates if there is a flood insurance purchase requirement; and (4) indicates if the transaction involves the sale of unimproved real estate, that the property may be subject to floodplain management regulations which dictate the manner, and in some cases the location of new construction.

SECTION 5

The head of each agency shall submit a report to the Council on Environmental Quality and to the Water Resources Council on June 30, 1978, regarding the status of their procedures and the impact of this Order on the agency's operations. Thereafter, the Water Resources Council shall periodically evaluate agency procedures and their effectiveness.

Agencies may be called on to furnish documentation covering revisions or special applications of procedures in years subsequent to 1978. WRC will involve interested and affected agencies in the review.

SECTION 6

As used in this Order:

(a) The term "Agency" shall have the same meaning as the term "Executive agency" in Section 105 of Title 5 of the United States Code and shall include the military departments; the directives contained in this Order, however, are meant to apply only to those agencies which perform the activities described in Section 1 which are located in or affecting floodplains.

(b) The term "Base flood" shall mean that flood which has a one percent or greater chance of occurrence in any given year.

(c) The term "floodplain" shall mean the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands. The floodplain shall be established using one of the following approaches:

(1) Unless an exception is made under paragraph (2), the floodplain shall be:

- (i) The elevation and flood hazard area that result from using a climate-informed science approach that uses the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science. This approach will also include an emphasis on whether the action is a critical action as one of the factors to be considered when conducting the analysis;*
- (ii) The elevation and flood hazard area that result from using the freeboard value, reached by adding an additional 2 feet to the base flood elevation for non-critical actions and from adding an additional 3 feet to the base flood elevation for critical actions;*
- (iii) The area subject to flooding by the a 0.2 percent annual chance flood; or*
- (iv) The elevation and flood hazard area that results from using any other method identified in an update to the Federal Flood Risk Management Standard.*

(2) The head of an agency may except an agency action from paragraph (1) where it is in the interest of national security, where the agency action is an emergency action, where application to a Federal facility or structure is demonstrably inappropriate, or where the agency action is a mission-critical requirement related to a national security interest or emergency action. When an agency action is excepted from paragraph (1) because it is in the interest of national security, it is an emergency action, or it is a mission-critical requirement related to a national security interest or an emergency action, the agency head shall rely on the area of land subject to the base flood.

772 (d) The term “critical action” shall mean any activity for which even a slight
773 chance of flooding would be too great.

774 The terms "agency," "base flood," "floodplain" and “critical action” are defined in the
775 Glossary. E.O. XXXXX amended the term “floodplain” to incorporate the different approaches
776 that can be used to determine a flood elevation and flood hazard area based on the FFRMS. The
777 FFRMS seeks to improve upon the standards set forth in Executive Order 11988 by providing a
778 higher flood elevation and expanded flood hazard area to address current and future flood risk.
779 The FFRMS includes three specific approaches for determining a flood elevation and flood
780 hazard area that are designed to recognize and incorporate future conditions rather than rely
781 solely on existing data and information. It also can be expanded in the future to include
782 additional approaches. The three approaches currently described in the FFRMS are the
783 following:

- 784 (1) *Climate-informed Science Approach* – Agencies shall use the best available,
785 actionable hydrologic and hydraulic data and methods that integrate current and
786 future changes in flooding based on climate and related science to determine the
787 flood elevation and flood hazard area in a manner appropriate to policies, practices,
788 criticality, and consequences. (In some cases, this flood elevation could correspond
789 to the projected 1-percent-annual-chance flood.)
790 (2) *Freeboard Value Approach* – Agencies shall use the Base Flood Elevation (or 1-
791 percent-annual-chance flood determined using best available data) and an additional
792 height to calculate the freeboard value. The additional height will depend on
793 whether or not the action is a critical action.
794 (3) *The “500-year” Elevation Approach* – Agencies shall use the 0.2-percent-annual-
795 chance flood elevation (also known as the “500-year” flood elevation).

796 The three approaches may vary based on whether the proposed action is an area
797 vulnerable to coastal or riverine floods and whether the action is a critical action. Part II – Step
798 1.B. provides more detail about these approaches and how to apply them. Agencies should use an
799 approach that takes advantage of best available information and data. When actionable climate
800 science is available, the Climate-informed Science Approach is preferred. In cases where
801 relevant data are not available, the other two approaches are acceptable methods to determine the
802 elevation and floodplain. Each of these approaches can improve resilience to current and future
803 flood risk. Where multiple Federal agencies are jointly engaged in an action, they should begin
804 to coordinate early in the process to select the most appropriate approach for determining the
805 flood elevation and flood hazard area that will be applied to the action. Agencies maintain the
806 responsibility and flexibility to tailor their procedures to meet their prescribed missions while
807 fulfilling the requirements of the Order.

808 Although the FFRMS provides guidance to agencies regarding specific calculated
809 elevations to address uncertainty and provide for resilience, agencies should consider whether an
810 even higher elevation should be applied depending on the criticality of the action and the other

flood characteristics. The FFRMS encourages agencies to use higher flood elevations where an agency determines it to be appropriate.

E.O. XXXXX also amended the definition of floodplain to include an exception for national security and emergency actions as stated in Section 6(c)(2). The exception from the FFRMS provided for in Subsection 6(c)(2) does not preclude agencies from also determining that structures or facilities are demonstrably inappropriate requiring deviation from both the FFRMS and NFIP standards as provided for in Subsection 3(a). In developing revised individual agency implementing procedures, agencies are directed to either specify which agency actions are excepted, or prescribe the process to be used to determine on a case-by-case basis whether an action is excepted. Agencies should also specify what justification, documentation, and tracking is required when an action is excepted. To determine whether the national security exception applies, agencies should refer to the definition of national security provided in the Glossary.

Excepted actions will not be subject to the higher FFRMS standard. However, agencies are still required to follow the eight-step process outlined in the original E.O. 11988 Implementing Guidelines and should also consider the following floodplain management principles: anticipating a changing environment, supporting regional resilience, adopting sustainable solutions, and supporting holistic approaches to floodplain management.

Consistent with the 1978 Implementing Guidelines for the Order, E.O. XXXXX and the FFRMS set forth a higher level of resilience for critical actions that includes any activity for which even a slight chance of flooding is too great. The prominence of critical actions highlights a continued concern that the impacts of floods on human safety, health, and welfare for many actions could not be minimized unless a higher standard than the base flood was provided. (See Part II – Step 1.)

Federal agencies continue to be responsible for determining whether an action is critical. To assist agencies in determining whether a proposed action is a “critical action,” they should consider the example questions below. However, agencies may have other types of questions that are relevant to determine if an action is critical.

- If flooded, would the proposed action create an added dimension to the disaster as could be the case for facilities producing and/or storing highly volatile, toxic, or water-reactive materials?
- Would the occupants of buildings such as hospitals, nursing homes, prisons, and schools be sufficiently mobile and have available transport capability to avoid loss of life and injury given the flood warning lead times available?
- Would essential and irreplaceable records, utilities, emergency services, national laboratories, items or structures of substantial cultural significance, and structures that may house critical equipment, systems, networks, and functions be lost?
- If flooded, would the resulting damage or disruption lead to regional or national catastrophic impacts beyond the local impacts?

Given these types of questions and considerations, care must be taken by Federal agencies to identify practicable alternatives to locating in the floodplain. When no practicable alternatives exist but to locate a critical action in the floodplain, the agency shall determine the impacts and minimize, restore, and preserve as required. (See Part II, Step 5.)

During planning, design and construction of critical actions, an agency should pay close attention to flood characteristics at and near the site such as, but not limited to, flood depths, flood velocity, hydrostatic loads, hydrodynamic loads, possible debris impact loads, erosion and localized scour, duration of floodwater, and subsidence. Agencies should also consider other factors such as flood warning time, evacuation time, logistical challenges to evacuation, preparedness, and the potential to function without interruption. Recognition of these characteristics and other factors provides the agency with a better understanding of the nature of the flood hazard at the proposed location. It also enables the agency to make a more informed decision about avoiding the floodplain or increasing the resilience of an action to minimize harm to or within the floodplain for a proposed critical action that must be located in the floodplain.

SECTION 7

Executive Order No. 11296 of August 10, 1966, is hereby revoked. All actions, procedures, and issuances taken under that Order and still in effect shall remain in effect until modified by appropriate authority under the terms of this Order.

The previous E.O. 11296 is revoked, but agencies are allowed to operate under existing procedures until they can be revised to reflect this Order. At the latest, this revision must be accomplished by May 24, 1978.

SECTION 8

Nothing in this Order shall apply to assistance provided for emergency work essential to save lives and protect property and public health and safety, performed pursuant to Sections 403 and 502 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (42 U.S.C. §§ 5170b and 5192).

Although Section 8 exempts flood related and other emergency activities "essential to save lives and protect property and public health and safety" from the provisions of the Order, (e.g., the requirement to prepare and circulate notice of proposed activity), it does not exempt them from the spirit of the Order expressed in Section 1. Activities under portions of legislatively directed emergency programs, (e.g., under P.L. 84-99 (33 USC 701n)) covering the same kinds of situations as those sections specifically cited in the Order, are clearly within the meaning and intent of Section 8 and therefore are subject to the same interpretation.

In addition to this exemption, an action that is in the interest of national security, is an emergency action, is "demonstrably inappropriate" where applied to a Federal facility or structure, or is a mission-critical requirement related to a national security interest or emergency

action is excepted from the higher standards in the FFRMS that apply to E.O. 11988. Although agencies are able to except those actions from compliance with the higher standard, agencies are still required to adhere to the requirements of E.O. 11988 when undertaking these actions. See Part I Section 6(c) for more information.

SECTION 9

To the extent the provisions of section 2(a) of this Order are applicable to projects covered by Section 104(h) of the Housing and Community Development Act of 1974, as amended (88 Stat. 640), 42 U.S.C. 5304(h)), the responsibilities under those provisions may be assumed by the appropriate applicant, if the applicant has also assumed, with respect to such projects, all of the responsibilities for environmental review, decision-making, and action pursuant to the National Environmental Policy Act of 1969, as amended.

This section allows units of general purpose, Local government which may assume the status of Federal agencies for purposes of NEPA compliance under the for certain HUD Community Development Block Grant (CDBG) Program to assume the responsibility for carrying out the provisions of Section 2(a) of this Order for specific projects under CDBG as part of their overall NEPA responsibilities. Thus, the provisions of Section 2(a) of this Order will be carried out in conjunction with NEPA compliance, and one responsibility may not be assumed without the other also being assumed by a grantee. Compliance with Section 2(a) of the Order will be completed prior to the grantee's certification of compliance with NEPA.

Part II: Decision-Making Process

INTRODUCTION

This part of the Guidelines is structured in eight steps to reflect the decision-making process (Figure 1) required in section 2(a) of the Order for all actions in and affecting floodplains. This section and relevant steps have been revised to address amendments to E.O. 11988 by E.O. XXXXX and the FFRMS such as:

- *A new definition of floodplain.* E.O. XXXXX changes the definition of floodplain in E.O. 11988, expanding the area in which agencies must assess impacts of proposed actions and establishing a new level to which that action must be resilient. The new definition describes three approaches to determine the flood elevation and flood hazard area when carrying out the eight-step decision-making process outlined in this part of the Guidelines.
- *Recognition of critical action determinations by agencies.* The concept of critical action reflects a concern that the impacts of flooding on human safety, health, and welfare for many activities could not be minimized unless a higher degree of resilience was provided.
- *The use of natural features and nature-based approaches.* These approaches have the potential to minimize impacts to natural and beneficial floodplain values and to lives and property.

The Order and Guidelines recognize that each agency's action will be driven by a specific need, function, and situation, and that the nature and scope of the agency's action is defined by the specific statutory authority. The eight-step process is designed to help agencies evaluate the type of action they are taking, where that action will be located, what impacts it may have in or affecting the floodplain and how those impacts can be avoided or minimized consistent with their statutory authority. In addition, factors such as actions of insignificant impacts or actions of a short duration may allow for an altered or shortened decision-making process, as indicated in the statement at the end of the summary of the eight-step decision-making process provided below. Before starting the eight-step decision-making process, agencies may want to consider the following questions that will help guide their decisions:

Is the action a critical action?

Federal agencies will be responsible for determining whether an action is critical and, if so, whether it is located in the floodplain. Agencies are to consider critical actions in more detail as a means to minimize risks posed to those actions that must occur in a floodplain. Critical actions include any activity for which even a slight chance of flooding is too great. The concept of critical action reflects a concern that the impacts of flooding on human safety, health, and welfare for many activities could not be minimized unless a higher degree of resilience was provided. To assist agencies in determining whether a

proposed action is a “critical action,” they should consider the example questions below. However, agencies may have other types of questions that are relevant to determine if an action is critical.

- If flooded, would the proposed action create an added dimension to the disaster as could be the case for facilities producing and/or storing highly volatile, toxic, or water-reactive materials?
- Would the occupants of buildings such as hospitals, nursing homes, prisons, and schools be sufficiently mobile and have available transport capability to avoid loss of life and injury given the flood warning lead times available?
- Would essential and irreplaceable records, utilities, emergency services, national laboratories, items or structures of substantial cultural significance, and structures that may house critical equipment, systems, networks, and functions be lost?
- If flooded, would the resulting damage or disruption lead to regional or national catastrophic impacts beyond the local impacts?

Does an action qualify for a general review?

Agencies planning to conduct a series of actions may consider conducting a general area review. This is an area-wide compliance process that may be substituted for individual compliance actions where a series of individual actions is proposed or contemplated over an indefinite period of time. The area-wide compliance process shall comply with the full decision-making process for avoiding floodplain locations. Additional guidance on this topic is provided in *Further Advice on Executive Order 11988 Floodplain Management (1987 or more current version)*.

Will the action have limited impact?

When the proposed activity has very limited exposure to flooding or causes rather insignificant impacts on the floodplain, some adjustments could be made in the intensity of analysis and extent of distribution of public notices. Examples of actions with limited impact on the floodplain typically include those involving approval of financial assistance for signs, trails, and land acquisition for parks and recreation. Additional guidance on this topic is provided in *Further Advice on Executive Order 11988 Floodplain Management (1987 or more current version)*.

Is the action a repetitive action?

Agencies may perform class reviews for certain repetitive actions. For class reviews, agencies should review its past activities to determine whether a class review would be appropriate for certain activities. To improve efficiency but yet maintain a desirable level of compliance with the Executive Order, a floodplain evaluation class review may be made of certain routine or recurring action. Additional guidance on this topic is provided in *Further Advice on Executive Order 11988 Floodplain Management (1987 or more current version)*.

Can you take advantage of natural features or nature-based approaches?

Agencies are encouraged to consider the use of natural features and nature-based approaches when developing alternatives for a proposed action in a floodplain. Nature-based approaches include engineered features and restored natural features to mimic or restore natural processes that are created by human design. Examples include restored habitat for fish and wildlife, a constructed impounded wetland, or a beach and dune system site specifically engineered for coastal storm damage reduction. Nature-based approaches generally, but not always, must be maintained in order to reliably provide the intended level of services. Nature-based approaches can be used in combination with or instead of new, existing, or other similar measures. A nature-based approach could also substitute for proposed actions, or could be used in combination with a proposed action.

Avoidance of floodplains is preferred, but if an agency determines that an action must occur in a floodplain a nature-based approach could help to minimize the adverse impacts of the action to the natural and beneficial values. If designed properly, a nature-based approach could also help to restore some of the physical, geological, biological, and chemical processes of the floodplain. Natural features in particular may not require any maintenance, but rather restore a functioning portion of the natural physical, geological, biological, and chemical processes of a system.

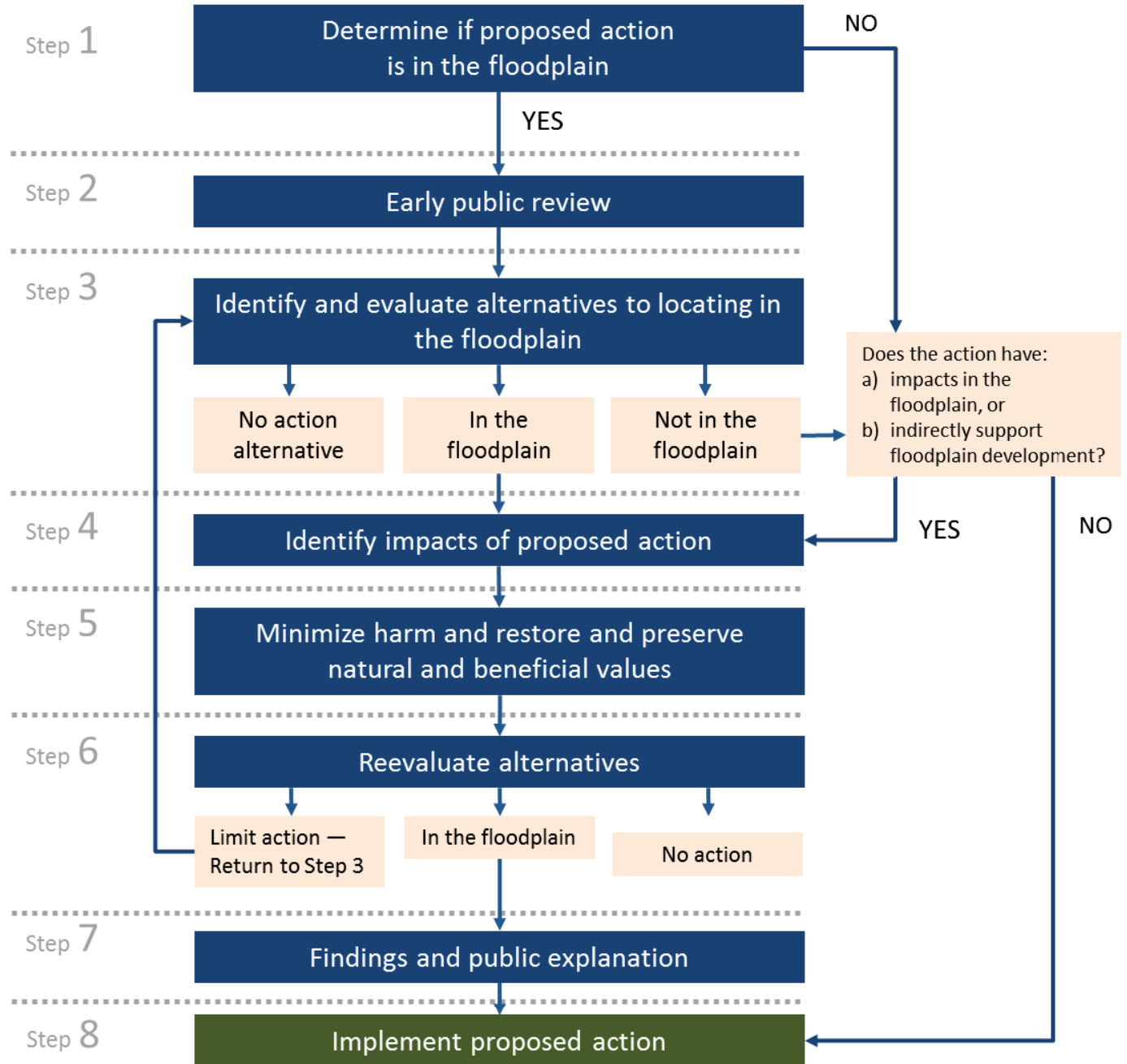
In addition to identifying the specific need, function, and situation for the action and determining whether it is a critical action, agencies should follow the eight-step decision-making process summarized below and discussed in more detail in the sections that follow.

1. The first step of the decision process is to determine if a proposed agency action is located in or will impact the floodplain. This discussion identifies various types of floodplains and their boundaries. If the proposed action is not in the floodplain, proceed to Step 4.
2. The agency must make public its intent to locate a proposed action in the floodplain. This notice must provide a description of the proposed action with ample lead time for meaningful input from the public.
3. If the action is in the floodplain, the third step is to identify and evaluate the practicable alternatives to locating in the floodplain. This determination requires the agency to consider whether the floodplain can be avoided either through alternative siting; through alternate actions which would perform the intended function but would minimize harm to or within the floodplain; or by taking no action.
4. For the proposed alternative, the agency must identify if the action has impacts in the floodplain or directly or indirectly supports floodplain development that has additional impacts. If the proposed action is outside the floodplain and has no identifiable impacts or support, the action can be implemented, Step 8.

5. If the proposed action has identifiable impacts or support, these effects must be minimized. Further natural and beneficial floodplain values must be restored and preserved.
6. The proposed alternative can now be reevaluated taking into account the identified impacts, the steps necessary to minimize these impacts and opportunities to restore and preserve floodplain values. In the floodplain: if this reevaluation shows that the proposed action is no longer feasible, consider limiting the action to make a non-floodplain site practicable or taking no action. Outside the floodplain: if the action has impacts or support, consider modifying or relocating the action to eliminate or reduce these effects or taking no action.
7. If the agency head finds that the only practicable alternative is locating in the floodplain, public notice of the reasons must be given for this finding (including the alternatives considered).
8. After a reasonable period to allow for public response, the proposed action can be implemented.

Note that depending on the situation this process may be carried out with fewer steps if all of the objectives of the decision-making process can be achieved.

Figure 1: Eight-step Decision-making Process for E.O. 11988



STEP 1 – DETERMINE IF A PROPOSED ACTION IS IN THE FLOODPLAIN

The first step in complying with the Order is to determine whether or not a proposed action is located in the floodplain. The following discussion includes information about types of floodplains (1.A.) and determination of the flood elevation and flood hazard area (1.B.).

1.A. TYPES OF FLOODPLAINS

The general types of land area where flood hazards are encountered are riverine floodplains and coastal floodplains. A floodplain is not limited to areas surrounding large bodies of water such as coastal areas and the shores of large rivers. In this document, a floodplain can be any land area susceptible to being inundated from any source of flooding, including those which can be flooded from small and often dry watercourses. Small watercourses can become sources of major flood damage when their watersheds experience rapid runoff from intense rain or melting snow adds.

Aggravating factors such as land-use changes, climate variability, and climate change contribute to the flood hazard in many riverine, coastal, and sheet flow areas. This is particularly true in riverine situations where high velocity flow causes flood-related erosion. In other areas where sheet flow has high velocity, sheet flow erosion may occur. Unusually high waves and tides are the most frequent agents of coastal erosion. Ice flooding can also contribute to structural damages. Land subsidence may occur with extensive withdrawals of groundwater or other substances producing a relative increase in flood levels.

In addition to the flood characteristics described above, other flood characteristics, such as rate of rise and flood depth, need to be considered. The flood characteristics regarding a new action or impacting an existing structure or facility should be used to evaluate the feasibility of the proposed action or critical action and the performance of different resilience approaches based on the potential hazards associated with each flood characteristic.

1.A.1. Flood Mapping Process

FEMA's Flood Insurance Rate Maps (FIRMs) and Flood Insurance Studies (FISs) are a widely available and easily accessible source for agencies to determine the Base Flood Elevation (BFE). In producing and updating FISs, FEMA typically uses a combination of two study approaches (approximate and detailed) in identifying a community's flood hazards. The results of the FIS are presented on a map, referred to as a FIRM, and presented in the FIS report in a narrative, as well as graphically, as flood profiles attached to the narrative. Detailed study methods typically employ the use of engineering models which, at a minimum, result in the determination of BFEs or flood depths and regulatory floodways that will be displayed on the FIRM. The regulatory floodway is defined as the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the entire base flood (1-percent-annual-chance flood) discharge can be conveyed with no greater than a 1.0-foot increase in the

BF E. NFIP communities are required to adopt regulatory floodways that must be designed to carry the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any point. A number of States have more restrictive floodway standards from a .001 to 0.5 foot rise that communities in those States must adopt. Flood hazard information for flooding sources that affect developed or developing areas are based on detailed studies whenever possible; approximate study methods, which are less rigorous than detailed methods and do not determine BFEs or floodways, may be used for undeveloped or sparsely developed areas. In general, the decision whether to use the approximate method or detailed method is based on existing and anticipated development in and near the floodplain. FISs used to develop BFEs and designate floodways and risk zones for developed areas of the floodplain have been produced for most NFIP communities.

FEMA's Flood Insurance Rate Maps and Flood Insurance Studies are a widely available and easily accessible source for agencies to determine the Base Flood Elevation. However, agencies may choose to utilize the 1-percent-annual-chance flood elevation from another credible source or choose to develop their own Base Flood Elevation using standard engineering practices.

1.A.2. Riverine Floodplains

Riverine floodplains or valley areas adjacent to any size stream or river can be covered by floodwaters (Figure 2). Flooding in these areas results from excessive rainfall, snowmelt, or a combination thereof. If runoff is increased to the point that the carrying capacity of the channel is exceeded, flooding occurs. Flooding also occurs when the capacity of the stream channel is reduced by natural obstructions (ice or debris dams, sediment, and vegetation) and human-made obstructions (structures and facilities). Some areas flood either from tributary stream overflow, backwater from a major stream, or from both simultaneously.

Riverine 1-percent-annual-chance floodplains (or base floodplains) are designated as A Zones (A, AE, A1-30) on the Flood Insurance Rate Maps (FIRMs) (Figure 2) and Flood Hazard Boundary Maps (FHBM s) (Figure 3) issued by FEMA. A detailed FEMA Flood Insurance Study (FIS) also may contain flood profiles for these areas of riverine hazard. Flood profiles (Figure 4) are graphs that usually include elevations for the 10-percent, 2-percent, 1-percent, and 0.2-percent-annual-chance flood. Elevations depicted on the FIRM or FHBM are for informational purposes only; therefore, agencies should refer to the profile in the FIS to obtain a more precise Base Flood Elevation.

The three figures below (Figures 2, 3 and 4) are examples of FEMA products that assist agencies in visualizing floodplains of various exceedances. Not shown is an example of a Flood Map Panel from a Flood Insurance Rate Map showing the upstream limits of a Flood Insurance Study. It is FEMA's policy not to map flood hazard areas that have less than one square mile of drainage or less than one foot of flooding during the 1-percent-annual-chance flood. However, flooding conditions could exist. Therefore, consideration should be given to seeking information

from a Federal, State, or other source or seeking the services of a professional engineer with the ability to develop information about the floodplain.

For most of the Flood Maps produced since January 1985, flood insurance risk zones, base flood elevations, and the regulatory floodway are presented on the Flood Map panels. These Flood Maps present simplified flood insurance risk zone designations for the 1-percent-annual chance floodplain. (That is, Zone AE is used in place of Zones A1 to A30 in riverine areas, and Zone VE is used in place of Zones V1 to V30 in coastal areas.) Before January 1985, the regulatory floodway was shown on separate Flood Maps, called Flood Boundary and Floodway Maps. Also since 1985, a number of the Flood Maps depict areas for the 0.2-percent-annual-chance floodplain as Zone X (the shaded Zone X is comparable to Zone B on older Flood Maps) and areas outside the 0.2-percent-annual-chance floodplain as Zone X (unshaded Zone X is comparable to Zone C on older Flood Maps).

In this section, the key elements common to Flood Maps are described and illustrated. As a result of variations in format and content, all elements described here do not appear on every Flood Map.

Figure 2. Flood Map Panel Elements for a Riverine Flood Hazard Area

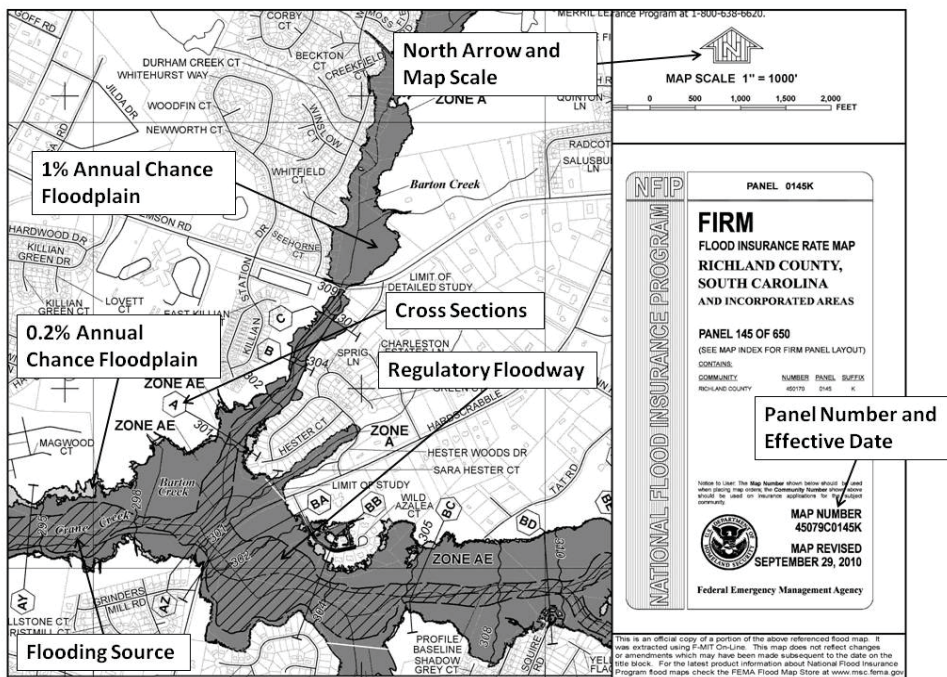
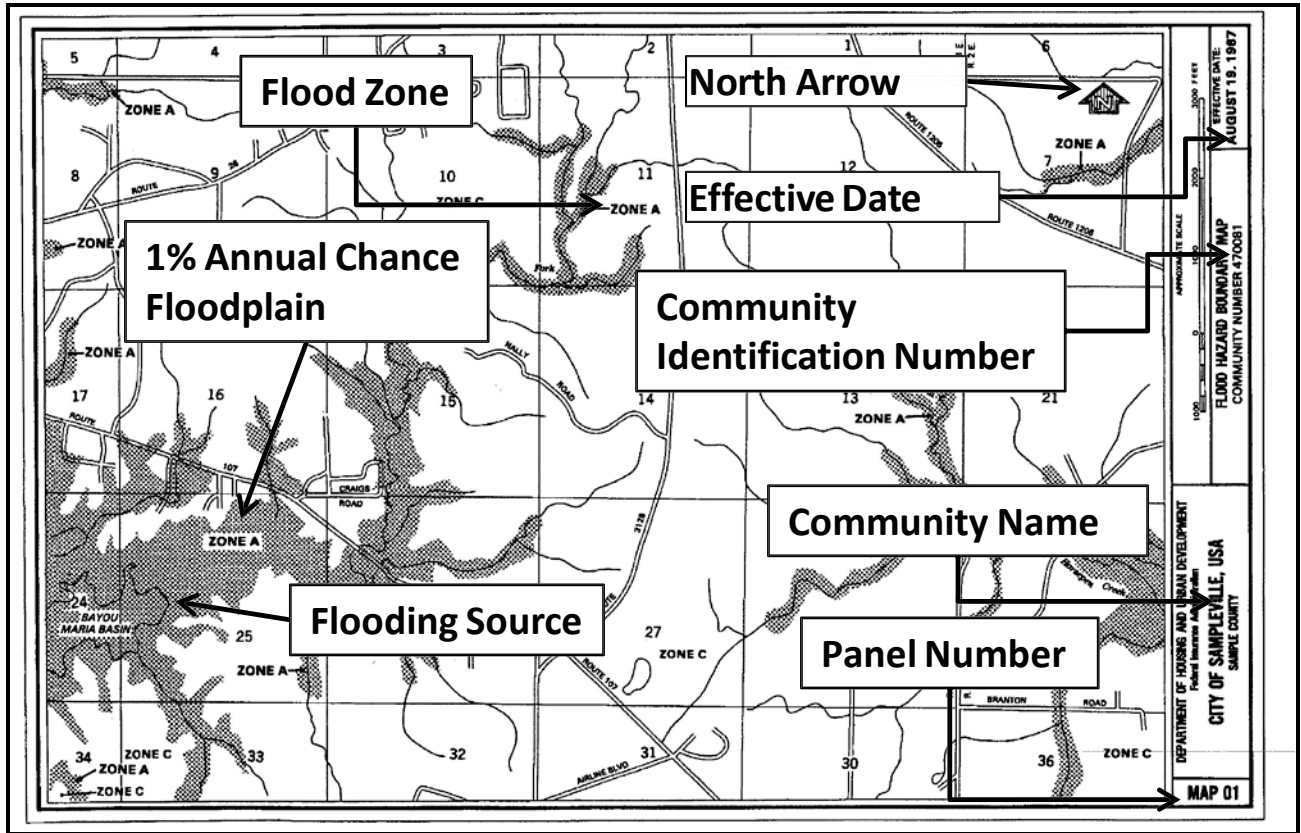


Figure 2 shows an excerpt of a sample FIRM for a riverine flood hazard area. In addition to the base map features (e.g., major highways, roads, railroads, and community boundaries), this map depicts a regulatory floodway, cross sections, flood zones and flood zone boundaries, 1-percent-annual-chance and 0.2-percent-annual-chance floodplains, a north arrow, panel number, effective date, community name, and NFIP community identification number.

1131 **Figure 3. Sample Flood Hazard Boundary Map (FHBM)**



1134 *Figure 3 shows a sample FHBM for a riverine flood hazard area. In addition to the base map features*
 1135 *(e.g., major highways, roads, and community boundaries), this map depicts riverine flooding sources,*
 1136 *flood zones and flood zone boundaries, 1-percent-annual-chance floodplain (Zone A with no Base Flood*
 1137 *Elevations (BFEs) shown) and areas outside the 0.2-percent-annual-chance floodplains (Zone C), a north*
 1138 *arrow, panel number, effective date, community name, and community identification number.*

Figure 4. Sample Flood Insurance Study (FIS) and Flood Profile

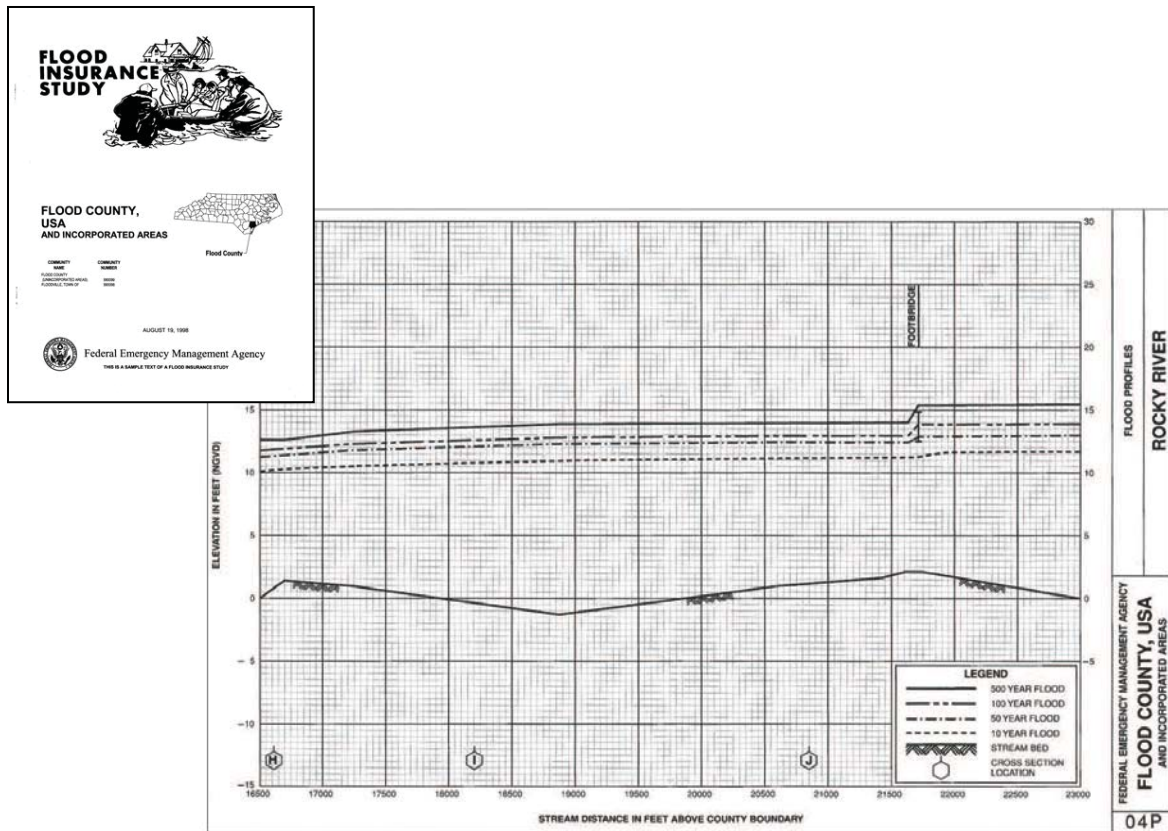


Figure 4 shows the cover of a sample FIS, which is a compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community. It also includes a sample flood profile from an FIS, which shows the stream distance in feet on the horizontal axis (or x-axis), flood elevations in feet on the vertical axis (or y-axis), cross section locations, the stream bed, and a footbridge location.

1.A.3. Coastal Floodplains

Coastal floodplains border oceans, estuaries, some lakes, or similar large bodies of standing water (Figure 5). Flooding in these areas is due to landward flows caused by unusually high tides, waves from high winds, storm surges, tsunamis (large waves in the sea associated with very strong earthquakes or other impulsive disturbances), or by a combination of these causes.

Coastal 1-percent-annual-chance floodplains are designated as V Zones (V, VE, V1-30), where the “V” stands for velocity wave action on the FIRMs and FHBMs issued by FEMA. Where a detailed FIS is produced by FEMA, a coastal hydraulic analysis may include transects instead of cross sections or profiles. A transect (not exhibited) shows the elevation of the ground both onshore and offshore and the expected height of the wave crests and run-up above the storm surge.

To help community officials and property owners recognize this increased potential for damage due to wave action in Zone AE, FEMA issued guidance in December 2008 that identified and mapped the 1.5-foot wave height line, referred to as the Limit of Moderate Wave Action (LiMWA). The LiMWA alerts property owners on the coastal side of the line that although their property is in a Zone AE, their property may be adversely affected by waves as low as 1.5 feet high. Consequently, property owners and community officials need to be aware of the high flood risk in the area between this inland limit and the Zone VE boundary, although the risk is not as high as in Zone VE (see Figures 6 and 7).

[illegible]

Figure 5 shows a portion of a sample FIRM for a coastal flood hazard area. In addition to the base map features (e.g., major highways, roads, and community boundaries), this map depicts coastal flooding sources, flood zones, 1-percent-annual-chance floodplains (Zone VE with BFEs rounded to the nearest whole foot and Zone V with no BFEs), 0.2-percent-annual-chance floodplains (Zone X (shaded)), areas outside the 0.2 percent-annual-chance floodplains (Zone X (unshaded)), and Otherwise Protected Areas (OPAs).

Figure 6. Depiction of the Limit of Moderate Wave Action (LiMWA)

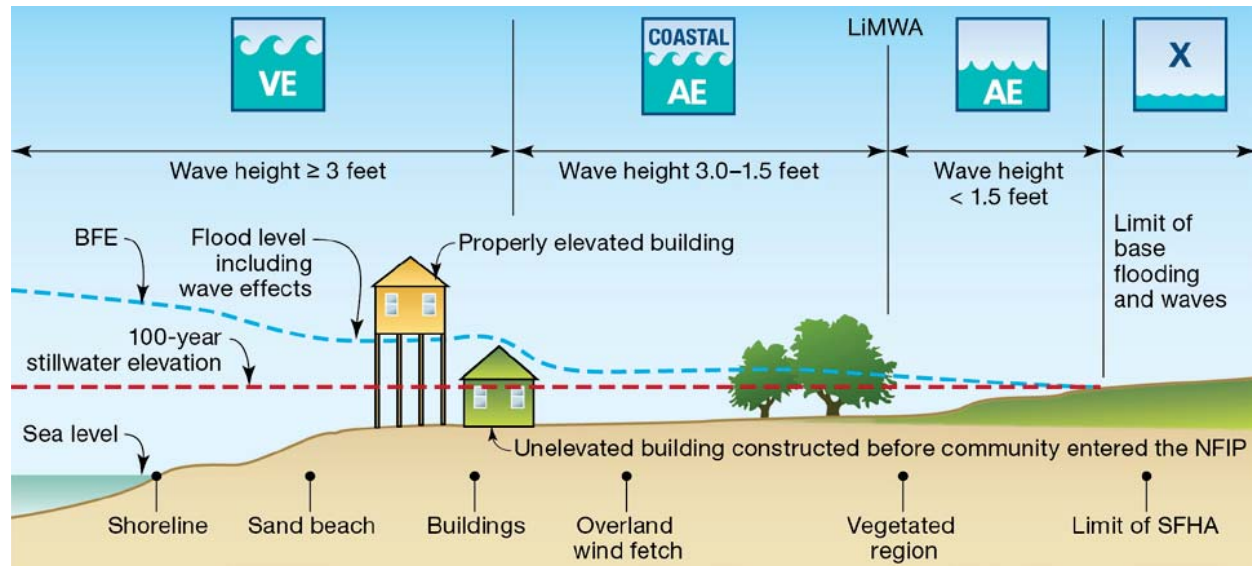
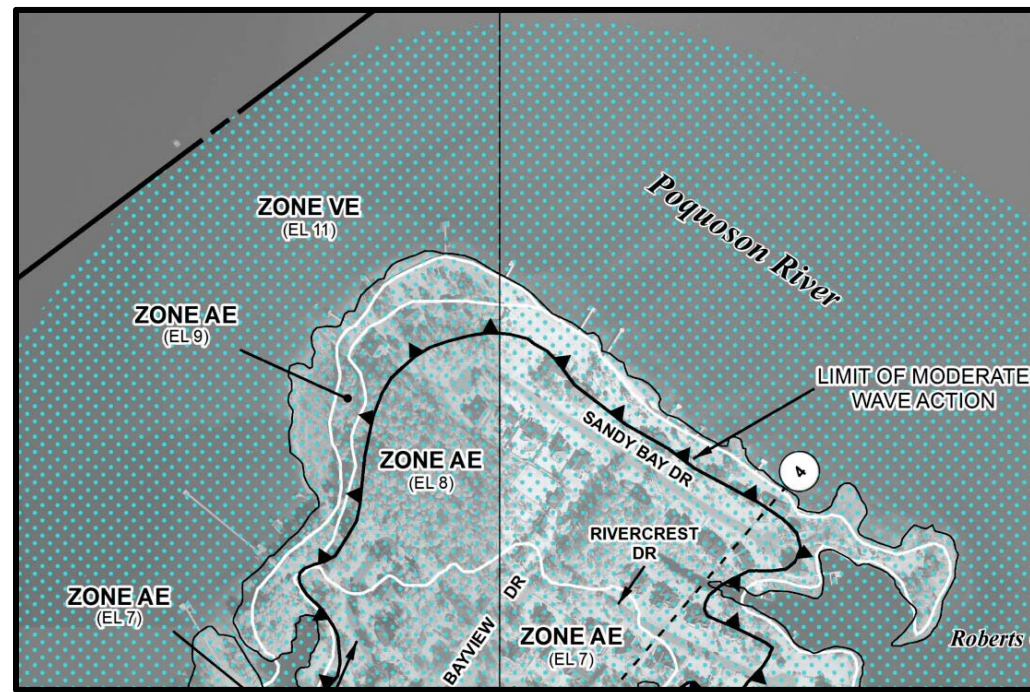


Figure 7. Excerpt of FIRM with Limit of Moderate Wave Action (LiMWA)



1.A.4. High-Hazard Areas

Within the base floodplain, extreme hazard is associated with those portions of riverine and coastal floodplains nearest to flood sources, where depths and velocities of floodwaters are greatest. These areas are usually referred to as a “floodway” and “coastal high-hazard area,” and with few exceptions, are locations to avoid. Locating buildings, facilities, and other development, including fill, can obstruct flood flows and cause the water to slow down and back up, resulting in higher flood elevations. A floodway is included in most riverine Flood Insurance Studies. Actions proposed in the floodway should undergo an encroachment review to determine if the action has any effect on flood flow or may cause any other problem. The coastal high-hazard area is the most hazardous part of the coastal floodplain, due to its exposure to wave effects. These are the floodplain areas where flooding is not only most frequent and damaging, but where natural and beneficial values of the land and water interface are at their maximum.

1.A.5. Special Floodplain Areas

Special floodplain areas encompass sheet flow or shallow flooding areas, wetlands, mudflows, and ground failures, such as sinkholes, subsidence, and liquefaction. When a clearly defined channel does not exist, the path of flooding is unpredictable. In some cases, high velocity flow may occur with sheet flow, as it does commonly on, for example, alluvial fans, which are shown as Zone AO with depth and velocity on the FIRMs. Areas of shallow flooding are designated on the FIRMS as either AO, AH, AR/AO, or AR/AH on a FIRM with a 1-percent annual-chance or greater flooding to an average depth of one (1) to three (3) feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident.

Areas of approximate study, designated Zone A on a FIRM or FHBM with no BFEs shown, are determined by FEMA in areas where there is little or no development and it is not expected in the future. In order to determine the boundary of the 1-percent-annual-chance flood, agencies must draw information from a variety of sources – soils mapping, actual high water marks, aerial photographs of previous floods, and topographic maps. These data are used to populate automated flood engineering models to generate the approximate boundary of the 1-percent-annual-chance flood. For assistance in determining 1-percent-annual-chance flood elevations or in obtaining flood study data in areas of approximate study, contact the agencies listed in Table 1 and Appendix A.

Other flood problems are caused when development occurs in areas drained by sinkholes, which often become plugged. Subsidence and liquefaction of soil may cause flooding of areas in the immediate vicinity of the ground failure, while mudflows may cause damages downstream of the location where the initial ground failure occurred.

1.A.6. Potential Sources of Floodplain Information and Technical Assistance Services

FEMA has published maps for approximately 21,000 of the over 22,000 NFIP participating communities, and more maps continue to be published. Many of the communities that have a FIRM also have an FIS report containing detailed flood information. Less than 5,000 NFIP communities have FEMA maps showing the approximate areas of the base (Zone A) floodplain that do not have base flood elevations or other detailed data as indicated in Figure 3. There are currently 190 unmapped NFIP participating communities.

If a decision involves an area or location within extensive Federal or State holdings, it is unlikely that FIS reports and FIRM or FHBM maps would be available. In this event, information should be sought from the land administering agency before information and/or assistance is sought from the agencies listed in Table 1. If none of these agencies has information or can provide assistance, the services of an experienced consulting engineer should be obtained.

Table 1: Resources for Floodplain Information and Technical Assistance

The agencies listed in the table below may be able to provide information that can assist decision-makers in determining whether a potential action will be located in or impact a floodplain. The information types and levels of technical assistance vary greatly. Appendix A provides additional detail on resources that these agencies have and how they can be accessed.

AGENCY*	Maps and Profiles		Technical Assistance Services
	Riverine	Coastal	
U.S. Department of Agriculture: Natural Resources Conservation Service (NRCS)	✓	✓	✓
Department of Defense: U.S. Army Corps of Engineers (USACE)	✓	✓	✓
Department of Commerce: National Oceanic and Atmospheric Administration (NOAA)	✓	✓	✓
Department of Homeland Security: Federal Emergency Management Agency (FEMA)	✓	✓	✓
Department of Housing and Urban Development	-	-	✓
Department of the Interior:			
Bureau of Reclamation	-	-	✓
U.S. Fish and Wildlife Service (FWS)	✓	✓	✓
United States Geological Survey (USGS)	-	-	✓
Department of Transportation	✓	✓	✓
Environmental Protection Agency			✓
General Services Administration	✓	✓	✓
Tennessee Valley Authority	✓	-	-
State and Regional Agencies	State and Regional agencies such as Departments of Transportation, Departments of Water Resources, Departments of Natural Resources, or Flood Control Districts, Local Public Works, and Local Planning Commissions may have developed floodplain data for smaller streams or reaches of streams impacted by a flood control or drainage project.		

1.B. DETERMINATION OF THE FLOODPLAIN

For purposes of the Order, all agency heads will determine if the proposed action is located in the floodplain. The intent of the new definition of floodplain as amended by E.O. XXXXX is to ensure that uncertainties associated with climate change and other future changes are more adequately accounted for in the agency decision-making process. Agencies may use any of the approaches included in the definition to determine the flood elevation and flood hazard area for a given action. Agencies should use an approach that takes advantage of best-available information and data. When actionable climate science is available, the Climate-informed Science Approach is preferred. Regardless of which approach is selected, there are distinctions within the approach for critical versus non-critical actions and actions proposed for locations vulnerable to flooding from riverine versus coastal flood hazards.

There are several important concepts that agencies should keep in mind as they develop procedures for determining the flood elevation and flood hazard area. These include the importance of considering the best-available data and information and use of State, Tribal, Territorial, or Local Government standards.

Use of best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate and related science

Climate change can affect property, human health and welfare in various ways – one of which is through increased risk of flooding. The Order anticipates increases in both climate change impacts and the intensity of those impacts over time. As a result, these Guidelines encourage agencies to use best-available and actionable science, including engineering methods, to develop innovative solutions that reflect the evolving nature of flood hazards in relation to physical and socioeconomic vulnerability. The Climate-informed Science Approach utilizes the best-available, actionable hydrologic and hydraulic methods and data that integrate current and future changes in flooding based on climate and related science to determine the flood elevation and flood hazard area. Using scientific information to prepare for climate change can help agencies evaluate alternatives to locating in the floodplain and to better manage the flood risk and minimize impacts and costs over time if there are no alternatives to locating in the floodplain. Climate-related science information continues to grow and evolve, and it is the intent of this standard that agencies will use the latest science, in consideration of policies, procedures, criticality and consequences, to make their determinations of the flood elevation and flood hazard area. (In some cases, this flood elevation could correspond to the projected 1-percent-annual-chance flood.)

Use of best-available information

Agencies should consider using the best-available information in determining whether a proposed action will be located in a floodplain if the agency uses either the Freeboard Value Approach or the “500-year” Elevation Approach. FEMA’s FIRMs and FISs are established as the starting point for making this determination. When a FIRM or FIS is revised, a FEMA draft or preliminary flood insurance study would be developed. The information from this study may

serve as best available information if the information shows that a site previously located outside the floodplain is now in the floodplain or that the Base Flood Elevation at the site has increased.

If the information from the study shows that the Base Flood Elevation or 0.2-percent-annual-chance flood elevation has increased, the agency should use the higher base flood elevation and apply the freeboard to that elevation or use the higher 0.2-percent-annual-chance flood elevation for the decision-making process. For example, if FEMA’s preliminary flood insurance study indicates that the Base Flood Elevation at a site has increased by two feet, then the two-foot freeboard or three-foot freeboard for critical actions would be added to the two foot increase in the Base Flood Elevation.

To find information on whether an FIS is underway in a community and whether preliminary flood insurance information is available, agencies can check FEMA’s Flood Map Service Center (MSC) on their website. Agencies may also contact the FEMA Regional Offices listed in Appendix A regarding draft FIS information or other information about the flood hazards in a particular community.

Advisory Base Flood Elevations (ABFEs) are developed under certain situations. FEMA may develop ABFEs after a major disaster in order to assist communities and property owners in making rebuilding decisions. Agencies should consider using the ABFEs where available. Agencies can contact the FEMA Regional Offices to find out if ABFEs have been developed after a disaster.

If a FIRM, FIS, or FHBM are not available from FEMA for the proposed location and the agency is using the Freeboard Value Approach or the “500-year” Elevation Approach, the agency may seek information about the base floodplain, 1-percent-annual-chance flood, and 0.2-percent-annual-chance flood from other Federal, State, or Local agencies. The agency also may seek the services of a professional engineer with the ability to develop information about the floodplain. As an alternative, agencies could also consider using the Climate-informed Science Approach if there is available actionable science to determine the flood elevation and flood hazard area.

Use of State, Tribal, Territorial, or Local Government Standards

The elevation standards of the Federal Flood Risk Management Standard are not intended to supplant applicable State, Tribal, Territorial, or Local floodplain protection standards. A Federal agency will consider State, Tribal, Territorial, and Local laws and regulations to determine whether their floodplain management standards exceed the Federal Flood Risk Management Standard. If such standards exceed the Federal Flood Risk Management 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 and any amending Executive Orders. A modification of Federal action to meet such State, Tribal, Territorial, or Local standards does

not necessarily mandate an increase of the Federal financial investment in the action, particularly where state, tribal, territorial, or local entities have non-Federal cost-sharing requirements.

1.B.1. Climate-Informed Science Approach

Non-critical Actions

The Climate-informed Science Approach utilizes the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate and related science to determine the flood elevation and flood hazard area in a manner appropriate to policies, practices, criticality and consequences. (In some cases, this flood elevation could correspond to the projected 1-percent-annual-chance flood.) This approach ensures that expected future changes, including changes in climate, land use, or other watershed characteristics, are incorporated into calculations of expected flood levels. Calculations are different for areas that may experience riverine or coastal flood hazards.

Coastal Flood Hazards

The Climate-informed Science Approach for areas vulnerable to coastal flood hazards incorporates scenarios of time-dependent regional sea-level change into the best-available hazard information that takes into consideration the anticipated life of the action and risk associated with that action. An example approach may be to use NOAA (Parris et al. 2012) or similarly developed global mean sea-level-rise (GMSLR) scenarios, adjusted to local relative sea-level (LRSL) conditions to determine possible future conditions. The LRSL conditions should be combined with surge, tide, and wave data to determine the flood elevation and flood hazard area using state-of-the-art science in a manner appropriate to policies, practices, criticality, and consequences. (In some cases, this flood elevation could correspond to the projected 1-percent-annual-chance flood.) As another example, an agency could start with the best-available coastal flood hazard information, which in many cases could be FEMA-mapped stillwater elevations, and add the plausible changes in sea level using scenarios from such sources as NOAA or the LRSL to determine a future 1-percent-annual-chance elevation. The agency would project this future elevation inland to determine the floodplain. This second example is a simplified approach that may address agency needs to identify the floodplain quickly and with relatively low up-front cost. It should be noted that in cases where local relative sea level is expected to fall rather than rise, the anticipated flood elevations to which the action may be expected to be exposed over the entire life of the action should be considered.

In following this methodology, the agency must consider a number of factors about the action, including an assessment of the risk to which the action will be exposed, the anticipated level of investment, the anticipated life of the action, and the consequences of exposure of the action to flood hazards. These factors should help inform choices the agency makes in determining the flood elevation, such as which GMSLR scenario to use, the time horizon to consider, and level of rigor to apply in the analyses.

Riverine Flood Hazards

The Climate-informed Science Approach for areas vulnerable to riverine flood hazards combines an agency's actionable hydrological and hydraulic methodologies with the additional consideration of incorporating plausible future conditions resulting from changes in climate, land use, or other watershed characteristics. Specifically, the agency should conduct a hydrology study that is informed by expected changes in climate and land-use factors. This future-oriented hydrologic analysis should be incorporated into the current process used by the agency to calculate flood elevation and flood hazard area of the floodplain.

In using this approach, the agency should again consider numerous factors about the action, including anticipated level of investment, anticipated life of the action, and the consequences of exposure of the action to flood hazards. These factors should assist the agency in making appropriate decisions about data sources to use in their analyses, methodologies, level of rigor to apply in analyses, and the time horizon to consider.

Critical Actions

For critical actions affected by coastal or riverine flood hazards, the flood elevations informed by the Climate-informed Science Approach can be adjusted to be higher to account for the increased consequences associated with flood damage. The Climate-informed Science Approach for critical actions will use the same methodology as used for other actions, but with emphasis on criticality as one of the factors for agencies to consider. For example, for coastal systems, agencies can take a more conservative approach for critical actions by choosing a higher sea-level rise scenario that will result in a higher flood elevation. For riverine systems, agencies could assume a larger impervious surface that would increase the potential runoff to the river and result in a higher potential flood elevation.

1.B.2. Freeboard Value Approach

Determination of Elevation

The Freeboard Value Approach is based upon the current Base Flood Elevation, with the addition of freeboard to account for uncertainties in future conditions. For non-critical actions in areas prone to either riverine or coastal flood hazards, a freeboard of two (2) feet should be added to the Base Flood Elevation. For critical actions, a freeboard of three (3) feet should be added to the Base Flood Elevation to determine the flood elevation for actions.

Determination of Flood Hazard Area

There are several methods that can be used to approximate the floodplain without first calculating the elevation using one of the approaches described in section 6(c) of the Order. Two examples are listed below.

- 1) The first such approach would be to review existing FEMA FIRMs and FIS reports to determine whether the proposed action is located within the existing base floodplain, or

based on the best available information (See Step 1). If the proposed action is located within the existing base floodplain or based on best available information, then the proposed action will be located within the floodplain. The agency should then add the appropriate freeboard to the Base Flood Elevation to determine the floodplain elevation.

- 2) If the proposed location is not within the existing base floodplain but is close to the existing floodplain boundary, the agency may consult a topographic map or seek the services of a professional surveyor to determine the ground elevation of the location. The agency should then add the appropriate freeboard to the Base Flood Elevation to determine the floodplain elevation. If the ground elevation is lower than the floodplain elevation, the action should be considered to be in the floodplain and the requirements of the Order apply to the proposed action.

1.B.3. “500-year” Elevation Approach

The “500-year” Elevation approach allows an agency to use the 0.2-percent-annual-chance flood elevation to determine the elevation and flood hazard area. In some areas, FEMA has already calculated the 0.2-percent-annual-chance flood elevation and mapped the corresponding floodplain on a FIRM and FIS. If such data do not exist, an agency may obtain such calculations of the 0.2-percent-annual-chance flood elevation and floodplain from another existing source or by making their own calculations. While this approach may be used for both riverine and coastal floodplains, it is important to evaluate the 0.2-percent-annual-chance flood data you are using in coastal areas, and conduct an analysis of coastal flood hazards at the site that incorporates the local effects of wave action, scour and erosion, wave run-up, and overtopping. Thus, agencies are encouraged to ensure that this approach will achieve an appropriate level of flood resilience for the proposed action. This approach may be used for either non-critical or critical actions.

1.B.4. Additional Guidance for Selecting Among the Three FFRMS Approaches

When an agency is not using the Climate-informed Science Approach in areas subject to coastal flood hazards, the agency must use, at a minimum, the applicable freeboard elevation. In some instances, the FEMA 0.2-percent-annual-chance (“500-year”) flood elevation, which does not consider wave action, will be lower than the current base flood elevation or the base flood elevation plus the applicable freeboard; the 0.2-percent-annual-chance (“500-year”) flood elevation should not be used in these cases. When an agency is not using the Climate-informed Science Approach in riverine flood hazard areas, the agency may select either the Freeboard Value Approach or the 0.2-percent-annual-chance (“500-year”) elevation, as appropriate, and is not required to use the higher of the two.

Actions that may be vulnerable to flooding from lakes present special challenges for agencies when selecting an approach to determine the elevation and flood hazard area for a floodplain. The Great Lakes shorelines are modeled for flood risk similar to other U.S. coastal regions in that they account for surge (seiche) and waves; therefore, there is current flood risk

information for the Great Lakes shorelines from the National Flood Insurance Program. Future flood risk in the Great Lakes will be determined by future fluctuations in lake levels. Currently, there is significant uncertainty as to trends in future lake levels, because water level projections for the individual lakes vary by several feet among the available climate models. As a result, there is not currently a recommend approach for determining the elevation or flood hazard area for the Great Lakes shoreline. Generally speaking, the applicability of an approach to other lakes, including whether they should be considered as riverine or coastal, should be handled on a case-by-case basis. If considering lakes as coastal floodplains, sea-level-rise scenarios do not apply.

1.B.5. Procedures if Site is Out of the Floodplain

Actions above the elevations established in the approaches described in the FFRMS and outside determined flood hazard area would meet the minimum requirements, and no further action is required for compliance with the Order unless the action impacts the floodplain (Step 4) or indirectly supports floodplain development (Step 4.A.) In the absence of a finding to the contrary, agencies may want to consider structures or facilities that have been flooded as being located in a floodplain and, if so, apply the eight-step decision-making process.

If a ground elevation for a proposed site is higher than the determined elevation, agencies should consider reviewing surrounding sites and their ground elevation relative to that elevation and evaluate such factors as whether the proposed action will be surrounded by flood water, whether it is a critical action, proposed use (if it is not a critical action), flood characteristics, access roads, and flood warning to determine whether the site is still appropriate.

If the action is a critical action or other factors are relevant, agencies should undertake the eight-step decision-making process.

1.B.6. Procedures if Site is in the Floodplain

If the location of the proposed action is within the floodplain, both alternative sites outside the floodplain and alternative actions are to be identified and evaluated (Step 3), in an initial attempt to avoid the floodplain.

1.C. FEDERAL ACTIONS INVOLVING WATERWAYS ALONG OR CROSSING AN INTERNATIONAL BOUNDARY

When a Federal action involves waterways along or crossing an International boundary and has the potential to affect the waterways or floodplains of a foreign Nation, the agency should ensure that consultations with responsible authorities in the affected foreign Nation take place regarding the means to apply this standard in a manner consistent with International obligations.

STEP 2 – EARLY PUBLIC REVIEW

Early public review is one of several requirements of the Order directed at the objective of public involvement. It should be considered in the context of the whole public involvement process.

The objective of public involvement is to provide sufficient information early enough in the process of making decisions affecting floodplains so that the public can have impact on the decision outcome. The Order includes requirements that the public be provided adequate information, opportunity for review and comment, and an accounting for the rationale for proposed actions affecting floodplains. These requirements are stated in Section 2 of the Order, which:

- Requires agencies to provide opportunity for early public review of any plans or proposals for actions in floodplains;
- Requires agencies to provide notice explaining a proposed action; and
- Requires preparation and circulation of a notice of findings and explanation prior to taking an action.

An overview of these sections suggests that agency procedure should provide an integrated procedure for involvement of the public in the floodplain management decision-making process. Thus, to ensure that adequate information and opportunities are provided for the public to effectively participate in floodplain decisions, and to meet the requirements of the Order, the following elements should be incorporated in agency public involvement procedures:

- A description of the overall audience, including specific segments to whom public notice information will be targeted (e.g., floodplain residents, elected officials, basin residents, interest groups, other agencies, etc.). The responsibility is to reach as broad an audience as possible;
- A description of the vehicles or public information mechanism which will be utilized to reach the target audience (e.g., public hearings, newsletters, workshops, advisory groups, etc.). The responsibility is to provide continuous interaction and involvement opportunities for the public during the floodplain decision-making process;
- A description of the purpose for which various public notice actions will be undertaken and assurance that public input will be integrated into the decision-making process (e.g., specific efforts to provide one-way information dissemination, two-way public communication or interaction, etc.). The responsibility is to provide information which promotes the fullest understanding of the proposed plan or action; and

- A statement explaining the timing of public notice actions to promote public understanding and provide opportunities for the public to affect a proposed action or plan before alternative actions have been precluded.

It is recognized that the public involvement process must be tailored to specific program types (permits, direct in Federally assisted projects, etc.) and will vary. Nevertheless, agency procedures must be compatible with section 2(b) of Executive Order 11514 (Appendix E), and must apply to actions which require preparation of an EIS, EA, or documented CE under NEPA.

If there is a reasonable likelihood that a plan or proposed action or its alternatives will impact a floodplain, then it should be announced as early as that is known and not delayed until much more detailed information is developed.

It is recognized that variations in program types will determine the earliest time in the floodplain decision-making process when the public can be notified. For example, in the case of a private developer applying for a permit to construct a housing complex with floodplain impact, the earliest public notice may not come until a point very late in the decision-making process. At that point, the only options maybe no project, or the project as designed and proposed. In another example, a major facility such as a proposed regional wastewater treatment facility requires considerable expenditure for site evaluation, engineering, and design. Public notice must precede major site identification and analysis so the public can have an input early in the decision-making process of preliminary site screening and selection. If not, public choice options may be foreclosed, or decisions will not be based on similarly detailed information bases.

Early public notice is the first in a series of public information and involvement activities. This would logically be followed by continuing public communication at Step 4, in identifying impacts, Step 6, reevaluating alternatives through the environmental review process, and at Step 7, in the issuance of findings and explanation of why the proposed plan or action must impact the floodplain.

STEP 3 – IDENTIFY AND EVALUATE PRACTICABLE ALTERNATIVES TO LOCATING IN THE FLOODPLAIN

Having determined that a proposed action is located in the floodplain, the agency is required by the Order to identify and evaluate practicable alternatives to locating in the floodplain. Alternatives to be evaluated include: (1) carrying out the proposed action at a location outside the floodplain (alternative sites); (2) other means which accomplish the same purpose as the proposed action (alternative actions); and (3) no action.

3.A. ALTERNATIVE SITES

Alternative sites must be identified and the practicability of such sites evaluated. If a practicable site exists outside the floodplain, the proposed action must not be located in the

floodplain. Whenever a floodplain site is the only practicable alternative, the agency analysis leading to this conclusion should be fully documented. In determining the practicability of a non-floodplain site, the general concepts of site feasibility apply. At a minimum, site practicability shall be addressed in the light of the following:

- Natural (topography, habitat, hazards, etc.);
- Social (aesthetics, historic and cultural values, land use patterns, etc.);
- Economic (cost of space, construction, services, relocation); and
- Legal (deeds, leases, etc.).

3.B. ALTERNATIVE ACTIONS

Alternative actions must be considered before a decision is made to carry out an action in the floodplain. These are actions which substitute for the proposed action in that they comprise new solutions or approaches which serve the same function or purpose as that proposed, but which have less potential for harm. For example, where an agency has proposed the construction of a document storage facility within the floodplain to handle expanding record keeping needs, the alternative of storing documents offsite electronically could allay the need for a new structure. Similarly, rather than providing expanded waste treatment capacity for an area by constructing a new or larger facility in the floodplain, the alternative of using surplus capacity in a neighboring locale could serve the need for a new or expanded facility.

When considering alternative actions that can serve the same function or purpose as the proposed action but that would result in less potential harm, an action that completely avoids the floodplain, as illustrated in the above examples, should be the preferred alternative. However, when considering alternative actions, agencies may want to consider whether existing natural features/ecosystem processes, or the restoration of natural features/ecosystem processes could be an appropriate alternative action. Specifically, agencies may want to consider the use of nature-based or nonstructural alternatives where these actions could appropriately be used in lieu of actions proposed in the floodplain. For example, an alternative to construction of a sea wall for shoreline stabilization could be the creation of a “living shoreline” using strategic placement of habitat components to accomplish the same purpose. When a nature-based approach is implemented in lieu of or to complement a proposed action in the floodplain, there may be reduced flood risk as well as less potential for degradation to the natural and beneficial floodplain values. In addition, there will likely be improvements over time to the natural and beneficial values of floodplains when preserving or restoring natural features or using nature-based approaches. If a nature-based approach is the preferred alternative action, this would still be an action in the floodplain subject to the remaining eight steps of the decision-making process in of E.O. 11988.

3.C. NO ACTION

No action is also an alternative, and assessment of this course is required. The alternative of no action probably cannot be fully evaluated until a determination has been made in Step 4 of the harm to or within the floodplain resulting from the proposed action.

STEP 4 – IDENTIFY IMPACTS OF THE PROPOSED ACTION

If the agency has determined that the only practicable alternative is locating in the floodplain, the impacts of the proposed action must be identified. Similarly, where actions proposed to be located out of the floodplain will affect the floodplain, impacts resulting from these actions must be identified. Agencies are required to identify impacts of their proposed actions on lives, property, and the natural and beneficial values of floodplains. The potential impacts of any nature-based approaches or restoration activities being considered should still be evaluated as part of the action and in consideration of the types of impacts outlined in these Guidelines.

Since the Order is based primarily on NEPA, the agencies can draw upon the impact identification and assessment experience and guidance which they have developed in their implementation of NEPA. The concepts of impact assessment applicable to both NEPA and the Order are identical, with the Order's focus being narrower. The following discussion addresses general concepts of impact identification and assessment (Step 4.A.), and the two areas of concern which are impacted as a result of the occupancy and modification of floodplains; lives and property (Step 4B.), and floodplain values (Step 4.C.).

4.A. GENERAL CONCEPTS

In their regulations and procedures, the agencies must identify the means by which they will address the following impact-related issues:

- All agency actions can have impacts associated with the modification of floodplains. Although the modification of floodplains and ensuing impacts most clearly result from actions located in the floodplain or at its periphery, it can also result from actions out of the floodplain.
- Certain types of agency actions may support subsequent actions which have additional impacts of their own;
- The Order focuses on the adverse impacts of proposed actions on lives and property, and on natural and beneficial floodplain values.
- The three basic types of impacts are: (a) positive and negative; (b) concentrated and dispersed; and (c) short- and long-term.

4.A.1 Direct and Indirect Support of Floodplain Development

The Order requires the agencies to avoid the direct and indirect support of floodplain development whenever there is a practicable alternative. For the purposes of these Guidelines, an

action supports floodplain development if it encourages, allows, serves or otherwise facilitates additional floodplain development. The agencies may also reflect in their regulations and procedures, the manner in which agency actions similarly accommodate the maintenance of existing uses in the floodplain. That is, a proposed action can reinforce existing land use patterns which generally have developed without reflecting the concepts of hazard and risk minimization and restoration and preservation of natural floodplain values which form the basis of the Order.

Direct support results from actions located on the floodplain, while indirect support results from those outside the floodplain. For example, the location of a major public service structure or facility (a post office, library or office building), in the floodplain, requires new or additional investment in or construction of support facilities for food service, parking, etc. Further, simply through their location, such actions would foster additional developments in the floodplain. Floodplain development could be indirectly supported by the provision of infrastructure (water and waste water systems, power supplies, highway and secondary road networks, mass transit systems and airports) outside the floodplain.

It is the intent of the Order that the impacts of Federal actions and the impacts of actions supported by Federal actions be evaluated. However, the identification and evaluation of these positive and negative changes to the systems of flood losses, threats to life and health, and environmental values are often both difficult and even speculative. Moreover, the process by which an agency tries to describe the actions supported by their actions is both complex and often not well addressed in accepted methodologies, without a clear conceptualization of the supported action, there is little chance that the impacts can be identified. On the other hand, when the supported actions are describable in terms of growth experience in the area or from experience with similar actions elsewhere, the impacts of the supported actions can be identified as they are for the proposed action.

4.A.2. Types of Impacts

The three basic types of impacts which must be addressed are: (a) positive and negative; (b) concentrated and dispersed; and (c) short and long term.

Positive and negative impacts: both must be identified, even though the focus of impact identification and assessment is on negative or adverse impacts. This is necessary in order to identify the full range of impacts against which to weigh the practicability of a proposed action. In addition, it must be recognized that impacts which are beneficial to some, may be harmful to others. For example, draining wetlands establishes an environment which is suitable for certain uses, but at the expense of the beneficial values of the wetland.

Concentrated and dispersed impacts: both may result from any action. The impact is concentrated if it occurs at or near the site of the action and is dispersed if it occurs at a site remote from the action. For example, a concentrated impact of constructing a building on a

wooded area is the loss of vegetation at the site. A dispersed impact of the same action could be sedimentation downstream caused by erosion at the site.

Regional impacts: watersheds and floodplains are interconnected systems that do not follow political boundaries and are part of larger regions that encompass multiple jurisdictions. To help limit the transfer of impacts, risks, or costs onto others, agencies should also consider actions that increase *regional* resilience to reduce unacceptable risks to structures, facilities, and communities. Such regional approaches to actions foster long-term resilience.

Short- and long-term impacts: both must be analyzed in order to evaluate the total impact of an action. Short-term impacts are temporary changes occurring during or immediately following an action and usually persist for a short while. Long-term impacts occur during or after an action and may take the form of delayed changes or changes resulting from the cumulative effects of many individual actions. Long-term impacts may persist for a considerable time and may continue indefinitely. An example of a short-term impact could be sedimentation at or below a construction site. A long-term impact could be the loss of valley floodwater storage resulting from the cumulative effect of floodplain development.

4.A.3. Sources of Impacts

Regardless of the source of impacts, the agencies are required to identify the types of impacts discussed above which arise from their actions when these impacts affect the floodplain. This requirement applies to actions proposed both in and out of the floodplain. The location of the action causing the impact determines which of the requirements of the Order must be met by the agencies. For actions proposed in the floodplain, all of the requirements of the Order must be met as outlined (Figure 1). For actions proposed out of the floodplain, however, the Order does not require that the public notice and findings discussed in Steps 2 and 7 be prepared. Similarly, since in these cases the action causing the impacts in the floodplain is located outside of it, the practicability test (Step 3) is not required. As a minimum, however, the agencies must identify these impacts and minimize ensuing harm to or within the floodplain which would result if the action is taken as proposed. Because there is no requirement for public notice or the practicability test, the minimization responsibility (Step 5) takes on added significance. This should be reflected in agency procedures.

The agencies are strongly encouraged to apply the public notice procedures and alternate sites and action evaluations to actions proposed out of the floodplain which will result in impacts to the floodplain. It has been recognized that public input in agency decision-making processes through NEPA has improved the environmental soundness of these decisions. It is even more reasonable to apply the alternate site and action evaluation to actions taking place outside the floodplain. The evaluation of alternatives to the proposed action, as discussed in Step 3, provides a better opportunity to explore the range of possibilities for avoiding adverse impacts to or within the floodplain than the more narrowly focused concepts of minimization, restoration and preservation discussed in Step 5. For example, the overall costs involved in locating a highway

interchange, sewer interceptor line, airport facility, etc., at a location less directly affecting the floodplain could be less than the costs incurred in attempting to minimize the impact of the proposed action and to restore and preserve floodplain values.

4.B. LIVES AND PROPERTY

After determining that a proposed action is in the floodplain, the risk to lives and property involved in using that site must be determined. This requires an understanding of the magnitude and consequences of flooding that can be expected.

4.B.1. Nature of Hazard and Risk

Two basic types of floods are used in determining flood hazards: observed or historic floods and probability floods.

Historic Floods: Often these can be the basis for deciding whether a proposed site is in a hazardous area. However, the fact that a certain level of flooding has been observed indicates little about how floods are likely to occur in the future. Even where records extend over a long period of time, the highest observed flood must not be used as the only guide for decision-making. With very few exceptions, flooding at any site can be expected to reach higher levels than those previously recorded because larger storms, urbanization, floodplain encroachment, or other factors affect flooding.

Probability Floods: These are statistically derived floods. The one percent chance (100-year or base) flood is the term which describes the magnitude of flooding used by FEMA as the minimum acceptable level to which a community must regulate the floodplain in order to qualify for the National Flood Insurance Program. As stated previously, this magnitude flood has a one percent chance of being equaled or exceeded in any one-year period. The likelihood of exceeding the one percent chance flood magnitude increases with time periods longer than one-year period. For example the probability is about one in four that the one percent chance flood will be exceeded during the life of a 30-year mortgage.

Large floods occur each year in many parts of the United States. No part of the country is immune from large floods. Consequently, it has become standard practice for agencies dealing with flood problems to calculate elevations of a greater flood to indicate the range of flooding which can and will occur.

4.B.2. High-Hazard Areas

High-hazard areas are those portions of riverine and coastal floodplains nearest the source of flooding. These are the frequently flooded areas that become arenas of major flood dynamics during large floods. Here, floodwaters exert their maximum pressures, erosion is greatly accelerated, and loss potential is increased. Additionally, these are the areas of coastal and riverine floodplains within which many of the most critical floodplain values are concentrated. In riverine situations, the high-hazard area is that portion of the floodplain where impedance to

flood flow resulting from human activity can increase flood heights and consequently the area subject to flooding. In coastal floodplains, the high-hazard area is usually confined to the beach area in front of high bluffs or the crest of primary or foredunes, where wave impact is the most significant inducing factor. In light of the high loss potential and the likelihood of significant adverse effects to floodplain values associated with the conduct, support or allowance of actions in these portions of the floodplain, the agencies must rigorously apply the Order's charge to avoid these areas.

4.B.3. Evaluation of Flood Hazard

Evaluation procedures must be established in writing by all agencies. This evaluation serves to express clearly the hazard involved and provides the basis for carrying out the succeeding phases of the analysis. Key questions which must be addressed by the agencies in establishing their regulations/and procedures for the evaluation of flood hazard include the following:

- Is the proposed action to be located in the floodway portion of the riverine floodplain, or the coastal high-hazard area?
- Is the proposed action in a flood fringe area such as a flood fringe portion of the riverine floodplain or the backwater areas of a coastal floodplain?
- Is the flood hazard aggravated by the presence of, or potential for, destructive velocity flows, flood related erosion, or other special problems?
- Is there a combination of flood sources present, which may flood simultaneously in the area (e.g., river and ocean, or shallow overland runoff and river, etc.)?

4.C. NATURAL AND BENEFICIAL FLOODPLAIN VALUES

Water and the adjacent floodplain exist in nature in a state of dynamic equilibrium; when coastal or riverine systems are disturbed, the environmental effects may affect areas far from the original site of the disturbance and can last for decades. Thus, floodplain actions must be viewed with caution and a careful assessment made of their impact on natural and beneficial floodplain values. Floodplains in their natural or relatively undisturbed state serve water resources values (natural moderation of floods, water quality maintenance, and groundwater recharge), living resource values (fish, wildlife, and plant resources), cultural resource values (open space, natural beauty, scientific study, outdoor education, and recreation), and cultivated resource values (agriculture, aquaculture, and forestry).

4.C.1. Water Resources

Floodplains provide for the natural storage of surface and ground waters and the natural improvement of water quality.

Natural Moderation of Floods: The characteristics of the floodplain and of flooding are closely interdependent. Floods shape floodplain topography and soils and influence the ecology of the aquatic and floodplain systems. In turn, the physical characteristics of the floodplain shape

flood flows. Except for some steep valley and coastal bluff landscapes, naturally vegetated floodplains can provide a broad area to spread and slow floodwaters, thereby reducing velocities and flood peaks. Stream meander, dune formation in coastal areas, and other natural processes which reduce the force of floodwaters are also accommodated in undisturbed floodplains.

Floodplain encroachment modifies these processes. The effects of such modification are complex and not fully understood. Although in some cases encroachments may interact with natural processes to aid in the reduction of flood forces, their predominant effect has been to aggravate the flood hazard.

In coastal floodplains, natural barriers exist in the form of sand dunes and certain vegetation, e.g., mangrove stands, which reduce the impact of high tides and storm surges. Alteration or removal of the barriers themselves, or the vegetative and drainage systems which support them, reduces or eliminates their role in the reduction of flood forces. In addition, excessive withdrawal of groundwater may result in land subsidence thereby increasing flood depths and exposing greater areas to flooding.

Water Quality Maintenance: Floodplain vegetation and soils maintain the physical and chemical integrity of the water that ultimately supports biological communities. Runoff is slowed by vegetation, allowing the water to deposit not only sediments originating on land but also those scoured from the channel bank and bed. Sediment deposition may add rich nutrients to the floodplain soil and also keep sediment-associated pathogens from the water.

However, siltation can destroy or degrade biological communities within floodplains because it contributes to eutrophication (nutrient overloading), decreased dissolved oxygen, increased water temperature, and serious impairment of photosynthetic productivity. Vegetation shades stream banks and decreases daily water temperature fluctuations thereby alleviating temperature stress to the biota. Vegetation slows the flow of water and provides slack waters that give the aquatic biota a greater chance to survive flooding. In addition, floodplain storage and vegetation reduces siltation in downstream reservoirs.

Groundwater Recharge: An additional value of floodplain vegetation's role in slowing runoff is in groundwater recharge. Slowing the floodwater allows it to infiltrate through the generally porous floodplain soil. Base streamflow and the level of standing water bodies are regulated naturally by groundwater. During periods of excessive precipitation, runoff enters the groundwater system as well as stream channels and standing water bodies, thereby reducing peak flows; during the dry season, water generally flows from the groundwater system into surface waters, augmenting low flows.

4.C.2. Living Resources

The Nation's coastal and riverine floodplains support large and diverse populations of flora and fauna which represent valuable resources of great importance to society.

The floodplain is biologically very productive because it is here that land and water meet and the elements of both terrestrial and aquatic habitats interact. For example, unspoiled tidal marshes rank well above intensively farmed croplands in the magnitude and diversity of biological productivity. Marsh-rimmed estuaries and adjacent floodplains are vital to marine fisheries as breeding, nursery, and feeding grounds. Inland ponds, prairie potholes, marshes, and other wetland areas may provide highly important habitat for waterfowl and other wildlife.

Fish and wildlife resources are highly susceptible to human-induced disruption of the floodplain because of their high sensitivity to the resulting impacts. For example, drainage of wetlands, channelization of natural water courses, clearing of vegetation, especially bottomland forests, all have short- and long-term and direct and indirect impacts on plant and animal communities. Other changes that limit food, water supplies, or protective cover have similar effects. Modification of the floodplain at one location can affect living resources elsewhere on the floodplain.

4.C.3. Cultural Resources

Floodplains contain cultural resources important to the Nation and to individual localities. Because Native American settlements and early cities were located along coasts and rivers for access to water transportation, supply, and power, floodplains include most of the Nation's earliest archeological and historical sites. In addition to cultural richness, floodplains may be valuable sources for scientific research. For example, because they may contain unique habitats, they are ideal areas for ecological study. Floodplains are used for open space and green belt parks in cities to vary the pattern of the urban scene, to absorb noise, to clean air, and to lower air temperatures. They also are well-suited as venues for environmental education and are often attractive areas that can serve as a base for recreation (hiking and camping) and for water-oriented sports such as boating and swimming. In addition, floodplain wildlife resources can be managed for recreational hunting and fishing. Where they remain in relatively pristine condition, floodplains can be valued as a part of the "wilderness experience" so important to American culture.

4.C.4. Agricultural, Aquacultural and Forestry Resources

Floodplains generally provide excellent resources for agricultural, aquacultural, and forestry production.

The natural processes of sediment renewal that takes place in floodplains replenish soil and their nutrients. Thus, with proper management, floodplain soils generally require less artificial fertilization than upland sites. Level or gently rolling floodplain terrain facilitates agricultural operations. Surface and groundwater sources are usually easily accessible. Well-drained, deep soil suitable to most economic crops are often prevalent in the floodplain. Soils well-suited to specialty crops are also found on floodplains (e.g., the poorly drained areas of the Sacramento Valley where rice is a major crop).

However, certain agricultural uses and practices in the floodplain may adversely affect natural floodplain values. They may be incompatible with wildlife production; may induce aggravated erosion and sedimentation; or may result in the drainage of inland and tidal wetlands to increase the amount of arable land. Excessive fertilization and poor feedlot practices can result in nutrient pollution in local water bodies. Thus, proper management practices are essential where agriculture is proposed in sensitive floodplain areas.

The use of floodplain areas for aquacultural operations has grown into a viable industry producing a wide variety of aquatic crops. Aquaculture is subject to similar limitations to those noted for agriculture, but if properly managed, can be compatible with the natural values of floodplains and may offer opportunities for the restoration of damaged floodplain values.

Many of the Nation's valuable forest resources are found within floodplains. Bottomland hardwoods and other riparian species (those which can only flourish in close proximity to water) are important to the timber industry and the overall economy of the country. Thus, sound management of forest resources in the floodplain is also essential.

STEP 5 – MINIMIZE, RESTORE, PRESERVE

The requirements of the Order to minimize, restore, and preserve apply if a proposed action will result in harm to or within the floodplain. The term "harm," as used in the context of the Order, applies to both lives and property (Step 4.B.), and natural and beneficial floodplain values (Step 4.C.). The concept of minimization (Step 5.A.), applies to harm. The concept of restoration and preservation (Step 5.A.) applies only to floodplain values. Step 5.C. discusses some mechanisms which may be applied to achieve these three requirements.

5.A. MINIMIZE

Minimize is a demanding standard and requires the agency to reduce harm to the smallest possible degree, thus establishing a far more rigorous standard than other terms which often are used in similar contexts, e.g., alleviate (to lessen), mitigate (to moderate the severity of), ameliorate (to improve), etc. From the standpoint of lives and property, potential harm to or within the floodplain must be reduced to the smallest possible amount or degree. Where a critical action is proposed (see Step 2.C.) the goal is associated with higher levels of flooding. Similarly, from the standpoint of floodplain values, minimization requires that harm to such values be reduced to the smallest possible amount or degree. The Order's requirement to minimize potential harm applies to (1) the investment at risk, or the flood loss potential of the action itself, (2) the impact the action may have on others, and (3) the impact the action may have on floodplain values. The agencies must specify in their regulations and procedures, how actions will be designed and modified to minimize harm to or within the floodplain. (Also see page 1-4 on the requirements to minimize harm.)

5.B. RESTORE AND PRESERVE

In the context of this Order, “restore” focuses upon conditions existing as a result of prior actions, while “preserve” focuses upon the impacts of a proposed action.

Restore means to reestablish a setting or environment in which the natural and beneficial floodplain values can again operate. Where floodplain values have been degraded by past actions, the agency must identify, evaluate, and implement measures to restore the values diminished or lost. The functions of many of the Nation's degraded floodplains can be partially or fully restored through remedial action.

Preserve means to prevent modification to the natural floodplain environment, or to maintain it as closely as possible to its natural state. This term applies foremost to floodplains showing little or no disruption by man. If an action will result in harm to or within the floodplain, the agency must design or modify the action to assure that it will be carried out in a manner which preserves as much of the natural and beneficial floodplain values as is possible.

5.C. METHODS TO MINIMIZE, RESTORE AND PRESERVE

A wide range of methods have been developed over time to minimize harm to lives and property from flood hazards. In the recent past, other methods directed toward minimizing harm to natural and beneficial environmental values, including those associated with the floodplain, have also been developed. The technology and methodologies for achieving restoration and preservation of natural values have advanced significantly since the 1970's and are much better understood, although additional work in this regard is still needed. The tools and approaches, which are directed toward attaining these three goals of the Order, should be considered and applied at all stages of a proposed action, as appropriate, e.g., during the planning, design, construction, operation and maintenance of a proposed project.

Agencies are required by E.O. 11988 to minimize harm and restore and preserve the natural values of floodplains, including natural systems such as wetlands, when taking actions in a floodplain. Natural features and nature-based approaches are tools for both minimizing harm and restoring the natural and beneficial values of floodplains. For example, if a system has degraded natural features, agencies should consider incorporating nature-based approaches to restore these natural features, such as modifying or removing levees and restoring wetland functions along a coastal or riverine system. In addition to restoring the natural and beneficial values of the system, such actions may assist in moderating flood flows, thereby minimizing the harm caused by the action.

Although the Order emphasizes avoidance of the floodplain as the preferred manner for meeting its intent to avoid harm to or within the floodplain, the following examples are provided as additional guidance. The agencies should not be limited by the scope and level of detail of these examples. Additionally, agencies should note that the activities described in these examples

1897 would provide multiple benefits including the reduction of flood risks and the preservation and
1898 restoration of natural systems and ecosystem processes.

1899 **5.C.1. Natural Moderation of Floods**

- 1900 • Minimize floodplain fills and actions that require fills such as construction of dwellings,
1901 factories, highways, etc.
- 1902 • Require that structures and facilities on wetlands provide for adequate flow circulation.
- 1903 • Use minimum grading requirements and save as much of the site from compaction as
1904 possible.
- 1905 • Relocate nonconforming structures and facilities out of the floodplain.
- 1906 • Return site to natural contours.
- 1907 • Preserve free natural drainage-when designing and constructing bridges, roads, fills, and
1908 large built-up centers.
- 1909 • Prevent intrusion on and destruction of beach and estuarine ecosystems and restore
1910 damaged dunes and vegetation.
- 1911 • Preserve watershed functions of riverine or coastal systems when designing and
1912 constructing bridges, roads, fills, and large built-up centers.
- 1913 • Prevent intrusion on and destruction of beach and riverine ecosystems and restore
1914 ecological features such as damaged dunes, vegetation, and wetlands.
- 1915 • Preserve or restore natural features such as barrier islands, dunes, wetlands, and native
1916 vegetation to attenuate waves, stabilize sediment, and store floodwaters.

1917 **5.C.2. Water Quality**

- 1918 • Maintain wetland and floodplain vegetation buffers to reduce sedimentation and delivery
1919 of chemical pollutants to the water body.
- 1920 • Control agricultural activities to minimize nutrient inflow.
- 1921 • Control urban runoff, other storm water, and point and nonpoint discharges.
- 1922 • Control methods used for grading, filling, soil removal and replacement, etc., to minimize
1923 erosion and sedimentation during construction.
- 1924 • Prohibit the location of potential pathogenic and toxic sources on the floodplain, such as
1925 sanitary landfills and septic tanks, etc.
- 1926 • Use green infrastructure for stormwater management to improve water quality and reduce
1927 flood flows.
- 1928 • Preserve and restore wetland functions and riparian areas to facilitate groundwater
1929 recharge, improve water quality, and protect fish and wildlife habitats.
- 1930 • Modify or remove a structure to reconnect rivers to their floodplain.

1931 **5.C.3. Groundwater Recharge**

- 1932 • Require the use of pervious surfaces where practicable.
- 1933 • Design construction projects for runoff detention.

- 1934 • Dispose of spoils and waste materials so as not to contaminate ground or surface water or
1935 change land contours.

1936 **5.C.4. Living Resources**

- 1937 • Identify and protect wildlife habitat and other vital ecologically sensitive areas from
1938 disruption.
- 1939 • Require topsoil protection programs during construction.
- 1940 • Control wetland drainage, channelization, and water withdrawal.
- 1941 • Reestablish degraded floodplain ecosystems.
- 1942 • Minimize tree cutting and other vegetation removal.
- 1943 • Design floodgates and seawalls to allow natural tidal activity and estuarine flow.

1944 **5.C.5. Cultural Resources**

- 1945 • Provide public access to and along the waterfront for recreation, scientific study,
1946 educational instruction, etc.
- 1947 • Locate and preserve from harm historical cultural resources; consult with appropriate
1948 governmental agency or private groups.

1949 **5.C.6. Agricultural Resources**

- 1950 • Minimize soil erosion on cropped areas within floodplains.
- 1951 • Control use of pesticides, herbicides, and fertilizer.
- 1952 • Limit the size of fields.
- 1953 • Promote fence rows, shelter belts, and strip cropping.
- 1954 • Strengthen water bank and soil bank type programs to be consistent with alternate
1955 demands for the use of agricultural land.
- 1956 • Minimize irrigation return flows and excessive applications of water.

1957 **5.C.7. Aquacultural Resources**

- 1958 • Construct impoundments to minimize any alteration in natural drainage and flood flow.
1959 Existing natural impoundments such as oxbow lakes and sloughs could be utilized under
1960 proper management.
- 1961 • Limit the use of exotic species, both plant and animal, to those organisms already
1962 common to the area or those known not to compete unfavorably with existing natural
1963 populations.
- 1964 • Discourage mechanized operations.
- 1965 • Machinery such as dredges, weeders, and large-scale harvesting equipment may lead to
1966 environmental problems such as sediment loading to adjacent watercourses.

1967 **5.C.8. Forestry Resources**

- 1968 • Control the practice of clear-cutting, depending upon the species harvested, topography,
1969 and location.

- 1970 • Complement State law governing other aspects of harvest operations: proximity to
1971 watercourses, limits on roadbuilding, equipment intrusions, etc.
1972 • Include fire management in any overall management plans. Selective fire use may reduce
1973 the probability of major destructive fires.
1974 • Require erosion control plans on all timber allotments, roads, and skidways.

1975 These may be achieved through many types of administrative measures, depending in
1976 part upon the agency programs and authority.

1977 Some examples are:

- 1978 • Engineering and realty section standards and procedures.
1979 • Contract, grant, loan, permit, and license stipulations.
1980 • Application of appropriate encumbrances during land conveyance.
1981 • Information transfer and education of employees and public.
1982 • Delegation of responsibility for floodplain activities to a specific office with sufficient
1983 authority to play an active leadership role both within and outside of the agency.
1984 • Systematic review of existing agency programs to identify opportunities for floodplain
1985 value preservation and restoration.
1986 • Site surveys to identify opportunities for floodplain preservation and restoration; and
1987 • Provision of coordination methods within and outside of agency to enable the
1988 implementation of unified floodplain management measures.

1989 **STEP 6 – RE-EVALUATE ALTERNATIVES**

1990 Having identified the impacts the proposed action would have on the floodplain (Step 4),
1991 methods to minimize these impacts, and opportunities to restore and preserve floodplain values
1992 (Step 5); the proposed action should now be reevaluated. For proposed actions in the floodplain,
1993 the reevaluation should consider if the action is still feasible at this site. If not, consider limiting
1994 the action to make non-floodplain sites practicable. If neither is acceptable, the alternative is no
1995 action. If the proposed action is outside the base floodplain but has impacts which cannot be
1996 minimized (Step 5), consider whether the action can be modified or relocated to eliminate or
1997 reduce the identified impacts, or if the no action alternative should be chosen.

1998 The reevaluation should also include a provision for comparison of the relative adverse
1999 impacts associated with the proposed action located in and out of the floodplain. The comparison
2000 should emphasize floodplain values. However, a site out of the floodplain should not be chosen
2001 if the overall harm is significantly greater than that associated with the floodplain site.

6.A. LOCATION IN THE FLOODPLAIN

In determining whether the proposed action will be located in the floodplain, the agency must ascertain that the floodplain site is the only practicable alternative. Further, the importance of the location must clearly outweigh the requirements of the Order to:

- Avoid direct or indirect support of floodplain development wherever there is a practicable alternative;
- Reduce the risk of flood loss;
- Minimize the impact of floods on human safety, health and welfare; and
- Restore and preserve the natural and beneficial floodplain values.

6.B. LIMIT ACTION

If an action proposed to be located in the floodplain cannot satisfy the four requirements in Step 6.A., consider reducing the criteria for the proposed action. This would lower the threshold for what constitutes a practicable alternative. New alternative actions and sites could then be identified and previously rejected ones reevaluated for practicability based on scaled-down expectations.

6.C. NO ACTION

If neither of the above courses of action is feasible, the agency should reevaluate the no action alternative.

STEP 7 – FINDINGS AND PUBLIC EXPLANATION

If reevaluation results in the determination that there is no practicable alternative to locating in or impacting the floodplain, a statement of findings and public explanation must be provided for the proposed action. Each agency should explain how any tradeoff analysis was conducted by the agency in making its findings. Some existing agency public notice procedures may already satisfy part of the requirements of the Order (section 2(a)(2)(ii)) through such mechanisms as OMB A-95 and NEPA procedures, or other public involvement programs. However, agency procedures must incorporate the development and issuance of a written statement of findings and public explanation which includes:

1. A description of why the proposed action must be located in the floodplain.
2. A description of all significant facts considered in making the determination, including alternative sites and actions.
3. A statement indicating whether the actions conform to applicable State or Local floodplain protection standards.

In addition, and in keeping with the concept of the overall public involvement process discussed in Step 2, the following items should be included in the statement of findings and public explanation:

4. A statement indicating why the NFIP criteria are demonstrably inappropriate for the proposed action;
5. A provision for publication in the Federal Register or other appropriate vehicle;
6. A provision for a brief comment period prior to agency action (15 to 30 days);
7. A description of how the activity will be designed or modified to minimize harm to or within the floodplain;
8. A statement indicating how the action affects natural or beneficial floodplain values; and
9. A statement listing other involved agencies and individuals.

7.A. INTERAGENCY NOTICE

Certain public review procedures already exist with which the Order's review requirements are to be integrated.

7.A.1 Programs Subject to E.O. 12372

For programs subject to E.O. 12372, the agency shall follow its agency-specific procedures when sending a notice in compliance with E.O. 11988. The notice shall include (as a minimum) 1, 2, and 3 from above. It would also be helpful to the reviewer, and consistent with the intent of the Order, to include items 4 through 9.

7.A.2. Other Programs

For programs not subject to E.O. 12372 requirements, agencies must develop or ensure other existing procedures provide for similar notice and explanation of why a proposed action is to be located in a floodplain. This notice must be circulated among agencies and also made available to the public for review.

7.B. ACTIONS SUBJECT TO NEPA

For agency actions subject to NEPA which take place in the floodplain, the public review requirements discussed above as set out in Section 2(b) of Executive Order 11514, as amended, should include the nine items listed in the introduction to the step. Section 2(a)(4) of the Order requires the same public notice procedures for actions in the floodplain even though impacts are not significant enough to require the public review required for preparation of an environmental impact statement (EIS) under Section 102(2)(C) of NEPA (Public Law 91-190).

Under NEPA procedures, a final EIS is circulated for public and interagency review and comment. A minimum of 30 days is required to allow a review and to receive responses from the public and governmental agencies. These comments must then be considered. The findings must be made in conjunction with a final agency decision and the formal statement of findings required by the Order must be issued prior to initiating the proposed action. A final EIS should explain, if appropriate, why the responsible official has recommended or why the agency might support an action located in a floodplain.

7.C. ALL ACTIONS LOCATED IN THE FLOODPLAIN

A statement of findings (including the explanatory information discussed in 7.A.) must be issued by the agency head in compliance with Section 2(a)(2) of the Order. This applies to all proposed actions located within or impacting the floodplain, including proposed actions whose impacts are not significant enough or are not otherwise required to complete an EIS.

STEP 8 – IMPLEMENT ACTION

With the conclusion of the decision-making process described in Steps 1-7, the proposed action can be implemented. However, there is a continuing responsibility for insuring that the action is carried out in compliance with the Order. This is especially important for projects with long-term operation, maintenance and repair programs such as reservoirs or waste treatment facilities.