United States Department of the Interior

NATIONAL PARK SERVICE
P.O. Box 37127
Washington, D.C. 20013-7127

IN REPLY REFER TO:

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Special Directive 93- 4

To: Directorate, Field Directorate, WASO Office and Division Chiefs, DSC Planning Chiefs, and All Superintendents

From: Director

Subject: Floodplain Management - Revised Guidelines for National Park Service Floodplain Compliance

The purpose of this directive is to establish the attached guideline as the agency-specific guidance for floodplain management as required by Executive Order 11988, "Floodplain Management." This guideline replaces the National Park Service floodplain management guidance published in 45 FR 35916 and 47 FR 36718, "Floodplain Management and Wetlands Protection Guidelines." This guideline does not replace the wetlands protection guidance provided in that earlier guideline.

The revised guideline maintains the National Park Service policy of preserving floodplain values and minimizing potentially hazardous conditions associated with flooding. A procedure for implementing the guideline is provided. In that procedure, proposed actions are classified as fitting into one of three classes. Depending upon the action class, one of three "regulatory floodplains" applies (100-yr, 500-yr, Extreme). If a proposed action is found to be in the applicable regulatory floodplain and relocating the action to a non-floodplain site is considered not to be a viable alternative, then flood conditions and associated hazards must be quantified as a basis for management decision making, and appropriate prescribed actions must be taken. If it is decided to locate an action in an applicable regulatory floodplain, a formal Statement of Findings (SOF) must be prepared. The SOF must be surnamed by the Regional Safety and Compliance Officers and the Chief, Water Resources Division, Washington Office, and approved by the Regional Director.

For assistance in using this guideline, please contact the Water Resources Division at (303) 225-3503.

Attachment

NATIONAL PARK SERVICE

FLOODPLAIN MANAGEMENT GUIDELINE

July 1, 1993

U.S. Department of the Interior
National Park Service

NATIONAL PARK SERVICE
FLOODPLAIN MANAGEMENT GUIDELINE

SUMMARY

This guideline provides requirements for implementing floodplain protection and management actions in units of the National Park System. It replaces all previous National Park Service (NPS) floodplain management guidance and related instructions. It does not, like previous guidance, provide guidance for the protection or management of wetlands.

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DEFINITIONS

ACTION: *Any Federal activity including (but not limited to) acquiring, managing, and disposing of Federal lands and facilities; facilitating human occupation or visitation; providing Federally undertaken, financed, or assisted construction and improvements; and conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, and regulating and licensing activities.*

ALLUVIAL FAN: *The land counterpart of a delta; fan assemblage of sediments marking the place where a stream moves from a steep gradient to a flatter gradient and suddenly loses its transporting power. Typical of arid or semiarid climates, but not confined to them.*

BASE FLOOD: *That flood which has a one percent chance of occurring in any given year (also known as the 100-year flood). This term is used by the National Flood Insurance Program to indicate the minimum level of flooding to be used by a community in its floodplain management regulations.*

BASE FLOODPLAIN: *The 100-year floodplain.*

CHANNEL: *A natural or artificial watercourse of perceptible extent, with a definite bed and banks to confine and conduct continuously or periodically flowing water.*

COASTAL HIGH HAZARD AREA: *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. Also includes those areas subject to tsunamis.*

EXTREME FLOOD: *The flood considered to be the largest in magnitude possible, at a site. Methods for determining these extreme floods for a basin or area of concern include (but are not limited to) Probable Maximum Flood, Q Extreme, and Paleoflood Determinations. The purpose of using these methods is to delineate the area beyond which there is virtually no risk of flooding.*

FLASH FLOOD: *A flood that occurs in a short time interval (minutes to hours) following the causative event, and for which there is insufficient time for persons on-site to become aware of the flood and safely evacuate.*

FLOOD OR FLOODING: *A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland and/or tidal waters and/or the unusual and rapid accumulation of runoff of surface waters from any source.*

FLOODPLAIN: *The lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, and including at a minimum, that area subject to temporary inundation by a regulatory flood.*

GEOMORPHICALLY ACTIVE ZONES: *Zones where flood-induced erosion or sediment deposition processes present a clear hazard to structures or facilities, or present a danger to persons occupying the site. Geomorphically active zones include arroyo banks and eroding river terraces, alluvial fans, beaches, and hillslopes subject to mass-failure if undercut by floods.*

HIGH HAZARD AREAS: *Those portions of riverine or coastal floodplains nearest the source of flooding or areas subject to flooding events which are so unexpected, violent, or otherwise devastating that human lives are placed in immediate and grave danger. High Hazard Areas include, but are not limited to areas subject to flash flooding; areas where floodwaters exert their maximum force; areas behind unsafe or inadequate levees; areas below dams known to be structurally unsound; areas from which escape would be difficult; areas near or on alluvial fans; and coastal high hazard areas.*

HYDRAULIC AND HYDROLOGIC HAZARDS: *Hazards to human life or property caused by the conditions of flow (deep water, high velocities, debris loads, etc.), or by the characteristics of flooding (rate of flood rise, rapidity of response to causative events, etc.).*

IRREPLACEABLE ARTIFACTS: *Objects or records of such historical or archaeological importance as determined by the NPS that they must be kept in perpetuity. Examples include native American artifacts, original paintings by noted artists or of famous individuals, materials of famous individuals containing original handwriting, signatures or personal items.*

MITIGATION: *These are measures which serve to minimize the potential of flooding or adverse impacts of actions in floodplains. These measures may be used for either present or planned actions. Examples include:*

- dikes and/or conveyance ditches built to divert and/or carry flood flows away from the site,

- dams built to impound flood flows above the site and designed to release the captured waters at a slow, moderate rate which will not result in flooding of the site,

- modification of the structure to provide sufficient elevation to be above the flood crest (e.g., placing structures on columns, walls, piles, or piers),

- closure of the area to the public during seasons which historically produce flood events,

- replacement or compensation for lost natural floodplain values,

- development of an adequate flood warning system which monitors one or more physical parameters (e.g., rainfall, runoff, streamflow) and provides warning of an impending flood to visitors and park personnel with adequate time to permit evacuation, and

- signs, high water indicators, and other information indicating that a site is floodprone and suggesting appropriate actions in the event of flooding.

NATURAL FLOODPLAIN VALUES: *Attributes of floodplains which contribute to ecosystem quality, including soils, vegetation, wildlife habitat, dissipation of flood energy, sedimentation processes, ground water (including riparian ground water) recharge, etc.*

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.*

PRELIMINARY FLOODPLAIN ASSESSMENT: *A subjective, reasoned determination by a qualified professional of the existence of flood potential at a site. Preliminary floodplain assessments are based upon an analysis of site characteristics including hydrology, channel type and capacity, geomorphology, topography, vegetation, climatic data, watershed characteristics, existing published information, etc.*

RECURRENCE INTERVAL: *The average time interval between occurrences of a hydrological event of a given or greater magnitude.*

REGULATORY FLOODPLAIN: *The specific floodplain which is subject to regulation by the Order and this Guideline. For Class I Actions, the Base Floodplain (100-year) is the regulatory floodplain; for Class II Actions, the 500-year return period floodplain is the regulatory floodplain; for Class III Actions, the Extreme floodplain is the regulatory floodplain.*

RESTORE: *To re-establish a setting or environment in which the natural functions of the floodplain can again operate.*

STRUCTURES: *Walled or roofed buildings, including mobile homes, and gas or liquid storage tanks that are primarily above ground.*

I. PURPOSE

The purpose of this guideline is to set forth policies and procedures for use by the NPS in implementing Executive Order 11988, "Floodplain Management," here after referred to as the Order, and to comply with the Order by developing additional provisions specifically relevant to the NPS.

II. POLICY

It is NPS policy to recognize and manage for the preservation of floodplain values, to minimize potentially hazardous conditions associated with flooding, and to adhere to all Federally mandated laws and regulations related to the management of activities in floodprone areas. Specifically, it is the policy of the NPS to:

1. Restore and preserve natural floodplain values;

2. Avoid to the extent possible, the long and short-term environmental impacts associated with the occupancy and modification of floodplain, and avoid direct and indirect support of floodplain development wherever there is a practicable alternative;

3. Minimize risk to life and property by design or modification of actions in floodplain, utilizing nonstructural methods when possible, where it is not otherwise practical to place structures and human activities outside of the floodplain; and

4. Require structures and facilities which must be in floodplain to be designed so as to be consistent with the intent of the Standards and Criteria of the National Flood Insurance Program (44 CFR 60).

III. OBJECTIVES

The objectives of this guideline are to:

1. Define the regulatory floodplain and the information required to delineate regulatory floodplains,

2. Define the information required to evaluate hazards associated with the modification or occupation of floodplains, and

3. Provide guidance for managing activities which result in the modification or occupation of floodplains, or which result in impacts to floodplain values.

IV. RELATIONSHIPS TO OTHER REQUIREMENTS

This guideline is consistent with all substantive requirements of the Order as interpreted and explained in the U.S. Water Resources Council (WRC) Floodplain Management Guidelines (43 FR 6030). NPS compliance with the Order is mandated. This guideline adopts the requirements of the Order as interpreted and explained in the WRC guidelines, and follows the WRC guidelines except where they are superseded by the Department of the Interior Manual (Chapt. 1, Part 520). In addition, this guideline addresses activities and responsibilities which occur in flood prone areas not specifically addressed in the Order, WRC guidelines, or Department Manual (e.g., flash floodprone zones, geomorphically active zones).

This guideline is part of NPS-12 concerning compliance with legislative and executive requirements which relate to NPS planning activities, including those pertaining to the National Environmental Policy Act (NEPA), Section 10 of the Rivers and Harbors Act, Coastal Zone Management Act, Clean Water Act, Water Resources Development Act, Fish and Wildlife Coordination Act, and the National Flood Insurance Program. The guideline does not replace any existing legislative or executive requirements pertaining to NPS planning activities.

Documents prepared for compliance with the Order and this guideline will be combined with or appended to the appropriate environmental documents for each action as required by NEPA, subsequent guidelines, and regulations. Wetlands compliance can be combined with floodplain compliance when the two issues are related.

The Standards and Criteria of the National Flood Insurance Program (44 CFR 60) pertain specifically to these guidelines and procedures. Those Standards and Criteria are directed towards the protection of structures and facilities from flood hazards and the protection of existing development from the effects of new development. They pertain to siting and design criteria for residential and non-residential structures, utility systems, and other structures. Unless these standards are demonstrably inappropriate for a given type of structure or facility, they will apply to all NPS planning, assessment, and design activities for actions in the regulatory floodplain.

V. SCOPE

A. Applicability

This guideline applies to all NPS actions, including the direct and indirect support of floodplain development, which have the potential for adversely impacting the regulatory floodplain or its occupants, or which are subject to potential harm by being located in floodplains. This guideline applies to all actions:

1. proposed or implemented after the effective date of this guideline. It applies to all actions that were ongoing, in the planning or development stage, or undergoing implementation after the effective date of the Orders (May 24, 1977) but which had not, by the effective date of this guideline, achieved compliance with previous NPS floodplain management guidelines.

2. implemented prior to May 28, 1980, including existing developments, when those actions are the subject of regularly occurring updates of official NPS planning documents. In this case, actions which may be out of compliance with this guideline should be identified and measures should be identified and implemented to bring them into compliance.

3. even if the cost of obtaining precise floodplain information is prohibitive. In that case, the NPS will assume the project is within a regulatory floodplain unless the site can be determined beyond reasonable doubt to be outside of the regulatory floodplain.

B. Excepted Actions

1. This guideline does not apply to actions which are functionally dependent upon locations in proximity to water and for which non-floodplain sites are never a practicable alternative. However, practicable (water-side) alternative actions, including no action, should be evaluated for all water-dependent actions. Examples of actions functionally dependent upon water include marinas, docks, piers, water intake facilities, sewage outfalls, bridges, flood control facilities, water monitoring stations, drainage ditches, debris removal, outdoor water sports facilities, boardwalks to interpret wetlands, and similar water-dependent actions.

2. This guideline does not apply to certain park functions that are often located near water for the enjoyment of visitors but do not involve overnight occupation. Examples include:

   a. Picnic facilities, scenic overlooks, foot trails, and associated day-time parking facilities in non-high hazard areas.

   b. Entrance, access, and internal roads to or within units of the NPS,

   c. Isolated backcountry sites, natural or undeveloped sites along trails or roads,

surveys and studies, or other activities as contained in Departmental Manual (516, DM 2, Appendix 1 and 516 DM 6, Appendix 7, as amended October, 1984),

d. Emergency actions essential to protect property and public health and safety, provided that all possible steps are taken to mitigate the adverse impacts of these actions,

3. This guideline does not apply to camping and associated sanitary facilities located in non-high hazard floodplains provided that:

a. An evaluation of alternative sites has indicated that there is no aesthetically comparable, flood-safe location available,

b. Flood information is made available to visitors by signs and/or pamphlet, and,

c. A contingency plan for evacuating campgrounds during periods of flooding is in place. The plan should be approved by the Regional Safety Officer. The plan will be based on an evaluation of the opportunity for safe evacuation of the site and will consider: 1) the safety of necessary evacuation routes, 2) the amount of time required for site evacuation, 3) the amount of warning time that can be expected, and 4) the mechanism for reliable and timely notification of impending flood hazard.

4. This guideline does not apply to historic or archaeologic structures, sites or artifacts whose location is integral to their significance.

VI. PROCEDURES

A. Introduction

The general procedure for implementing this guideline is depicted in Figure 1. To implement this guideline, it is necessary to determine the class of the proposed action and which of three regulatory floodplains applies. A preliminary floodplain assessment

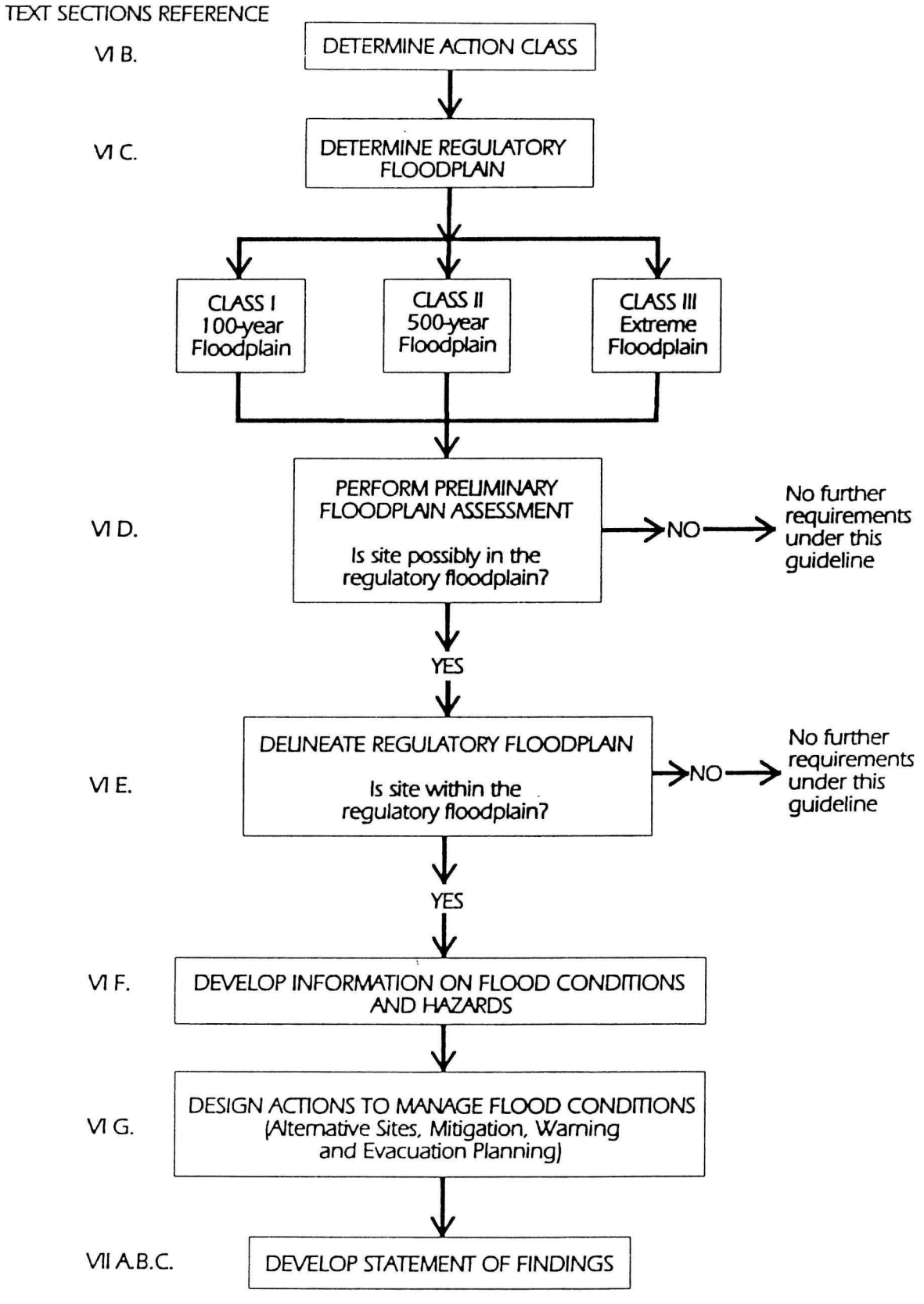

Figure 1. Procedure for Implementing the National Park Service Floodplain Management Guideline.

is is conducted to determine if the proposed activity has a chance of being located in the applicable regulatory floodplain. If there is no chance of being located in the applicable regulatory floodplain, there are no further requirements of this guideline.

If there is a chance that the proposed action is in the applicable regulatory floodplain, then that floodplain must be delineated to determine whether or not additional actions are required by this guideline. If the proposed activity is found to be in the applicable regulatory floodplain, then flood conditions and associated hazards must be quantified and appropriate actions (an alternative site, or effective mitigation and/or warning and/or evacuation planning) must be taken to manage floodplain conditions and flood hazards. In the case where the selected site for the proposed activity is located in the applicable regulatory floodplain, a formal Statement of Findings (SOF) must be prepared. Statements of Findings must be surnamed by the Regional Safety and Compliance Officers and the Chief, Water Resources Division, Washington Office and approved by the Regional Director.

Each of the following sections specifically relate to an item on Figure 1.

B. Determine the Action Class

1. Class I Actions: Class I Actions include location or construction of administrative, residential, warehouse and maintenance buildings, non-excepted parking lots or other man-made features which by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values.

2. Class II Actions: Class II Actions are Critical Actions as defined by the Order. Class II Actions are those which would create an added disastrous dimension to the flood event. Examples of critical actions include:

    a. Schools, hospitals, clinics, or other facilities occupied by people with physical or medical limitations,

    b. Fuel storage facilities, 40,000 gallons per day or larger sewage treatment plants, storage of toxic or water-reactive materials including hazardous materials, and

    c. Irreplaceable records, museums, storage of archeological artifacts, and emergency services.

3. Class III Actions: Class III Actions are Class I or Class II Actions located in High Hazard Areas, including coastal high hazard areas and areas subject to flash flooding. In high hazard areas picnic facilities, scenic overlooks, foot trails and associated day-time

parking facilities may be placed within the 100-year floodplain, but, these facilities must contain signs informing visitors of flood risk and suggested actions in the event of flooding. However, consideration should be given to providing additional levels of flood protection.

C. Determine the Regulatory Floodplain

Action Class	Regulatory Floodplain	Chance of Flooding during One Year	Chance of Flooding during Fifty Years
Class I	100-year (Base Floodplain)	1%	39%
Class II	500-year	0.2%	10%
Class III	Extreme Flood	0%	0%

D. Perform Preliminary Floodplain Assessment

1. A preliminary floodplain assessment can be made as part of a general floodplain inventory or on a case-by-case basis. Flood prone areas subject to or potentially subject to Class I, II, or III Actions should be inventoried and assessed during the preparation of the Resource Base Inventory proceeding the General Management Plan or other planning documents. The preliminary assessment can be accomplished using existing floodplain delineations or by conducting a site assessment using qualified hydrologists, engineers, planners, or scientists. Where existing floodplain delineations are not available, the preliminary assessment should be based upon an analysis of such factors as vegetation, topography, soils, geomorphic features and processes, stream type, and other factors. The objective is to determine if there is any chance that the site might be floodprone. If, based upon the preliminary floodplain assessment, it can be determined that there is no chance that the site is subject to flooding, then there are no further requirements under this guideline.

2. The preliminary assessment should also include associated hydrologic factors such as the rate of flood-water rise, duration of flooding, likely sediment and debris loads, potential pollution hazards, and hazards associated with ice and/or debris jams.

Geologic and geomorphic stability also should be evaluated, including the potential for sediment deposition, bank erosion and channel realignments, alluvial fan processes, mudslides, and other contingencies. In the case of coastal sites, areas susceptible to high tides, storm waves, tsunami, beach erosion, and other factors should be described and evaluated.

E. Delineate the Regulatory Floodplain

If the proposed action is determined to be in a potentially floodprone site, the regulatory floodplain which corresponds to the applicable Action Class should be delineated on a map of sufficient scale to meet all planning needs. The delineated floodplain should correspond to the elevation, on the land's surface, and location of the maximum extent of inundation by the regulatory flood. Flood magnitudes (e.g., 100-year; 500-year) should be determined by commonly accepted flow-frequency analysis procedures, regional hydrologic analysis procedures, or hydrologic modeling procedures. The extreme flood magnitude should be determined by any one of several accepted extreme flood procedures. The elevation of the regulatory flood should be determined by commonly accepted procedures, implemented by qualified professionals. All methods should be properly referenced.

F. Develop Information on Flood Conditions and Hazards

In addition to delineating the regulatory floodplain, floodplain management decisions are to be based upon information on the hydrologic and geomorphic processes and hazards associated with the location of the proposed activity. Flood hazard information should be developed and should include an analysis of flooding frequency at the proposed activity site, the probability of flooding over the planned project life, and the hydraulic attributes associated with the regulatory flood at the proposed activity site (flood depth and velocity). Further descriptions and evaluations of factors in Section VI D-2, will be made to fully assess hazards of those contingencies.

G. Design Actions to Manage Flood Conditions

After determining the Action Class and Regulatory Floodplain and evaluating hydrologic, hydraulic, and geomorphic hazards associated with the proposed activity site, it is necessary to take effective actions to manage floodplain natural and cultural resources, and flood hazards to human life and property. Those actions will include selection of an alternative (non-floodplain) site, structural or other forms of mitigation, and/or flood warning and evacuation plans. The following guidance is provided in developing appropriate floodplain management actions.

1. Alternative site determinations: non floodprone sites should be identified and evaluated for all proposed actions when it is determined that the action will occur in a

regulatory floodplain. If practicable alternative sites are identified, it is NPS Policy as set forth in the Order and in this Guideline to give preference to locating the proposed action at an alternative site outside the regulatory floodplain. In the event that an alternative site outside the regulatory floodplain is selected, there are no further requirements under this guideline.

2. Mitigation: measures may be applied to proposed actions to provide for their location in the regulatory floodplain when it is documented in a Statement of Findings that practicable alternative locations are not available and the importance of the location clearly outweighs the policies set forth in Section II of this guideline. Mitigation measures may also be applied if other substantive management considerations exist which clearly favor locating an action in a regulatory floodplain. Mitigation may consist of any combination of seasonal closure, structural flood proofing, specific actions to minimize impacts to floodplain natural resource values, effective flood warning and flood evacuation. Structural flood proofing measures must be professionally engineered to effectively manage flood hazards as quantified according to Section VI-F of this guideline. Effective structural flood proofing is very difficult to achieve for geomorphically unstable sites such as alluvial fans and active beach zones. Flood warning and evacuation planning must be designed and determined to be adequate to manage flood hazards as quantified according to Section VI-F of this guideline. Effective flood warning and evacuation planning is very difficult to achieve for flash floodprone high hazard locations. Occasionally, mitigation measures may result in the modification of floodplains to such an extent that the elevation of the regulatory flood will be affected. In those situations, additional hydraulic analyses may be required to quantify flood hazards under mitigated conditions.

VII. STATEMENT OF FINDINGS (SOF)

A. Introduction

Except for actions categorically excluded from National Environmental Policy Act (NEPA) compliance as provided for in 516 DM and NPS-12, all proposed actions must

include compliance with NEPA through preparation of either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). If an EA is prepared and it is determined on the basis of the EA that there will be no significant impacts, then a Finding of No Significant Impact (FONSI) will be prepared for and signed by the Regional Director. In such cases, the SOF may be combined as a separately identifiable document with the EA and signed concurrently with the FONSI. If determined on the basis of the EA that an EIS will be prepared, then a Notice of Intent will be published in the Federal Register. The SOF may be combined as a separately identifiable document with the EIS and signed concurrently with the Record of Decision for the EIS. In cases where the record of decision for the EIS is signed by someone other than the Regional Director, the floodplain SOF must first be signed by the Regional Director. The public review period for the SOF will coincide with that of the NEPA document. Upon approval, the SOF will be sent to the appropriate agencies and appropriate state review offices as determined by E.O. 12372.

B. Content

The SOF will clearly describe all alternative locations considered and provide precise reasoning as to why the proposed site was selected and why alternative sites were rejected. The SOF will include an accurate and complete description of the flood hazard assumed by implementation of the proposed action without mitigation in accordance with Section VI-F of this Guideline. In the case where alternative sites are also floodprone, an analysis of the comparative flood risk between alternative sites will be provided. The SOF will describe the environmental impacts associated with the proposed action. The SOF will include a thorough description of mitigation measures chosen to achieve compliance with the Orders and this Guideline, and will provide sufficient information to evaluate the effectiveness of the proposed mitigation in managing identified flood hazards. If flood warning and evacuation are planned, both warning and evacuation times should be determined. In the event that risk to property or human life cannot be eliminated in high hazard areas, even by compliance with this guideline, a clear statement of this situation is required in the SOF.

C. Approval Process

The SOF must be approved by the Regional Director. Prior to Regional Director approval, the SOF must be reviewed and surnamed by the following parties to determine that the intent of the Order and this Guideline is achieved:

1. Water Resources Division (WASO) - technical review of hydrologic and hydraulic information.

2. Regional Safety Officer - review of structural and non-structural mitigation measures.

3. Regional Compliance Officer - review to ensure compliance with all pertinent related laws, regulations and guidelines.

D. Outline for a Floodplain Statement of Findings

1. Introduction
   A. Brief description of the proposed action.
   B. Brief site description.
   C. General characterization of the nature of flooding in the area.

2. Justification for Use of the Floodplain
   A. Description of why the proposed action must be located in floodplain.
   B. Investigation of Alternative Sites.

3. Description of Site-Specific Flood Risk
   A. Recurrence interval of flooding at the site.
   B. Hydraulics of Flooding at the Site (depths, velocities).
   C. Time required for flooding to occur (amount of warning possible).
   D. Opportunity for Evacuation of Site in the event of flooding.
   E. Geomorphic considerations (erosion, sediment deposition, channel adjustments).

4. A description of how the action will be designed or modified to minimize harm to floodplain values, or risk to life or property.

5. Summary