

High Hazard Potential Dam Floodplain Management Job Aid 2022

Introduction

High Hazard Potential Dams (HHPD) floodplain management plan (FPMP) is not to be confused with the Floodplain Management component of the National Flood Insurance Program (NFIP) which requires participating communities to adopt and enforce floodplain management regulations for development in regulatory floodplains. The purpose of the plan is to specifically address the impacts of the dam for which a HHPD grant has been awarded. Additionally, HHPD floodplain management plans are dam-specific and focus on the area impacted by the dam undergoing rehabilitation or removal. For all HHPD grants, Executive Order (EO) 11988 must be considered through all stages of grant funding, including planning and design, and the recipient should coordinate with the state, local government, or community authorized floodplain manager for permits and submit updated data to FEMA.

Plans are designed to identify and implement actions to reduce or eliminate the adverse impacts of future flood events in the project area. For structural measures including dam rehabilitation and dam removals, the plan should address both upstream and downstream impacts for a wide range of recurrence interval events including the impacts to the base (1% annual chance) flood regulated by the local government participating in the NFIP.

The plan should also include interim actions needed to manage the dam and the area impacted by the dam until the project is designed and constructed. Applicants are encouraged to implement sensible floodplain management measures, practices and policies to reduce loss of life, injuries, damages to property and facilities, public expenditures, and other adverse impacts associated with flooding; to preserve and enhance natural floodplain values; and address measures that will help preserve levels of protection provided by the project.

HHPD FPMPs can also be useful in the development of community warning and evacuation planning. FEMA may provide technical support for the development and implementation of HHPD FPMPs. Grant funds may be used for the development of the HHPD floodplain management plans.

Requirements

The HHPD floodplain management plan is to specifically address the impacts of the project dam or dams for which a HHPD grant has been awarded. All dam rehabilitation projects should meet state and local regulations for encroachment in or alterations of regulatory floodplains in compliance with state laws and local floodplain management, zoning, and site design regulations.

To be eligible for HHPD, subrecipients must develop a plan no later than two years after the date of execution of a dam rehabilitation or removal project agreement and the plan must be implemented no later than two years after



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the date of completion of a dam rehabilitation project. Project agreement is defined as documented responsibilities that are mutually agreed upon by both parties.

Each party is accountable for executing duties associated with the agreement utilizing resources and funding within a defined period of execution of tasks. Implemented is defined as being reviewed by designated parties that are determined by State Authorized Agency and fully adopted and integrated into local and state program operations. Additionally, this can be considered as ensuring a set of practices or process has been established.

The Table below outlines project tasks which triggers the plan requirement.

Table 1: Summary of FPMP Requirements

Category	Eligible Scope of Work Activities
Planning	<ul style="list-style-type: none"> ▪ Dam risk and consequence assessments ▪ Feasibility studies ▪ Preliminary engineering studies ▪ Analysis of alternatives which in compliance with Executive Order 11988 ▪ Alternatives must address the impacts on flooding of the dam rehabilitation and dam removal upstream and downstream of the project ▪ Mapping, engineering survey and inundation modeling
Design	<ul style="list-style-type: none"> ▪ Engineering design ▪ Development of specifications ▪ Per 44 Code of Federal Regulations 65.12, prior to permitting encroachments (i.e., projects) that will result in base (1% -annual-chance) flood increases in excess of those allowed by Part 60 of the NFIP regulations to occur, a community shall apply to FEMA for a Conditional Letter of Map Revision (CLOMR). A community (or state) may request a CLOMR per 44 CFR 65.8 for any project regardless of flood hazard zone or amount of Base (1% -annual-chance) Flood Elevation (BFE) increase/decrease.
Construction	<ul style="list-style-type: none"> ▪ Repair, rehabilitation or removal; ▪ Construction monitoring ▪ Installation of early warning systems ▪ If a CLOMR was required by the NFIP per 44 CFR 65.12, a Letter of Map Revision (LOMR) request should be submitted to FEMA after the project is completed. Even if there was not a CLOMR issued by FEMA prior to construction, it is highly recommended that communities require LOMRs be submitted for all projects within the SHA that result in a change to the effective BFE.

Development Process

Step 1: Coordination

- Development of the plan should be a shared responsibility of the dam owner and local government with authority to implement policies to protect the public and regulate development
- Plan development should include the involvement of key partners and stakeholders including representatives of the local government, emergency managers, first responders, planners, and state agencies including dam safety and state hazard mitigation offices, as well as technical resources afforded by federal agencies
- Roles and responsibilities must be clearly defined in the plan and there should be documentation that each entity is aware of their roles and agree to implement them
- It is recommended as a best practice to develop the plan concurrently with the feasibility studies that are conducted for the proposed project, relevant hazard mitigation plan(s), as well as any other plans that address dam risk

Step 2: Public Involvement

Approximately 14,000 dams in the United States are classified as high-hazard potential, meaning that their failure could result in loss of life. Dams can fail for several reasons, including overtopping caused by floods, acts of sabotage, or structural failure of materials used in dam construction. Plans support dam safety by establishing public policy that promotes public risk awareness and community planning. At a minimum the following should occur:

- There should be active public involvement throughout the plan development process
- Documentation or records of meetings and public involvement should be included in the plan

Step 3: Post-Project Floodplain Hazard Assessment

A post-project floodplain hazard assessment should be conducted to help identify problems, adverse impacts, and other risks associated with post-project floodplain conditions. This is best done by determining and describing the inherent characteristics of the floodplain and post-project flood risk in the project area. These characteristics include, but are not limited, to:

- A description of the flood hazard, which includes the calculation of flood levels and determination of flood risk should consider both existing and future conditions over the expected life of the dam.
- A description and delineation of the regulatory floodway and/or natural storage areas, which includes at a minimum, the upstream and downstream reach of stream impacted by the dam rehabilitation project should be identified.

- A description and delineation of different flood inundation scenarios, which includes the identification of the impacts of the dam rehabilitation project on the flood elevations for a range of frequent and infrequent flood events with input from an experienced water resources engineer.
- A characterization of the post-project conditions associated with incremental, non-breach, and residual risk that includes potential consequences focusing on aspects such as economic losses due to the flooding event, number of residential and commercial insurable structures, critical facilities, transportation network and other factors.

Step 4: Goals

Based on the problems and needs identified through the planning process, goals should be set, and strategies developed to meet those goals. At a minimum, the following goals and corresponding strategies should be described in the plan:

1. Potential measures, evaluations, practices, and policies to reduce loss of life, injuries, damage to property and facilities, public expenditures, consequences and other adverse impacts of flooding in the area impacted by the project
2. Plans for flood fighting and removal of temporary material or structures in flood path, and flood risk reduction or a wide range of potential flooding events including non-dam breach events, for extreme flood events for which dams are designed, and for the operational releases from dams that are key to dam safety. This should be done in coordination with the governing local government emergency managers and dam owners and include plans for the removal of temporary structures and hazardous materials
3. Plans for evacuation that addresses both shelter in place and horizontal evacuation
4. Public education and awareness of flood risk through an outreach program that provides information to impacted property owners