



Amite River and Tributaries East of the Mississippi River, Louisiana



Appendix I – Nonstructural Implementation Plan

March 2025

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ANNEX

Annex 1.	Generalized Workflow of Single Structure
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Section 1

Definitions Related to the Nonstructural Plan

Term	Definition
AEP	Annual Exceedance Probability (AEP) means the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year or the probability of a given stage at a given location will be exceeded in any one year. When used in reference to stage, this is the stage produced by the hydraulic model for the associated annual exceedance probability rainfall inputs.
Base Flood	The term “base flood” is defined by the National Flood Insurance Project (NFIP) as the “flood having a 1 percent chance of being exceeded in any given year and is also called the .01 annual exceedance probability flood”.
Base Flood Elevation (BFE)	The computed elevation to which floodwater is anticipated to rise during the base flood. The base flood elevation or BFE is shown on community’s Flood Insurance Rate Map (FIRM).
Dry Floodproofing	Dry floodproofing consists of sealing all areas of a structure up to a maximum of approximately 3 feet above ground level to reduce damage caused by .01 AEP BFE based on year 2078 hydrology by making walls, doors, windows, and other openings resistant to penetration by water. Walls are coated with sealants, waterproofing compounds, or plastic sheeting. Back-flow from water and sewer lines is prevented by installing mechanisms such as drain plugs, standpipes, grinder pumps, and back-up valves. Openings, such as doors, windows, sewer lines, and vents, may also be closed temporarily with sandbags or removable closures, or closed permanently.
Economically Justified	The elevation or floodproofing measures proposed for the structure must be economically justified based on an aggregation or sub aggregation level that are anticipated to be avoided over the 50-year period of analysis (years 2028-2078) unless they have been identified eligible based on social vulnerability (SV) criteria and included in the next highest aggregation regardless of economic justification.

Elevation (of structure)	The entire foundation of the residential structure will be lifted and placed on a new foundation (i.e., columns, piers, posted or raised foundation walls) so that the lowest habitable finished floor is above the design water surface elevation (WSE). All utilities and mechanical equipment, such as air conditioners and hot water heaters, will also be raised to this elevation. This measure is applicable to permanent residential structures only.
Eligible structures	Structures that are determined by the United States Army Corps of Engineers (USACE) to be eligible for floodproofing or elevation after the completion of the investigations and analyses as described herein in the secondary eligibility description.
First Floor Elevation (FFE)	First floor elevation or FFE refers to the height of the first lowest floor of the structure above the adjacent grade. The higher the FFE of a structure, the less likely that flood damage to the structures will occur.
Floodproofing	As defined by the Federal Emergency Management Agency (FEMA) in 44 CFR, Chapter 1, Part 59, "floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damages to real estate or improved real property, water and sanitary facilities, structures, and their contents.
Hazardous, Toxic, and Radioactive Waste (HTRW)	HTRW means hazardous, toxic, and radioactive waste as more specifically defined in Engineer Regulation (ER) 1165-2-132, "Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects".
Historic Structure	As defined in 44 CFR Part 59, a historic structure is a structure that is: (1) listed individually in the National Register of Historic Places (maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (2) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (3) individually listed on a state inventory of historic places with historic preservation projects which have been approved by the Secretary of the Interior; and (4) individually listed on a local inventory of historic places in communities with historic preservation projects that have been certified either by (a) an approved state project as determined

by the Secretary of the Interior or; (b) directly by the Secretary of the Interior in states without approved projects.

- Manufactured Home** "Manufactured home" and "manufactured housing" mean a factory-built, residential dwelling unit constructed to standards and codes, as promulgated by the United States Department of Housing and Urban Development, under the National Manufactured Housing Construction and Safety Standards Act of 1974, 42 U.S.C. 5401 et seq., as amended. Further, the terms "manufactured home" and "manufactured housing" may be used interchangeably and apply to structures bearing the permanently affixed seal of the United States Department of Housing and Urban Development. To be eligible for elevation, a manufactured home must have a permanent foundation, be permanently affixed to the ground, meet the anchoring, construction, installation, and other requirements of La. R.S. 51:912, ART XIV-B., and be legally classified as immoveable real property under state law. Notwithstanding the provisions of La. R.S. 9:1149.6, the manufactured homeowner and any subsequent owner of an immobilized manufactured home, may not de-immobilize the manufactured home in the future by detachment, removal, authentic act of de-immobilization, or any other method.
- Mobile Home** "Mobile home" means a factory-built, residential dwelling unit built to voluntary standards prior to the passage of the National Manufactured Housing Construction and Safety Standards Act of 1974. This term includes and is interchangeable with the term "house trailer" but does not include the term "manufactured home." To be eligible for elevation, a mobile home must have a permanent foundation, be permanently immobilized in accordance with the requirements of La. R.S. 9:1149.4, as amended from time to time, and be legally classified as immoveable real property under state law. Notwithstanding the provisions of La. R.S. 9:1149.6, the mobile homeowner and any subsequent owner of an immobilized mobile home, may not de-immobilize the mobile home in the future by detachment, removal, authentic act of de-immobilization, or any other method.
- Modular Home** "Modular home" and "modular housing" mean a factory-built, residential dwelling unit built to the International Residential Code (IRC) as adopted by the Louisiana State Uniform Construction Code Council pursuant to La. R.S. 51:911.22, as amended from time to time. To be eligible for elevation, a modular home must have a permanent foundation, be permanently affixed to the ground, be legally classified as immoveable real property under state law, and meet the anchoring, construction, installation, and other requirements of La. R.S. 51:912, ART XIV-B. Notwithstanding the provisions of La. R.S. 9:1149.6, the modular homeowner and any subsequent owner of a modular home, may not de-immobilize the modular

home in the future by detachment, removal, authentic act of de-immobilization or any other method.

National Flood Insurance Program (NFIP)	The NFIP is a program that makes federally backed flood insurance available in those states and communities that agree to adopt and enforce flood-plain management ordinances to reduce future flood damage. The program of flood insurance coverage and floodplain management administered under the Act and applicable federal regulations promulgated in Title 44 of the Code of Federal Regulations, Subchapter B.
Non-Federal Interest (NFI)	The NFI plans to act as the sponsor, including any non-Federal interest that has contributed to, or is expected to contribute to, the non-Federal cost share of the proposed feasibility study or project modification.
Non-Federal Sponsor (NFS)	The NFS is the cost-sharing partner for the design, construction of the project, as well as for the Operation, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R) of the project.
Nonstructural Measures	Nonstructural floodproofing measures are permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damage from flooding. Nonstructural food proofing measures differ from structural floodproofing measures (i.e., levees, floodwalls, etc.) in that they focus on reducing the consequences of damages from flood events instead of focusing on reducing the probability of damages from flood events.
Nonstructural Plan	Nonstructural measures are permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damages from flooding. Nonstructural Plan measures differ from structural measures in that they focus on reducing consequences of flooding instead of focusing on reducing the probability of flooding. Nonstructural measures reduce flood damages without significantly altering the nature or extent of flooding. The Nonstructural measures for this report include the elevation of eligible residential structures and floodproofing of eligible nonresidential structures.
Nonresidential Structure	A nonresidential structure is those not herein defined as Residential.

Preliminary Structure Eligibility Criteria	<p>To be considered preliminarily eligible for participation in the Nonstructural Plan, a structure must meet these criteria:</p> <ol style="list-style-type: none"> 1. The structure must have a FFE at or below the applicable floodplain (which may be a 0.1, 0.04, 0.02 and 0.01 AEP year floodplain depending on the location of the structure), based on hydrologic conditions predicted to occur in 2028 (the beginning of the 50-year period of analysis) at a specific location. 2. The elevation or floodproofing measures proposed for the structure must be economically justified based on an aggregation or sub aggregation level that are anticipated to be avoided over the 50-year period of analysis (years 2028-2078) unless they have been identified eligible based on SV criteria and included in the next highest aggregation regardless of economic justification. 3. The structure must have a permanent foundation and be permanently immobilized and affixed or anchored to the ground, as required by applicable law, and must be legally classified as immovable real property under state law. Notwithstanding the provisions of La. R.S. 9:1149.6, a manufactured, modular, or mobile homeowner and any subsequent owner may not de-immobilize the manufactured, modular, or mobile home in the future, by detachment, removal, act of de-immobilization, or any other method. Manufactured, modular, and mobile homes that do not meet these requirements are not eligible for elevation. This criterion only applies to residential uses of manufactured, modular, and mobile homes.
Residential Structure	One- or two-family dwellings which are 3-stories or less in height intended for human habitation, for living, sleeping, cooking, or eating purposes, or any combination thereof as defined by IRC Chapter 11 Section N1101.6.
Structural Plan	Structural measures are physical modifications designed to reduce the frequency of damaging levels of flood inundation. For purposes of this report, these measures include levees and floodwalls.
Special Flood Hazard Area (SFHA)	An area having special flood, mudflow or flood-related erosion hazards and shown on a Flood Hazard Boundary Map or a Flood Insurance Rate Map (FIRM) Zone A, AO, A1-A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1-A30, V1-V30, VE or V. The Special Flood Hazard Area (SFHA) is the area where the NFIP's floodplain management regulations must be enforced.
Wet Floodproofing	Wet floodproofing prevents or provides resistance to damage from flooding while allowing floodwaters to enter the structure or area and equalize pressures on foundation walls or lower-level walls. A key

feature associated with wet floodproofing are openings to allow floodwaters in, consisting of engineered flood vents in the structure walls.

Section 2

Introduction

This Nonstructural (NS) Implementation Plan (Plan) describes the general process for the implementation of elevations and floodproofing measures to reduce the risk of flood damages to residential and nonresidential structures caused by riverine flooding from excessive rainfall events, in addition to the residual risk of flood damages associated with coastal storm events in the Amite River Tributaries (ART) study area in general accordance with the July 22, 2024 Memorandum from Headquarters USACE Guidance for *Nonstructural Project Planning and Implementation*. USACE recognizes that there are unique challenges in the implementation of a relatively large plan. The Non-Federal Sponsor (NFS), State of Louisiana, acting by and through, the Louisiana Department of Transportation and Development (LADOTD), and local stakeholders have also provided valuable information pertinent to the study. The USACE places a priority on continuing this coordination during preconstruction engineering and design (PED) and construction, and sharing lessons learned with other USACE teams. This will likely include updating the Hydrology & Hydraulics (H&H) existing conditions modeling to incorporate newly built projects by the NFS or USACE that would change the flood risk for the study area. The PED phase occurs after Congress authorizes the final recommended plan.

The anticipated duties and obligations of property owners are generally outlined in Sections 4,5,6 and 8 of this Appendix. Section 8 of this appendix provides information of the generalized workflows of meeting eligibility requirements during the application, screening and design-build phase the of a single structure. However, some of this information may be modified in PED as the Plan is finalized. While groups of structures have been evaluated for the most cost-effective NS measure, USACE reserves the right to determine which measure shall ultimately be implemented at each structure location, including consideration of project costs and benefits.

The project area shall be subdivided into distinct geographic areas or reaches for implementation and maps of these areas will be prepared and regularly updated to depict the current stage of structure elevation, eligible owner names, property line boundaries, locations of hazardous, toxic, and radioactive waste (HTRW), zoning districts, regulatory floodway boundaries, flood zones, and other important information.

It is anticipated that implementation of the Plan will occur over an approximate 8.5-year period. Following an initial 24-month PED phase, there will be 6.5 years for the elevation of residential and dry/wet floodproofing of nonresidential construction starting off with a small pilot project of 25 to 50 structures followed by soliciting 5 large Multiple Award Task Order Contract (MATOC) contracts with USACE managed contractors constructing approximately 400 structures per MATOC contract. The implementation schedule assumes that each of the 5 USACE managed contractors would floodproof or elevate 80 to 100 structures

concurrently per year, thereby completing construction of up to 400 structures per year. This timeframe is highly dependent upon the amount of funding allocated in any given year, the participation rate and environmental conditions, timely approval process of structures receiving NS measures, and expediency of submittal reviews and permit processing during design-build phase.

Additional information is provided in Section 8 of this appendix.

2.1 USACE RECOMMENDED PLAN

The RP is Plan 4, the Total Net Benefits Plan, which includes NS flood risk management project of the elevation of residential structures and the dry or wet floodproofing of non-residential structures on a total of 2,051 structures, located in the 0.1 (5 aggregates), 0.04 (25 aggregates), 0.02 (7 aggregates) or 0.01 (20 aggregates) AEP floodplains in the ART study area (Figure I:2-1). Eligible structures were determined based on the 2076 rainfall/riverine floodplain and were optimized using damages from the predominate condition for

- 1,810 residential structures,
- 241 nonresidential structures.

The reduction in damages would be achieved by elevating residential structures to the 2078 0.01 AEP BFE that has been individually determined for each structure, up to 13 feet above ground surface, and floodproofing up to 3 feet above ground surface. During implementation, each structure would be individually surveyed. Participation in the RP is 100 percent voluntary.

Participation in the Plan does not guarantee reduced rates under the NFIP.

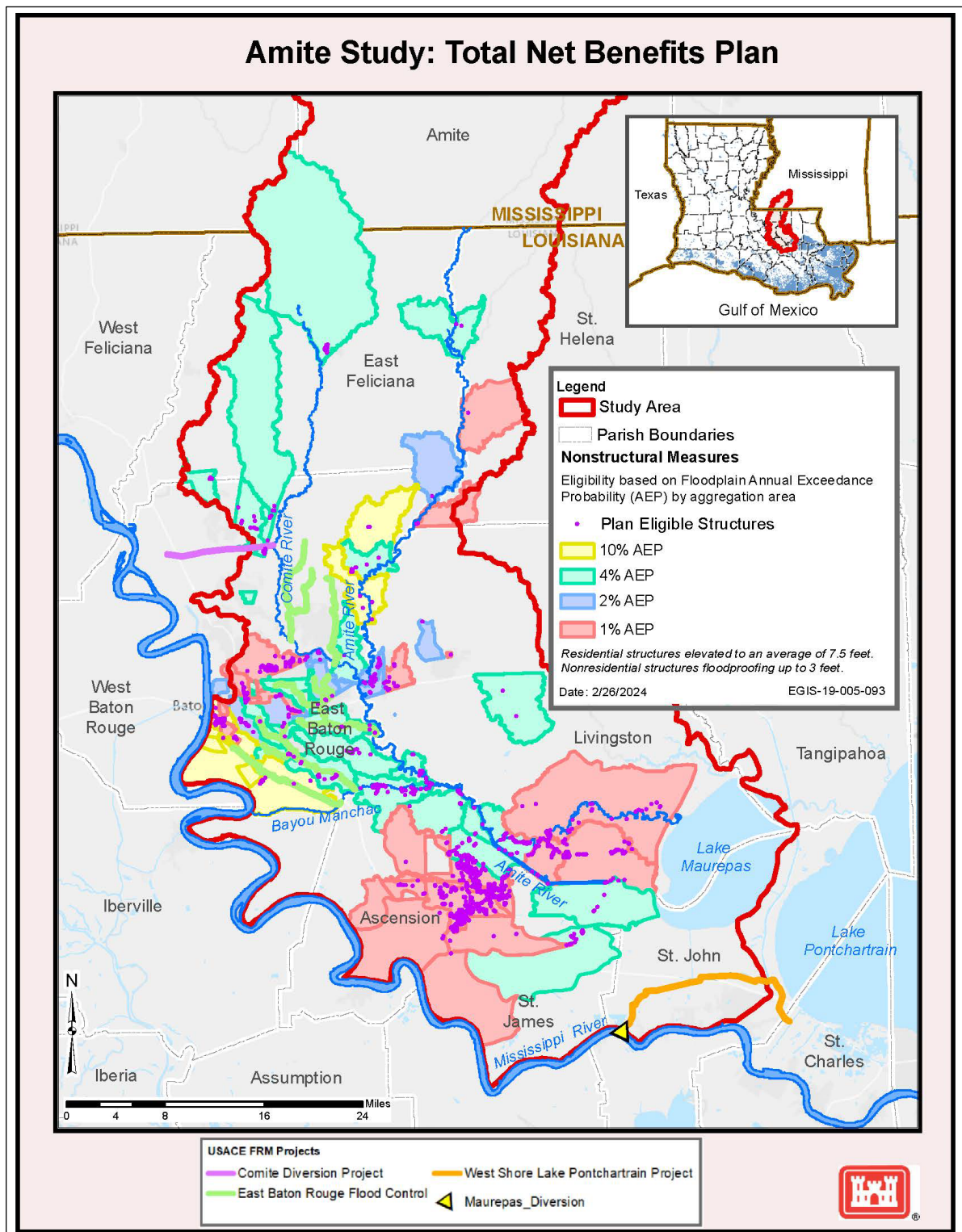


Figure I:2-1. Map of the Nonstructural Plan

2.2 PRELIMINARY ELIGIBILITY

For a structure to be preliminarily eligible for inclusion in the Plan, the following criteria must be met:

1. The structure must have a FFE at or below the applicable floodplain (which may be a 0.1, 0.04, 0.02 and 0.01 AEP year floodplain depending on the location of the structure), based on hydrologic conditions predicted to occur in 2028 (the beginning of the 50-year period of analysis) at a specific location.
2. The elevation or floodproofing measures proposed for the structure must be economically justified based on an aggregation or sub aggregation level that are anticipated to be avoided over the 50-year period of analysis (years 2028-2078) unless they have been identified eligible based on SV criteria and included in the next highest aggregation regardless of economic justification.
3. The structure must have a permanent foundation and be permanently immobilized and affixed or anchored to the ground, as required by applicable law, and must be legally classified as immovable real property under state law. Notwithstanding the provisions of La. R.S. 9:1149.6, a manufactured, modular, or mobile homeowner and any subsequent owner may not de-immobilize the manufactured, modular, or mobile home in the future, by detachment, removal, act of de-immobilization, or any other method. Manufactured, modular, and mobile homes that do not meet these requirements are not eligible for elevation. This criterion only applies to residential uses of manufactured, modular, and mobile homes.

Additionally, structures that have received prior financial assistance from a federal agency or program for disaster assistance may not be eligible if assistance provided under this project would result in a duplication of benefits prohibited by the terms of the disaster assistance provided.

2.3 PROPOSED NONSTRUCTURAL MEASURES

The Plan is currently based on the following measures, which will be refined as additional data becomes available throughout the PED phase. Additional information regarding other NS measures will be added, as appropriate, and as the Plan evolves.

Typical construction actions that were developed during feasibility to produce more accurate quantities for the cost estimate include the following:

- Elevation on piers, columns, or piles.
- Elevation on continuous foundation walls with integral slab on grade.
- Elevation of slab foundations.
- Commercial dry-flood proofing (up to +3.0 ft above the ground surface elevation)
- Industrial dry-flood proofing (up to +3.0 ft above the ground surface elevation)

Other possible construction actions*

- Slab separation.
- Elevation on fill.

Individual properties in the inventory may have differing site conditions discovered after the initial screening. These conditions would be evaluated on a case-by-case basis. Slab separation or additional backfill requirements would be evaluated for cost reasonableness to either modify the contract or the structure would be disqualified.

2.3.1 Elevation of Eligible Residential Structures

Elevation of eligible residential structures to the 0.01 AEP base flood elevation (BFE) will be based on WSE of the USACE Hydraulics and Hydrology modeled 2078-year event that has been individually determined for each structure. Foundations must be properly designed to account for all loads, be appropriately connected to the floor structure above, and utility connections must be properly connected to the elevated structure. Elevations will not exceed 13 feet above ground level. If the 2078 0.01 AEP flood elevation is greater than 13 feet above ground level, the structure would still be eligible for elevation up to that height with the residual risk present. The elevation of structures greater than 13 feet above ground level introduces damage risk from winds during tropical events as a new condition. This height generally serves as a differentiator for insurance rates for wind/hail coverage as well and is therefore used as the upper limit for elevating structures. It is estimated that the BFE, based on 2078 hydrology, for 99 percent of the prospective structures is below 13 feet above ground level.

2.3.2 Dry Floodproofing of Eligible Nonresidential Structures

Dry floodproofing involves techniques applied to keep nonresidential structures dry by sealing the structure to keep floodwaters out. In dry floodproofing, the portion of a structure that is below the FFE (walls and other exterior components) is sealed to make it watertight and substantially impermeable to floodwaters. Such watertight impervious membrane sealant systems can include wall coatings, waterproofing compounds, impermeable sheeting, and supplemental impermeable wall systems, such as cast-in-place concrete. Doors, windows, sewer and water lines, and vents are closed with permanent or removable shields or valves. The expected duration of flooding is critical when deciding which sealant systems to use because seepage can increase over time, rendering the floodproofing ineffective. Waterproofing compounds, sheeting, or sheathing may fail or deteriorate if exposed to floodwaters for extended periods. Sealant systems are also subject to damage (puncture) in areas that experience water flow of significant velocity, or ice or debris flow. The USACE National Flood Proofing Committee has investigated the effect of various depths of water on masonry walls. The results of their work show that, generally, no more than 3 feet (0.9 m) of water should be allowed on a nonreinforced concrete block wall that has not previously been designed and constructed to withstand flood loads. Therefore, application of sealants and shields should involve a determination of the structural soundness of a building and its corresponding ability to resist flood and flood-related loads. A Licensed Professional Engineer registered in Louisiana should be involved in any design of dry floodproofing mitigation systems so that they can evaluate the building to determine the appropriate height of dry floodproofing. Research in this subject area is available in: *Flood Proofing Tests – Tests of Materials and Systems for Flood Proofing Structures*

(USACE, 1988). Some of the advantages and disadvantages associated with dry floodproofing are displayed in Table I:2-1.

Table I:2-1. Advantages and Disadvantages of Dry Floodproofing

Advantages	Disadvantages
Reduces the flood risk to the structure and contents	Requires ongoing maintenance
May be less costly than other retrofitting measures	Usually requires human intervention and adequate warning time for installation of barrier elements
Does not require the extra land that may be needed for floodwalls or reduced levees.	May not provide protection if measures fail or the flood event exceeds the design parameters of the measure
Retains the structure in its present environment and may avoid significant changes in appearance if of masonry construction.	May result in more damage than flooding if design loads are exceeded, walls collapse, floors buckle, or experiences uplift
	May adversely affect the appearance of the building if shields are not aesthetically pleasing
	May not reduce damage to the exterior of the building and other property features

2.3.3 Wet Floodproofing of Eligible Nonresidential Structures

Wet floodproofing involves techniques designed to permit floodwaters to enter a structure by elevating mechanical and electrical components above the design floodwater elevation. Thereby damage from flooding is reduced making the structure more resilient to floodwaters and allowing the structure to be cleaned and returned to service more quickly. Wet floodproofing prevents unbalanced hydrostatic pressure on foundation walls and support systems by equalizing interior and exterior water levels. Some of the advantages and disadvantages associated with wet floodproofing are displayed in Table I:2-2.

Table I:2-2. Advantages and Disadvantages of Wet Floodproofing

Advantages	Disadvantages
Reduces the recovery time needed to return a structure to service.	Usually requires a flood warning to prepare the building and contents for flooding.
Prevents unbalanced hydrostatic pressure on walls.	Requires human intervention to evacuate contents from the flood-prone area.
Costs less than other measures.	Usually requires human intervention and adequate warning time for installation of protective measures.
Retains the structure in its present environment and may avoid significant changes in appearance.	Results in a structure that is wet on the inside and possibly contaminated by sewage, chemicals, and other materials borne by floodwaters and may require extensive cleanup.
	May require ongoing maintenance to keep in operable condition.

2.4 PUBLIC EDUCATION AND ENGAGEMENT

USACE and/or the NFS will engage in a public education campaign to inform property owners and any impacted renters of the NS plan including, but not limited to:

1. Eligibility criteria.
2. The application process.
3. Responsibilities of property owners to clear title and remediate contaminated properties.
4. Other key information about the project.

USACE and/or the NFS shall prepare and distribute written materials such as project information pamphlets, letters of invitation to participate, and public meeting notices. In addition, USACE and/or the NFS will issue press releases, hold public meetings, make presentations to homeowner's associations and other civic groups and organizations, and utilize a variety of social media and other public relations methods to inform property owners and tenants of the project. For the project, it was assumed for the schedule (Table I:9-2) that at least two meetings per year per Parish would be conducted during implementation.

To maximize community understanding, acceptance, and participation in the Plan, it is imperative that NFS and local agencies communicate the benefits of the Plan and project. Local community involvement is a requisite for success. Familiarity with local political and community leaders will likely improve residents' level of comfort, trust, and understanding of the project goals, objectives, and benefits.

Section 3

Process for the Elevation of a Residential Structure

3.1 PRELIMINARY ELIGIBILITY

The structure must be defined as residential to qualify for elevation. A residential structure is a one- or two-family dwelling which is 3-stories or less in height and intended for human habitation, for living, sleeping, cooking, or eating purposes, or any combination thereof as defined by IRC Chapter 11 Section N1101.6. Additionally, it must meet the requirements listed in Section 2.2 of this Plan.

3.2 SECOND STAGE OF ELIGIBILITY DETERMINATIONS

The following is a general description of the process that will apply to willing owners of preliminarily eligible residential structures. Participating owners of eligible structures must complete and submit an application to USACE, but the processing, investigation and verifying tasks for final eligibility may be shared between USACE and the NFS depending on the NFS's capability. Incomplete applications or applications that contain false or misleading information or substantial errors will not be processed until all required information is obtained and verified to be accurate.

Owners of preliminarily eligible structures that do not want their structure elevated may elect not to participate. USACE and the NFS will defer any further action on that structure until such time as the property owner elects to participate within the identified registration timeframe as discussed in Section 8 of this Appendix. If there is a title transfer (i.e., the home is sold or there is a donation, succession, foreclosure, etc.) and the project remains authorized and funded, the new owner(s) may elect to participate. A property owner may elect not to participate at any time prior to the issuance of right-of-entry for construction. For properties with multiple owners, all the owners must consent in writing to the elevation of the structure during the application process. Because the Plan requires voluntary participation, no exercise of eminent domain by the NFS or USACE is necessary.

Residential property owners will be required to grant a temporary right-of-entry to agents of USACE and the NFS to enter upon the property to conduct such investigations deemed necessary to determine final eligibility. These investigations may include, building condition assessments, surveys, limited environmental testing and site assessments, inspections to verify current elevation and determine elevation requirements, and to conduct other activities deemed necessary by USACE to establish eligibility. Refusal to grant temporary right-of-entry to USACE and/or the NFS will constitute property owner election not to participate.

Title research will be completed by the NFS to confirm fee ownership (clear title) and the existence of leases, third party interests, and any liens, judgments, or mortgages on the property as discussed in Section 3.8. The property owner must provide satisfactory proof of ownership of the real property and the permanent structure to be elevated. Proof of ownership shall include an authentic Certificate of Title and a Certificate of Mortgage that identifies the names of all the owners, real property and structure targeted for elevation, as well as any holders of an encumbrances against the property. All interested parties in the real property and structure targeted for elevation must consent in writing on a USACE designated form and mortgages may need to be subordinated.

The property must have clear title that is not subject to any outstanding right or interest that will present an impediment to the implementation of the project including but not limited to property/boundary disputed, succession matters, etc. To that end, as one of the conditions of being determined to be eligible to participate in the project, the property owner shall be responsible to clear the title of all ownership issues, (in accordance with the conditions and requirements deemed necessary by USACE), at the property owner's sole expense. The failure of the property owner to provide clear title documentation and obtain the required consents of other interest parties, to the satisfaction of USACE, shall result in a USACE determination of ineligibility.

USACE policy is no use of project funds for HTRW removal and remediation activities. Refer to ER 1165-2-132 and the American Society for Testing and Materials (ASTM) E 1527-21, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM, 1997). Pursuant to Engineer Regulation 1165-2-132, HTRW Guidance for Civil Works Projects (26 June 1992), an American Society for Testing and Materials (ASTM) Phase I Environmental Site Assessment (ESA) and Asbestos investigation site reconnaissance will need to be conducted during PED and are part of the included project costs.

If the Phase I ESA identifies potential HTRW issues, the property owner would be notified that an ASTM E 1903-19 Phase II ESA would be required. The Phase II ESA and any HTRW remediation would be performed at the expense of the property owner prior to construction. All remediation of HTRW must be performed by a Louisiana Department of Environmental Quality (LDEQ) approved contractor and all remedial activities must be conducted in accordance with LDEQ rules and regulations.

In addition, documentation from the LDEQ approved contractor supporting that the contamination has been successfully and properly remediated must be provided to USACE prior to construction activities.

A determination that a structure is qualified for elevation will be made by USACE after all inspections, investigations, assessments, title research, and other required activities defined herein has been completed prior to scope of work development.

Additional requirements for residential structure elevation are:

- The structure is not located on federal property or leased land.
- A condition assessment will identify any issues that are immediately inhibitive. The owner, at their expense, will need to rectify issues before being declared eligible. The lifting contractor will determine final viability of lifting.
- The property owner must provide tax assessor documentation that no taxes are due and payable on the property, as well as documentation from any holder of a mortgage that the mortgage is in good standing and that the mortgage holder does not object to the nonstructural project.
- The structure must have an approved sanitary disposal system and be following existing local and state health, building and zoning codes as of the time of the structure elevation. Code compliance is the responsibility of the property owner (both for implementation and cost) as a matter of project eligibility.
- The implementation of NS measures will not impact threatened or endangered species or their habitats.
- Implementing NS measures will not require the filling of waters of the United States and will not result in any impact to wetlands.

3.3 ELEVATION ELIGIBLE COSTS

Elevations will require the issuance of state and local government permits prior to the commencement of any onsite construction. Elements of structure elevation work that are potentially eligible project costs include, but are not limited to: design costs; costs of title searches (in review of title information submitted by the property owner), surveys; costs of obtaining all required permits (i.e., zoning or land use approvals, environmental permits or required certifications, historic preservation approvals, and building permits); and the costs for the following tasks:

- Raising the roof and extending the walls of a side structure attached to the main structure (i.e., garage).
- Raising mechanical equipment (e.g., air conditioner, furnace, water heater, electrical panel, fuel storage, valves, or meters).
- Connecting, disconnecting, and extending utility connections for electrical power, fuel, incoming potable water, wastewater discharge.
- Meeting access requirements of applicable building and other codes (e.g., stairs with landings, guardrails) and/or the Americans with Disabilities Act.
- Creating large vent openings in the foundation and walls to meet requirements for floodwater entry and exit.
- Special access improvements (See Section 3.5).
- Removal of any trees and other vegetation which restrict the elevation work.
- Debris removal (all demolition debris (hazardous and non-hazardous) shall be removed and taken to an approved landfill).
- Site grading and site restoration including grading landscaping to it preconstruction condition, but it cannot adversely affect drainage of adjacent properties.

- Temporary site protection measures during the elevation work such as temporary construction silt and security fencing.
- Allowable relocation assistance funds for displaced tenants who are unable to occupy the structure during the elevation process in accordance with the Uniform Relocation Assistance (URA) and Real Property Acquisition Policies for Federal and Federally Assisted Programs of 1970, Public Law 91-646, 84 Stat. 1984 (42 U.S.C. 4601), as amended by the Surface Transportation and Uniform Relocation Assistance Act of 1987, Title IV of Public Law 100-17, 101 Stat. 246-256. Relocation assistance for tenants who cannot live in the structure during the elevation process, may include, advisory services, eligible reasonable out-of-pocket expenses incurred during temporary displacement (e.g., moving and storage of household goods required to be removed during construction, temporary quarters, meals, etc.)

3.4 ELEVATION INELIGIBLE COSTS

No Federal funds will be used to restore, replace, or repair a structure or bring a structure into compliance with applicable building and other codes. No additions to the habitable spaces of a structure (including but not limited to, outbuildings, detached garages, sheds, etc.) will be permitted in the performance of the elevation work. In no event shall the structure be elevated if USACE determines that the structure is not physically sound and/or capable of being raised safely. If additional work is required as a condition of building permit issuance, and if such work is not listed as eligible herein, the property owner will be required to fund and conduct such additional work.

Potential ineligible costs include but are not limited to:

- Any work that is not strictly necessary for the safe completion of the structure elevation.
- Any structural and system repair due to existing deficiencies, including foundations.
- Modifications or improvements to a septic system except for extension of lines from the raised structure to the existing system and back flow valves.
- Cost for elevation above the (2078) 0.01 AEP BFE elevation up to 13 feet.
- Modifications to structures that are not attached to the eligible structure.
- Modifications to pools, spas, hot tubs, and related structures or accessories.
- Modifications to decks and patios not connected to or immediately adjacent to the structure except for modifications that are expressly required by building codes (e.g., stairways and landing modifications).
- Removal of movable objects which restrict the elevation work.
- The proper remediation, removal and disposal of environmental contaminants including but not limited to HTRW, lead, asbestos, and asbestos-containing materials in damaged or friable form. All HTRW remediation costs shall be borne solely by the property owner.
- Costs associated with bringing a non-conforming structure into compliance with current building codes, housing codes, and/or other applicable codes.

3.5 ACCESSIBILITY ACCOMMODATIONS

If a property owner and/or the property owner's family member or other person or tenant, who is a current occupant of the structure at the time of scheduling elevation of the structure, is physically disabled or has mobility impairments, such as in the case of elderly property owners, special access improvements (e.g., elevators, lifts, ramps, etc.) may be an eligible cost. A satisfactory written medical opinion must be provided by a medical doctor who is active, in good standing, and licensed by the State of Louisiana, and state that special handicapped access is required for a handicapped or mobility challenged property owner and/or the property owner's family member and/or other person currently residing in the structure, and/or by a tenant currently occupying the structure. Multiple access points may also be eligible where necessary to meet state and/or local building and other code requirements. Where ramps are used to provide access, the ramps shall be designed to meet Federal standards for slope and width. Where ramps are not technically feasible, a mechanical chairlift may be installed. Special access features shall be subject to state and local building and other applicable codes.

3.6 RELOCATION ASSISTANCE

Tenants who are deemed to be temporarily "displaced" under the Uniform Relocation Assistance and Real Property Acquisition Act (URA) regulations, may be eligible for certain benefits in accordance with Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Projects of 1970, Public Law 91-646, 84 Stat. 1894 (42 U.S.C. 4601), as amended by the Surface Transportation and Uniform Relocation Assistance Act of 1987, Title IV of Public Law 100-17, 101 Stat. 246-256; 49 Code of Federal Regulations 24; and HUD Handbook 1378 (collectively referred to as the URA). Appropriate advisory services, including reasonable advance written notice of:

- Date and approximate duration of the temporary relocation.
- Address of the suitable decent, safe, and sanitary dwelling to be made available for the temporary period.
- Terms and conditions under which the tenant may lease and occupy a suitable decent, safe, and sanitary dwelling in the building/complex upon completion of the project.
- Provisions of reimbursement, in accordance with the requirements of the URA including 49CFR part 24, paragraph 24.402, for all reasonable out of pocket expenses incurred in connection with the temporary relocation.
- In addition to relocation advisory services, residential displaced tenants may be eligible for other relocation assistance including relocation payments for moving expenses for the increased costs of renting a comparable replacement dwelling.
- All temporary housing costs must be approved in advance in writing by USACE.

3.7 REAL ESTATE REQUIREMENTS FOR THE IMPLEMENTATION OF RESIDENTIAL STRUCTURE ELEVATIONS

Once construction funds are appropriated for this project, the LADOTD, as the NFS, and the Department of the Army will enter into a project partnership agreement (PPA). After the signing of a PPA, the NFS will acquire the necessary land, easements, and rights of way to construct the project. The NFS will be responsible for ensuring the requirements of the proposed project are met.

The NFS will send eligible property owners a Notice of Eligibility to participate in the project. The language of the easements that will be acquired over structure(s) will be included with this notification, so the landowner is aware of the property restrictions in advance. Eligible property owners who wish to participate must complete and submit an application, which will include a temporary right-of-entry to USACE and the NFS for investigations to determine final eligibility. A final determination that a structure is qualified to participate in the nonstructural project will be made by the USACE PDT after all inspections, investigations, assessments, title research, and all other work required to determine final eligibility is complete.

A Participation Agreement between the NFS and each landowner will be executed to document the owner's commitment and understanding of the process and to address the plans and specifications unique to the structure, including a copy of the design. The Agreement will document the nonstructural measure to be constructed and the cost associated with such; delineate the obligations of each party; document property owner agreement to voluntarily participate in the nonstructural project; require the owner to grant a temporary right of entry to the NFS, USACE, and its assigns for the construction of the nonstructural measure; require the owner to release the NFS from the obligation of informing him/her of the value of the perpetual easements; require the owner to hold harmless the NFS for any damages arising from the nonstructural work; and require the owner to attest to his/her willingness to expend costs that may be necessary in connection with the construction of the nonstructural measure which are not eligible project costs such as betterments and costs associated with temporary relocation of residents of an owner-occupied residential structure.

If a property owner elects not to have the nonstructural treatment performed on their structure and an agreement is not obtained, eminent domain will not be pursued.

A non-standard permanent Restrictive Easement, which has already been approved for other CEMVN nonstructural projects is proposed for the construction, operation, and maintenance of the nonstructural treatment for residential structures. This non-standard Perpetual Land Use Restrictions Easement will outline the elevation or floodproofing treatment, identify restrictions owners must take or abstain from to ensure the long-term performance of elevation and floodproofing measures, and contain restrictions and covenants that would run with the land.

Additionally, a nonstandard Perpetual Access Easement will be required prior to initiation of construction. Approval for the use of this estate will also need to be requested through CEMVD to CEHQ-RE. The perpetual access easement will allow for ingress and egress over private property for the purpose of inspecting and monitoring the residential and non-residential structure(s) and project measures located on the land to ensure compliance with the restrictive easement.

It is assumed that all eligible properties have legal access by way of public streets or existing public right of way (ROW). Further, it is assumed that residential properties participating in the program will have adequate site area to accommodate the staging of required materials and equipment. Should additional ROW be necessary, standard temporary work area or access easements could be acquired.

Once the NFS and the owner have signed the Participation Agreement and the deed acquiring the easements, the NFS may issue an Authorization for Entry (AFE) for that structure (or cluster of structures).

Section 4

Process for Dry Floodproofing of Eligible Nonresidential Structures

Dry floodproofing consists of sealing all areas below the flood damage risk reduction level of a nonresidential and nonresidential portions of mixed-use structures to make walls, doors, windows, and other openings impermeable to water penetration and watertight to ensure that floodwaters cannot get inside. Based on NFIP testing conducted at the Engineering Research and Development Center, dry floodproofing can generally only be performed on the walls and portions of a conventionally built structure from the ground level to up to 3 feet above ground level. Walls are coated with sealants, waterproofing compounds, or plastic sheeting is placed around the walls and covered. Back-flow valves from water and sewer lines prevention mechanisms such as drain plugs, standpipes, grinder pumps, and back-up valves are installed. Openings, such as doors, windows, sewer lines, and vents, may also be closed temporarily, with sandbags or removable closures, or permanently sealed.

Dry floodproofing generally consists of the following components:

- Construction of an impermeable barrier, which is attached to the existing foundation, three feet above grade around the entire building perimeter
- Development/design of deployable and/or permanent barriers at door, window, or other foundation openings which are within three feet of grade
- Installation of backflow preventors and/or valves on utility lines as necessary
- Relocate, rearrange, and/or elevate all utility lines as necessary and perform disconnections and subsequent reconnections post flood proofing activities
- Installation of sump pumps and sub-drains (as necessary)
- Water resistant material; water resistant window coverings, waterproof adhesives; sealants and compounds, and floor drains
- Removal of any trees that restrict the dry floodproofing of a structure.
- Temporary site protection measures during site work.
- Site grading and site restoration including grading landscaping to it preconstruction condition (but it cannot adversely affect drainage of adjacent properties)

Dry floodproofing of nonresidential structures must be performed in accordance with engineering and design standards and building codes. Applicable design standards and building codes are summarized and compiled within the NFIP Technical Bulletin (TB) 3-93, Nonresidential Floodproofing—Requirements and Certification, and 44 C.F.R. §§ 60.3(b)(5) and (c)(4).

4.1 NONRESIDENTIAL PRELIMINARY ELIGIBILITY

The structure must be defined as nonresidential to qualify for floodproofing. Nonresidential structure is those not herein defined as residential as defined by IRC Chapter 11 Section N1101.6. Additionally, it must meet the requirements listed in Section 2.2 of this Plan and the additional two listed below.

4. Structure is in an area where there is low velocity flooding (less than 3 ft/sec), and the flooding is not flashy (more than 1 hour of warning).
5. Does not have crawl foundation or basement.

4.2 SECOND STAGE OF ELIGIBILITY DETERMINATIONS

The secondary stage of eligibility determinations for dry floodproofing is the same as presented in Section 3.2 of the residential elevation plan.

4.3 DRY FLOODPROOFING ELIGIBLE COSTS

The eligible costs for dry floodproofing are very similar as presented in Section 3.3 of the residential elevation plan except for the work features listed in the introduction of this Section 4.

4.4 DRY FLOODPROOFING INELIGIBLE COSTS

In addition to the ineligible costs listed in Section 3.4 of this Plan, which are the sole responsibility of the property owner, are the following specific to dry floodproofing:

- Cost for dry floodproofing more than 3 feet above ground level
- Any work that is not strictly necessary for the safe completion of dry floodproofing the structure.
- Relocation of movable objects that restrict the dry floodproofing of a structure.

4.5 REAL ESTATE REQUIRED FOR DRY FLOODPROOFING

The dry floodproofing of eligible nonresidential structures will require the NFS to acquire rights in the same manner as previously delineated by the residential measures, including a standard right of entry for survey and exploratory work to determine the eligibility of the structure, a Participation Agreement, a non-standard estate in the form of a restrictive easement over the structure(s) and a non-standard Perpetual Access Easement. The Restrictive Easement and Perpetual Access Easement provide the necessary rights and restrictions to protect the federal investment and will be proposed by CEMVN and submitted for approval by CEMVD and Headquarters USACE (HQUSACE) in accordance with the USACE regulations during PED Phase of the project. The contemplated perpetual easement will likely prohibit the grantors, heirs, successors, assigns, and all others from engaging in other uses of the structure or the land that would impair, contravene, or interfere with the integrity of the structure. Further, the perpetual easement would contain a reservation of

rights and privileges in favor of the grantor(s), heirs, successors, and assigns, of all such rights and privileges that can be made of the property without interfering with or abridging the rights, and restrictions imposed, but subject to existing easements for public roads and highways, public utilities, railroads, and pipelines. The Perpetual Access easement would also include a right of ingress and egress over and across the land by the NFS for inspection and monitoring of the structure and land for the enforcement of the rights and prohibitions contained in the easement.

Section 5

Process for Wet Floodproofing of Eligible Nonresidential Structures

Wet floodproofing prevents or provides resistance to damage from flooding while allowing floodwaters to enter the structure or area and equalize pressures on foundation walls or lower-level walls. A key feature associated with wet floodproofing are openings to allow floodwaters in, consisting of engineered flood vents in the structure walls. Per FEMA TB, 7-93:

Flooding of a structure's interior is intended to prevent unbalanced hydrostatic pressure on the walls, surfaces, and supports of the structure by equalizing interior and exterior water levels during a flood. Inundation also reduces the danger of buoyancy from hydrostatic uplift forces. Such measures may require alteration of a structure's design and construction, use of flood-resistant materials, adjustment of building operation and maintenance procedure, relocation and treatment of equipment and contents, and emergency preparedness for actions that require human intervention.

Wet floodproofing of structures must be performed in accordance engineering design standards and building codes. Applicable design standards and building codes are summarized and compiled within FEMA TB 1-93, Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas, and FEMA 259, Engineering Principles and Practices for Retrofitting Flood Prone Residential Buildings, FEMA 348. Protecting Building Utilities from Flood Damage, and the requirements pertaining to floodproofing of structures found in 44 C.F.R. §§ 60.3(b)(5) and (c)(4).

Wet floodproofing generally consists of the following components:

- Wet floodproofing of the structure.
- Engineered flood vents.
- Flood-resistant construction materials such as rigid foam board wall insulation or cement board and molding within the interior of the building,
- Elevation and wet floodproofing of electric outlets,
- Concrete floor treatment and interior wall and floor sealer/stains.
- Exterior paint coatings.
- Sand/water blasting or other manual removal of rusted coatings and application of epoxy coatings.
- Elevation and wet floodproofing of mechanical and electrical equipment.
- Connecting, disconnecting, and extending utility connections for electrical power, fuel, incoming potable water, wastewater discharge.

- Removal of any trees which restrict access to floodproofing the structure.
- Temporary site protection measures during site work.
- Site grading and site restoration including grading landscaping to it preconstruction condition (but it cannot adversely affect drainage of adjacent properties)

5.1 PRELIMINARY ELIGIBILITY

The structure must be defined as nonresidential to qualify for floodproofing. Nonresidential structures are those not herein defined as residential as defined by IRC Chapter 11 Section N1101.6. Additionally, it must meet the requirements listed in Section 2.2 of this Plan and the additional two listed below.

4. Structure is in an area where there is low velocity flooding (less than 3 ft/sec), and the flooding is not flashy (more than 1 hour of warning).
5. Does not have crawl foundation or basement.

Wet floodproofing achieves flood damage risk reduction, but it is not recognized by the NFIP for any flood insurance premium rate reduction when applied to nonresidential and residential structures and may not be used under the NFIP for new or substantially damaged buildings located in a Special Flood Hazard Area.

5.2 SECOND STAGE OF ELIGIBILITY DETERMINATIONS

The secondary stage of eligibility determinations is the same as presented in Section 3.2 of this plan except it is for wet floodproofing and nonresidential structures.

5.3 WET FLOODPROOFING ELIGIBLE COSTS

The eligible costs for dry floodproofing are very similar as presented in Section 3.3 of the residential elevation plan except for the work features listed in the introduction of this Section 5.

5.4 WET FLOODPROOFING INELIGIBLE COSTS

In addition to the ineligible costs listed in Section 3.4 of this Plan, which are the sole responsibility of the property owner, are the following specific to wet floodproofing:

- Cost for wet floodproofing more than 3 feet above ground level.
- Relocation of movable objects that restrict the wet floodproofing of a structure.

5.5 REAL ESTATE REQUIRED FOR WET FLOODPROOFING

The wet floodproofing of eligible nonresidential structures will require the NFS to acquire rights in the same manner as previously delineated by the residential measures, including a standard right of entry for survey and exploratory work to determine the eligibility of the structure, a Participation Agreement, a non-standard estate in the form of a restrictive easement over the structure(s) and a non-standard Perpetual Access Easement. The

Restrictive Easement and Perpetual Access Easement provide the necessary rights and restrictions to protect the federal investment and will be proposed by CEMVN and submitted for approval by CEMVD and HQUSACE in accordance with the USACE regulations during PED Phase of the project. The contemplated perpetual easement will likely prohibit the grantors, heirs, successors, assigns, and all others from engaging in other uses of the structure or the land that would impair, contravene, or interfere with the integrity of the structure. Further, the perpetual easement would contain a reservation of rights and privileges in favor of the grantor(s), heirs, successors, and assigns, of all such rights and privileges that can be made of the property without interfering with or abridging the rights, and restrictions imposed, but subject to existing easements for public roads and highways, public utilities, railroads, and pipelines. The Perpetual Access easement would also include a right of ingress and egress over and across the land by the NFS for inspection and monitoring of the structure and land for the enforcement of the rights and prohibitions contained in the easement.

Section 6

Adaptation Tracking and Strategies

The main report and associated appendices detail how the Recommended Plan will effectively reduce flood risks from rainfall/riverine in the study area and residual risk from storm surge at those structures, where project designs were optimized using damages from the predominate condition WSE to the study area, but the Recommended Plan's effectiveness may change over time given relative sea level change (RSLC) and/or varying storm intensities (Reference Section 7.2.4 of the main report).

6.1 ADAPTATION PLAN FOR CHANGES IN RSLC RATE

The predominant coastal flood risk defined in this study is from coastal storm surge, as detailed in Appendix H, Hydrology and Hydrologic. Coastal storm surge is the total water level from sources such as a coastal storm's surge, tides, and projected RSLC. The intermediate rate of RSLC was used to design the non-structural measures used in the RP. The rate of RSLC is an uncertain variable in predicting design flood elevations. A framework will be established during PED for tracking the observed rate of RSLC and determining if the rate of RSLC significantly deviates from the intermediate rate used in this feasibility study. The specifics of when and how to make this determination will be fleshed out during PED. While the specifics of the plan are not defined at this stage of the study, Figure I:6-1 below shows that the high RSLC curve surpasses the total intermediate RSLC between the baseline and future project years (1.9 feet) in the year 2050. This suggests that if the true rate of RSLC follows the high rate rather than the intermediate rate, the project designs may become inadequate by the year 2050.

Residual risk analysis described in section 6.3 of Appendix H references similar comparisons showing the year when critical infrastructure would become susceptible to tidal flooding under the different RSLC rates. The years identified in that analysis could similarly inform when re-evaluation of RSLC rates used for project design should occur. All references to 2028, 2078, and 2128 hydraulic outputs were calculated using assumptions for 2026, 2076, and 2126 respectively for the purposes of this final report.

The 2128 100-year floodplain was also modeled to estimate the magnitude of residual risk due to future sea level change. EP 1100-2-1 (Procedures to Evaluate Sea Level Change) states that PDTs must estimate a "future affected area" by estimating the floodplain for 100 years from the baseline year using the high sea level change curve. The guidance states that with this information, "if the level of risk is shown to be high, later stages of the study may improve on the quality or quantity of data in order to better capture the risks associated with project area vulnerability." Annex H-4 in Appendix H shows the floodplain for the 2128 0.01 AEP predominant event. Figure I:6-1 shows the study area floodplain estimate increase comparison for 0.01 AEP floodplain based on 2078 vs 2128 predominant WSE using the

high sea level change curve. The 6-10 feet of WSE increase is in the lower basin area where the flooding is caused by a combination of slow riverine drainage as well as flooding from storm surge.

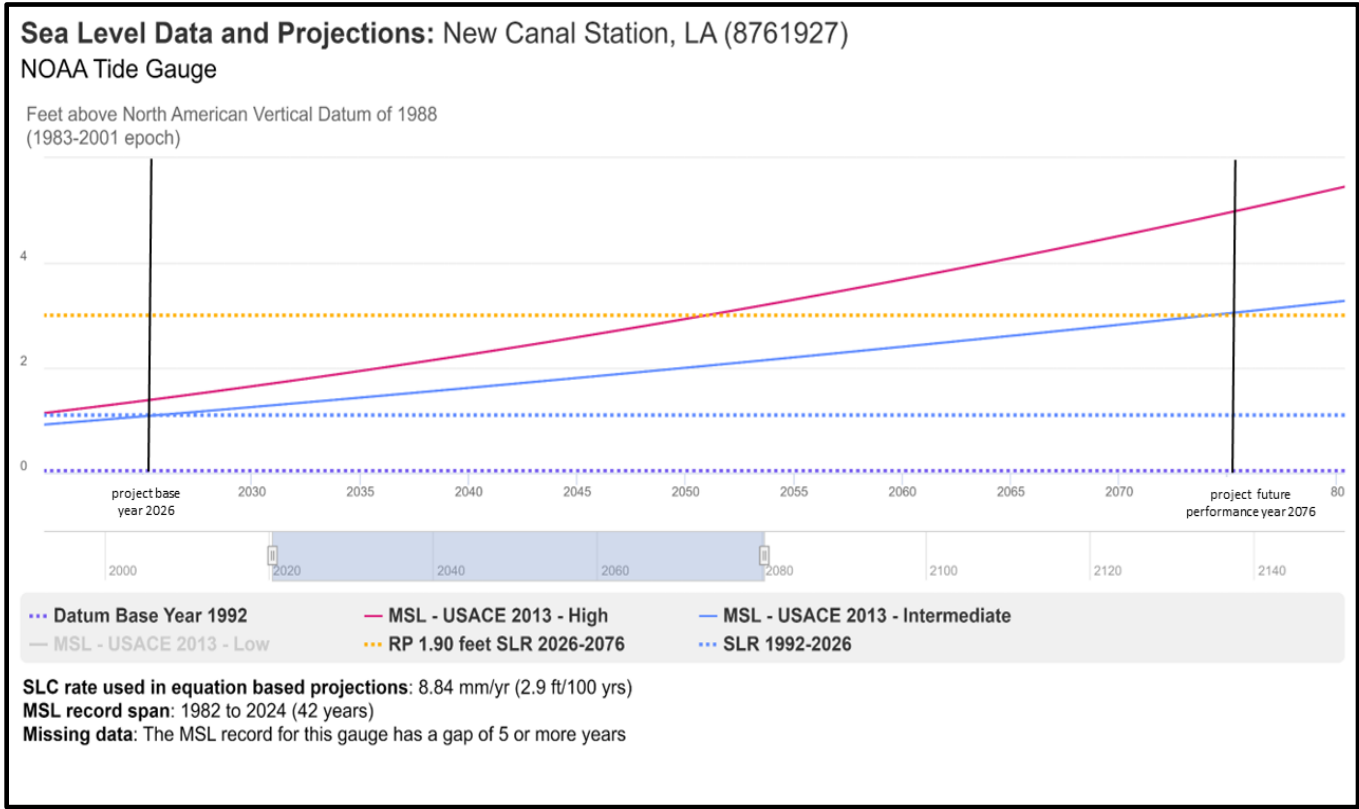


Figure I:6-1 Comparison of Total Intermediate RSLC to High RSLC Curve

6.2 ADAPTION PLAN FOR POTENTIAL INCREASE IN STORM INTENSITY

The literature review portion of the change conditions of precipitation, flood frequency and sea level is summarized in Appendix H Section 6.4 of this report identified risks of more frequent and intense storms. Additionally, the Climate Hydrology Assessment Tool estimates a 4% increase in annual 1-day maximum precipitation frequency in the project area. These potential change conditions are highly uncertain and should be considered qualitatively. The release of Atlas 15 point-precipitation estimates by the National Oceanic and Atmospheric Administration, anticipated before 2030, will provide updated rainfall intensities. If these intensities are found to be significantly different from the ones used in the current RP, a re-evaluation could be warranted. If a large inland or coastal storm was to hit the project area triggering a Federal Disaster Emergency Declaration, this could trigger a re-evaluation of the RP as well. Other potential triggers for RP re-evaluation based on hydrologic forecasts will be discussed during PED.

6.3 ADAPTATION IMPLEMENTATION

USACE and NFS will coordinate to determine if the change triggers are met once they are established during PED and will consider the project authority of addressing rainfall-riverine flood events during this assessment. Eligible structures for the project were determined based on the 2076 rainfall/riverine floodplain and project designs were optimized using damages from the predominate condition WSE, which uses the higher of the WSEs created by riverine flooding due to precipitation or storm surge flooding. USACE may consider a Post Authorization Change Report in compliance with ER 1105-2-100, Appendix G: such as a Validation Report if significantly changed conditions have been identified. This may identify that additional coordination/consultation may be required in accordance with National Environmental Policy Act and National Historic Preservation Act.

Section 7

Flood Risk Reduction Actions to be Taken by the Non-Federal Sponsor

The Non-Federal Sponsor will be required to undertake certain flood event risk reduction actions to comply with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12) (Section 402). These actions, include but are not limited to, actions to ensure the NFS government, and municipal and local governments within the parishes develop, comply, monitor, and enforce floodplain management plans, regulations, building codes, land use and zoning regulations, and any other developmental controls that are consistent and compliant with the requirements of Section 402 and the regulations promulgated thereunder. In addition, the NFS shall:

- Inform affected interests of the extent of protection afforded by the authorized plan not less than once each year.
- Participation in and compliance with applicable Federal floodplain management and flood insurance projects.
- Compliance with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12), including the preparation of a floodplain management plan within one year after the date of execution of the PPA; implementation of such plan not later than one year after completion of construction of the project, or functional elements of the project. The final authorized plan shall be designed to reduce the impacts of future flood events in the project area, including but not limited to, addressing those measures to be undertaken by non-Federal interests to preserve the level of flood risk reduction provided by the completed project. The NFS will provide an informational copy of the plan to USACE once the plan is finalized.
- Publication of floodplain information and provision of the information to zoning and other regulatory agencies for use in adopting regulations, or taking other actions, to prevent unwise future development and to ensure compatibility with the completed project.

Additionally, the NFS will be obligated to prevent obstructions or encroachments on the properties that have been flood proofed (including prescribing and enforcing regulations to prevent such obstructions or encroachments). Presently, many communities within East Feliciana, St. Helena, East Baton Rouge, Livingston, Iberville, and Ascension Louisiana Parishes participate in the NFIP (See FEMA Community Status Book, Louisiana, August 2023 [fema.gov/cis/LA.html](https://www.fema.gov/cis/LA.html)).

Section 8

Performance of Work

The traditional method of implementation per HQUSACE Guidance for Nonstructural Project Planning and Implementation, dated 22 July 2024, is typically a USACE-led construction approach. This method of implementation utilizes a federal procurement process to obtain design and construction contractors for the various nonstructural measures. The Government will procure contracts that will allow a contractor to perform nonstructural measures on multiple structures through series of one or more design-build task orders. The contractor will also be responsible for eligible work associated with the elevation and floodproofing including the final design of the nonstructural measure, obtaining the required local, state, and Federal permits, and all necessary elements to complete construction to desired intent.

The proposed method of implementation for this project is Design-Build (D-B) delivery, where design and construction are combined in a single contract with a single contractor. Currently, USACE only has authority to use "Two-phase design-build" for Civil Works construction, which is a "design-build" method of construction contracting in which USACE selects a limited number of technically qualified offerors in Phase One to submit detailed price proposals in Phase Two.

It is anticipated that implementation of the Plan will occur over an approximate 8.5-year period. Following an initial 24-month PED phase, there will be 6.5 years for the elevation of residential and dry/wet floodproofing of nonresidential construction starting off with a small pilot project of 25 to 50 structures followed by soliciting 5 large MATOC contracts with USACE managed contractors constructing approximately 400 structures per MATOC contract. The implementation schedule assumes that each of the 5 USACE managed contractors would floodproof or elevate 80 to 100 structures concurrently per year, thereby completing construction of up to 400 structures per year. This timeframe is highly dependent upon the amount of funding allocated in any given year, the participation rate and environmental conditions, timely approval process of structures receiving NS measures, and expediency of submittal reviews and permit processing during design-build phase.

The implementation of other USACE projects in Louisiana containing a NS plan were also considered in making the 400 structures a year assumption based on contractor capability. The contractor capability assumption risk is discussed in Appendix C, Cost & Schedule Risk Analysis Details. The PDT also assumed that it would take a four-month period to complete the elevation or floodproofing on structures with a slab foundation, and a three-month period to complete the elevation or floodproofing of structures with a crawl foundation. If there is a cost associated with the residential structure elevation that is coverable by the program, then that cost would be paid by NFS and/or USACE and not by the property owner. The property

owner would not be expected to pay the coverable cost and wait for reimbursement as direct payment to the contractor from USACE is anticipated.

A certificate of occupancy must be issued by the appropriate qualified building official with jurisdiction to certify that the floodproofing or elevation work was completed properly and in accordance with the final USACE approved plans and specifications. Additionally for elevations, a professional land surveyor must verify that the structure has been elevated to the required elevation. After final inspection, approval, and acceptance of the work by USACE, a notice of construction completion (NCC) will be issued to the NFS, and the floodproofing or elevation work for the structure will be financially closed out by USACE. Section 11 of this report provides details of the NFS and property owner responsibilities for Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) after the project completion.

Annex 1 to this Appendix is generalized workflow during the application, screening, and design-build phase of a single structure, which will be further refined in PED.

The amount of time for an owner to enter into an agreement when offered the opportunity for elevation will be determined during PED and refined as necessary during construction to try to increase participation rates. It will be subject to project duration and funding which is in part dependent upon the participation rate. Construction will not be unreasonably deferred until a property owner elects to participate or until the period of construction ends. During PED it will also be determined what length of time is determined to be substantial time regarding the needed to repair/rehab a structure; therefore, it will not be included in the project.

Section 9

Implementation Tasks and Cost Estimates

The below tables present the PDT's projection of implementation tasks for the total project. Project costs by implementation task and durations with assumptions that were developed during the feasibility level design phase. Table I:9-1 displays, in sequential order, implementation tasks which are color-coded by the following categories of work: PED; Real Estate; Construction Management; Construction, and Contingency. The analysis assumes 100 percent participation. Table I:9-2 presents a more detailed schedule, color-coded to match the first table for ease of reference. Additional details on specific tasks, work break down structure and activity-specific costs will be developed by the PDT early in the PED phase as part of the scoping and Project Management Plan (PMP) development (this will occur in conjunction with execution of the Design Agreement or Project Partnership Agreement.) Tasks and cost estimates are subject to significant change during the period between the signing of the Chief's Report and Congressional authorization and appropriation required to begin the project.

Table I:9-1. Projected Implementation Task and Cost Summary for Total Project First Costs with 42% Contingency

Implementation Task	Project First Costs
Preconstruction Engineering & Design (PED)	\$ 90,148,000
Real Estate	\$ 46,353,000
Construction Management	\$ 45,326,000
Construction	\$ 563,977,000
42% Contingency for Construction & Construction Management with 25% for RE	\$ 303,517,000
<i>Total Base Cost + Contingency</i>	\$ 1,049,321,000

FY 2025 Price Level

Number of Structures = 2,051 total (1,810 residential and 241 commercial)

Table I:9-2. Projected Implementation Task Summary

IMPLEMENTATION TASK	Estimated Duration for PED Tasks (Calendar days)	Assumptions
(1) Project Partnership Agreement (PPA) Development and (2) PMP Development	180	Assumes model PPA language. Back and forth will occur based on NFS OC versus USACE OC comments. Assumes that development of PMP and coordination of the PPA details will take approx. 6 months.
Public Outreach / Property Owner Meetings	730	Assumes USACE and NFS will use social media to reach out to public. Set up website with project overview. Homeowners' application is on the website. Available FAQs in website. Set up Call Center and email address for the public to reach out (1 person). Send letters to homeowners to communicate the process. Assumes at least two meetings per year per Parish would be conducted during implementation.
Notification Owner Eligibility/Applications Received w/ Deed & Right of Entry for Survey	30	Application/acceptance process online (propose to use uCop survey online) Block of houses done concurrently. PED process will happen throughout the life of the project because of the phased approach to implementation.
Application Processing & Acceptance	30	Use online tool. Block of houses done concurrently. PED process will happen throughout the life of the project because of the phase approach to implementation.
Ownership Verification, HTRW, Sanitary Evaluation & Section 106 Review	30	Block of houses done concurrently. PED process will happen throughout the life of the project because of the phase approach to implementation.
Screening Phase: Consulting A/E Firm Contract (Contractor #1)	548	Assume priority group of structures and remaining structures raised as two separate contracts efforts. Assume 18 Month pilot process to screen initial group of priority structures.
Survey / Design Site Visit of Structure	30	Includes travel to the site with a team of engineers and survey team for plot determination. Duration per structure.
Certificate of Title / Title Review	30	---
Design-Build Contractor: Plans & Specs Development (Contractor #2)	120	Assumes total time spent on one structure. Time spread out over a period of time to work on multiple homes at once.
Appraisal / Informal Value Estimate / Appraisal Review	30	Current plan is to not require appraisals or appraisal reviews.
SOW Feedback/initiate permit applications & variance process (as needed)	30	Contractor's task: Durations assumes multiple iterations with the property owner and editing needed. Duration is provided on a per structure basis
Easement / Deed Restrictions	30	Assumes that property owner was informed of easement/deed restriction language upon initial notification of the program.

IMPLEMENTATION TASK	Estimated Duration for PED Tasks (Calendar days)	Assumptions
Record Easement Parish Clerk of Court	30	Per Structure
NFS Issue Authorization for Entry	30	Per Structure
Contractor Market Research & Outreach to establish contractors (this task starts before Screening Phase)	180	Overall duration will vary but typical sources sought is 30 days and the industry day is another tool that may be used. This task is performed before screening process.
Establish SATOC/MATOC Contracts	480	Assumed a brand new SATOC for screening process (long lead time: 12 to 16 months). Assumes MATOC for the Desing-Build.
Finalize permits and town variances (as needed)	120	NFS task
IGE Development for the Contracts (First Priority, Screening and Construction)	180	Assumes multiple iterations of the IGE will occur over the span of the project execution.
Request & Receipt of Contractor Proposals (incl. Task Orders)	90	Assumes a 3-month window to account for any RFIs during solicitation. Assumes low price task order award through MATOC or SATOC.
Award Contracts	60	Can be issued as task order exercises or bundles of homes depending on how MATOC/SATOC is set up.
Cultural Resources Mitigation	45	Assumes a number of structures will require additional effort tied to documenting historical structures and administration fees.
Floodproofing Agreement Request & Execution	30	Only the scope of work to elevate or floodproof structure.
Pre-Construction Meeting with Homeowner & Contractor	0	Duration included in Construction management task.
Construction Contract & Contract Administration	N/A	Ongoing task once field construction activities begin and will continue until project completion. Flood proofing and residential elevation occurs concurrently. Assumes a minimum of 400 homes per year.
Residential Relocations	N/A	This is considered part of the MATOC or SATOC contract award for performing the elevation/floodproofing
Construction Management	N/A	Ongoing task once field construction activities begin and will continue throughout the project life. Flood proofing and residential elevation occurs concurrently. Assumes a minimum of 400 homes per year. Duration anticipated to be 30 days per structure on average with multiple sites active concurrently.
Final Inspections	0	Duration included in Construction management task.

Amite River and Tributaries East of the Mississippi River, Louisiana
Appendix I – Nonstructural Implementation Plan

IMPLEMENTATION TASK	Estimated Duration for PED Tasks (Calendar days)	Assumptions
Review NFS Credit/Reimbursement Package	0	Duration included in Construction management task.
Review NFS Credit/Reimbursement Package - Real Estate	60	For real estate related and administrative costs. No compensation due to owners in exchange for the required easement/deed restrictions. Duration estimated per structure.
Financial Closeout	0	Duration included in Construction management task.

Section 10

Methods for Scheduling and/or Prioritizing

The scheduling and/or prioritization of residential structure elevations and floodproofing will be subject to the availability of Federal funds. The strategy will be refined during PED, as additional information provides opportunities for cost efficiencies or issues with local contractor capacity. The strategy includes the following criteria as further described in the below subsections:

1. Clustering to increase construction effectiveness and efficiency (Section 10.1)
2. Critical Service Areas or Community Lifelines (Section 10.2)
3. Clustering Based on Socially Vulnerable Communities (Section 10.3)
4. Level of risk (Section 10.4)
5. First come, first served (Section 10.5)

10.1 CLUSTERING TO INCREASE CONSTRUCTION EFFECTIVENESS AND EFFICIENCY

If numerous property owners in a contiguous neighborhood or subdivision agree to participate, that area could be targeted for priority in structure elevation and floodproofing implementation. A focus on clustered properties can create a ranking hierarchy of which properties to address first. The size of a cluster will need to be defined but could consist of zip codes or neighborhoods. This approach will rank efficiency as the main factor in determining which eligible properties should be prioritized.

10.2 CRITICAL SERVICE AREAS OR COMMUNITY LIFELINES

Priority should be given to structures identified through collaboration of stakeholders, NFS and public input, that are in critical service areas and are community lifelines as identified by the recently developed 2019 *Office of Community Development State of Louisiana Master Action Plan for the Utilization of Community Development Block Grant Mitigation Funds*. Critical service areas or community lifelines refer to indispensable services that enable continuous operation of critical business and government functions in the wake of a disaster event, and are essential to human health and safety, economic security, and foster community resilience. These include:

- Safety and security
- Communications
- Food, water, shelter
- Transportation
- Health/medical
- Hazardous material
- Energy

10.3 CLUSTERING BASED ON SOCIALLY VULNERABLE COMMUNITIES

This methodology would identify populations in areas of social vulnerability using Center for Disease Control and Prevention (CDC) Socially Vulnerable Index (SVI) most recent data. For this effort US percentile ranking may be chosen over Louisiana percentile ranking to ensure that all census tracts with potential SVI are captured. Detailed documentation of the SVI percentile ranking, and data dictionary can be found on the CDC’s website.

According to CDC’s SVI documentation, census tracts at the 90th percentile or higher indicate high vulnerability. SVI includes four themes: Socioeconomic Status; Household Characteristics; Racial & Ethnic Minority Status; and Housing Type/Transportation (Figure I:10-1). To capture all SV, census tracts with 90th percentile or higher in any of the four themes may be classified as highly vulnerable, which are areas where the population is exposed to high levels of environmental stressors and are low-income who reside in disadvantage communities as identified by CEQ’s Climate and Economic Justice Screening Tool area using the most recent statistics from the U.S. Census Bureau. This approach would rank environmental and demographic data as the main factor in determining which eligible properties should be prioritized. Homeowners in disadvantaged communities or those living at or below the poverty level would be given priority.

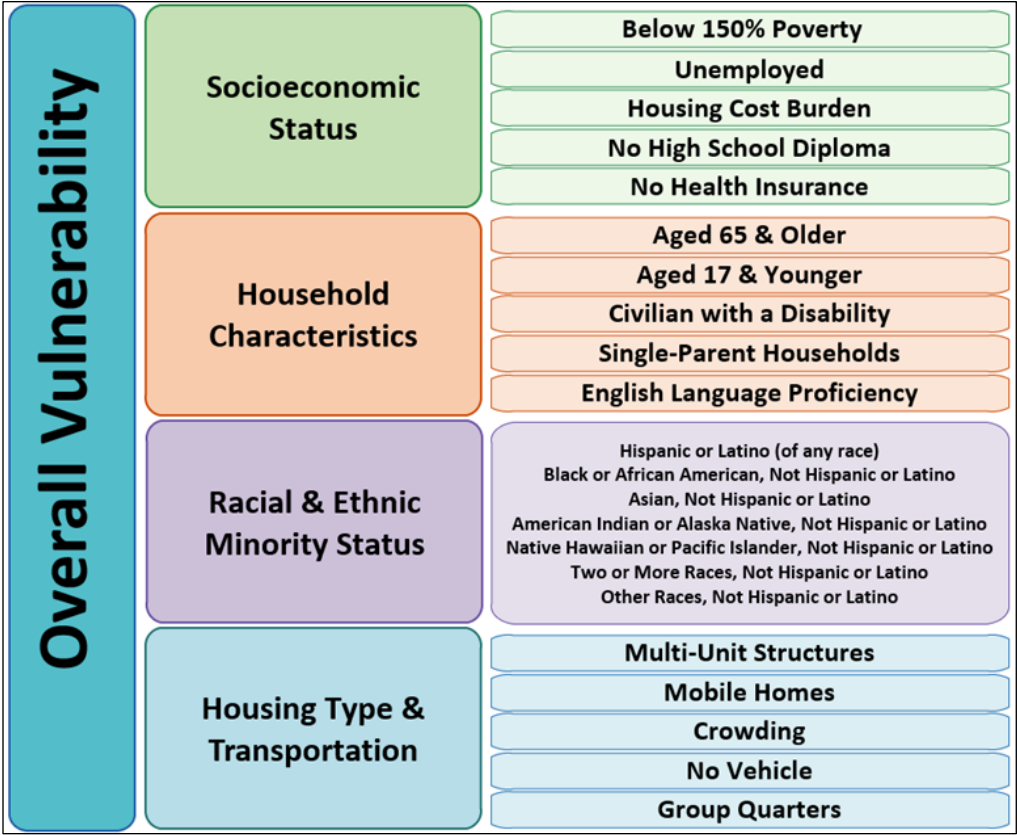


Figure I:10-1. Social Vulnerability Themes

10.4 FLOOD RISK-LEVEL

Willing property owners may not exist in clusters. In such cases, an alternative option is to focus on the willing property owners who have structures that exhibit the highest risk for flood damages. For example, if 1,000 property owners who reside in the 0.1 AEP floodplain will be prioritized for construction. Once these properties are elevated, the next highest-risk properties will be targeted. This approach will rank risk exposure as one of the main factors in determining which eligible properties should be prioritized.

10.5 FIRST-COME, FIRST-SERVED

This approach would involve creating a list of eligible structures that will be ranked based on how quickly elevation contractors can be procured and the processing of applications and the finalization of eligibility determinations. This approach would help ensure that resources will be used effectively by focusing on properties that have owner support for the residential structure elevations.

Section 11

Operation, Maintenance, Repair, Replacement, and Rehabilitation

The OMRR&R Manual is developed in collaboration with the NFS after the project is completed but prior to the NCC. There are OMRR&R costs for the NFS and the property owners for nonresidential structures which are anticipated to begin in fiscal year 2035 which is five years after the first MATOC completion. USACE will have no operation and maintenance responsibilities.

11.1 NON-FEDERAL SPONSOR

For all structure types (residential and nonresidential) OMRR&R costs for the NFS will be confined to regular, periodic surveys and site visits of structures where the Recommended Plan measures have been applied to determine that the requirements of the OMRR&R Manual are being met. Once a Notice of Construction Completion (NCC) has been issued by USACE, the NFS's obligations for operation and maintenance for the subject structure in perpetuity or until such time as the structure no longer exists or the project is de-authorized by Congress.

Enforcement of restrictive easements is the sole responsibility of the NFS. The NFS will prepare mass mailings to project participants every ten years providing notice that the structure on the property was elevated by the USACE and notice of the easements encumbering the property and the restrictions thereon. On a rotating schedule, every five years, the NFS will conduct physical inspections, expected to cost approximately \$1,200 per structure, from the street of 10 percent of the structures that have participated in the project, approximately 205 structures, to ensure that the owners, their heirs, and assigns, are following the terms and conditions of the executed agreements. The current total estimated O&M cost for inspection by the NFS is approximately \$246,000 every five years. For those structures which are situated on large acreage parcels where the structure is not visible from the street, the NFS may notify the owner of the inspection and obtain concurrence to enter the property. When available, the NFS will also make efficient use of monitoring that is already being conducted by local cities or counties, FEMA, or state agencies. The inspections will determine among other things, that no part of the structure located below the level of the lowest habitable finished floor has been converted to living area for human habitation or occupancy, or otherwise altered in any manner which would impede the movement of waters beneath the structure.

The NFS will utilize GIS or a sharable database to track surveys and violations. The NFS may use existing tracking tools or those from local, state, or Federal agencies if

they exist. The NFS will provide updates to the executing USACE district every five years after surveys have been completed.

If a potential violation of the terms of the easement is discovered, the NFS will coordinate with the local government, as appropriate. Notification will also be provided to the FEMA regional office. Resolution may be deferred to a local government if there are sufficient mechanisms for enforcement and resolution; however, the NFS will still issue a notice of violation and will inform the property owner that the issue must be resolved with the local government or legal action may be taken to recover the funds expended by the Federal Government. While this is a NFS responsibility, the Government, in its sole discretion, always retains the right to step in to operate and maintain the project, which does not relieve the NFS of its obligations or preclude the Government from pursuing any other remedy at law or equity to ensure faithful performance under a project's agreement.

USACE shall have the right, but not the obligation, to perform its own inspections of the flood proofed structures and lands acquired pursuant to the Project.

11.2 NONRESIDENTIAL STRUCTURAL OWNERS

The property owner obligations O&M for floodproofing measures are crucial to ensure their effectiveness and longevity. For dry floodproofing systems, which typically consist of permanent wall systems, regular maintenance is necessary to prevent damage and ensure proper functioning. For example, weep holes in the masonry walls may need to be regularly cleaned out to allow moisture in the wall cavity to drain, preventing water accumulation and potential damage. Or sealant coatings may need reapplication every 5-10 years. In addition, deployable systems such as opening covers will require regular inspection and maintenance to ensure they remain functional during floods. This may include replacing worn-out components like gaskets, spare panels, and hardware. The specific O&M requirements will depend on the type of system installed, but common tasks may include:

- Replacing sealant materials used to seal the structure
- Deploying opening covers during floods
- Inspecting and replacing deployable system components as needed
- Cleaning weep holes to maintain drainage
- Providing spare parts and components, such as extra gaskets and panels, to ensure timely repairs and replacements.

It will be essential for the property owner to follow the manufacturer's recommendations and develop a routine maintenance schedule to ensure the floodproofing system remains effective and functional over time.

Table I:11-1. Recommended Plan OMRR&R Cost Summary

Task	Hours/Qty	Cost per Structure	Total Cost	Frequency
<i>NFS Costs (2,051 structures)</i>				
Structure Inspections from street of 10 % of participating structures and associated reporting.	205 structures	\$1,200	\$246,000	Every 5 years
<i>Nonresidential Floodproofing Property Owners (241 Structures)</i>				
Sealing Coating Reapplication	24 hours at \$30 per hour	\$720	\$173, 520	Every 10 years estimated
Sealing Materials	Not Applicable	\$144	\$34,704	Every 10 years estimated

Notes: There are OMRR&R costs are anticipated to begin in fiscal year 2035 which is five years after the first MATOC completion.

Application Phase

Screening Phase

Screening Phase

Design Build Phase

Application Phase Notes

1. Application is public facing Survey 123 Form with hard copy version.
2. If application is completed in hard copy, Survey 123 form will need to be completed by USACE , with digital hard copy attached to form.
3. Homeowner should be able to check status at this point.

Screening Phase Notes

1. KTR screenings: is USACE providing screening criteria? If so, suggest Survey123 form and hard copy form for each screening type. KTR will be responsible for manually entering screening information into Survey123 if hard copy is used in the field.
2. Sponsor Real Estate work does not lend its self to Survey 123 form (except RE Agreement). Title Search, Assessment, Subordination documents should be loaded to database. Survey123 option for RE Agreement.
3. Should USACE interface with owner if KTR or Sponsor has trouble completing one or more screenings/RE tasks? Need to refine this slightly.

Design Build Phase Notes

1. Workflow below would be for a single structure, not the larger process required for Design Build Contracts
2. Need significant input on Design Build process from Contracting, Engineering, Construction
3. Structure QA can be done as Survey 123 Form and hard copy. Similar workflow as Screening and Real Estate.
4. Need to determine how groups of structures are submitted to DB KTR.
 - a. Structure type / Structure size combination (i.e. Residential, less than 2000 sqft | Commercial/Industrial, less than 10,000 sqft)
 - b. Geographic location
 - c. Non-Structural mitigation type: Elevate, Wet Floodproof, Dry Floodproof
 - d. Regardless of grouping, cap number of structures submitted?

Survey 123 Forms (Tentative)

1. Initial Application | Criteria Defined | Public Facing
 - a. Owner Signature Required
2. Structural Integrity | Criteria Not Defined | KTR Facing
3. Cultural Screening | Criteria Not Defined | KTR Facing
4. HTRW Screening | Criteria Not Defined | KTR Facing
5. Real Estate | Criteria Not Defined | Sponsor Facing
 - a. Attach Title Search, Assessment, Subordination
 - b. Complete RE Agreement with Owner Signature
6. Design-Build | Criteria Not Defined | KTR Facing
 - a. Attach Final Design, Construction Docs, Others?
 - b. Include Design review comment-respond-closeout pattern
7. Quality Assurance | Criteria Not Defined | USACE Facing

