Executive Summary

Public Facilities Programmatic Environmental Assessment

Introduction

The mission of the Federal Emergency Management Agency (FEMA) is to reduce the loss of life and property and protect our institutions from all hazards by leading and supporting the nation in a comprehensive, risk-based emergency management program of mitigation, preparedness, response, and recovery. Beginning September 2017, hurricanes Irma and Maria caused significant damages to Puerto Rico. President Donald J. Trump issued a disaster declaration for Hurricane Maria on September 20, 2017, encompassing the entirety of Puerto Rico. Since the signing of the disaster declaration in response to the hurricanes, Puerto Rico has experienced increased seismic activity leading to an additional disaster declaration signed by President Donald J. Trump on January 16, 2020. The disaster declaration for increased seismic activity applies to designated Municipalities within Puerto Rico.

The declarations authorized federal public assistance to affected communities and certain non-profit organizations per FEMA, and in accordance with the Robert T. Stafford Disaster Relief and Emergency Assistance (Stafford) Act of 1974 (42 United States Code [U.S.C.] §§ 5121-5207), *as amended*; the Sandy Recovery Improvement Act of 2013; and the Bipartisan Budget Act of 2018 (Public Law 115-123). The Central Office of Recovery, Reconstruction and Resiliency (COR3) is the recipient for FEMA grants and multiple agencies may be the subrecipient for specific projects.

This Programmatic Environmental Assessment (PEA) is prepared in accordance with Section 102 of the National Environmental Policy Act (NEPA) of 1969, *as amended*; and the regulations for implementation of the NEPA (40 Code of Federal Regulations [CFR] §§ 1500 to 1508). The purpose of this PEA is to consider the potential environmental impacts of different project alternatives, including a no action alternative, and to determine whether to revise or withdraw the PEA, prepare a Finding of No Significant Impact (FONSI) or initiate an Environmental Impact Statement (EIS). In accordance with above referenced regulations, FEMA Directive 108-1, and FEMA Instruction 108-1-1, FEMA, during the decision-making process, evaluates and considers the environmental consequences of major federal actions it funds or undertakes.

Recent changes to the President's Council on Environmental Quality (CEQ) regulations implementing NEPA became effective on September 14, 2020 (85 Fed. R. 43304-76 [July 16, 2020]). As stated in 40 CFR § 1506.13, the new regulations apply to any NEPA process initiated after September 14, 2020. This PEA substantively commenced prior to that date; therefore, this PEA conforms to CEQ NEPA implementing regulations that were in place prior to September 14, 2020, and procedures adopted pursuant to Department of Homeland Security Directive 023-01, Rev. 01, and FEMA Directive 108-1. In accordance with above referenced regulations, directive, and instruction, FEMA evaluates and considers the environmental consequences of major federal actions it funds or undertakes.

If a proposed project meets the scope, impacts, and mitigation under this PEA, FEMA will then conduct any remaining project-specific reviews and consultation with federal regulatory partners. The subrecipient, for such proposals, will conduct any necessary municipal or Puerto Rican

consultation and permitting prior to commencement of construction. Projects exceeding the thresholds or having impacts greater than considered in this PEA may result in a project-specific tiered environmental assessment (EA) or stand-alone project-specific EA. Project proposals that FEMA determines cannot meet a FONSI will require an EIS, or FEMA may choose to not fund such a project. This PEA analyzes the following four alternatives:

- Alternative 1: No Action Alternative;
- Alternative 2: Repair of Public Facilities with added Resiliency Measures;
- Alternative 3: Relocation of Public Facilities; and
- Alternative 4: A Combination of Alternatives 2 through 4.

Purpose and Need

Wind, rain, and floodwater from hurricanes Irma and Maria damaged various public facilities throughout Puerto Rico. Similarly, increased seismicity within Puerto Rico further exacerbated the physical condition of Puerto Rico's facilities supporting critical services within local communities. For this PEA, references to public facilities are inclusive of their associated appurtenances. The purpose of the programmatic actions considered herein is to restore Puerto Rican public facilities and their functions to meet the post-disaster needs of subrecipients and increase the resiliency of them in response to future disaster events. Under the Stafford Act, FEMA has authority to provide grant funding to eligible subrecipients for cost-effective actions that have the purpose of reducing or eliminating risks to life and property from hazards and their effects. FEMA's programs of Public Assistance Alternate Procedures, Sections 404 and 406 Hazard Mitigation under the Stafford Act, and the Bipartisan Budget Act of 2018, each encourage flexibility in disaster recovery.

In an effort to restore public facilities and mitigate impacts to them from future disaster events, federal agencies, led by FEMA, may provide funds to a subrecipient for the recovery and hazard mitigation of public facilities throughout Puerto Rico. The need for this action is to repair public facilities to current codes and standards, equitably restore or increase resiliency measures, reopen facilities closed as a result of disaster events, support alignment to subrecipient needs of restoring facility services, align facilities with local laws, and provide hazard mitigation to increase resiliency in response to future disaster events. More resilient and upgraded public facilities will allow services to remain open during future disaster events, which will enable quicker emergency response times, increase public safety, reduce injury and death, and increase survivability. FEMA anticipates upgraded facilities will be more cost-effective to operate and be able to provide uninterrupted, more resilient, critical services to Puerto Rican residents during and following future disaster events. If, instead of implementing one of the alternatives covered under this PEA for a disaster-impacted public facility, a new action is proposed, then it would undergo a separate NEPA evaluation.

Project Background

Following hurricanes Irma and Maria and subsequent seismic events within Puerto Rico, FEMA prepared this PEA for recovery actions involving public facilities, which is a broad term that may

encompass a variety of structures and as many as 43 different subrecipients using such facilities (Fischbach, et al. 2020). Public facilities covered under this PEA include:

- Emergency response facilities: state and municipal police, fire stations, Puerto Rico National Guard facilities, and other emergency response facilities;
- Publicly owned and non-profit hospitals, medical centers, and health care facilities;
- Non-profit houses of worship and churches;
- Publicly owned and non-profit higher education facilities, such as, University of Puerto Rico, vocational, and technical/trade schools.
- State and municipal government offices, such as city halls, municipal service centers, among others;
- Public housing communities – managed by the Puerto Rico Public Housing Administration and the Puerto Rico Department of Housing, private non-profit (PNPs) special community housing facilities (orphans, elder care, rehabilitation);
- Judiciary buildings and correction facilities;
- Public recreation facilities including parks, tracks, basketball courts, and pools;
- Libraries, archives, and museums; and
- Puerto Rico Industrial Development Company (PRIDCO) facilities involving public real estate operations of acquisition, operation, and improving industrial parks including a variety of uses from light to specialized manufacturing, research and development, distribution centers, warehouses, and light industrial activities.

The Stafford Act defines critical services as including power, water, sewer, wastewater treatment, communications, education, and emergency medical care. Due to the lack of availability of data for analysis, this PEA evaluated publicly owned and non-profit hospitals, medical centers, health care facilities, urgent care, emergency management offices, police stations, fire stations, and the Puerto Rico National Guard.

Puerto Rico is situated within a Caribbean archipelago composed of four main islands and other accompanying cays and has a total area of approximately 13,791 square kilometers (km^2) (5,325 square miles [mi^2]). Many islands comprise Puerto Rico; however, only the main island, Vieques, and Culebra are inhabited; however, Puerto Rico is one of the most densely populated states or entities within the U.S. Puerto Rico is mountainous with extensive coastal areas in the north and south with the main mountain range being "La Cordillera Central".

In Puerto Rico, it is common for public facilities to be owned by a public entity, such as PRIDCO or Puerto Rico Public Buildings Authority, and Puerto Rico Department of Housing. The damage caused to Puerto Rico's public facilities from recent disasters resulted in an extended reduction in Puerto Rico's critical services infrastructure.

Description of Alternatives

FEMA developed the following alternatives based on anticipated project proposals to satisfy the purpose and need of this PEA. The alternatives will assist the recipient and subrecipients in addressing damage to public facilities primarily from hurricanes Irma and Maria as well as the recent increase in seismic activity in Puerto Rico. Public facilities include infrastructure involving state and municipally owned and operated facilities as well as public housing, government offices, emergency response facilities, hospitals and medical centers, special community housing facilities, judicial buildings, nonprofit houses of worship, public recreation facilities, and public and non-profit higher education facilities. Higher education includes education beyond high school, especially at college, university, or a technical school. Action alternatives may also include roads, walkways, landscaping, parking facilities, and other appurtenances that together make up the on-site public facility infrastructure.

Implementation of action alternatives will ensure federally funded projects mitigate future impacts from flooding, wind, and seismic events by increasing the resiliency of public facilities. The alternatives presented in this PEA include a no action alternative, also known as the "Future without Federal Project Condition." The following alternatives are inclusive of portions of project development activities including planning and design, engineering, repair, demolition, construction, and regulatory compliance.

Allowances for a project's limits of disturbance are based on existing conditions and proposed locations. The intent is to ensure that FEMA considers local conditions when determining whether or not this PEA satisfies a project's NEPA requirements. For actions at existing facilities, FEMA is considering expansion of function, capacity, and density of up to 20%, which aligns with the HUD standards in 24 CFR Part 50 and Part 58. For projects at new sites, FEMA will consider actions of up to five-acres for sites in urban areas and up to two-acres in rural areas of ground disturbance activity after considering thresholds of other federal agency for new construction. Ground disturbance activities may include the establishment of staging areas, temporary construction activities, site access preparation, and site construction.

For the 2010 Census, the USCB indicates urban areas represent densely developed land areas that encompass residential, commercial, and other non-residential urban land uses. The following are definitions the USCB uses to determine if an area is urban or rural:

- Urban areas include densely settled populations containing 50,000 or more people,
- Urban Clusters are any incorporated place or census place that includes between 2,500 and 50,000 people, and
- Rural areas are locations where any population, housing, and territory do not occur within an urban area (USCB 2010a).

Alternative 1: No Action Alternative

Under the no action alternative, FEMA will not provide grant funding for permanent work including reconstruction, relocation, and/or hazard mitigation of public facilities, the relocation

and upgrade of public facilities, and new construction of such facilities in Puerto Rico. Due to budgetary constraints within Puerto Rico, FEMA anticipates that much of the public facility work may go unfunded or deferred indefinitely. Deferred or unfunded public facility projects will likely impact the efficiency and resiliency of the Puerto Rico's critical services which will impact Puerto Rican residents. Public facilities with temporary, emergency measures still in place following disaster events are likely to remain in their current condition.

Alternative 2: Repair of Public Facilities with added Resiliency Measures

Actions under Alternative 2 will involve repairing public facilities to their pre-disaster function as well as improving their resiliency to future disaster events. Public facilities will maintain their same location within the same parcel. However, for existing facilities, Alternative 2 allows a minor expansion of facility function, capacity, and density of up to 20% based on post-disaster needs such as population trends, onsite operation plans, public facility resizing and reorganization, or hazard mitigation measures requiring additional area. If FEMA reviews a SOW containing expansion of a public facility situated within a floodway or coastal high-hazard zone, that proposed action may undergo tiering from this PEA.

If a public facility is eligible for replacement, the subrecipient may construct a new facility meeting current building codes and standards. This alternative includes demolition and rebuilding of public facilities on the same property, except if the site is in a floodway or coastal high-hazard zone. However, public facilities may undergo relocation if they receive with substantial damages and are within the 100-year floodplain, unless no practicable alternate location exists. This also applies to public facilities within the 500-year floodplain if the school meets the definition of a critical services facility, such as hospitals. Impact analysis discussion for public facility relocation is provided for Alternative 3.

Common Activities: the following are common activities with potential association with public facility repairs with added resiliency measures at existing locations.

- Site work may include surface grading, excavation, conduit replacements, trenching, concrete applications, cutting and resurfacing of pavement or curb and gutter, and hardware placement.

- For actions under Alternative 3, FEMA anticipates construction activities may require the use of heavy equipment such as wheeled or tracked combustion engine powered, construction/demolition and transportation equipment and handheld gasoline or pneumatic powered construction/demolition equipment.

- Mobilization of construction equipment and materials to project sites, establishment of staging areas, demolition of existing structures, performance of concrete and asphalt work, and post-construction site repairs.

- The upgrade of public facilities to the current building codes and standards which provide minimum requirements to safeguard public health as well as, the safety and general welfare of building occupants (COR3 2018).

- Compliance with the Americans with Disabilities Act.

- Engineering design services such as hydraulic and hydrologic (H&H) studies, seismicity surveys, geotechnical subsurface explorations, topographical surveys, life-cycle costs analyses, energy efficiency studies, earthquake resiliency, and feasibility analyses.

- Additionally, for all SOW involving demolition and replacement, disposal of construction and demolition debris generated by actions under this PEA will occur at Puerto Rico Department of Natural and Environmental Resources (PRDNER)/Puerto Rico Environmental Quality Board (PREQB) permitted disposal staging areas, landfills, and associated recycling facilities.

- Incorporate resiliency measures including structure evaluation, stabilization, and facility elevation.

- May conduct remediation and confirmation sampling for mold, asbestos containing materials, and lead-based paint.

The following are typical types of actions which could occur under Alternative 2:

Upgrade of Utilities and Stormwater Management Systems: Principal activities will involve replacing or hardening on-site utility networks and could include tying into existing offsite networks operated by municipal and Puerto Rico-wide providers. Under this PEA, utility networks include telecommunication systems, power, backup power, potable and wastewater systems, stormwater management systems, and heating, ventilation, and air conditioning systems. Upgrades to telecommunication networks, potable water, wastewater, and stormwater systems could involve open cut trenching and replacement of existing pipes with right sized piping and equipment meeting current codes and standards. Associated activities may involve temporary staging area establishment; removal and installation of piping and pumps; and the disposal of old piping, broken pavement, and old pumps. Site work may include surface grading, conduit replacements, trenching, concrete applications, cutting and resurfacing of pavement or curb and gutter, and hardware placement. Trenches will be backfilled following utility placement. Associated actions may involve the maintenance of vegetation. New stormwater systems could include conduits, water overflow ponds, trenches, and gutters, manholes, grates, and appurtenances.

Installation of Microgrids – Alternative 2 includes microgrid installation to provide sufficient power during grid outages. Microgrid systems would provide alternative power and storage for health clinics, higher education, and other community critical facilities which would provide a more resilient, continuous power to vulnerable groups when the larger power grid is unavailable. Microgrid systems can provide grid resilience, mitigate disturbances caused by natural disasters, and allow for faster system response and recovery. Microgrid systems could include solar panels, battery storage, feeder automation control systems, load control equipment, or other renewable energy sources. The microgrids would provide power to public facility life support systems such as power to water pumps which would supply potable water, wastewater, and power backup systems. The subrecipient would protect any batteries, inverters, and associated equipment for microgrid systems from impact from flooding appropriate to the site.

Resiliency Measures: Hazard mitigation measure implementation can assist with increasing a facility's resiliency and reduce future damages from future disaster events. FEMA defines hazard mitigation as reducing disaster damages and a sustained action taken to reduce or eliminate the long-term risk to human life and property from natural hazards and their effects. The following are typical hazard mitigation actions associated with Alternative 2:

- **Wind Retrofits**: For wind retrofit projects satisfied by Alternative 2, each SOW must include retrofit measures to address roof retrofits, openings protection, and load path improvements. Additional SOW under this class of actions will involve mitigating constructed steel frames, concrete, and reinforced masonry construction.

- **Installation of Flood Protection Measures**: Actions under Alternative 2 may include flood mitigation measures such as the installation of floodwalls, floodproofing, elevating key equipment, and temporary barriers. The subrecipient's engineer will be responsible for designing flood protection measures in compliance with applicable codes and coordinating with the Puerto Rico Planning Board (PRPB) to ensure compliance with National Flood Insurance Program (NFIP). Flood protective measures may protect both single structures and multiple structures. SOW may be inclusive of flood barriers such as floodwalls and earthen berms.

- **Facility Elevation**: Alternative 2 will involve creating operational space above the Base Flood Elevation (BFE) when no practicable alternate location exists outside the floodplain or coastal high-hazard area. Projects that involve the elevation of public facilities include the following activities:

    - Engineering design services such as H&H studies, geotechnical subsurface explorations, life-cycle costs analyses, and other economic and feasibility studies;

    - Building elevation may include the elevation of slab-on-grade buildings. The subrecipient's engineer will be responsible for inspecting the structural integrity buildings to determine whether the slab is sufficient to support the elevated structure without the continuous support of the underlying soil;

    - The separation of frame, masonry veneer, and masonry buildings and facilities from their foundations and the use of heavy equipment and hydraulic jacks for the purpose of elevating public facilities to their required height above the BFE;

    - The installation of a temporary support system that will hold a structure in place while the subrecipient's contractor installs a new or extended foundation below. The new support system may consist of continuous walls or separate piers, posts, columns, or piles; and

    - Actions associated with public facility elevation may include removing a roof and raising a public facility's operational space, either by extending the walls of the structure and raising the floor or by abandoning the lower level and moving the operational space to an existing or newly constructed upper floor.

- **Seismic Retrofit:** Actions under Alternative 2 may include the application of structural supports to existing public facilities. Some common retrofitting improvements may include

foundation stabilization, foundation anchoring, continuous load path integration, and improvements to structural systems.

- **Installation of Safe Room or Tsunami Refuge**: Actions under Alternative 2 may include constructing a safe room or hardening of existing facilities in whole or in part following FEMA design guidance. Actions may also include the construction of tsunami refuge to serve as a safe haven until the most imminent danger has passed. Construction of either would include any associated utility connections for emergency and redundant power, communications, water, wastewater, and any other essential support for the use of the safe room or refuge for the intended populations.

Alternative 3: Relocation of Public Facilities

Actions under Alternative 3 allow for relocating public facility function and operations to a new site which could include consolidation of one or more public facilities into an existing facility, physical relocation of an entire public facility to a new site, or selection of a new site for new construction. Consolidation of public facilities to an existing site is subject to the 20% expansion of the existing capacity, function, and density based on post-disaster needs such as population trends, onsite operation plans, or hazard mitigation measures that require additional area. Expansion of public facilities would not occur to those structures in a floodway or coastal high-hazard zone. New public facility construction within a floodway or coastal high hazard area is unallowable. Relocation of public facility functions could be to an existing facility and would include associated build-out of the site, an existing developed site not currently a public facility. However, public facility relocation into the floodplain will occur only if no practicable location meeting the needs of the community were available. Construction of new public facilities at a new location would be subject to this PEA's rural and urban area acreage thresholds. Additionally, SOW under Alternative 3 will involve upgrading the new site to current codes and standards. The following activities provide context to the types of actions that are likely to occur under Alternative 3.

Common Activities: the following are common actions that may occur with either the relocation of public facility operations to an existing facility, relocation of an existing structure, or new public facility construction. Common actions under Alternative 3 will be similar to those listed in Alternative 2 with the addition of the following:

- Alternative 3 actions may require the acquisition of land or structures for the relocation of an entire facility or a component of a public facility. Any acquisition of land will adhere to federal, territorial, and local regulations for the acquisition of lands.

- Subrecipients choosing to abandon a facility must render the original site safe and secure to ensure it does not present a threat to public health and safety. Such activities could include, but are not limited to, fencing, boarding windows and doors, securing utilities, providing adequate ventilation, removing potential hazards to public health, structural stabilization, and maintenance and monitoring plans. Any future use or transfer of property must adhere to applicable federal, Puerto Rico, and local regulations.

- Actions associated with the demolition of facility structures and appurtenances as required by federal, Puerto Rico, and local laws will likely involve the removal of aboveground

structures, removal of associated facilities, filling in of basements, removal or capping of utilities and septic tanks, and removal and disposal of asbestos or similar hazardous building materials.

Relocation to an Existing Facility: The following activities are associated with relocation of public facility operations to an existing site or another facility may involve:

- **Upgrade of Utilities and Stormwater Management Systems**: similar to those actions under Alternative 2.
- **Installation of Microgrids:** These activities would be the same as Alternative 2.
- **Expansion of Existing Facilities for Public Facility Relocation:** Alternative 3 allows for facility expansion similar to that under Alternative 2, which may include construction of additional administrative offices and infrastructure support. Alternative 3 actions include both facilities constructed in-place as well as prefabricated modular offices, including universities and higher education facilities. Construction activities will likely require excavations, installation of temporary and permanent access roads, and placement of concrete footers and pads or fill material. Associated actions will include the installation of the mechanical, electrical, and plumbing necessary to operate a facility to current codes and standards.
- **Former Site Management**: The subrecipient will manage the former site or facility following relocation in accordance with federal, Puerto Rico, and local regulations.
- **Resiliency Measures**: Activities will follow similar hazard mitigative efforts to those actions under Alternative 2.
- **Installation of Safe Room or Tsunami Refuge**: These activities would be the same as Alternative 2.

Physical Relocation of an Existing Facility: This technique involves the use of heavy equipment for the relocation of a public facility will likely require the use of a flatbed trailer which the subrecipient will coordinate with all local requirements for oversize vehicle use. The operator moves the flatbed trailer under a raised structure and then lowers the structure onto the flatbed. The subrecipient's contractor will install temporary support systems that will hold the structure in place as a contractor moves the structure to its new site. Upon arriving at the new site, the contractor will remove the structure from the flatbed and lower it onto its new foundation.

The subrecipient's engineer will be responsible for the design and installation of a new foundation to accommodate the relocated infrastructure. The construction of a new foundation requires grading, excavation, and installation of structural supports. The following activities are associated with relocating structures to a new site.

- **Upgrade of Utilities and Stormwater Management Systems**: similar to those actions under Alternative 2.
- **Installation of Flood Protection Measures:** Actions under Alternative 3 may include flood mitigation measures similar to that covered under Alternative 2.

- **Resiliency Measures**: Activities will follow similar hazard mitigative efforts to those actions under Alternative 2.

New Facility Construction: Newly constructed public facilities can occur on the same property or at an entirely new site and comprise of installation of prefabricated offices or other similar structures. The following activities associated with new public facility construction will be similar to those listed in Alternative 2 with the exception of the following:

- Associated actions would include the construction of all surface and subsurface elements necessary to operate and manage a modern public facility. FEMA anticipates new construction would involve the installation of all mechanical, electrical, plumbing systems, and may include backup power generation, construction of parking structures, and connections to adjacent roadways.

- Similar to relocating facility operations, physical relocation and new facility construction could include SOW for land acquisition, abandonment, stabilization, or demolition of existing structures along with land acquisition.

Alternative 4: A Combination of Alternatives 2 Through 4

FEMA prefers Alternative 4 as it fulfills the purpose and need of this PEA. Alternative 4 is inclusive of each activity and SOW presented for Alternatives 2 and 3. Alternative 4 allows the subrecipient the ability to select SOW that are applicable to addressing the wide range of damages public facilities within Puerto Rico experienced as a result of the recent natural disasters. Additionally, it provides the subrecipient increased flexibility in how they increase the resiliency of Puerto Rico's public facilities along with supporting economic growth within Puerto Rico.

Potential Impacts and Resources Evaluated

FEMA evaluated the physical, biological, cultural, and human use setting in which the proposed activities will occur, including restorative actions. This PEA presents a qualitative evaluation of potential impacts to the affected environment. The qualitative evaluation relies upon a scale that describes the intensity and duration of a potential impact. FEMA evaluated the following resources as part of this PEA:

> *Geology, Topography, and Soils, Air Quality, Water Quality, Wetlands, Floodplains, Coastal Resources, Threatened and Endangered Species, Cultural Resources, Socioeconomic and Environmental Justice, Land Use and Planning, Noise, Transportation, Public Services a Utilities, Public Health and Safety, and Hazardous Materials*.

Resources eliminated from review within this PEA include Safe Drinking Water Act, Wild and Scenic River System, Bald and Golden Eagles, Vegetation, Wildlife and Fish, and Fish and Wildlife Coordination Act. FEMA omitted these resource topics from further evaluation under this PEA because they do not apply to the projects or locations considered in this NEPA document.

Although FEMA determined that adverse temporary, short-term, and long-term impacts to each evaluated resource may occur from either the No Action or Action Alternatives, all foreseeable

impacts are likely to be between the level of negligible and moderate. FEMA anticipates that requiring subrecipients adhere to the action thresholds and the Permits and Requirements under this PEA will be sufficient to prevent adverse impacts from reaching the level of major.

FEMA will review potential scopes of work under this PEA in accordance with the Clean Air Act. FEMA anticipates that construction emissions will be below threshold levels. The subrecipients will adhere to work hours, use of Tier 4 rated equipment and ultra-low sulfur fuel, as well as the use of best management practices during construction to minimize noise, dust, and potential traffic disruptions. For all applicable projects located in non-attainment and maintenance areas, the subrecipient will be responsible for performing a General Conformity applicability analysis.

If a proposed project is likely to impact Waters of the U.S., the subrecipient will be responsible for obtaining appropriate permits prior to the beginning of work, and implementing all requirements of the permits, including pre-construction notification. Staging areas and access roads must be located outside the jurisdictional boundaries of Waters of the U.S. The implementation mitigation measures, and erosion controls will minimize water quality impacts by limiting sediment escapement and retaining turbid waters within project areas.

If potential actions that may affect or are within a floodplain, under requirements established under 44 CFR § 60.3 and 44 CFR § 9.11, FEMA will conduct the 8-Step Decision-Making Process in accordance with Executive Orders 11988 and 11990, as well as 44 CFR Part 9. FEMA anticipates actions undertaken under this PEA will have a positive effect on floodplains as they will improve the hydraulic flow and protect development from flooding. Mitigation and resiliency measures may include raising structures above flood levels, relocation, or otherwise minimizing their effect on floodplain or wetlands. Avoidance and mitigation measures will minimize adverse impacts to floodplains and wetlands.

FEMA does not expect the actions under this PEA to adversely affect Endangered Species Act listed or proposed species or their designated critical habitat. This PEA does not include any actions that will create a level of impact beyond a "*not likely to adversely affect"* determination for federally listed species or have an *adverse modification* to designated critical habitat. Any such action that will cause an impact beyond not likely to adversely affect will require FEMA to perform additional NEPA compliance. Actions under this PEA may temporarily displace local wildlife and fish during construction; however, landscape and water quality restoration will restore wildlife and fish habitat following completion of public facility actions.

Proposed actions in the Puerto Rico-defined coastal zone are subject to review in accordance with the Coastal Zone Management Act and Puerto Rico Coastal Zone Management Program. Pursuant to Federal Consistency Regulations at 15 CFR § 930, FEMA and the Puerto Rico Planning Board signed a Federal Consistency Certificate (Resolution) for Category C through G work dated October 3, 2018, and signed by FEMA and PRPB October 5, 2018 (Resolution JP-2018-324). FEMA will submit Federal Coastal Zone Consistency Determinations for scopes of work not included in the resolution to the Puerto Rico Planning Board for concurrence. The Resolution is set for a five-year term, where if it expires or does not undergo renewal, SOW involving actions within CZMA would undergo consultation with the PRPB. FEMA will review SOW to determine the need for consultation with the PRPB as required under the Puerto Rico Coastal Zone

Management Program. Proposed actions that comply with any consultations or fall under the Federal Consistency Certificate will aid in minimizing impacts to coastal resources.

FEMA will review all scopes of work to determine compliance with Section 106 of the NHPA and the programmatic agreement in accordance with the amended *Programmatic Agreement Among the Federal Emergency Management Agency, the Puerto Rico State Historic Preservation Officer, and the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency* and any project-specific programmatic agreement that may be executed for the undertaking pursuant to Stipulation II.C.6(c) of the amended Programmatic Agreement and in accordance with 36 CFR § 800.14(b). The subrecipient will be responsible for coordination with the Puerto Rico Institute for Culture for compliance with historic preservation and archaeological requirements. FEMA anticipates complying with the programmatic agreement and adhering to measures within and in accordance with any consultations with the SHPO will minimize impacts to cultural resources.

Proposed actions will undergo review to determine any potential impacts to communities with EJ concerns in accordance with Executive Order 12898. The subrecipient will be responsible for involving the local minority and low-income populations and community when impacts from public facility project construction may occur. Integrating public participation will aid in determining and minimizing potential impacts within the communities with EJ concerns.

Cumulative Impacts

FEMA anticipates action alternatives analyzed throughout this PEA will not result in major cumulative impacts. FEMA is funding actions involving the repair, replacement, or rehabilitation and associated hazard mitigation measures of projects similar in function, size, and locality to the existing infrastructure. Therefore, most cumulative impacts from the initial installation and temporary emergency measures of the projects have already occurred prior to and after recent disaster events. FEMA anticipates the detailed and extended grant approval process for projects under this PEA or tiered from this PEA will further limit cumulative impacts to environmental, socioeconomic, and historic properties throughout Puerto Rico. The process of implementing projects over an extended period will likely ensure that resource overburdening does not occur at any given time with the implementation of federally financed projects involving public facility infrastructure.

While the environmental and socioeconomic resources referenced in this document are susceptible to incremental impacts from federal actions, FEMA included project thresholds and requirements under this PEA for the purpose of avoiding or limiting adverse impacts that could cumulatively degrade or diminish these resources.

- Combined impacts of concurrent construction projects would have a long-term adverse impact on air quality. Although each project would be temporary, the number of projects completed would be continuous and therefore resulting in minor short-term emissions of air pollutants from construction equipment and fugitive dust during construction activities. FEMA anticipates minor impacts due to an increased project approval timeframe and spreading construction projects over a multitude of years over throughout Puerto Rico. Additionally, FEMA anticipates that the requirement of no new permanent emission sources under this PEA, along with bringing current emission

sources to current codes and standards, would net a minor long-term beneficial impact to the air quality in Puerto Rico. Additionally, a long-term beneficial cumulative impact on air quality would occur if inclusion of renewable energy microgrids occurs throughout Puerto Rico. Benefits would also occur from the enhancement or improvement of electrical power systems and upgrading to current codes and standards throughout Puerto Rico. Adverse impacts would occur if microgrids continued reliance on fossil fuels.

- For circumstances where multiple projects are under construction within the same watershed and at the same time, a cumulative impact to geology, topography, soils, water quality, vegetation and wildlife could occur. Although adverse, FEMA anticipates that cumulative impacts from public facility recovery projects under this PEA will be short-term and negligible to moderate. The conservation measures and BMPs presented in Section 6.0 of this PEA will aid limiting cumulative impacts to environmental resources by maintaining compliance with applicable permit conditions.

- Situations where multiple actions may undergo construction within the SFHA would result in an increased presence of structures, staged equipment, and impervious surfaces, which could, in turn, result in increased flood potential. If no feasible siting alternative exists, FEMA requires the use of minimization standards to reduce impacts to the floodplain and impacts from the floodplain to facilities. FEMA anticipates that by requiring subrecipients include floodplain resiliency measures combined with not funding new structure projects or project expansion within the floodway or the V-Zone would result in no major adverse cumulative impacts on floodplain resources.

- The potential for combined impacts of concurrent construction projects could have a long-term moderate cumulative impact on traffic delays, reroutes, congestion, construction noise, and social services. The subrecipient will be responsible for coordinating construction activities with local agencies, public utility departments, and environmental permitting agencies.

- The combined impacts of concurrent construction projects could have a long-term negligible to major adverse impact on historic properties, including archaeological resources. Concurrent construction project impacts would have no adverse impact to historic properties when repairs are carried out in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties 2017 (Secretary's Standards)* as outlined in the amended Programmatic Agreement. Demolition of historic properties would have a long-term major effect and would reduce the number of historic properties representing the history and culture of Puerto Rico. In order to prevent the cumulative loss of Puerto Rico's historic public facilities due to demolition or the disposition as a result of relocation, FEMA will establish an internal process to track FEMA-funded projects for historic public facilities. The amended Programmatic Agreement identifies particular treatment and mitigation measures to compensate for the demolition of historic properties. Documentation of the historic property prior to demolition may reduce the impact to less than major. The BMP for known archaeological resources is avoidance and would result in negligible impacts. If impacts to archaeological resources are unavoidable, the amended Programmatic Agreement

outlines the process for data recovery and documentation and may reduce the impact to less than major. For project sites with no known archaeological resources, the requirement of pre-construction surveys may occur and identify the likelihood of any potential resources and determine if additional surveys are appropriate. If discovery of archaeological resources occurs during construction, the discovery provisions in the amended Programmatic Agreement (Stipulation III.B) defines the process to be followed.

- The potential for combined impacts of concurrent public facility construction projects would have a long-term beneficial impact on buildings and infrastructure resiliency throughout Puerto Rico. FEMA anticipates that by requiring subrecipients to update public facilities to current codes and standards will increase the resiliency in response to future disaster events, which will, in turn, repair the critical services to support local communities.

Permits and Requirements

1. **Stormwater, Soils, and Erosion and Sediment Control**: Under the EPA NPDES, any project disturbing equal to or greater than one acre in size requires an EPA Construction General Permit, an NPDES Permit, and a SWPPP. The permits and plan require BMPs which serve to protect soils and stormwater. The subrecipient is required to: manage any piles of soil or debris, minimize steep slope disturbance, preserve native topsoil unless infeasible; and minimize soil compaction and erosion (EPA 2021). For each project the subrecipient will implement the BMPs and guidelines recommended in the Puerto Rico Erosion and Sediment Control Handbook for Developing Areas (PREQB and USDA NRCS 2005). The subrecipient will be responsible for obtaining all necessary permits such as an NPDES permit and implementing the associated erosion and sediment control plans (i.e., SWPPP).

2. **Clean Air Act**: The subrecipient is responsible for complying with all applicable EPA and PRDNER/PREQB requirements for fugitive dust suppression. The subrecipient will prepare a General Conformity applicability analysis for applicable actions under this PEA.

3. **Work Affecting Water**: For any project that involves WOTUS, including wetlands, the subrecipient will be responsible for initiating the permitting process with the USACE and the PRDNER. The subrecipient is responsible for obtaining appropriate permits prior to the beginning of work, and implementing all requirements of the permits, including pre-construction notification. Staging areas and access roads must be located outside the jurisdictional boundaries of WOTUS.

4. **Floodplains**: For FEMA funded actions that may affect or are within a floodplain, under requirements established under 44 CFR § 60.3 and 44 CFR § 9.11, the subrecipient will ensure the project is in compliance with the local PRPB floodplain administrator and follow appropriate mitigation requirements for new construction or substantial improvement.

5. **Endangered Species Act**: All projects will comply with and implement the ESA conditions found in any FEMA programmatic consultation that applies, or those conditions from a project-specific consultation.

6. **Invasive Species**: EO 13112, *Invasive Species*, directs federal agencies to prevent the introduction of invasive species, providing resources for their control, and minimize the economic, ecological, and human health impacts caused by their presence. The subrecipient is responsible for restoring disturbed soils with planting native, non-invasive species. Construction equipment should be power washed prior to initial transport to the construction site and prior to changing locations to prevent spread of noxious weeds.

7. **Historic Properties**: FEMA will review all SOWs to determine compliance with Section 106 of the NHPA. FEMA will follow the programmatic agreement for compliance in accordance with the amended *Programmatic Agreement Among the Federal Emergency Management Agency, the Puerto Rico State Historic Preservation Officer, and the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency* and any project-specific programmatic agreement that may be executed for the undertaking pursuant to Stipulation II.C.6(c) of the amended Programmatic Agreement and in accordance with 36 CFR § 800.14(b). The subrecipient will be responsible for coordination with the ICP for compliance with historic preservation and archaeological requirements. In the event an unexpected discovery of archaeological materials or human remains or if it appears that the undertaking has affected a previously unidentified historic property or a known property in an unanticipated manner, then FEMA, in coordination with SHPO, will address the discovery or unanticipated effect in accordance with the amended Programmatic Agreement (Unexpected Discoveries, Previously Unidentified Properties, or Unexpected Effects) and in accordance with any similar stipulation included in the State-wide or project-specific programmatic agreement if one is executed for the undertaking.

8. **Communities with EJ Concerns**: In accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* the subrecipient will be responsible for involving the local minority and low-income populations and community when impacts from public facility project construction may occur. Integrating public participation will aid in determining and minimizing potential impacts within the communities with EJ concerns.

9. **Construction Material and Debris**: The subrecipient is responsible for obtaining any permits associated with transportation and handling of construction material and debris. The subrecipient will identify, handle, transport, and dispose of hazardous materials and/or toxic waste in accordance with EPA and PRDNER/PREQB requirements. The subrecipient is responsible for determining the presence of asbestos or lead containing materials and obtaining applicable permits before beginning work. The subrecipient is responsible for ensuring that all non-recyclable debris generated from repair and demolition activities be deposited at a PRDNER/PREQB permitted landfill.

10. **Utility Clearance**: For all ground disturbing activities, the subrecipient is responsible for locating utilities. OSHA mandates that if a utility provider cannot respond to a request to locate underground utility installations or cannot establish the exact location of these

installations, the contractor may proceed provided they use detection equipment or other acceptable means to locate utility installations.

11. **Tree Cutting**: The subrecipient is responsible for complying with applicable PRDNER/ PREQB requirements for pruning, trimming, removal, and planting of vegetation