U.S. Department of Homeland Security
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FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR HAZARD MITIGATION SAFE ROOM CONSTRUCTION

BACKGROUND

In accordance with the National Environmental Policy Act (NEPA) of 1969, FEMA's regulations for implementing NEPA at 44 Code of Federal Regulations (CFR) Part 10, and the President's Council on Environmental Quality NEPA implementing regulations at 40 CFR Parts 1500-1508, FEMA prepared a draft Programmatic Environmental Assessment (PEA) to evaluate the potential impacts to the human environment resulting from the construction of residential and non-residential (individual) safe rooms and community safe rooms that are proposed for funding under FEMA's Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) Program. Section 203 (PDM) and 404 (HMGP) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. § 5121 et seq., authorize FEMA to provide funding to eligible applicants for eligible, feasible, and cost-effective activities that have the purpose of reducing or eliminating risks to life and property from hazards and their effects. One such activity is the construction and installation of safe rooms to protect populations from extreme wind events. The PEA is incorporated by reference into this FONSI.

The PEA evaluated five alternatives: (1) No Action; (2) Retrofit or Renovation of an Existing or Proposed Facility (Type A: Existing Facilities; Type B: New Facilities or Significant Renovation of Existing Facilities); (3) Safe Room Connected to an Existing Building and Beyond Original Footprint; (4) New Stand-Alone Construction in Previously Disturbed Areas; and (5) New Stand-Alone Construction in Previously Undisturbed Areas.

FEMA will develop tiered Site-Specific Environmental Assessments (SEAs) for those safe room projects requiring evaluation under areas of concern not evaluated in this PEA. having impacts beyond those described in the PEA or otherwise requiring a tiered SEA as identified in Table 1 in the PEA. Notice of the availability of the draft PEA was published in the Federal Register on April 27, 2011, for a 30-day public comment period. No comments were received on the draft PEA.

CONDITIONS

Actions under this PEA and FONSI must meet the following conditions. Failure to comply with these conditions would make the FONSI determination inapplicable for the project and could jeopardize the receipt of FEMA funding.

1. Excavated soil and waste materials will be managed and disposed of in accordance with applicable local, state, and federal regulations. If contaminated materials are discovered during construction activities, the work will cease until the appropriate procedures and permits are implemented.

2. The grantee and sub grantee will follow applicable mitigation measures as identified in Section 7 of the PEA to the maximum extent possible.

3. If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.

4. The grantee and sub grantee must meet any project-specific conditions developed and agreed upon between FEMA and with environmental planning or historic preservation resource or regulatory agencies during consultation or coordination.

5. This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize federal funding.

FINDING

Based upon the information contained in the Final PEA, the potential impacts resulting from the five alternatives analyzed in the PEA, and in accordance with FEMA's regulations at 44 CFR Part 10 and Executive Orders 11988 (Floodplain Management). 11990 (Protection of Wetlands), and 12898 (Environmental Justice). FEMA finds that the implementation of the proposed action will not have significant impacts to the quality of the human environment.

Therefore, an Environmental Impact Statement (EIS) will not be prepared. This FONSI is based upon proposed safe room projects fitting one of the project types described in the Final PEA and meeting all conditions prescribed for that particular project type.

APPROVAL

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Date JUN 02 2011

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Date 6/1/11

Final Programmatic Environmental Assessment

Hazard Mitigation Safe Room Construction

June 2011

Federal Emergency Management Agency
Department of Homeland Security
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List of Acronyms

ACHP	Advisory Council on Historic Preservation
AGL	above ground level
APE	Area of Potential Effect
AQCR	air quality control region
ASD	acceptable separation distance
AST	Aboveground Storage Tank
BA	Biological Assessment
BFE	base flood elevation
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BTU	British Thermal Unit
CAA	Clean Air Act
CATEX	categorical exclusion
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resource System
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHHA	Coastal High Hazard Area
CO	carbon monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
DHS	Department of Homeland Security
DNL	Day-Night Average sound Level
EA	Environmental Assessment
EHP	Environmental and Historic Preservation
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EO	Executive Order
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIP	Federal Implementation Plan
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GCR	General Conformity Rule
HMGP	Hazard Mitigation Grant Program
HUD	Department of Housing and Urban Development
Hz	hertz
LiMWA	Limit of Moderate Wave Action
MBTA	Migratory Bird Treaty Act

MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
NAAQS	National Ambient Air Quality Standards
NEHRP	National Earthquake Hazard Reduction Program
NEPA	National Environmental Policy Act of 1969
NFIA	National Flood Insurance Act
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service of the U.S. Department of Interior
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTHMP	National Tsunami Hazard Mitigation Program
NWP	Nationwide Permit
O_3	ozone
OPA	Oil Pollution Prevention Act
PA	Programmatic Agreement
Pb	lead
PDM	Pre-Disaster Mitigation
PEA	Programmatic Environmental Assessment
PM_{10}	particulate matter equal to or less than 10 micrometers in aerodynamic diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter
ppm	parts per million
PTHA	Probabilistic Tsunami Hazard Assessment RCRA Resource Conservation and Recovery Act
REC	Record of Environmental Considerations
RHA	Rivers and Harbors Act
SDWA	Safe Drinking Water Act
SEA	Site-Specific Environmental Assessment
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Officer
TIP	Tribal Implementation Plan

U.S.	United States
U.S.C.	United States Code
USCB	U.S. Census Bureau
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
USGS	U.S. Geological Survey
VOC	volatile organic compound
VSAT	Very Small Aperture Terminal
WSRA	Wild and Scenic Rivers Act

Section One Program Background

Section 203 (Pre-Disaster Mitigation (PDM) Program) and 404 (Hazard Mitigation Grant Program [HMGP]) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. § 5121 *et seq*., authorize the Federal Emergency Management Agency (FEMA) to provide funding to eligible applicants for eligible, feasible, and cost-effective activities that have the purpose of reducing or eliminating risks to life and property from hazards and their effects. One such activity is the construction and installation of safe rooms to protect populations from extreme wind events. According to FEMA Mitigation Interim Policy MRR-2-09-1: Hazard Mitigation Assistance for Safe Rooms (FEMA 2009a) and Hazard Mitigation Assistance Unified Guidance (FEMA 2009b, 2010), eligible safe room activities under HMGP and PDM are limited to extreme wind (combined tornado and hurricane) residential and non-residential (individual) safe rooms; extreme wind (combined tornado and hurricane) community safe rooms; tornado community safe rooms, and hurricane community safe rooms. The design criteria for individual and community safe rooms are defined in the FEMA publications FEMA 320: Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business (FEMA 2008a) and FEMA 361: Design and Construction Guidance for Community Safe Rooms (FEMA 2008b).

Since 1999 FEMA has reviewed close to 19,270 safe room projects under its hazard mitigation grant programs. Of these close to 950 have been community safe rooms and 18,320 have been individual safe rooms. FEMA's experience conducting environmental planning and historic preservation reviews for these projects has provided the agency's officials and reviewers with sufficient information to determine the likely impacts of this type of action on the human environment. This Programmatic Environmental Assessment (PEA) captures and builds upon this knowledge and experience and furthers the goals of the National Environmental Policy Act.

Section Two Use of this Programmatic Environmental Assessment

The National Environmental Policy Act of 1969, 42 U.S.C. § 4321 *et seq.*, (NEPA) mandates that federal agencies take into account the effects of their actions, including programs, regulations, policies, and grant-funded projects, on the quality of the human environment. The Council on Environmental Quality (CEQ) has established NEPA Implementing Regulations at 40 Code of Federal Regulations (CFR) 1500 *et seq.* for meeting these requirements, and each federal agency has developed its own implementing procedures specific to its mission. FEMA's procedures are found at 44 CFR Part 10. They contain a list of actions, referred to as Categorical Exclusions (CATEX), that typically do not individually or cumulatively have significant impacts on the human environment. An action that would normally qualify for a CATEX may have extraordinary circumstances that disqualify it from the CATEX's applicability. FEMA's list of extraordinary circumstances can be found at 44 CFR 10.8(d)(3). Actions that are not covered by a CATEX or actions covered by a CATEX that have unresolved extraordinary circumstances require the preparation of an Environmental Assessment (EA) under NEPA to determine the nature and extent of impacts of the action and determine whether the action has significant impacts on the quality of the human environment. An Environmental Impact Statement (EIS) is required when an action will have a significant impact on the quality of the human environment.

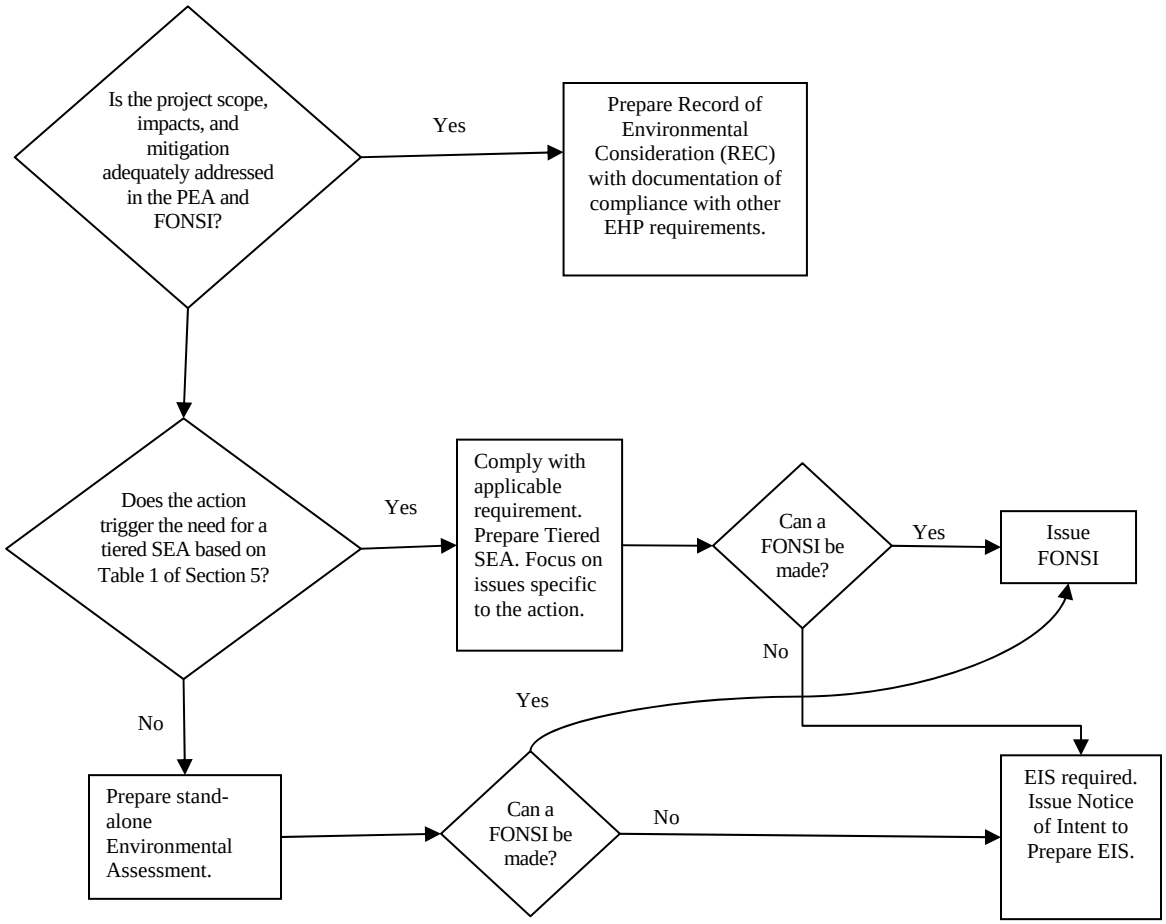
The CEQ regulations at 40 CFR §§ 1500.4(i), 1502.4 and 1502.20 encourage the development of program-level NEPA environmental documents and tiering for eliminating repetitive discussions and to focus on the issues specific to the subsequent action. FEMA has developed this Programmatic Environmental Assessment (PEA) under this CEQ authority.

This PEA will also facilitate FEMA's compliance with other environmental and historic preservation requirements by providing a framework to address the impacts of safe room construction actions under FEMA's hazard mitigation grant programs. FEMA coordinates and integrates to the maximum extent possible the review and compliance process required under similar requirements such as the Section 106 of the National Historic Preservation Act (NHPA), Section 7 of the Endangered Species Act (ESA), the eight-step process of the Executive Order 11988 and 11990, and others. This PEA provides a framework on how FEMA integrates these requirements with NEPA.

Finally, the PEA provides the public and decision-makers with the information required to understand and evaluate the potential environmental consequences of these hazard mitigation actions. This PEA meets the NEPA goals of impact identification and disclosure and addresses the need to streamline the NEPA review process.

If the project meets the scope, impacts, and mitigation covered in this PEA, then only a record of environmental considerations (REC) would be required. If the scope is covered but the action triggers the need for additional analysis based on the thresholds established in Table 1 of Section 5, FEMA will engage in the appropriate analysis or consultation requirement, prepare a tiered Site-Specific EA (SEA) under this PEA with the additional information, and provide a 15-day comment period to determine whether a Finding of No Significant Impact (FONSI) can be issued or whether an EIS is required. If the scope is not covered in this PEA, a separate stand-alone EA will be required.

Figure 1: Use of PEA in FEMA's Review



Section Three Purpose and Need

3.1 Purpose

Section 203 (Pre-Disaster Mitigation (PDM) grants) and 404 (Hazard Mitigation Grant Program [HMGP]) of the Robert T. Stafford Relief and Emergency Assistance Act, 42 U.S.C. § 5121 *et seq*., authorize FEMA to provide funding to eligible grant applicants for cost effective activities that have the purpose of reducing or eliminating risks to life and property from hazards and their effects. Mitigation grant program regulations and guidance that implement these authorities identify various types of hazard mitigation projects or activities that meet this purpose and may be eligible for funding. These projects represent a range of activities that protect structures, the contents within those structures, and/or the lives of their occupants.

3.2 Need

In extreme wind events where there is sufficient warning time and the time of protection is 24 hours (e.g. hurricanes), the general population may be expected to leave the area of anticipated immediate impact and seek shelter outside the at-risk area. However, some people such as first responders and those physically unable to leave the area remain in harm's way. In extreme wind events where the threat posed affords little to no warning to allow the general population to leave the area of immediate impact and the time of protection is 2 hours, immediate life safety protection is needed. There is a need throughout the nation for structures that provide "near absolute protection" during these extreme wind events. In order to provide this acceptable level of hazard mitigation protection during extreme wind events, a structure has to meet design criteria intended for this specific purpose, which exceed the design criteria for structure and building envelope protection only.

Section Four Alternatives

The discussion of each alternative below includes both individual and community safe rooms. PDM and HMGP funds may only be used for safe room projects designed to achieve "near-absolute protection" as described in FEMA Publications 320 and 361 (FEMA 2008a and 2008b). Any lower threshold of protection exposes safe room occupants to a greater degree of risk than is acceptable. In some cases, these projects also afford some ancillary level of structural and building envelope protection to reduce or eliminate damage to the structure and its contents and to ensure continuation of facility function.

PDM and HMGP funds are not available for general population shelters, including evacuation or recovery shelters intended to provide longer-term services and housing for people leaving the anticipated impact area of an extreme wind event, or because their homes have been damaged or destroyed by extreme wind events, fire, disasters, or other catastrophes. Such general population shelters are not intended to sustain the extreme wind event and are not required to satisfy the higher design criteria of near-absolute protection consistent with hazard mitigation residential, nonresidential, and community safe rooms as established in FEMA Publications 320 and 361. In addition, the hazard mitigation time of protection for safe rooms is a minimum of 2 hours for tornado events and 24 hours for hurricane events. These time periods also differentiate hazard mitigation event-only safe rooms from longer-term evacuation and recovery shelters.

Furthermore, the planning and operation of PDM and HMGP safe rooms should not conflict with state and/or local evacuation plans. PDM and HMGP safe room project activities should not be used as a substitute for, or as an option for individuals to ignore local community and/or state evacuation plans or any other law or ordinance.

Residential and non-residential individual safe rooms have a maximum size limit of 196 square feet (FEMA 2008a, 2009a). Size determinations for community safe rooms are made based on the size of the at-risk population in need of life-safety protection and on the anticipated period of protection (longer periods of protection require increased square footage allotments per person).

Single-use safe rooms are used only in the event of a natural hazard event and typically have a simplified design with simplified electrical and mechanical systems.

Multi-use safe rooms can be used for daily business when the safe room is not being used during a tornado or hurricane. These safe rooms may have more complex designs in order to satisfy purposes other than extreme wind protection and may also involve additional space considerations so that the criteria for square foot per occupant can be met while still meeting the design needs of the alternate intended use. Examples of multi-use areas designed or retrofitted for use as safe rooms include auditoriums, cafeterias, classrooms, libraries, hallways, music rooms, gymnasiums, and laboratories in school buildings; cafeterias/lunchrooms, hallways, and bathrooms in public and private buildings; and lunchrooms, hallways, and surgical suites in hospitals. According to MRR-2-09-1: Hazard Mitigation Assistance for Safe Rooms, allowable costs for PDM and HMGP safe room projects are those project components such as the design and building costs necessary for the purpose of immediate life safety resulting from structural and building envelope protection to the limited population that must remain in the impact area

during an extreme wind event. Conversely, costs associated with any function that is not essential for life-safety protection of occupants are not eligible (FEMA 2009a). Some examples of ineligible costs at a multi-use community safe room might include auditorium seating, sports equipment and fixtures, and floor treatments (FEMA 2010).

4.1 Alternative 1: No Action

FEMA has included a No Action Alternative to provide a benchmark against which the proposed alternatives may be evaluated. Under the No Action Alternative, FEMA would not provide funding for the construction of structures that provide "near absolute protection" for extreme wind events.

4.2 Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A: Existing Facilities

HMGP and PDM grant funds can be used to create safe rooms at existing facilities through retrofit or renovation of existing structures. Retrofits generally include modifications to strengthen a structure's foundation, load-bearing walls, beams, columns, building envelope, structural floors and roofs, and the connections between these components. This alternative also includes completely renovating a portion of an existing structure to create a safe room within that facility. Upgrades to improve levels of protection in existing buildings might include:

- Replacing existing doors (and door hardware) vulnerable to failures from wind pressures or missile impacts with metal door systems;
- Removing all glazing or wall sections vulnerable to failure from wind pressures or missile impacts and replacing with wall sections;
- Protecting glazing, doors, or openings with metal doors, shutter systems, or impact-resistant glazing systems to replace glazing that is vulnerable to failure from wind pressures or missile impacts; and
- Adding alcoves and walls to protect existing doors from the direct impact of windborne debris.

Retrofit and renovation projects involve relatively minor alterations to the interior or exterior of existing facilities. Work is conducted within the existing footprint of a building and in most cases no new ground is being disturbed. In some cases, the purchase and/or installation of emergency generators may be included as part of the FEMA-funded project.

Examples of interior spaces within buildings retrofitted or renovated as safe rooms include, but are not limited to, hallways/corridors, bathrooms, workrooms, laboratory areas, kitchens, mechanical rooms, interior offices, workrooms, and lounges. Typical facilities that are retrofitted or renovated to include a safe room include schools, hospitals, residences, small businesses, community centers, emergency operation centers, and government buildings.

Retrofits or renovations of existing structures and facilities with no or minimal ground disturbance beyond the existing footprint are covered by FEMA CATEX (xvi) and (xvii).

Type B: New Facilities or Significant Renovation of Existing Facilities

Type B activities are similar to Type A activities, except they involve hardening a portion of a structure that has not yet been constructed or would undergo a major renovation of the facility. These safe rooms are incorporated into a proposed new structure or into the plans for the renovation of the facility and will be funded by sources outside of FEMA. HMGP or PDM funds are only allocated towards the safe room portion of the structure and are not used to fund any other portion of the new construction or renovation. An example of this alternative type would be a new community center that is being planned at a site where FEMA has no involvement in the site selection or a major renovation of a school where FEMA is not involved in the renovation. The construction is being funded by sources outside of FEMA and the construction would proceed with or without the inclusion of a FEMA-funded safe room. While the construction of the safe room is part of a larger action, FEMA has determined that the larger action is not federalized by the funding of a safe room if:

(1) FEMA has no control or influence over the siting or design of the larger action; and
(2) the construction of the larger facility is not dependent on having the safe room or funding associated with the safe room for its completion

For these Type B retrofits FEMA will limit the scope of environmental planning and historic preservation analysis to the federal action associated with funding and construction of the safe room.

4.3 Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

This alternative involves the construction of a safe room as an annex or addition to an existing building (i.e. school, community center, residence, small business). Unlike the renovation alternative discussed above, this activity involves going beyond the original footprint of the existing structure. The safe room may be created by the construction of additional walls on the exterior face of the existing building or the safe room could be a new structure that is connected to the existing structure via a corridor or tunnel. Whichever the case, under this alternative the new safe room enclosure goes beyond the original footprint of the existing building, but in general the safe room is located in very close proximity to the original structure. As such, the safe room is most likely sited on ground that was previously disturbed when the existing structure was originally constructed. In most cases, the safe room is sited above ground, but there are times when it may be partially or completely below grade.

Under this alternative, there will be ground-disturbing activities during construction, but as mentioned above, the construction will usually only affect previously disturbed ground. Ground disturbance is any work or activity that results in a disturbance of the earth, including excavating, digging, trenching, plowing, drilling, tunneling, backfilling, blasting, topsoil stripping, land-leveling, peat removing, quarrying, clearing, and grating. Ground disturbance actions under this alternative would be less than one (1) acre.

For community safe rooms, additional features such as utility connections, fencing, lighting, access roads, equipment/construction staging areas, and parking lots may also be included as part of the project and contribute to the total project footprint. In some cases, the purchase and/or installation of emergency generators may be included as part of the FEMA-funded project.

Activities associated with the construction of a connected safe room may include:

- Demolition of an existing structure;
- Site clearing and grubbing;
- Site grading;
- Excavation;
- Staging areas for equipment, building materials, fill, etc.;
- Delivery, installation, and connection of utilities;
- Use of construction equipment, such as backhoes, front-end loaders, compactors, trenchers, augers, trucks (concrete, delivery, dump), and air compressors; and
- Traffic to and from the project site, including worker vehicles and delivery vehicles.

Typical facilities where a safe room is built as an addition include schools, hospitals, residences, small businesses, community centers, emergency operation centers, and government buildings.

4.4 Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Under this alternative, the safe room is constructed as a new, freestanding structure that is not connected to or attached to an existing structure. The new safe room is sited on land in a developed area that has been previously disturbed by past construction activities. The safe room might be located adjacent to other buildings, such as on a school campus, government complex, or at a residence, or it may be independent and separate from any other building complex.

The size of the safe room structure itself depends on the population to be protected, as defined in FEMA 320 (FEMA 2008a), FEMA 361 (FEMA 2008b), and FEMA Mitigation Interim Policy MRR-2-09-1 (FEMA 2009a). Residential and non-residential individual safe rooms have a maximum size limit of 196 square feet (FEMA 2008a, 2009a). The size of community safe rooms depends on the size of the at-risk population and on the period of protection, which is a minimum of 2 hours for a tornado and at least 24 hours for a hurricane. Safe rooms that are intended to offer a longer period of protection will require higher square footage allotments per person.

For community safe rooms, additional features such as utility connections, fencing, lighting, access roads, equipment/construction staging areas, and parking lots may also be included as part of the project and contribute to the total project footprint. The purchase and/or installation of emergency generators may also be included as part of the FEMA-funded project.

Activities associated with the construction of a new stand-alone safe room may include:

- Demolition of an existing structure;
- Site clearing and grubbing;

- Site grading;
- Excavation;
- Staging areas for equipment, building materials, fill, etc.;
- Delivery, installation, and connection of utilities;
- Use of construction equipment, such as backhoes, front-end loaders, compactors, trenchers, augers, trucks (concrete, delivery, dump), and air compressors; and
- Traffic to and from the project site, including worker vehicles and delivery vehicles.

Under this alternative, there will be ground-disturbing activities during construction, but as mentioned above, the construction will only affect previously disturbed ground. Ground disturbance is any work or activity that results in a disturbance of the earth, including excavating, digging, trenching, plowing, drilling, tunneling, backfilling, blasting, topsoil stripping, land-leveling, peat removing, quarrying, clearing, and grating. Ground disturbance actions under this alternative would be less than five (5) acres.

This alternative would also cover the funding and construction of new multi-use safe rooms in previously disturbed areas where FEMA has control or influence over the siting and design of the larger facility or where the larger facility is dependent on the FEMA safe room funding for is completion.

4.5 Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

This alternative is similar in scope to Alternative 4, but the proposed construction site is in an area that has not been previously developed or disturbed. The construction of the stand-alone safe room may be on a large school campus or government complex where the safe room site itself is located in an area that was never disturbed during the construction of the original buildings. This alternative can also include community safe rooms that are not associated with an existing campus and that are being built on native, undeveloped land.

In general, individual residential and non-residential safe rooms that are discussed in FEMA 320 (2008a) are not included under this alternative because those types of safe rooms are intended to be located within close proximity to an existing building for easy and quick access. Therefore, by design, they are located in previously disturbed areas.

The size of the safe room structure itself depends on the population to be protected, as defined in FEMA 361 (FEMA 2008b) and FEMA Mitigation Interim Policy MRR-2-09-1 (FEMA 2009a). The size of community safe rooms depends on the size of the at-risk population and on the period of protection, which is a minimum of 2 hours for a tornado and at least 24 hours for a hurricane. Safe rooms that are intended to offer a longer period of protection will require higher square footage allotments per person.

For community safe rooms, additional features such as utility connections, fencing, lighting, access roads, equipment/construction staging areas, and parking lots may also be included as part of the project and contribute to the total project footprint. Installing utility infrastructure may be more complex and involved than under Alternative 4 because the area is undeveloped and those

services are not already available at the project site. The purchase and/or installation of emergency generators may also be included as part of the FEMA-funded project.

Activities associated with the construction of a new stand-alone safe room may include:

- Site clearing and grubbing;
- Site grading;
- Excavation;
- Staging areas for equipment, building materials, fill, etc.;
- Delivery, installation, and connection of utilities;
- Use of construction equipment, such as backhoes, front-end loaders, compactors, trenchers, augers, trucks (concrete, delivery, dump), and air compressors; and
- Traffic to and from the project site, including worker vehicles and delivery vehicles.

Under this alternative, there will be ground-disturbing activities during construction on previously undisturbed ground. Ground disturbance is any work or activity that results in a disturbance of the earth, including excavating, digging, trenching, plowing, drilling, tunneling, backfilling, blasting, topsoil stripping, land-leveling, peat removing, quarrying, clearing, and grating. Ground disturbance actions under this alternative would be less than five (5) acres.

This alternative would also cover the funding and construction of new multi-use safe rooms in undisturbed areas where FEMA has control or influence over the siting and design of the larger facility or where the larger facility is dependent on the FEMA safe room funding for is completion.

Section Five Affected Environment and Impact Evaluation

This section discusses the baseline conditions and environmental impacts of the various alternatives. Due to the nationwide programmatic approach of this analysis, FEMA is providing a regulatory background and other special considerations for a particular resource area, as opposed to a description of the current conditions of the nation's environmental resources. In the impacts analysis for the alternatives, FEMA provides a description of the impacts of the action based on the following scale:

- No effect – no discernible effect is expected.
- Negligible effect – the effect is so small that it cannot be measured in meaningful way.
- Minor effect – the effect is measurable but would be minor.
- Moderate effect – the effect is measurable and may require mitigation to be adequately addressed.
- Significant impact – the effects meets the criteria for significance as defined in the Council on Environmental Quality's NEPA implementation regulations in 40 CFR 1508.27.

Table 5-1 establishes the criteria for determining if a proposed action is covered under the Finding of No Significant Impact (FONSI) for this PEA, or if a tiered Site-Specific Environmental Assessment (SEA) and an additional 15-day public comment period are needed. If the project meets the scope, impacts, and mitigation covered in this PEA, then no further NEPA documentation will be required.

Table 1. Thresholds for Preparing Tiered Site-Specific Environmental Assessments for Safe Room Construction

Area of Evaluation	Action Covered by this PEA	Tiered Site-Specific Environmental Assessment Required
Land Use	No impacts to land use. or The proposed action would have negligible or minor impacts to land use and would be consistent with surrounding or planned land uses. The proposed action would be consistent with respective state Coastal Zone Management plans, CBRA and FPPA. or Mitigation measures are used to reduce the level of impacts below the level of significance.	The proposed action will significantly change the surrounding land uses in the short- and long-term. or The proposed action disturbs more than 5 acres of land. or The proposed action would not be consistent with the surrounding land use and the local land use agency requires a special land use permit or waiver. or The proposed action would not be consistent with state Coastal Zone Management plans or CBRA. or The proposed action may cause significant impacts to prime and unique farmland (project scores more than 160 on Farmland Impact Conversion Rating Form AD-1006).
Geology, Soils, and Seismicity	The proposed action would have no, negligible, or minor impacts to geology, soils, and seismicity. Projects proposed in areas characterized by susceptibility to seismic, volcanic, tsunamis, landslide or mudslide activity, structural instability, excessive erodibility, or steep slopes would be implemented in accordance with local building codes and appropriate seismic design and construction standards. or Mitigation measures are used to reduce the level of impacts below the level of significance.	Impacts on geology, soils, and seismicity as a result of the proposed action may be significant. or Projects proposed in areas characterized by susceptibility to seismic, volcanic, tsunamis, landslide or mudslide activity, structural instability, excessive erodibility, or steep slopes are not mitigated. or Community safe rooms built in tsunami hazard areas. or The proposed action would disturb more than 5 acres of land.

Area of Evaluation	Action Covered by this PEA	Tiered Site-Specific Environmental Assessment Required
Water Quality and Resources	The proposed action would have no, negligible or minor impacts to water quality and would be at or below water quality standards or criteria. Localized and short-term alterations in water quality and hydrologic conditions relative to historical baseline may occur. or Mitigation measures are used to reduce the level of impacts below the level of significance.	The proposed action would cause or contribute to existing exceedances of water quality standards on either a short-term or prolonged basis. or The proposed action would disturb more than 5 acres of land.
Floodplains	Individual safe rooms covered by the class review under this PEA. or Safe rooms outside the 500 year floodplain.	Individual safe rooms not covered by the class review under this PEA. or Community safe rooms within the 100 or 500 year floodplain.
Wetlands	Proposed action is not located in and does not adversely affect wetlands.	Proposed action is located in or would adversely affect wetlands.
Biological Resources	The proposed action would have no, negligible, minor, or moderate impacts to native species, their habitats, or the natural processes sustaining them. Population levels of native species would not be affected. Sufficient habitat would remain functional to maintain viability of all species. and In regard to federally listed species and critical habitat, FEMA can make a "No Effect" determination. or FEMA can make a "Not Likely to Adversely Affect" determination along with concurrence from USFWS or NMFS. or	The proposed action may have significant impact on native species, their habitats, or the natural processes sustaining them. Population numbers, population structure, genetic variability, and other demographic factors for species might have large, short-term declines, with long-term population numbers significantly depressed. Loss of habitat would affect the long-term viability of native species. or FEMA determines that the proposed action is likely to adversely affect a listed species or will adversely modify critical habitat. or The proposed action would disturb more than 5 acres of land.

Area of Evaluation	Action Covered by this PEA	Tiered Site-Specific Environmental Assessment Required
	Mitigation measures are used to reduce the level of impacts below the level of significance.	
Human Health and Safety	Hazardous or toxic materials and/or wastes resulting from the proposed action would be safely and adequately managed in accordance with all applicable regulations and policies, with limited exposures or risks. There would be no short- or long-term adverse impacts to public safety. or Mitigation measures are used to reduce the level of impacts below the level of significance.	The proposed action would result in a net increase in the amount of hazardous or toxic materials and/or wastes to be handled, stored, used, or disposed of, resulting in unacceptable risk, exceedance of available waste disposal capacity, or probable regulatory violation(s). Public safety would be compromised and vulnerabilities would increase. or A Phase I or II environmental site assessment indicates that contamination exceeding reporting levels are present and further action is warranted.
Minority and Low-Income Populations	There would be no disproportionately high and adverse environmental or health effects to low-income and/or minority populations. or Mitigation measures are used to reduce the level of impacts below the level of significance.	There would be unmitigated disproportionately high and adverse environmental and health impacts to low-income or minority populations.
Historic Properties	No historic properties are affected. or FEMA can make a determination of "No Adverse Effect" with concurrence from SHPO/THPO.	FEMA makes an "Adverse Effect" determination with concurrence from SHPO/THPO.
Air Quality	Emissions from the proposed action for NAAQS in nonattainment and maintenance areas would be less than exceedance levels as defined in Table 5-3. Emissions in attainment areas would not cause air quality to go out of attainment for any NAAQS. or Mitigation measures are used to reduce the level of impacts below	Emissions from the proposed action for NAAQS would be greater than the exceedance levels for nonattainment and maintenance areas. Emissions in attainment areas would cause an area to be out of attainment for any NAAQS.

Area of Evaluation	Action Covered by this PEA	Tiered Site-Specific Environmental Assessment Required
	the level of significance.	
Noise	Noise levels resulting from the proposed action would not exceed typical noise levels expected from construction equipment or generators. Noise generated by construction and operation of the facility would be temporary or short-term in nature. or Mitigation measures are used to reduce the level of impacts below the level of significance.	Noise levels would exceed typical noise levels expected from construction equipment and generators on a permanent basis or for a prolonged period of time.

5.1 Land Use

5.1.1 Regulatory Framework

Land use is the way in which, and the purposes for which, people utilize the land and its resources. Land use planning varies depending on land ownership and jurisdictional boundaries. Land use within and in the immediate vicinity of urban areas is generally guided by comprehensive plans that specify the allowable types and locations of present and future land use. In most cases, that comprehensive plan is developed through a public participation process and approved by publicly-elected officials to capture local values and attitudes toward planning and future development. Zoning ordinances and regulations vary throughout the U.S. and are primarily set at the regional, city, county, or local level.

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. § 1451 *et seq*.) is administered by the Department of Commerce's Office of Ocean and Coastal Resource Management within the National Oceanic and Atmospheric Administration (NOAA). It applies to all coastal states and to all states that border the Great Lakes. The CZMA was established to help prevent any additional loss of living marine resources, wildlife, and nutrient-enriched areas; alterations in ecological systems; and decreases in undeveloped areas available for public use. The CZMA gives states the authority to determine whether activities of governmental agencies are consistent with federally-approved coastal zone management programs. Each state coastal zone management program must include provisions protecting coastal natural resources, fish, and wildlife; managing development along coastal shorelines; providing public access to the coast for recreational purposes; and incorporating public and local coordination for decision-making in coastal areas. This voluntary federal-state partnership addresses coastal development, water quality, shoreline erosion, public access, protection of natural resources, energy facility siting, and coastal hazards.

The Federal Consistency provision, contained in Section 307 of the CZMA, allows affected states to review federal activities to ensure that they are consistent with the state's coastal zone management program. This provision also applies to non-federal programs and activities that use federal funding and that require federal authorization. Any activities that may have an effect on any land or water use or on any natural resources in the coastal zone must conform to the enforceable policies of the approved state coastal zone management program. NOAA's regulations in 15 CFR 930 provide the procedures for arriving or obtaining a consistency determination.

The Coastal Barrier Resources Act (CBRA) of 1982 (16 U.S.C. § 3501 *et seq*.), administered by the U.S. Fish and Wildlife Service (USFWS), was enacted to protect sensitive and vulnerable barrier islands found along the U.S. Atlantic, Gulf, and Great Lakes coastlines. The CBRA established the Coastal Barrier Resources System (CBRS), which is composed of undeveloped coastal barrier islands, including those in the Great Lakes. With limited exceptions, areas contained within a CBRS are ineligible for direct or indirect federal funds that might support or promote coastal development, thereby discouraging development in coastal areas.

Prime and unique farmlands and farmlands of state and local importance are protected under the Farmland Protection Policy Act (FPPA) of 1981 (7 U.S.C. § 4201 *et seq*.). Prime farmland is characterized as land with the best physical and chemical characteristics for the production of food, feed, forage, fiber and oilseed crops. Prime farmland is either used for food or fiber crops or is available for those crops; it is not urban, built-up land, or water areas. Unique farmland is defined as land that is used for the production of certain high-value crops, such as citrus, tree nuts, olives, and fruits. The FPPA requires federal agencies to examine the potentially adverse effects to these resources before approving any action that would irreversibly convert farmland to non-agricultural uses. This examination is done in consultation with the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS), which uses a land evaluation and site assessment system to complete a Farmland Conversion Impact Rating Form (Form AD-1006). Federal regulations at 7 CFR 658 describe the process for this analysis.

5.1.2 Impact Evaluation

Alternative 1: No Action

No effects on land use would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A
No effects are expected to land use because these actions would occur at existing facilities. The grantee or sub-grantee will be required to obtain all necessary permits, including applicable construction permits, before initiating work. Projects will be consistent with CZMA and enforceable policies of the approved coastal zone management plans because the actions will occur in previously developed areas. FEMA will not undertake safe room construction activities in CBRS units. Actions under this alternative are not expected to convert prime and unique farmland because land would be already developed.

Type B
Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

These actions would not result in land use changes and would have no effect on land use. The grantee or sub-grantee will be required to obtain all necessary permits, including applicable construction permits, before initiating work. Construction permits may include requirements for the construction and operation of the facility to be in compliance with local zoning ordinances or in compliance with any zoning variance granted.

FEMA will not undertake safe room construction activities in CBRS units. For proposed projects within a state's designated coastal zone, the action will be consistent with CZMA and enforceable policies of the approved coastal zone management plans because the actions will occur in previously developed areas.

Actions under this alternative are not expected to convert prime and unique farmland because land would be already developed.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

These actions would not result in land use changes and would have no or negligible effect on land use. The grantee or sub-grantee will be required to obtain all necessary permits, including applicable construction permits, before initiating work. Construction permits may include requirements for the construction and operation of the facility to be in compliance with local zoning ordinances or in compliance with any zoning variance granted.

FEMA is prohibited from providing assistance for new construction activities in CBRS units. FEMA will require the grantee or sub-grantee to coordinate with the state Coastal Management Agency to obtain a consistency determination when the proposed project occurs within a state's designated coastal zone.

If a proposed new construction project will convert prime or unique farmland to non-agricultural use, FEMA will conduct the required assessment (Farmland Conversion Impact Rating Form AD-1006) and consult with NRCS when necessary. However, because actions would occur on previously disturbed land that is typically not available for agricultural use, impacts to prime or unique farmland are not anticipated.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Some actions may result in land use and/or zoning changes. Construction of a new facility may require a change in land use or zoning designation, depending on the location chosen for construction. The grantee or sub-grantee will be required to obtain all necessary permits, including applicable construction permits, before initiating work. Conditions of the permit normally specify that the proposed facility be constructed and operated in compliance with local zoning ordinances, or that a zoning variance be obtained.

FEMA is prohibited from providing assistance for new construction activities in CBRS units. FEMA will require the grantee or sub-grantee to coordinate with the state Coastal Management Agency to obtain a consistency determination when the proposed project occurs within a state's designated coastal zone.

If a proposed new construction project will convert prime or unique farmland to non-agricultural use, FEMA will conduct the required assessment (Farmland Conversion Impact Rating Form AD-1006) and consult with NRCS when necessary.

Actions that are consistent with existing land use/zoning designations, are not in CBRS units, are consistent with a state's coastal management plan, and would not convert farmland to non-agricultural use would have no, negligible, or minor effects on land use.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

5.2 Geology, Soils, and Seismicity

5.2.1 Regulatory Framework

The geology of an area refers specifically to the surface and near-surface materials of the earth and to how those materials were formed. These resources are typically described in terms of regional or local geology, including mineral resources, earth materials, soil resources, and topography.

Descriptions of these resource areas include bedrock or sediment type and structure, unique geologic features, depositional or erosional environment, and age or history. Mineral resources include usable geological materials that have some economic or academic value. Soil is the unconsolidated loose covering of broken rock particles and decaying organic matter overlying the bedrock or parent material. Soils are typically described by their complex type, slope, and physical characteristics.

Soil characteristics within an area depend on the parent material located in that area. Soil characteristics vary across the U.S. and its territories. Areas with similar soils are grouped and labeled as soil series because of their similar origins and chemical and physical properties, which cause the soils to perform similarly for land use purposes.

The geological makeup of the United States is broken down into physiographic divisions, as established by the U.S. Geological Survey (USGS). Physiographic divisions are broad-scale regions established by common terrain texture, rock type, and geologic structure and history. Geologic, topographic, and soil characteristics may impose limitations on potential uses for a particular site. Areas characterized by susceptibility to flooding, seismic or volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes may entirely preclude the implementation of a proposed project at a particular location, or may require the use of certain engineering technologies or require consultation with state or federal agencies before the proposed project may proceed.

The tsunami hazard in the U.S. is the greatest along the coasts in Washington, Oregon, California, Alaska, and Hawaii, and along the coasts of the U.S. territories in the Caribbean. Most areas considered to have a high tsunami risk have been studied, and tsunami inundation areas associated with the credible worst-case scenario have been mapped. These maps were

prepared as part of the National Tsunami Hazard Mitigation Program (NTHMP) in cooperation with affected states and communities. FEMA has recently started to evaluate tsunami hazards by performing Probabilistic Tsunami Hazard Assessments (PTHAs). Currently, FEMA's Tsunami Pilot Study Working Group is developing a methodology that identifies relevant tsunami events and then maps the corresponding 500-year inundation area and tsunami elevations. FEMA recommends that the existing maps be used to identified the extents of the tsunami hazard in a given jurisdiction until a unified set of tsunami hazard maps is available. Additional information on the mapping of tsunami inundation zones can be found at http://nthmp.tsunami.gov/. Additional information on the design and construction of structures in tsunami inundation areas can be found at FEMA P646, *Guidelines for the Design of Structures for Vertical Evacuation from Tsunamis* (FEMA 2008c).

Executive Order 12699 – Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction establishes responsibilities regarding the seismic-related safety of buildings owned, leased or funded by federal agencies. Under this EO, each federal agency responsible for the design and construction of a federal or federally-funded building must ensure that the building is designed and constructed in accordance with appropriate seismic design and construction standards. These standards are promulgated through the National Earthquake Hazard Reduction Program (NEHRP) and are subsequently incorporated into model building codes (such as the 2006 International Building Code/International Residential Code) that are used as the basis for local building codes in most municipalities. NEHRP periodically publishes new standards; the latest NEHRP standards were published in 2000 (NEHRP 2000). The EO applies to all building projects for which detailed plans and specifications were initiated subsequent to its issuance. A building means any structure, fully or partially enclosed, used or intended for sheltering persons or property.

The purposes of these requirements are to:

- Reduce the risks to persons who would be affected by the failure during an earthquake of buildings owned by the federal government, leased for federal uses, or purchased or constructed with federal assistance;

- Improve the capability of essential federal buildings to function during and after an earthquake;

- Reduce earthquake-related losses to public buildings in a cost-effective manner.

5.2.2 Impact Evaluation

Alternative 1: No Action

No effects to or from geology, soils, or seismicity would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A

Activities in areas that are not characterized by susceptibility to seismic or volcanic activity, landslides, mudslides, structural instability, excessive erodibility, or steep slopes will have no effect on or be affected by seismicity or geology.

Activities in areas characterized by susceptibility to seismic or volcanic activity, landslides, mudslides, structural instability, excessive erodibility, or steep slopes may be moderately affected by these hazard conditions. Activities must be completed in accordance with building codes of the local area and in accordance with appropriate seismic design and construction standards. Therefore, impacts from seismicity or geology would not be significant. However, construction of community safe rooms within tsunami hazard areas under this alternative will require a tiered SEA.

Activities would have no or negligible effects on soils because minimal or no ground disturbance would occur.

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure. However, construction of community safe rooms within tsunami hazard areas under this alternative will require a tiered SEA.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Activities in areas that are not characterized by susceptibility to seismic or volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes will have no effect on or be affected by seismicity or geology.

Actions characterized by susceptibility to seismic, volcanic, tsunamis, landslide or mudslide activity, structural instability, excessive erodibility, or steep slopes may result in moderate effects from geology. Actions may require the use of certain engineering technologies or require consultation with state or federal agencies before the project may proceed. All structures in areas of seismic risk that are covered by this PEA must be designed and constructed in accordance with appropriate seismic design and construction standards, which are promulgated through NEHRP. Therefore, the constructed buildings will represent a low seismic hazard to occupants. However, construction of community safe rooms within tsunami hazard areas under this alternative will require a tiered SEA.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Activities in areas that are not characterized by susceptibility to seismic or volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes will have no effect on or be affected by seismicity or geology.

Actions characterized by susceptibility to seismic, volcanic, tsunamis, landslide or mudslide activity, structural instability, excessive erodibility, or steep slopes may result in moderate effects from geology. Actions may require the use of certain engineering technologies or require consultation with state or federal agencies before the project may proceed. All structures in areas of seismic risk that are covered by this PEA must be designed and constructed in accordance with appropriate seismic design and construction standards, which are promulgated through NEHRP. Therefore, the constructed buildings will represent a low seismic hazard to occupants. However, construction of community safe rooms within tsunami hazard areas under this alternative will require a tiered SEA.

Projects under this alternative will be sited on land in a developed area that has been previously disturbed by past construction activities. Actions may result in negligible to minor effects on soils.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Activities in areas that are not characterized by susceptibility to seismic or volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes will have no effect on or be affected by seismicity or geology.

Actions characterized by susceptibility to seismic, volcanic, tsunamis, landslide or mudslide activity, structural instability, excessive erodibility, or steep slopes may result in moderate effects from geology. Actions may require the use of certain engineering technologies or require consultation with state or federal agencies before the project may proceed. All structures in areas of seismic risk that are covered by this PEA must be designed and constructed in accordance with appropriate seismic design and construction standards, which are promulgated through NEHRP. Therefore, the constructed buildings will represent a low seismic hazard to occupants. However, construction of community safe rooms within tsunami hazard areas under this alternative will require a tiered SEA.

Actions may result in minor to moderate effects on soils. Projects under this alternative will be sited on undeveloped and previously undisturbed land. Inadequate stabilization of the site may produce uncontrolled erosion that may result in the loss of topsoil, reduction of infiltration capacity, alteration of elements of the natural hydrology of the land, and adverse impacts to nearby habitat (USEPA 2007). FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 which include practices to reduce soil erosion. Actions implementing these measures will not have significant impacts on soils.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

5.3 Water Quality and Resources

5.3.1 Regulatory Framework

Water quality and resources refer to the occurrence, availability and physical, chemical, and biological characteristics of surface water and groundwater, including hydrologic properties and water quality for aquatic plant and animal communities and public water supplies. Water bodies include aquifers, springs, streams, river, lakes, reservoirs, estuaries, and near shore and offshore marine waters. Water quality encompasses the level of pollutants that affect the suitability of water for a given use. Water use classifications generally include public water supply, recreation, propagation of fish and other aquatic life, agricultural use, and industrial use. Water quality and resources are protected and regulated by many federal statutes and EOs, as well as state and local regulations and directives. Surface, ground, and coastal waters are protected from pollution originating from point sources such as sewage treatment plant discharge and industrial discharges, and from non-point sources such as runoff from urban paved areas, mines, and livestock operations. Statutes, laws, and EOs governing water resources are listed below. Wetlands and floodplains will be described separately in the following sections.

- **Federal Water Pollution Control Act of 1972 (better known as Clean Water Act [CWA]) (33 U.S.C. § 1251 *et seq*.):** This Act regulates water quality of all discharges into "waters of the United States." The CWA also establishes the National Pollutant Discharge Elimination System (NPDES) under Section 402, permits for dredged or fill material under Section 404, and state water quality certification requirements under Section 401. The NPDES Permit Program regulates wastewater discharges from point sources. An NPDES Stormwater General Construction Permit is required before construction modification activities commence at a site where more than 1 acre of land will be disturbed. Grantees and sub-grantees are responsible for obtaining any applicable NPDES permits and meeting permit conditions, which may include developing a SWPPP for the construction activity. The SWPPP would include practices to control soil erosion, sedimentation and water pollution.

- **Section 404 of the CWA: The U.S. Army Corps of Engineers (USACE) is responsible for regulating the di*sposal* of** dredged and fill materials under Section 404 of the CWA. Certain waters of the United States are considered "special aquatic sites" under the CWA because they are generally recognized as having particular ecological value. Such sites include sanctuaries and refuges, mudflats, wetlands, vegetated shallow, eelgrass beds, coral reefs, and riffle and pool complexes. Special aquatic sites are defined in the CWA and may be afforded additional consideration in the USACE permit process for a project. Section 404 permits are discussed in more detail under wetlands in Section 5.5 of this PEA. Section 401 of the CWA specifies that states must certify that any activity subject to a permit issued by a federal agency, such as a CWA Section 404 permit, meets all state water quality standards.

- **Safe Drinking Water Act (SDWA) of 1974 (42 U.S.C. § 300f *et seq*.):** The U.S. Environmental Protection Agency (USEPA) regulates primary drinking water supplies under the SDWA. These regulations were established to protect public health and prescribe

requirements for state programs to implement the public water supply supervisor program and underground injection control program under the authority of SDWA.

- **Sole Source Aquifers (42 U.S.C. § 300h-3(e)):** The SDWA authorizes USEPA to designate aquifers that are the sole or principal source of drinking water for an area. To meet the criteria for designation, a sole-source aquifer must supply at least 50 percent of the drinking water to persons living over the aquifer and no feasible alternate source of drinking water is available. Once an aquifer is designated, USEPA can review proposed projects that are to receive federal funds and that have the potential to contaminate the aquifer. Federal agencies cannot provide financial assistance to a project for which the USEPA finds that it would create a significant hazard to public health by contaminating a designated soul source aquifer.

- **Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 U.S.C. § 401 *et seq*.):** This Act requires authorization from the USACE for construction activities in or near any navigable water of the United States.

- **Wild and Scenic Rivers Act (WSRA) of 1968 (16 U.S.C. § 1271 *et seq*.):** This Act preserves selected rivers in a free-flowing condition and protects their local environments.

- **Oil Pollution Prevention Act (OPA) of 1990 (33 U.S.C. § 2701 *et seq*.):** This Act requires facilities with aboveground storage capacity of more than 1,320 gallons or completely buried capacity of more than 42,000 to develop, amend, and implement Spill Prevention, Control, and Countermeasure (SPCC) plans to address the potential discharge of oil into waters of the United States.

Table 5-2 shows the most common water pollutants associated with construction activities.

Table 2. Common Water Pollutants Associated with Construction Activities

Construction Site Pollutants									
		Other Pollutants							
Areas of Consideration	Primary Pollutant: Sediment	Nutrients	Heavy metals	pH (acids & bases)	Pesticides & herbicides	Oil & grease	Bacteria & viruses	Trash, debris, solids	Other toxic chemicals
Clearing, grading, excavating, and unstabilized areas	✓							✓	
Paving operations	✓							✓	
Concrete washout and waste			✓	✓				✓	
Structure construction/ painting/cleaning		✓		✓				✓	✓
Demolition and debris disposal	✓							✓	
Dewatering operations	✓	✓							
Drilling and blasting operations	✓			✓				✓	
Material delivery and storage	✓	✓	✓	✓	✓	✓		✓	✓
Material use during building process		✓	✓	✓	✓	✓		✓	✓
Solid waste (trash and debris)								✓	✓
Hazardous waste			✓	✓	✓	✓			✓
Contaminated spills		✓	✓	✓	✓	✓			✓
Sanitary/septic waste		✓		✓			✓		✓
Vehicle/equipment fueling and maintenance						✓			✓
Vehicle/equipment use and storage						✓			✓
Landscaping operations	✓	✓						✓	

Source: USEPA 2007.

5.3.2 Impacts Evaluation

Alternative 1: No Action

No effects on water quality and resources would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A
Activities are anticipated to have no effect on water quality and resources because minimal or no ground disturbance would occur.

Type B
Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Actions may result in negligible to minor temporary effects on water quality and resources. Uncontrolled stormwater pollution, erosion and sedimentation can result in the pollution of waters of the U.S. (EPA 2007). FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 which include practices to reduce impacts on water quality and resources.

Construction activities located in or near a water body may require an RHA Section 10 or a CWA Section 404 permit from the USACE. The permits would identify measures that must be implemented to minimize erosion and runoff, such as the use of silt fencing, rip-rap, and other erosion-prevention methods.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Actions may result in negligible to moderate temporary effects on water quality and resources. Uncontrolled stormwater pollution, erosion and sedimentation can result in the pollution of waters of the U.S. (EPA 2007). Construction that disturbs more than one (1) acre will require an NPDES stormwater permit from either an authorized state department of environmental quality or from the USEPA, in cases where authority for CWA permitting has not been delegated to the state or tribal entity. FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 which include practices to reduce impacts on water quality and resources.

Construction activities located in or near a water body may require a RHA Section 10 or a CWA Section 404 permit from the USACE. The permits would identify measures that must be implemented to minimize erosion and runoff, such as the use of silt fencing, rip-rap, and other erosion-prevention methods.

Construction activities affecting more than an acre but less than 5 acres may require a general construction permit under Section 402 of CWA. This permit would be granted by the state or Tribal environmental quality agency with delegated authority from the USEPA or the USEPA if the state or tribe does not have delegation. Some states regulate and require permits for construction activities affecting more than ½ of an acre. The general mitigation measures for ground-disturbing activities in Section 7 of this PEA capture the majority of best management practices required under these types of permits to control water pollution associated with the construction. With these measures impacts from the construction activities to water quality would be negligible to minor.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Some actions may involve removal of vegetation including woody vegetation. Inadequate stabilization of the construction site may produce uncontrolled erosion that may result in the loss of topsoil, reduction of infiltration capacity, alteration of elements of the natural hydrology of the land, and adverse impacts to nearby habitat (USEPA 2007). This may result in moderate effects to water quality and resources. FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 which include practices to reduce impacts on water quality and resources. In addition, construction that disturbs more than one (1) acre will require an NPDES stormwater permit.

Construction activities located in or near a water body may require an RHA Section 10 or a CWA Section 404 permit from the USACE. The permits would identify measures that must be implemented to minimize erosion and runoff, such as the use of silt fencing, rip-rap, and other erosion-prevention methods.

Construction activities affecting more than an acre but less than 5 acres may require a general construction permit under Section 402 of CWA. This permit would be granted by the state or tribal environmental quality agency with delegated authority from the USEPA or the USEPA if the state or tribe does not have delegation. Some states regulate and require permits for construction activities affecting more than ½ of an acre. The general mitigation measures for ground-disturbing activities in Section 7 of this PEA capture the majority of best management practices required under these types of permits to control water pollution associated with the construction. With these measures impacts from the construction activities to water quality would be negligible to minor.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

5.4 Floodplains

5.4.1 Regulatory Framework

Floodplains are the lowland and relatively flat areas adjoining inland and coastal waters including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year. Floodplains perform a variety of essential functions including floodwater conveyance and storage, groundwater recharge, wave attenuation, streambank erosion, reduction in sedimentation rates, water quality maintenance, and support of highly productive ecosystems.

Most floodplains are adjacent to streams, lakes, or oceans. Beaches and small river valleys are usually easily recognizable as floodplains, but less obvious floodplains occur in dry washes and on alluvial fans in arid parts of the western United States, around prairie potholes, in areas subject to high groundwater levels, and in low lying areas where water may accumulate. Sheet flooding and ponding occur in areas where there is no clearly defined channel and the path of flooding is unpredictable.

FEMA is charged with the implementation of the National Flood Insurance Act (NFIA) as amended. The NFIA creates the National Flood Insurance Program (NFIP), makes flood insurance available for structures within communities participating in the NFIP, and requires the acquisition of flood insurance for structures in special flood hazard areas as a pre-condition of receiving federal assistance. As part of its implementation of the NFIP, FEMA identifies special flood hazard areas in Flood Insurance Rate Maps (FIRMs) and requires communities to adopt local floodplain ordinances that meet, at a minimum, FEMA's floodplain management criteria in 44 CFR 60 *et seq*.

Executive Order 11988 – Floodplain Management was issued in 1977 to eliminate the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative for locating a project outside of the floodplain. EO 11988 applies to federally-funded projects and directs agencies to consider alternatives to siting projects within a floodplain. FEMA's regulations in 44 CFR Part 9 implement EO 11988 for the agency. These regulations require FEMA to engage in an 8-step decision-making process before undertaking an action within the floodplain or that would be affected by the floodplain. These steps involve: (1) determination that the action is in the floodplain, would affect the 100-year floodplain, or would indirectly support development in the floodplain; (2) early public notice; (3) identification and evaluation of alternatives to locating in the floodplain; (4) identification of the impacts of the proposed action; (5) selection of minimization, restoration and preservation measures; (6) reevaluation of alternatives; (7) publication of findings and public explanation; and (8) implementation of the action. For critical actions at facilities such as emergency operation centers, communication towers, hazardous waste facilities, hospitals, or utility plants, FEMA must identify practicable alternatives outside the 500-year floodplain.

If no practicable alternatives exist to constructing a facility and/or supporting features, outside the floodplain, FEMA is required to minimize the impacts to the floodplain and the impacts from

floods to the facility. Minimization measures apply to the location of structures, equipment, and building contents in floodplain areas. They include elevating facilities above the base flood elevation or flood-proofing structures.

FEMA does not support the placement of safe rooms where floodwaters have the potential to endanger occupants. Sites susceptible to flooding are not suitable for safe rooms because of the dangers flooding may pose for the occupants and because flooding can isolate the facility and its occupants, or make it inaccessible in an emergency.

Consistent with the mandate in EO 11988 and 44 CFR Part 9, FEMA has established limitations on the siting and approval of safe rooms in special flood hazard areas. See Publications 320 (Section II, pages 23 and 24) and 361 (Chapter 3, pages 3-28 through 3-33 and Chapter 5, pages 5-14 through 5-17). FEMA will not fund the placement of residential, non-residential and community safe rooms within the following high hazard areas:

- The Coastal High Hazard Area (VE zones) or other areas known to be subject to high-velocity wave action;
- Areas seaward of the Limit of Moderate Wave Action (LiMWA) where mapped, also referred to as the Coastal A Zone in ASCE 24-05;
- Floodways.

In addition, FEMA will not fund the placement of individual safe rooms (residential and non-residential) within:

- Areas subject to coastal storm surge inundation associated with a Category 5 hurricane (where applicable, these areas should be mapped areas studied by the U.S. Army Corps of Engineers (USACE), NOAA, or other qualified sources).

FEMA considers community safe rooms under FEMA Publication 361 critical facilities under EO 11988 and 44 CFR Part 9. When it is determined that locating a community safe room outside the 500-year floodplain is not practicable, the facility must follow the minimization requirements in FEMA Publication 361 (Chapter 3). These include:

- The safe room should be located in the least hazardous portion of the 500-year floodplain, first,
- If this is not practicable, the safe room must be located in the least hazardous portion of the 100-year floodplain,
- The safe room must be elevated in a manner that the lowest floor used for safe room space and/or safe room support area is above **the higher** of the following elevations:
    i. Two feet above the base flood elevation (BFE),
    ii. Stillwater elevation associated with the 500-year floodplain,
    iii. The lowest floor elevation required by the community's floodplain ordinance,

iv. Two feet above the highest flood elevation in an area, if the area is designated as Zone D on a FIRM or Flood Hazard Boundary Map, or if the area has not been evaluated as part of an NFIP flood study (or equivalent flood study),

v. If in an area subject to coastal storm surge inundation:
   1. The maximum stillwater inundation elevation associated with a Category 5 hurricane,
   2. The wave crest elevation having a 0.2 percent annual chance of being equaled or exceeded in any given year

All community safe rooms subject to flooding, including any foundation or building component supporting the safe room, should be designed in accordance with the provisions of FEMA Publications 361, ASCE 7-05, and ASCE 24-05.

Class Review for Residential and Non-Residential Safe Rooms

Over the years FEMA has evaluated and funded a substantial number of individual safe rooms. Of approximately 18,320 of these projects FEMA has funded approximately 2,000 in the floodplain (11%). As part of its evaluation FEMA engaged in the 8-step decisionmaking process before approving these facilities. FEMA recognizes the hazard risk created by locating individual safe rooms in the floodplain. These safe rooms can extend the life of a structure in the floodplain, maintaining the investment and property at risk. They may also contribute to the debris problems associated with flooding. Flooding of these facilities can affect indoor environmental quality conditions, like the development of mold for example, and expose its users to these conditions if they are not adequately addressed in the aftermath of a flood event. Safe rooms in the floodplain may create a false sense of security from flood hazards during extreme wind events. For these reasons, FEMA discourages the siting of these safe rooms in special flood hazard areas. However, FEMA also recognizes that construction of these types of safe rooms in the floodplain is unavoidable, particularly in the Midwest where extreme wind events are frequent. Given that these facilities will be associated with structures that already occupy the floodplain and are necessary to protect citizens from extreme wind events regardless of their presence in the floodplain, FEMA will continue to support the placement of these facilities in the floodplain where no practicable alternative exists and the project meets the following conditions:

- The lowest floor of the safe room should be elevated to the highest of:
  i. Two feet above the BFE,
  ii. Sillwater elevation associated with the 500-year floodplain,
  iii. The lowest floor elevation required by the community's floodplain ordinance
- If the site where the safe room will be placed is not mapped or studied as part of an NFIP flood study (or equivalent flood study), the lowest floor of the safe room should be elevated 2 feet above the flood elevation corresponding to the to the highest recorded flood elevation.

FEMA Publication 320 safe rooms meeting these minimization requirements and that are outside the coastal high hazard area, areas seaward of the LiMWA, floodways, and areas subject to coastal storm surge inundation associated with a Category 5 hurricane, are part of this EO 11988 class review and will not require Steps 2 – early public notification, 4 – evaluation of impacts, 5 - minimization, 6 – re-evaluation of alternatives, and 7 – final notification. However, these safe rooms will continue to require Step 1 – determination of whether they are in the floodplain (including determination of whether they constitute a critical action on a case-by-case basis), Step 3 – identification of practicable alternatives, and Step 8 – implementation and monitoring.

5.4.2 Impacts Evaluation

Alternative 1: No Action

No effects on or from floodplains would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Activities that are not located in the floodplain would have no effect on and would not be affected by the floodplain.

Type A

Impacts of safe rooms in the floodplain are expected to be minor to moderate. These safe rooms can extend the life of a structure in the floodplain, maintaining the investment and property at risk. They may also contribute to the debris problems associated with flooding. Flooding of these facilities can affect indoor environmental quality conditions, like the development of mold for example, and expose its users to these conditions if they are not adequately addressed in the aftermath of a flood event. Safe rooms in the floodplain may create a false sense of security from flood hazards during extreme wind events. Safe rooms that meet the public infrastructure definition under FEMA's Public Assistance may be eligible for disaster assistance increasing the need for disaster assistance in the affected area.

Community safe rooms located within the 100-year and 500-year floodplain will require a tiered SEA focused on the 8-step decisonmaking process. As mentioned above, community or individual safe rooms that would be sited in coastal high hazard areas, floodways, or areas seaward of the LiMWA will not be eligible for FEMA hazard mitigation funding. In addition, no individual safe room that would be sited in areas subject to the coastal storm surge inundation associated with a Category 5 hurricane would be eligible for hazard mitigation funding.

FEMA will require the flood hazard minimization measures identified in 5.4.1. With these measures impacts of safe rooms to and from floodplains are expected to be minor to moderate.

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Impacts of safe rooms in the floodplain are expected to be minor to moderate. These safe rooms can place investment and property at risk of floods. They may also contribute to the debris problems associated with flooding. Flooding of these facilities can affect indoor environmental quality conditions, like the development of mold for example, and expose its users to these conditions if they are not adequately addressed in the aftermath of a flood event. Safe rooms in the floodplain may create a false sense of security from flood hazards during extreme wind events. Safe rooms that meet the public infrastructure definition under FEMA's Public Assistance may be eligible for disaster assistance increasing the need for disaster assistance in the affected area.

Community safe rooms located within the 100-year and 500-year floodplain will require a tiered SEA focused on the 8-step decisonmaking process. As mentioned above, community or individual safe rooms that would be sited in coastal high hazard areas, floodways, or areas seaward of the LiMWA will not be eligible for FEMA hazard mitigation funding. In addition, no individual safe room that would be sited in areas subject to the coastal storm surge inundation associated with a Category 5 hurricane would be eligible for hazard mitigation funding. This includes FEMA funding of safe room construction associated with new construction or substantial improvement that is funded by other sources.

FEMA will require the flood hazard minimization measures identified in 5.4.1. With these measures impacts of safe rooms to and from floodplains are expected to be minor to moderate.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Activities that are not located in the floodplain would have no effect on and would not be affected by the floodplain.

Impacts of safe rooms in the floodplain are expected to be minor to moderate. These safe rooms can extend the life of existing buildings in the floodplain, maintaining investment and property at risk. They may also contribute to the debris problems associated with flooding. Flooding of these facilities can affect indoor environmental quality conditions, like the development of mold for example, and expose its users to these conditions if they are not adequately addressed in the aftermath of a flood event. Safe rooms in the floodplain may create a false sense of security from flood hazards during extreme wind events. Safe rooms that meet the public infrastructure definition under FEMA's Public Assistance may be eligible for disaster assistance increasing the need for disaster assistance in the affected area.

Community safe rooms located within the 100-year and 500-year floodplain will require a tiered SEA focused on the 8-step decisonmaking process. As mentioned above, community or individual safe rooms that would be sited in coastal high hazard areas, floodways, or areas seaward of the LiMWA will not be eligible for FEMA hazard mitigation funding. In addition, no individual safe room that would be sited in areas subject to the coastal storm surge inundation associated with a Category 5 hurricane would be eligible for hazard mitigation funding. This includes adding a safe room to an existing building beyond its original footprint.

FEMA will require the flood hazard minimization measures identified in 5.4.1. With these measures impacts of safe rooms to and from floodplains are expected to be minor to moderate.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Activities that are not located in the floodplain would have no effect on and would not be affected by the floodplain.

Impacts of safe rooms in the floodplain are expected to be minor to moderate. These safe rooms can place investment and property at risk of floods. They may also contribute to the debris problems associated with flooding. Flooding of these facilities can affect indoor environmental quality conditions, like the development of mold for example, and expose its users to these conditions if they are not adequately addressed in the aftermath of a flood event. Safe rooms in the floodplain may create a false sense of security from flood hazards during extreme wind events. Safe rooms that meet the public infrastructure definition under FEMA's Public Assistance may be eligible for disaster assistance increasing the need for disaster assistance in the affected area.

Community safe rooms located within the 100-year and 500-year floodplain will require a tiered SEA focused on the 8-step decisonmaking process. As mentioned above, community or individual safe rooms that would be sited in coastal high hazard areas, floodways, or areas seaward of the LiMWA will not be eligible for FEMA hazard mitigation funding. In addition, no individual safe room that would be sited in areas subject to the coastal storm surge inundation associated with a Category 5 hurricane would be eligible for hazard mitigation funding. This includes construction of safe rooms in previously disturbed areas.

FEMA will require the flood hazard minimization measures identified in 5.4.1. With these measures impacts of safe rooms to and from floodplains are expected to be minor to moderate.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Activities that are not located in the floodplain would have no effect on and would not be affected by the floodplain.

Impacts of safe rooms in the floodplain are expected to be minor to moderate. These safe rooms can place investment and property at risk of floods. They may also contribute to the debris problems associated with flooding. Flooding of these facilities can affect indoor environmental quality conditions, like the development of mold for example, and expose its users to these conditions if they are not adequately addressed in the aftermath of a flood event. Safe rooms in the floodplain may create a false sense of security from flood hazards during extreme wind events. Safe rooms that meet the public infrastructure definition under FEMA's Public Assistance may be eligible for disaster assistance increasing the need for disaster assistance in the affected area.

Community safe rooms located within the 100-year and 500-year floodplain will require a tiered SEA focused on the 8-step decisonmaking process. As mentioned above, community or individual safe rooms that would be sited in coastal high hazard areas, floodways, or areas seaward of the LiMWA will not be eligible for FEMA hazard mitigation funding. In addition, no individual safe room that would be sited in areas subject to the coastal storm surge inundation associated with a Category 5 hurricane would be eligible for hazard mitigation funding.

FEMA will require the flood hazard minimization measures identified in 5.4.1. With these measures impacts of safe rooms to and from floodplains are expected to be minor to moderate.

5.5 Wetlands

5.5.1 Regulatory Framework

Wetlands are areas which are inundated or saturated by surface or ground water with a frequency sufficient to support, or that under normal hydrological conditions does or would support, a prevalence of vegetation or aquatic life typically adapted for these soil conditions. Examples of wetlands include swamps, marshes, estuaries, bogs, beaches, wet meadows, sloughs, mud flats, among others.

Wetlands have important ecological functions and are biologically diverse. They assimilate nutrients in surrounding surface waters, remove suspended solids and pollutants from stormwater, and protect shorelines from wind and wave action and storm-generated forces. Actions that would impact wetlands would require review under several regulatory programs. These programs are listed below.

- **Section 404 of the CWA:** Formal legal protection of jurisdictional wetlands is promulgated through Section 404 of the CWA. A dredge and fill permit for activities in waters of the United States including wetlands from the USACE is required if an action has the potential to adversely affect jurisdictional wetlands. There are several Nationwide Permits (NWP) for activities in waters of the U.S. that may cover specific aspects of the development of the proposed activities. For example, NWP 3 (Maintenance) may apply to activities related to the repair, rehabilitation, or replacement of an existing structure; NWP 12 (Utility Line Activities) or NWP 14 (Linear Transportation Projects) may apply to the construction of utility lines and access roads for new facilities; NWP 18 (Minor Discharges) or NWP 19 (Minor Dredging) may apply to many sites where water impacts are minimal; and NWP 39 (Commercial and Institutional Developments) may apply to actions involving the expansion or construction of security facilities. The NWP program has numerous guidelines and conditions that must be met for an activity to qualify for a permit. NWPs are subject to review by the states under Section 401 of the CWA, as are all aspects of the USACE permitting program. Various USACE Districts also have Regional General Permits that function similarly to NWPs; however, Regional General Permits are typically more specific in the types of actions that they cover and typically necessitate more stringent conditions and

reporting requirements. If none of the NWPs apply to the proposed activity and no applicable Regional General Permit exists, then FEMA may have to acquire an Individual Permit from the USACE.

- **Section 401 of the CWA:** Each state has an opportunity to establish specific criteria for water quality protection under this section of this Act. These provisions must be satisfied prior to issuance of permits under Sections 402 and 404 of the CWA.

- **Executive Order 11990 – Protection of Wetlands:** This EO, issued in 1977, requires that all federally funded, permitted, or sponsored projects affecting wetlands demonstrate that there are no practicable alternatives, and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

FEMA's implementation of EO 11990 is described in 44 CFR Part 9. Under this regulation, FEMA is required to engage in the 8-step decision-making process to ensure that proposed activities are consistent with EO 11990 and to evaluate the potential effects of an action on wetlands. The 8-step process includes using minimization measures when a project affecting a wetland is the only practicable alternative. Minimization measures include avoidance techniques such as establishing wetland buffer zones to avoid converting or filling wetlands and obtaining and complying with NPDES permits. Grantees and sub-grantees are responsible for obtaining any applicable NPDES permits and meeting permit conditions, which may include developing a SWPPP for the construction activity. The SWPPP would include practices to control soil erosion, sedimentation and water pollution that may affect wetlands. In addition to complying with 44 CFR Part 9, the grantee or sub-grantee must obtain the applicable CWA Section 404 permit prior to the initiation of the project if it will affect jurisdictional wetlands. The grantee or sub-grantee must coordinate with USACE to determine whether any of the NWPs or a Regional General Permit apply or whether an Individual Permit is required. Proposed projects that require an Individual Permit will require close coordination between the grantee or sub-grantee, FEMA and USACE. The grantee or sub-grantee is required to comply with all conditions of the 404 general or individual permit, which may include compensation measures, such as wetlands banking, for any loss of wetlands.

5.5.2 Impacts Evaluation

Alternative 1: No Action

No effects on wetlands would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A
Activities under this alternative are not anticipated to have impacts on wetlands because no or minimal ground disturbance would occur.

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

If the proposed action is not located in or adjacent to a wetland, there will be no effect. Activities located in or adversely affecting wetlands will require a tiered SEA focused on the 8-step decisionmaking process. Site-specific impacts to wetlands, permit requirements, and mitigation measures will be determined through that process.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

If the proposed action is not located in or adjacent to a wetland, there will be no effect. Activities located in or adversely affecting wetlands will require a tiered SEA focused on the 8-step decisionmaking process. Site-specific impacts to wetlands, permit requirements, and mitigation measures will be determined through that process.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

If the proposed action is not located in or adjacent to a wetland, there will be no effect. Activities located in or adversely affecting wetlands will require a tiered SEA focused on the 8-step decisionmaking process. Site-specific impacts to wetlands, permit requirements, and mitigation measures will be determined through that process.

5.6 Biological Resources

5.6.1 Regulatory Framework

Biological resources include animals, plants, and their habitats. In general, biological resources can include native and introduced plants that comprise the various habitats, animals present in such habitats, and natural areas that help support these plant and wildlife populations. Protected or sensitive biological resources include plant and animal species listed as threatened or endangered by USFWS, National Marine Fisheries Service (NMFS), or a state.

Vegetation

Vegetation can be characterized as tundra, forest (coniferous and broadleaf/mixed), grasslands and savannas, and desert. The potential for an area to provide and be used as wildlife habitat is based on several factors, including topography, vegetative cover and type, water availability, aerial extent, connectedness, and interferences attributable to human activity.

Terrestrial Wildlife and Aquatic Resources

Terrestrial wildlife species distribution and abundance are heavily influenced by available habitat. Available habitat and vegetative communities vary significantly across the U.S. and its territories even within short distances. Site-specific information is needed to determine project-specific impacts on wildlife species. Therefore, the focus of the baseline discussion is on compliance with existing laws and EOs regarding terrestrial wildlife.

In general, aquatic resources that could be affected by project activities are limited to water bodies located down gradient of a project site. Waterside structures also have potential to directly affect a water body through the placement of pilings, docks, etc. Both the distribution and abundance of aquatic species can be influenced by factors such as water quality (including temperature), land use practices within the watershed, and the presence of other aquatic species, especially non-native exotic species. Again, because potential project sites are located across the U.S. and its territories, providing baseline information for all aquatic ecosystems that could be located down gradient of project sites is beyond the scope of this PEA.

Examples of laws and EOs governing terrestrial wildlife and aquatic species are listed below.

- **Endangered Species Act (ESA) of 1973 (16 U.S.C. § 1531 *et seq*.):** This Act prohibits any actions that may harm or jeopardize the continued existence of any threatened or endangered species, or critical habitat. This is discussed in greater detail below.

- **Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. § 668 *et seq*.):** This Act prohibits the taking or possession of and commerce in bald eagle and golden eagles with limited exceptions.

- **Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. § 703 *et seq*.):**The Migratory Bird Treaty Act makes it unlawful for any individual to take, possess, buy, sell, purchase, or barter any migratory bird, including feathers or other parts, nests, eggs, or products, except as allowed by implementation regulations. It has been extended to include almost all birds that have the ability to seasonally relocate within various part of the U.S. A list of migratory birds can be found in 50 CFR Part 10.13 and at *http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtandx.html*.

- **Executive Order 12186 – Responsibilities of Federal Agencies to Protect Migratory Birds:** EO 13186 directs federal agencies whose activities have or are likely to have a measurable, negative effect on migratory bird populations to develop and implement a Memorandum of Understanding (MOU) with USFWS that will promote the conservation of migratory birds. Activities subject to the EO 12186 may include implementation of agency programs.

- **EO 13112 – Invasive Species:** EO 13112 was created to prevent the introduction of invasive species and to provide for their control. Under this EO federal agencies can not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the U.S.

The regulatory environment is an important consideration in reviewing the potential adverse impacts of activities proposed. The applicability of these requirements changes based on site-specific circumstances; project scope; federal, state, and local government programs; level of federal involvement; proximity of the biological resource(s) to a proposed project area; and land ownership. Developing an accurate portrayal of the regulatory environment affecting each proposed action is therefore essential in evaluating requirements for biological resource protection. Site-specific evaluation and a full understanding of the federal, state, and local requirements are necessary.

Listed Species, Critical Habitat, and Special-Status Species

Activities by humans, such as over-harvesting, spreading of invasive exotic species, uncontrolled development resulting in the destruction of habitat, and the release of contaminants into the air, water, and soil, have resulted in significant reductions in the abundance and distribution of native species with numerous species nearing extinction or becoming extinct. Regulatory programs, both federal and state, have been enacted in an attempt to prevent extinction of threatened and endangered species. Threatened and endangered species are broadly distributed throughout the U.S. and its territories. There are over 1,300 federally listed threatened and endangered species. Identifying and discussing each, as well as their habitat requirements, is beyond the scope of this PEA.

The ESA requires federal agencies to conserve those plants and animal species that have been listed as endangered and threatened species by the USFWS or NMFS and critical habitats designated by these agencies. It defines an endangered species as any species in danger of extinction throughout all or a significant area of its range and a threatened species as any species likely to become endangered in the near future. It also defines critical habitat as those geographical areas that contain physical or biological features that are essential to the conservation of the species. Under Section 7 of the ESA, federal agencies, in coordination with USFWS or NMFS, must ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species (i.e., a listed species) or result in the destruction or adverse modification of critical habitat.

USFWS and NMFS are responsible for compiling the lists of threatened and endangered species. If a Proposed Action is likely to adversely affect a listed species or critical habitat, the federal agency must prepare a Biological Assessment (BA) and initiate a formal consultation with USFWS or NMFS. After reviewing the BA, USFWS or NMFS prepares a Biological Opinion stating whether the Proposed Action is likely to jeopardize the continued existence of a listed species or cause the destruction or adverse modification of critical habitat. If this is the case, the Biological Opinion will provide the federal agency with Reasonable Prudent Alternatives that, if adopted, would avoid a jeopardy or adverse modification determination. The purpose of the consultation process is to ensure avoidance and minimization of potential adverse impacts on a listed species or critical habitats. Formal consultation is not required if the federal agency determines that the action would have no effect on endangered or threatened species or designated critical habitat. Formal consultation is also not needed if the federal agencies agree that the Proposed Action is not likely to adversely affect listed species. In addition, the ESA prohibits all persons subject to U.S. jurisdiction, including federal agencies, from, among other

things, "taking" endangered or threatened species. The "taking" prohibition includes any harm or harassment and applies in the United States and on the high seas.

Many states have designated special-status species and provide some level of legal protection for these species. The special-status species frequently overlap with those listed under the federal ESA. However, species lists developed by the states frequently are more inclusive.

5.6.2 Impacts Evaluation

Alternative 1: No Action

No effects on vegetation, fish and wildlife, endangered or threatened species or critical habitat would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A
Activities would have no effect on vegetation, fish and wildlife, endangered or threatened species, or critical habitat because they would occur at existing facilities.

Type B
Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Activities could have no to moderate effects on vegetation, fish and wildlife, endangered or threatened species, and critical habitat, depending on whether or not these resources are present at the project site.

FEMA will not be able to determine whether the effects of a specific activity to a listed species, critical habitat, or special status species are significant without an appropriate site-specific evaluation, which may include coordination with USFWS or NMFS. If FEMA is able to make a No Effect determination or a Not Likely to Adversely Affect determination (with the concurrence of USFWS or NMFS), then the activity is expected to have no effects to moderate effects on these resources. If formal consultation with USFWS or NMFS is required under Section 7 of the ESA, then FEMA will document the results of that consultation process in a tiered SEA.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 of this PEA to reduce impacts to vegetation and water resources and water quality.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Activities could have no to moderate effects on vegetation, fish and wildlife, endangered or threatened species, and critical habitat, depending on whether or not these resources are present at the project site.

FEMA will not be able to determine whether the effects of a specific activity to a listed species, critical habitat, or special status species are significant without an appropriate site-specific evaluation, which may include coordination with USFWS or NMFS. If FEMA is able to make a No Effect determination or a Not Likely to Adversely Affect determination (with the concurrence of USFWS or NMFS), then the activity is expected to have no effects to moderate effects on these resources. If formal consultation with USFWS or NMFS is required under Section 7 of the ESA, then FEMA will document the results of that consultation process in a tiered SEA.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 of this PEA to reduce impacts to vegetation and water resources and water quality.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Activities could have minor to moderate effects on vegetation, fish and wildlife, endangered or threatened species, and critical habitat, depending on whether or not these resources are present at the project site.

If an activity involves work in a forested area or special status area such as a floodplain, wetland, forest or wildlife refuge, the project may have adverse effects on wildlife such as displacement, loss of foraging habitat, or fragmentation of habitat. Projects within or affecting floodplains or wetlands may have adverse impacts to aquatic wildlife, their habitat, and other species that depend on the floodplain or wetland at some point in their lifecycle. Construction-related noise may disturb sensitive species. Impacts may be short-term and limited to the construction period, or they may be long-term, such as permanent displacement of a species or loss of habitat due to construction of a new facility.

FEMA will not be able to determine whether the effects of a specific activity to a listed species, critical habitat, or special status species are significant without an appropriate site-specific evaluation, which may include coordination with USFWS or NMFS. If FEMA is able to make a No Effect determination or a Not Likely to Adversely Affect determination (with the concurrence of USFWS or NMFS), then the activity is expected to have no effects to moderate

effects on these resources. If formal consultation with USFWS or NMFS is required under Section 7 of the ESA, then FEMA will document the results of that consultation process in a tiered SEA.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 of this PEA to reduce impacts to vegetation and water resources and water quality.

Actions involving more than five (5) acres of ground disturbance will require a tiered SEA.

5.7 Human Health and Safety

5.7.1 Regulatory Framework

Safety issues considered in this PEA include the health and safety of the public-at-large, including children, and the protection of personnel involved in activities related to the construction of safe rooms. In addition, hazardous materials are considered in this section.

Hazardous substances are defined as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health and the environment. Improper management and disposal of hazardous substances can lead to pollution of groundwater or other drinking water supplies, and the contamination of surface water and soil. Federal laws and subsequent regulations governing the assessment, transportation, and disposal of hazardous materials and wastes include the Resource Conservation and Recovery Act (RCRA); the RCRA Hazardous and Solid Waste Amendments; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the Toxic Substances Control Act (TSCA); and the CAA.

RCRA establishes national goals to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner. RCRA outlines duties and responsibilities for hazardous waste generators, transporters, storers, treaters, and disposers of hazardous waste. RCRA requires the regulation of underground storage tanks (UST), imposing structural integrity and management practice requirements.

Waste management regulations by USEPA are codified at 40 CFR Parts 239–282; regulations for management of hazardous waste begin at 40 CFR Part 260. Nearly all developed areas in the continental U.S. have solid waste management services or programs, with municipal solid waste generally regulated and managed at the state and community level. States have enacted laws and promulgated regulations that are at least as stringent as the federal regulations. In addition, states have the authority to carry out many of the functions of RCRA through their own hazardous waste programs (and state laws), if such programs have been approved (authorized) by USEPA.

CERCLA, commonly known as Superfund, provides federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA authorizes two kinds of response actions: short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response; and long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on USEPA's National Priorities List (NPL). Superfund site identification, monitoring, and response activities in states are coordinated through the state environmental protection or waste management agencies.

The Small Business Liability Relief and Revitalization Act (the Brownfield Amendments) clarified CERCLA liability provisions for prospective property owners. If the prospective property owners meet the specific provisions of the act, including an adequate inquiry on past uses of the property, the prospective landowner will be able to assert the innocent landowner defense, contiguous property exemption, and bona fide prospective purchaser exemption to CERCLA liability. The USEPA has published the final "all appropriate inquiries" rule (40 C.F.R. 312.10) that establishes the criteria for conducting environmental site assessments on properties considered for acquisition. In a Phase I environmental site assessment a certified environmental professional conducts title searches, historic documentation searches, interviews with previous land owners, and site surveys to determine if the site or property contains or at any point contained recognized environmental conditions. A Phase II environmental site assessment is conducted when more invasive methods, such as soil and water sampling and borings, are needed to determine if recognized environmental condition exist or when a determination of the extent of the contamination is needed. A Phase III environmental site assessment and remediation is a more invasive process that initiates the process for cleaning up identified hazardous substances.

TSCA gives USEPA the ability to track the approximately 75,000 industrial chemicals currently produced or imported into the U.S. USEPA repeatedly screens these chemicals, and can require reporting or testing of those that may pose an environmental or human-health hazard. USEPA may ban the manufacture and import of those chemicals that pose an unreasonable risk and control these chemicals as necessary to protect human health and the environment.

Section 112 of the CAA requires the USEPA to develop emission standards for hazardous air pollutants. In response to this section, the USEPA published a list of hazardous air pollutants and promulgated the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations. Because lead and asbestos present a substantial risk to human health as a result of air emissions from one or more source categories, they are considered hazardous air pollutants and, thus, hazardous materials. The Asbestos NESHAP (40 CFR 61, Subpart M) addresses milling, manufacturing, and fabricating operations, demolition and renovation activities, waste disposal issues, active and inactive waste disposal sites, and asbestos conversion processes.
Evaluations of hazardous substances and wastes must consider whether any hazardous material will be generated by the proposed activity and whether a hazardous material already exists at the site or in the general vicinity of the site.

5.7.2 Impacts Evaluation

Alternative 1: No Action

The no action alternative would have moderate effects on human health and safety. FEMA would not provide grant funding for the installation or construction of safe rooms that would protect lives during an extreme wind event (hurricane, tornado, etc.). Therefore, residents of communities susceptible to these hazard risks would remain vulnerable. Under this alternative, construction would not occur and there would be no impacts involving hazardous materials or waste.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A

These types of projects are expected to have a long-term beneficial impact on human health and safety. Retrofitting existing structures to create safe rooms reduces the risk and impact of extreme wind events to the public.

Construction activities could present moderate safety risks to those performing the activities. To minimize risks to safety and human health, all construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in accordance with the standards specified in the OSHA regulations. Appropriate signage and barriers will be in place prior to construction activities to alert the public of project activities.

Moderate effects could also result from exposure to asbestos and lead based paint. If any asbestos containing materials, lead based paint and/or other hazardous materials are found during renovation activities, the applicant must comply with all federal, state and local abatement and disposal requirements. Any other hazardous materials discovered, generated, or used during construction would be handled and disposed of in accordance with applicable local, state, and federal regulations. No long-term effects from hazardous materials are anticipated.

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Projects under this alternative will have a long-term beneficial impact on human health and safety because they will provide protection to the public from the risk of extreme wind events.

Construction activities could present moderate safety risks to those performing construction activities. To minimize risks to safety and human health, all construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in accordance with the standards specified in the OSHA regulations. Appropriate signage and barriers will be in place prior to construction activities to alert the public of project activities.

Because construction will take place immediately adjacent to an existing structure, it is anticipated that the presence of any hazardous material would have been remediated at the time of the original construction. Moderate effects could result from exposure to asbestos and lead based paint. If any asbestos containing materials, lead based paint and/or other hazardous materials are found during construction activities, the applicant must comply with all federal, state and local abatement and disposal requirements. Any other hazardous materials discovered, generated, or used during construction would be handled and disposed of in accordance with applicable local, state, and federal regulations. No long-term effects from hazardous materials are anticipated.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Safe room construction will have a long-term beneficial impact on human health and safety because it will provide protection to the public from the risk of extreme wind events.

Construction activities could present moderate safety risks to those performing construction activities. To minimize risks to safety and human health, all construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in accordance with the standards specified in the OSHA regulations. Appropriate signage and barriers will be in place prior to construction activities to alert the public of project activities.

FEMA will not be able to determine whether there is potential for the presence of hazardous materials without an appropriate site-specific evaluation. Past-use of the land parcel and/or its location relative to NPL sites can be a good indicator of whether hazardous materials are likely to be present. If there is an indication that hazardous materials are likely to be present at the proposed site for the safe room, a Phase I or Phase II environmental site assessment will be required. If the Phase I or Phase II study indicates that there are no hazardous materials or contamination exceeding reportable or actionable levels and no further action is needed, then the construction activities would not have significant long-term effects resulting from hazardous material exposure. If the Phase I or Phase II environmental site assessment indicate that there are hazardous substances or contamination present that exceed reportable limits and require

action, then a tiered SEA will be required. Any hazardous materials discovered, generated, or used during construction would be handled and disposed of in accordance with applicable local, state, and federal regulations.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Safe room construction will have a long-term beneficial impact on human health and safety because it will provide protection to the public from the risk of extreme wind events.

Construction activities could present moderate safety risks to those performing construction activities. To minimize risks to safety and human health, all construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in accordance with the standards specified in the OSHA regulations. Appropriate signage and barriers will be in place prior to construction activities to alert the public of project activities.

FEMA will not be able to determine whether there is potential for the presence of hazardous materials without an appropriate site-specific evaluation. In general, since these parcels of land have not been developed before, there is a low chance for contamination. If there is an indication that hazardous materials are likely to be present at the proposed site for the safe room, a Phase I or Phase II environmental site assessment will be required. If the Phase I or Phase II study indicates that there are no hazardous materials or contamination exceeding reportable or actionable levels and no further action is needed, then the construction activities would not have significant long-term effects resulting from hazardous material exposure. If the Phase I or Phase II environmental site assessment indicate that there are hazardous substances or contamination present that exceed reportable limits and require action, then a tiered SEA will be required. Any hazardous materials discovered, generated, or used during construction would be handled and disposed of in accordance with applicable local, state, and federal regulations.

5.8 Minority and Low-Income Populations

5.8.1 Regulatory Framework

Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority and Low-Income Populations requires federal agencies to identify and correct its programs, policies, and activities that have disproportionately high and adverse human health or environmental effects on minority or low-income populations. The EO also tasks federal agencies with ensuring that public notifications regarding environmental issues are concise, understandable, and readily accessible. The general purposes of EO 12898 are as follows:

- To focus the attention of federal agencies on human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice;

- To foster nondiscrimination in federal programs that substantially affect human health or the environment;
- To give minority communities and low-income communities greater opportunities for public participation in, and access to, public information on matters relating to human health and the environment.

Potential environmental justice impacts are evaluated by analyzing the socioeconomic makeup of the community where a project is proposed to be located. Some general category descriptions help define and weigh federal action impacts on socioeconomic resources and environmental justice include economic characteristics such as low-income areas, housing characteristics such as medium- to high-density residential areas and rural areas, and demographic characteristics such as areas with a high percentage of minorities.

Low-income or poverty areas are defined using the statistical poverty threshold from the U.S. Census Bureau (USCB), which is based on income and family size. The USCB defines a poverty area as a census tract in which 20 percent or more of its residents are below the poverty threshold and an extreme poverty area as one in which 40 percent or more are below the poverty level. The 2007 poverty threshold for a family of four with two children under the age of 18 was $21,027 (USCB 2008).

Minority populations include persons who identify themselves as Asian or Pacific Islander, Native American or Alaskan Native, black (not of Hispanic origin), or Hispanic. (CEQ 1997). A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. In addition, a minority population also exists if there is more than one minority group present and the minority percentage, when calculated by aggregating all minority persons, meets one of the above thresholds.

If a proposed project will cause disproportionate high and adverse impacts on low-income or minority populations, mitigation measures will be required.

Title VI of the Civil Rights Act of 1964 declares it to be the policy of the United States that discrimination on the ground of race, color, or national origin shall not occur in connection with programs and activities receiving federal financial assistance. It is FEMA's policy to ensure that the civil rights of all persons receiving services or benefits from agency programs and activities are protected. No person shall, on the grounds of race, color, national origin, sex, religion, age, disability, English proficiency or economic status, be denied the benefits of, be deprived of participation in, or be discriminated against in any program or activity receiving financial assistance from FEMA. In particular, all personnel carrying out federal major disaster or emergency assistance functions, including the distribution of supplies, the processing of the applications, and other relief and assistance activities, shall perform their work in an equitable and impartial manner without discrimination. It is Agency policy to prohibit such discrimination in any programmatic guideline, procedure, or other directives. These prohibitions extend to all entities receiving federal financial assistance from the Agency, including state and local governments, Indian tribal governments, educational institutions, and any organization of any type obtaining benefits through the Mitigation Programs. FEMA's Title 44 CFR, Parts 7.11

through 7.16, outlines the Agency procedures for voluntary compliance, enforcement action, and processing complaints of discrimination in FEMA's federally assisted programs. Procedures for processing complaints of discrimination on the basis of disability in federally conducted programs can be found in Title 44 CFR, Part 16.170.

5.8.2 Impacts Evaluation

Alternative 1: No Action

The no action alternative may have disproportionate high and adverse effects on low-income or minority populations. FEMA would not provide grant funding for the installation or construction of safe rooms that would protect lives during a extreme wind event (hurricane, tornado, etc.). Therefore, residents of communities susceptible to these hazard risks would remain vulnerable.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A
This alternative would not have disproportionately high or adverse long-term impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility in the event of a extreme wind event. The safe room would be accessible and beneficial to all members of the community.

Type B
Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

This alternative would not have disproportionately high or adverse long-term impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility in the event of an extreme wind event. The safe room would be accessible and beneficial to all members of the community.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Area

This alternative would not have disproportionately high or adverse long-term impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility in the event of an extreme wind event. The safe room would be accessible and beneficial to all members of the community.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Area

This alternative would not have disproportionately high or adverse long-term impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility in the event of an extreme wind event. The safe room would be accessible and beneficial to all members of the community.

5.9 Historic Properties

5.9.1 Regulatory Framework

Historic properties are prehistoric or historic districts, sites, buildings, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP), maintained by the Department of the Interior, National Park Service (NPS). More than 80,000 properties are listed in the NRHP. Almost every county in the U.S. has at least one building, structure, site, object, or district listed in the NRHP.

Properties may be eligible for listing in the NRHP if they possess significance at the national, tribal, state or territory, or local level in American history, architecture, archeology, engineering, or culture. In order for a property to be considered historic, it must meet basic criteria and retain the historic integrity of those features necessary to convey their significance. To convey integrity, historic properties will always possess several, and usually most, of the following seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. The passage of time may require re-evaluation of historic properties to reaffirm the original National Register status.

Section 106 of the NHPA of 1966 (16 U.S.C § 470 *et seq*.) directs the federal government to consider the effects of its undertakings on historic properties through a four-step decision-making and compliance process. It is noteworthy that the law does not mandate preservation of historic properties; rather, it mandates that federal agencies follow the decision-making process. The four steps of the Section 106 compliance process are as follows:

1. **Initiate the Section 106 Process.** FEMA determines whether an undertaking exists, engages the appropriate State Historic Preservation Office (SHPO) or Tribal Historic Preservation Office (THPO), and identifies potential consulting parties.

2. **Identify historic properties.** FEMA, in consultation with the SHPO/THPO, determines the Area of Potential Effects (APE) for the undertaking and reviews existing information on historic properties within the APE. The APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The APE is determined by the scope of the project, the characteristics of the project area (e.g. topography, building density, land

use), and the type of historic property being considered, and may be different for different kinds of effects caused by the undertaking. Once the APE is established, FEMA gathers information from the SHPO/THPO, Indian tribes and Native Hawaiian organizations, any other consulting parties, and individuals or organizations likely to have knowledge of historic properties in the area, and identifies issues relating to the undertaking's potential effects on historic properties. This step also involves FEMA making a determination of whether a property is eligible for listing on the NRHP.

3. **Assess adverse effects of undertaking on historic properties.** If FEMA's assessment determines no historic properties or no adverse effect to eligible historic properties, the SHPO/THPO and other consulting parties are informed, and the compliance process ends at this step unless the a consulting party disagrees with FEMA's determination. If the assessment determines actual or potential adverse effects to eligible historic properties, FEMA notifies the SHPO/THPO and other consulting parties through a letter and supporting documentation. Federal agencies must consider possible direct, indirect, and cumulative effects on historic properties. Direct effects include physical impacts, while indirect effects may include visual, atmospheric, and audible impacts on historic properties.

4. **Resolve adverse effects to historic properties.** As stipulated in 36 CFR § 800.6, the federal agency must resolve adverse effects by seeking ways to avoid, minimize, or mitigate the undertaking's adverse effect through consultation with the SHPO/THPO and Advisory Council on Historic Preservation (ACHP). If avoiding or minimizing the adverse effect through re-design or other alternative means is not possible, the federal agency, the SHPO/THPO, the ACHP, and other consulting parties may enter into a Memorandum of Agreement that outlines appropriate measures to mitigate adverse effects to historic properties. In cases where the federal agency and the other consulting parties fail to agree on appropriate treatment measures, the federal agency or the other consulting parties may terminate consultation, in which case the ACHP issues a final comment. The federal agency must take these comments into consideration before notifying ACHP of its final decision, after which the project may proceed.

Because of the broad scope and location of the proposed projects in this PEA, the presence of historic properties within the APE of some of the proposed projects is highly likely. Once an APE is established for a particular undertaking, background research with the SHPO/THPO, Indian tribes, local libraries, government offices, historical societies, and others as necessary, can provide information on previously-identified historic properties. Research may also provide an understanding of the historic context for a project area, which will further assist in identifying resources and evaluating whether they may meet one or more of the NRHP criteria. Fieldwork could also be required to identify historic properties.

A higher standard is applicable to federal agencies when their actions may affect historic properties that are designated as National Historic Landmarks (NHLs). Federal agencies must, to the maximum extent possible, minimize harm to NHLs directly and adversely affected by their undertakings prior to their approval. 16 U.S.C. § 470h-2(f). In addition federal agencies must

notify and formally invite the Secretary of Interior and the ACHP to participate in the resolution of adverse effects to an NHL. .

It is FEMA's practice to complete the Section 106 process before completing the NEPA determination to ensure that impacts to historic properties have been taken into account in the NEPA process.

Section106 Programmatic Agreements
FEMA has entered into state-specific Programmatic Agreements (PAs) with various SHPOs around the country. These state-specific PAs provide streamlined procedures for FEMA undertakings related to its disaster response and recovery missions. They also include programmatic allowances that exclude certain FEMA undertakings from the Section 106 consultation process.

5.9.2 Impact Evaluation

5.9.2.1Historic Properties - Archaeology

Alternative 1: No Action

The no action alternative would have no effect on archaeological resources.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A
Activities that do not involve ground disturbance would have no effect on archaeological resources.

Ground-disturbing activities at sites that have low probability for the presence of archaeological deposits or that have been previously surveyed and found not to have archaeological deposits would not have a significant impact on this resource.

Ground-disturbing activities at sites that have moderate to high probability for the presence of archaeological deposits may have adverse effects on these resources. The presence of modern structures or facilities does not mean that no archaeological resources exist or that they have been destroyed. While existing structures may have disturbed potential archaeological deposits at the time of construction, intact resources may have been left undisturbed. In addition, existing historic buildings or structures may also have archaeological components and any landscaping or other activities that disturb the ground could affect potential archaeological deposits. Geographical location and physical characteristics of the site dictate whether a proposed project will affect archaeological resources. If such activities are anticipated, then Section 106 consultation is necessary to determine whether potential archaeological resources exist and whether they would be adversely affected by the proposed project. If the proposed project will have an adverse effect, FEMA must develop ways to avoid, minimize, or mitigate adverse effects

to the archaeological resources in consultation with the SHPO/THPO, the grantee and sub-grantee, and other consulting parties.

If the proposed project does not have the potential to affect archaeological resources, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect archaeological resources, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

This alternative involves ground-disturbing activities. Work at sites that have low probability for the presence of archaeological deposits or that have been previously surveyed and found not to have archaeological deposits would not have a significant impact on this resource.

Ground-disturbing activities at sites that have moderate to high probability for the presence of archaeological deposits may have adverse effects on this resource. The presence of modern structures or facilities does not mean that no archaeological resources exist or that they have been destroyed. While existing structures may have disturbed potential archaeological deposits at the time of construction, intact resources may have been left undisturbed. In addition, existing historic buildings or structures may also have archaeological components and any landscaping or other activities that disturb the ground could affect potential archaeological deposits. Geographical location and physical characteristics of the site dictate whether a proposed project will affect archaeological resources. If such activities are anticipated, then Section 106 consultation is necessary to determine whether potential archaeological resources exist and whether they would be adversely affected by the proposed project. If the proposed project will have an adverse effect, FEMA must develop ways to avoid, minimize, or mitigate adverse effects to the archaeological resources in consultation with the SHPO/THPO, the grantee and sub-grantee, and other consulting parties.

If the proposed project does not have the potential to affect archaeological resources, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect archaeological resources, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

This alternative involves ground-disturbing activities at sites that have been previously disturbed. Work at sites that have low probability for the presence of archaeological deposits or that have been previously surveyed and found not to have archaeological deposits would not have a significant impact on this resource.

Ground-disturbing activities at sites that have moderate to high probability for the presence of archaeological deposits may have adverse effects on this resource. The presence of modern structures or facilities does not mean that no archaeological resources exist or that they have been destroyed. While existing structures may have disturbed potential archaeological deposits at the time of construction, intact resources may have been left undisturbed. In addition, existing historic buildings or structures may also have archaeological components and any landscaping or other activities that disturb the ground could affect potential archaeological deposits. Geographical location and physical characteristics of the site dictate whether a proposed project will affect archaeological resources. If such activities are anticipated, then Section 106 consultation is necessary to determine whether potential archaeological resources exist and whether they would be adversely affected by the proposed project. If the proposed project will have an adverse effect, FEMA must develop ways to avoid, minimize, or mitigate adverse effects to the archaeological resources in consultation with the SHPO/THPO, the grantee and sub-grantee, and other consulting parties.

If the proposed project does not have the potential to affect archaeological resources, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect archaeological resources, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

This alternative involves ground-disturbing activities at sites that have not yet been disturbed. Work at sites that have low probability for the presence of archaeological deposits or that have been previously surveyed and found not to have archaeological deposits would not have a significant impact on this resource.

Ground-disturbing activities at sites that have moderate to high probability for the presence of archaeological deposits may have adverse effects on this resource. The presence of modern structures or facilities does not mean that no archaeological resources exist or that they have been destroyed. While existing structures may have disturbed potential archaeological deposits at the time of construction, intact resources may have been left undisturbed. In addition, existing historic buildings or structures may also have archaeological components and any landscaping or other activities that disturb the ground could affect potential archaeological deposits. Geographical location and physical characteristics of the site dictate whether a proposed project will affect archaeological resources. If such activities are anticipated, then Section 106 consultation is necessary to determine whether potential archaeological resources exist and

whether they would be adversely affected by the proposed project. If the proposed project will have an adverse effect, FEMA must develop ways to avoid, minimize, or mitigate adverse effects to the archaeological resources in consultation with the SHPO/THPO, the grantee and sub-grantee, and other consulting parties.

If the proposed project does not have the potential to affect archaeological resources, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect archaeological resources, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

5.9.2.2 Historic Properties - Other Historic Properties

Alternative 1: No Action

The no action alternative would have no potential to affect historic properties.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A

Activities involving interior modification of existing structures and facilities that are not considered historic properties would result in no historic properties being affected.

Activities involving modification of existing structures and facilities that are historic properties or exterior work on structures and facilities within the APE of an historic property may have adverse effects on historic properties. Types of adverse effects include alteration of historic-defining features or components and diminishment of viewsheds.

If the proposed project does not have the potential to affect historic properties, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect historic properties, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Activities involving modification of existing structures and facilities that are not considered historic properties would have no effect on historic properties.

Activities involving modification of existing structures and facilities that are historic properties or exterior work on structures and facilities within the APE of an historic property may have adverse effects on historic properties. Types of adverse effects include alteration of historic-defining features or components, and diminishment of viewsheds.

If the proposed project does not have the potential to affect historic properties, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect historic properties, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Area

Activities under this alternative may include construction in an area where no other structures are near-by or it could include construction adjacent to other structures. Construction in areas where there are no other structures or where existing structures and facilities are not considered historic properties would have no effect on historic properties.

Construction in areas within the APE of existing structures and facilities that are historic properties may have adverse effects on historic properties. Types of adverse effects include alteration of historic-defining features or components and diminishment of viewsheds.

If the proposed project does not have the potential to affect historic properties, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect historic properties, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Area

Activities under this alternative may include construction in an area where no other structures are near-by or it could include construction adjacent to other structures. Construction in areas where there are no other structures or where existing structures and facilities are not considered historic properties would have no effect on historic properties.

Construction in areas within the APE of existing structures and facilities that are historic properties may have adverse effects on historic properties. Types of adverse effects include alteration of historic-defining features or components and diminishment of viewsheds.

If the proposed project does not have the potential to affect historic properties, then there would be no impact to this resource and no further Section 106 review would be required. If the proposed project has the potential to affect historic properties, FEMA will initiate the Section 106 review process. If the Section 106 process results in an MOA or other agreement to resolve adverse effects and that agreement is required in order to reduce the level of impacts below significance under NEPA, a tiered SEA will be required.

5.10 Air Quality

5.10.1 Regulatory Framework

The USEPA has established primary and secondary National Ambient Air Quality Standards (NAAQS) under the provisions of the Clean Air Act (CAA) of 1970 (42 U.S.C. § 7401 *et seq*.). The CAA not only established the NAAQS, but also set emission limits for certain air pollutants from specific sources, set new source performance standards based on best demonstrated technologies, and established national emissions standards for hazardous air pollutants.

The USEPA classifies the air quality within an air quality control region (AQCR) according to whether the region meets or exceeds federal primary and secondary NAAQS. Primary standards define levels of air quality necessary to protect public health with an adequate margin of safety. Secondary standards define levels of air quality necessary to protect public welfare (i.e., soils, vegetation, and wildlife) from any known or anticipated adverse impacts of a pollutant. Federal NAAQS are currently established for the following seven pollutants (known as "criteria pollutants"): carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), lead (Pb), particulate matter equal to or less than 10 micrometers in aerodynamic diameter (PM_{10}), and particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter ($PM_{2.5}$). Table 5-3 shows the NAAQS.

Table 3. National Ambient Air Quality Standards (NAAQS)

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide (CO)	9 ppm (10 milligrams/ m^3 [$mg/m^{3]}$)	8 hours	None	
	35 ppm (40 mg/m^3)	1 hour		
Lead (Pb)	0.15 $\mu g/m^3$	Rolling 3-month average	Same as primary	
	1.5 $\mu g/m^3$	Quarterly average	Same as primary	
Nitrogen Dioxide (NO_2)	0.053 ppm (100 $\mu g/m^3$)	Annual (arithmetic mean)	Same as primary	
Particulate Matter (PM_{10})	150 $\mu g/m^3$	24 hours	Same as primary	
Particulate Matter ($PM_{2.5}$)	15.0 $\mu g/m^3$	Annual (arithmetic mean)	Same as primary	
	35 $\mu g/m^3$	24 hours	Same as primary	
Ozone (O_3)	0.075 ppm	8 hours	Same as primary	

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
	(2008 std)			
	0.08 ppm (1997 std)	8 hours	Same as primary	
	0.12 ppm	1 hour (applies only in limited areas)	Same as primary	
Sulfur Dioxide (SO_2)	0.03 ppm	Annual (arithmetic mean)	0.5 ppm (1300 µg/m^3)	3-hours
	0.14 ppm	24-hours		

Source: USEPA 2008a.

Air quality is affected by both stationary sources (e.g., urban and industrial developments) and mobile sources (e.g., automobiles and trains). In general, urban environments are characterized by elevated levels of criteria pollutants, which can potentially reach unhealthy levels. Rural environments, in contrast, are typically characterized by good air quality for most criteria pollutants due to the lack of pollution- emitting sources. However, due to the migratory nature of air pollutants, emissions from urban areas can have a negative impact on the air quality of a rural area. Land use practices in rural areas can affect air quality when wind erosion raises dust from tilled fields, and when agricultural burning and fires caused by vegetation management practices adversely affect air quality with smoke and wind-blown ashes.

An AQCR or portion of an AQCR may be classified as attainment, non-attainment, or unclassified for each of the seven criteria pollutants. Attainment describes a condition in which one or more of the seven NAAQS are being met in an area. The area is considered to be attainment only for those criteria pollutants for which the NAAQS are being met. Non-attainment describes a condition in which one or more of the seven NAAQS are not being met in an area. Unclassified indicates that air quality in the area has not been classified and is therefore treated as attainment. Areas that have been recently re-designated from non-attainment to attainment are called maintenance areas (in reference to how the area will maintain attainment).

An area may have all four classifications for different criteria pollutants. Air emission regulations are more stringent in non-attainment areas and vary not only from AQCR to AQCR, but also within an AQCR. States with air quality that does not achieve the NAAQS are required to develop and maintain State Implementation Plans (SIPs). In addition, the USEPA may develop a Federal Implementation Plan (FIP) and Tribes may develop their own Tribal Implementation Plans (TIP). These plans constitute a federally enforceable definition of the applicable approach (or plan) and schedule for the attainment of the NAAQS.

The General Conformity Rule (GCR), established under Section 176(c)(4) of the CAA (42 U.S.C. § 7506(c)) requires federal agencies to work with, territory, tribal, and local governments in a nonattainment or maintenance area to ensure that federal actions conform to the initiatives established in the applicable SIP, FIP, or TIP. Before a federal action is taken, it must be evaluated for conformity with the applicable implementation plan.

States as well as regional and local authorities have established emission standards and permitting requirements for emission sources in their jurisdictions. Generators and emergency generators as well as construction activity are regulated under these permitting frameworks and facilities must check with these authorities to determine applicability of these requirements. New

requirements related to greenhouse gas emission reduction and energy conservation are also being developed and innovative solutions will be considered in order to adhere to these requirements.

5.10.2 Impacts Evaluation

Alternative 1: No Action

No effects on air quality would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed *Facility*

Type A

Retrofitting or renovation activities would have negligible to minor effects on air quality. No long-term impacts to air quality would occur. Short-term impacts to air quality may occur during facility renovation or retrofitting activities. To reduce temporary impacts to air quality, the grantee/sub-grantee would be required to water down construction areas when necessary. Emissions from fuel-burning internal combustion engines (e.g., heavy equipment and earthmoving machinery) could temporarily increase the levels of some of the criteria pollutants, including CO, NO2, O3, PM10, and non-criteria pollutants such as volatile organic compounds (USEPA 2003). To reduce the emission of criteria pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained. Older structures often contain hazardous materials such as lead-based paint or asbestos. Any activities associated with the modification or demolition of facilities must be done in accordance with federal and state laws and regulations regarding the handling and disposal of hazardous materials.

Some proposed projects could include the installation of an emergency generator that operates during power outages. The operation of generators may be regulated in the particular state or region where the project will take place. A generator may qualify for emergency generator provisions depending on its usage or it may be exempt from permit requirements if they are below the state's established emission threshold. Grantees and sub-grantees must coordinate with their state environmental quality agency to determine the applicable requirements.

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Renovation and construction activities would have negligible to minor effects on air quality. No long-term impacts to air quality would occur. Short-term impacts to air quality may occur during construction of the facility. To reduce temporary impacts to air quality, the grantee/sub-grantee would be required to water down construction areas when necessary. Emissions from fuel-burning internal combustion engines (e.g., heavy equipment and earthmoving machinery) could temporarily increase the levels of some of the criteria pollutants, including CO, NO2, O3, PM10, and non-criteria pollutants such as volatile organic compounds (USEPA 2003). To reduce the emission of criteria pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained. Older structures often contain hazardous materials such as lead-based paint or asbestos. Any activities associated with the modification or demolition of facilities must be done in accordance with federal and state laws and regulations regarding the handling and disposal of hazardous materials.

Some proposed projects could include the installation of an emergency generator that operates during power outages. The operation of generators may be regulated in the particular state or region where the project will take place. A generator may qualify for emergency generator provisions depending on its usage or it may be exempt from permit requirements if they are below the state's established emission threshold. Grantees and sub-grantees must coordinate with their state environmental quality agency to determine the applicable requirements.

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Activities may have a minor impact on air quality. No long-term impacts to air quality would occur. Short-term impacts to air quality may occur during construction of the facility. To reduce temporary impacts to air quality, the grantee/sub-grantee would be required to water down construction areas when necessary. Emissions from fuel-burning internal combustion engines (e.g., heavy equipment and earthmoving machinery) could temporarily increase the levels of some of the criteria pollutants, including CO, NO2, O3, PM10, and non-criteria pollutants such as volatile organic compounds (USEPA 2003). To reduce the emission of criteria pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained.

In FEMA's experience, the air emissions associated with individual site preparation and construction activities in sites less than five (5) acres do not rise to the level of significance even in non-attainment areas. Table 5-4shows an estimate made by the agency on the air emissions associated with equipment used for site preparation and construction activities for the placement of alternative housing units in the Gulf Coast of the U.S. (FEMA 2009c). These estimates were based on USEPA's NONROAD Model (USEPA 2005). These estimates are similar to those expected for construction activities associated with this alternative.

Some proposed projects could include the installation of an emergency generator that operates during power outages. The operation of generators may be regulated in the particular state or region where the project will take place. A generator may qualify for emergency generator provisions depending on its usage or it may be exempt from permit requirements if they are

below the state's established emission threshold. Grantees and sub-grantees must coordinate with their state environmental quality agency to determine the applicable requirements.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 to further reduce the potential impacts on air quality.

Table 4. Estimate of Criteria Pollutant Emissions from Equipment Used in Site Preparation and Construction Activities

Pollutant	Total (tons/year)	*de minimus* Thresholds (tons/year) (1)
CO	16.50	100
Volatile Organic Compounds (VOC)	3.21	100
Nitrous Oxides (NO_x)	23.62	100
PM-10	8.23	100
PM-2.5	2.54	100
SO_2	2.93	100

Source: FEMA 2009c, prepared by Gulf South Research Corp.

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Activities may have a minor impact on air quality. No long-term impacts to air quality would occur. Short-term impacts to air quality may occur during construction of the facility. To reduce temporary impacts to air quality, the grantee/sub-grantee would be required to water down construction areas when necessary. Emissions from fuel-burning internal combustion engines (e.g., heavy equipment and earthmoving machinery) could temporarily increase the levels of some of the criteria pollutants, including CO, NO2, O3, PM10, and non-criteria pollutants such as volatile organic compounds (USEPA 2003). To reduce the emission of criteria pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained.

In FEMA's experience, the air emissions associated with individual site preparation and construction activities in sites less than five (5) acres do not rise to the level of significance even in non-attainment areas. Table 5-4shows an estimate made by the agency on the air emissions associated with equipment used for site preparation and construction activities for the placement of alternative housing units in the Gulf Coast of the U.S. (FEMA 2009c). These estimates were based on USEPA's NONROAD Model (USEPA 2005). These estimates are similar to those expected for construction activities associated with this alternative.

Some proposed projects could include the installation of an emergency generator that operates during power outages. The operation of generators may be regulated in the particular state or region where the project will take place. A generator may qualify for emergency generator provisions depending on its usage or it may be exempt from permit requirements if they are

below the state's established emission threshold. Grantees and sub-grantees must coordinate with their state environmental quality agency to determine the applicable requirements.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7 to further reduce the potential impacts on air quality.

5.11 Noise

5.11.1 Regulatory Framework

Noise is defined as unwanted sound that interferes with normal human activities or wildlife behavior, or may otherwise diminish environmental quality. Sound is most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. The Day-Night Average sound Level (DNL) is an average measure of sound. The DNL descriptor is accepted by federal agencies as a standard for estimating sound impacts and establishing guidelines for compatible land uses. In a typical day, most people are exposed to sound levels of 50 to 55 dB or higher.

Topographic features and structural barriers that absorb, reflect, or scatter sound waves can decrease or increase noise levels (HUD 2009). In addition, atmospheric conditions, such as wind speed and direction, and weather, can also affect the perception of the sound (HUD 2009). Animals use sounds for communication and navigation, to avoid danger, and to find food. The same noise factors that affect humans may also influence wildlife. In general, wildlife has a wider hearing range than humans, both on the low and high frequency ends of the noise spectrum. Noise studies, principally those on aircraft noise, have found varying results, ranging from no identifiable effects in some species, to noticeable behavioral and physiological effects in other species (e.g., birds) (USEPA 1980).

For this PEA FEMA will adopt the U.S. Department of Transportation's Federal Highway Administration standards for noise abatement found in 23 CFR Part 772 – Table 1. These establish, for example, the need to consider noise abatement measures for actions that produce sound levels that 10 percent of the time exceed 70 dB in areas with sensitive receptors (e.g. as playgrounds, parks, schools, libraries, residences, and hospitals) and exceed 75 dB in developed lands.

5.11.2 Impact Evaluation

Alternative 1: No Action

No effects on noise would occur under the no action alternative.

Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility

Type A

Retrofitting or renovation activities may have negligible to minor effects on noise levels. Temporary, short-term increases in noise levels are anticipated during the construction period. FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7, which includes operation of construction equipment during business hours (Monday through Friday from 7am to 5pm) and using equipment with the manufacturer's standard noise control devices (e.g. mufflers, baffling, engine enclosures). In addition, grantees and sub-grantees will be required to comply with any state, territory, tribal, or local noise control requirements.

A tiered SEA will be required for projects that would result in noise levels exceeding 70 dBA for more than 10 percent of the construction period and will take place less than 200 feet from sensitive receptors (e.g. schools, hospitals, and residential areas). This tiered SEA requirement does not apply to situations where the only identified sensitive receptor is the facility that will incorporate the safe room (e.g. school, hospital, residence) and the construction will take place during a time where the facility is not occupied (e.g. safe room is in a school and construction will occur in the summer).

Type B

Impacts associated with Type B projects are similar to the impacts of Type A projects. While the construction of the safe room is part of a larger action, the larger action is not federalized. Inclusion of a safe room as part of a larger proposed structure does not amplify the overall impacts of constructing the larger structure.

Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint

Construction activities may have minor to moderate effects on noise levels. Temporary, short-term increases in noise levels are anticipated during the construction period. Table 5-5 shows an estimate of the noise levels associated with typical construction equipment and attenuation of noise at various distances. To estimate the attenuation of the noise over a given distance the following relationship was used:

$$dBA_2 = dBA_1 - 20 \log (d_2/ d_1)$$

Where:

dBA_2 = dBA at distance 2 from source (predicted);
dBA_1 = dBA at distance 1 from source (measured);
d_1 = distance to location 2 from source;
d_2 = distance to location 1 from source

Source: California Department of Transportation 1998.

The estimates provided in Table 5-5 indicate that most of the equipment commonly associated with construction activities produces noise levels that exceed 75 dBA. A distance of 200 feet or more is needed between most of the construction equipment provided and a receptor to attenuate the noise levels those that are acceptable.

Table 5. Estimated Sound Levels for Construction Equipment and Attenuation at Various Distances

Equipment	Typical Noise Level (dBA) at 50 ft. from Source[1]	Estimate at 100 ft.	Estimate at 200 ft.	Estimate at 500 ft.	Estimate at 1,000 ft.
Air Compressor	81	75	69	61	55
Backhoe	80	74	68	60	54
Concrete Mixer	85	79	73	65	59
Dozer	85	79	73	65	59
Generator	81	75	69	61	55
Loader	85	79	73	65	59
Paver	89	83	77	69	63
Pneumatic Tool	85	79	73	65	59
Pump	76	70	64	56	50
Saw	76	70	64	56	50
Shovel	82	76	70	62	56
Truck	88	82	76	68	62

[1]Source: FHWA 2006.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7, which includes operation of construction equipment during business hours (Monday through Friday from 7am to 5pm) and using equipment with the manufacturer's standard noise control devices (e.g. mufflers, baffling, engine enclosures). In addition, grantees and sub-grantees will be required to comply with any state, territory, tribal, or local noise control requirements.

A tiered SEA will be required for projects that would result in noise levels exceeding 70 dBA for more than 10 percent of the construction period and take place less than 200 feet from sensitive receptors (e.g. schools, hospitals, and residential areas). This tiered SEA requirement does not apply to situations where the only identified sensitive receptor is the facility that will incorporate the safe room (e.g. school, hospital, residence) and the construction will take place during a time where the facility is not occupied (e.g. safe room is in a school and construction will occur in the summer).

Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas

Construction activities may have minor to moderate effects on noise levels. Temporary, short-term increases in noise levels are anticipated during the construction period.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7, which includes operation of construction equipment during business hours (Monday through Friday from 7am to 5pm) and using equipment with the manufacturer's standard noise control devices (e.g. mufflers, baffling, engine enclosures). In addition, grantees and sub-grantees will be required to comply with any state, territory, tribal, or local noise control requirements.

A tiered SEA will be required for projects that would result in noise levels exceeding 70 dBA for more than 10 percent of the construction period and will take place less than 200 feet from sensitive receptors (e.g. schools, hospitals, and residential areas). This tiered SEA requirement does not apply to situations where the only identified sensitive receptor is the facility that will incorporate the safe room (e.g. school, hospital, residence) and the construction will take place during a time where the facility is not occupied (e.g. safe room is in a school and construction will occur in the summer).

Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas

Construction activities may have minor to moderate effects on noise levels. Temporary, short-term increases in noise levels are anticipated during the construction period.

FEMA will require grantees and sub-grantees to follow the general mitigation measures for ground-disturbing activities in Section 7, which includes operation of construction equipment during business hours (Monday through Friday from 7am to 5pm) and using equipment with the manufacturer's standard noise control devices (e.g. mufflers, baffling, engine enclosures). In addition, grantees and sub-grantees will be required to comply with any state, territory, tribal, or local noise control requirements.

A tiered SEA will be required for projects that would result in noise levels exceeding 70 dBA for more than 10 percent of the construction period and will take place less than 200 feet from sensitive receptors (e.g. schools, hospitals, and residential areas). This tiered SEA requirement does not apply to situations where the only identified sensitive receptor is the facility that will incorporate the safe room (e.g. school, hospital, residence) and the construction will take place during a time where the facility is not occupied (e.g. safe room is in a school and construction will occur in the summer).

Table 6. Summary of Impacts

Area of Evaluation	Alternative 1: No Action	Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility	Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint	Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas	Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas
Land Use	No effect.	No effect.	No effect.	No or negligible effect. If action will convert prime or unique farmland, FEMA will conduct the required assessment and consult with NRCS when necessary.	May result in land-use change. No, negligible, or minor effects on land use. Grantee/sub-grantee must comply with any required construction permits, which may specify compliance with zoning ordinance. If action will convert prime or unique farmland, FEMA will conduct the required assessment and consult with NRCS when necessary.
Geology, Soils, and Seismicity	No effect.	No or negligible effects on soils. Activities in areas characterized by susceptibility to seismic, volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes may be moderately affected.	Negligible to minor effects on soils. Activities in areas characterized by susceptibility to seismic, volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes may be moderately affected.	Negligible to minor effects on soils. Activities in areas characterized by susceptibility to seismic, volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes may be moderately affected.	Minor to moderate effects on soils. Activities in areas characterized by susceptibility to seismic, volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes may be moderately affected.
Water Quality and Resources	No effect.	No effect.	Negligible to minor temporary effects.	Negligible to moderate temporary effects.	Moderate effects.

Area of Evaluation	Alternative 1: No Action	Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility	Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint	Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas	Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas
Floodplains	No effect.	Activities not located in floodplain would have no effect on and would not be affected by the floodplain. Impacts of safe rooms in the floodplain are expected to be minor to moderate. FEMA will require the minimization measures in 5.4.1. Individual safe rooms under FEMA Publication 320 that meet the class review in 5.4.1 will only require Step 1, 3, and 8 of the 8-step decisionmaking process. Community safe rooms in the 100-year and 500 year floodplain will require a tiered SEA focused on the 8-step decisionmaking process.	Activities not located in floodplain would have no effect on and would not be affected by the floodplain. Impacts of safe rooms in the floodplain are expected to be minor to moderate. FEMA will require the minimization measures in 5.4.1. Individual safe rooms under FEMA Publication 320 that meet the class review in 5.4.1 will only require Step 1, 3, and 8 of the 8-step decisionmaking process. Community safe rooms in the 100-year and 500 year floodplain will require a tiered SEA focused on the 8-step decisionmaking process.	Activities not located in floodplain would have no effect on and would not be affected by the floodplain. Impacts of safe rooms in the floodplain are expected to be minor to moderate. FEMA will require the minimization measures in 5.4.1. Individual safe rooms under FEMA Publication 320 that meet the class review in 5.4.1 will only require Step 1, 3, and 8 of the 8-step decisionmaking process. Community safe rooms in the 100-year and 500 year floodplain will require a tiered SEA focused on the 8-step decisionmaking process.	Activities not located in floodplain would have no effect on and would not be affected by the floodplain. Impacts of safe rooms in the floodplain are expected to be minor to moderate. FEMA will require the minimization measures in 5.4.1. Individual safe rooms under FEMA Publication 320 that meet the class review in 5.4.1 will only require Step 1, 3, and 8 of the 8-step decisionmaking process. Community safe rooms in the 100-year and 500 year floodplain will require a tiered SEA focused on the 8-step decisionmaking process.
Wetlands	No effect.	No effect.	If proposed action is not located in or adjacent to wetland, there will be no effect. Activities located in or adversely affecting wetlands will require a tiered SEA. Impacts will be determined through	If proposed action is not located in or adjacent to wetland, there will be no effect. Activities located in or adversely affecting wetlands will require a tiered SEA. Impacts will be determined through that	If proposed action is not located in or adjacent to wetland, there will be no effect. Activities located in or adversely affecting wetlands will require a tiered SEA. Impacts will be determined through that

Area of Evaluation	Alternative 1: No Action	Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility	Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint	Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas	Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas
			that process.	process.	process.
Biological Resources	No effect.	No effect.	No to moderate effects on vegetation, fish and wildlife depending on whether these resources are present. If FEMA can issue "No Effect" or "Not Likely to Adversely Affect" determination, then action is expected to have no effect to moderate effects on T & E species and critical habitat.	No to moderate effects on vegetation, fish and wildlife depending on whether these resources are present. If FEMA can issue "No Effect" or "Not Likely to Adversely Affect" determination, then action is expected to have no effect to moderate effects on T & E species and critical habitat.	Minor to moderate effects on vegetation, fish and wildlife depending on whether these resources are present. If FEMA can issue "No Effect" or "Not Likely to Adversely Affect" determination, then action is expected to have no effect to moderate effects on T & E species and critical habitat.
Human Health and Safety	Moderate effect to human health and safety. Public exposed to risk of extreme wind events.	Long-term beneficial impact by reducing risk of extreme wind events. Construction activities could present moderate safety risks to those performing the activities. Moderate effects could also result from exposure to asbestos and lead based paint.	Long-term beneficial impact by reducing risk of extreme wind events. Construction activities could present moderate safety risks to those performing the activities. Moderate effects could also result from exposure to asbestos and lead based paint.	Long-term beneficial impact by reducing risk of extreme wind events. Construction activities could present moderate safety risks to those performing the activities. Potential for moderate to significant impacts from hazardous materials exposure, depending on site specifics. If Phase II Environmental Site Assessment indicates that hazardous substances or contamination exceeding reportable limits and	Long-term beneficial impact by reducing risk of extreme wind events. Construction activities could present moderate safety risks to those performing the activities. Potential for moderate to significant impacts from hazardous materials exposure, depending on site specifics. If Phase II Environmental Site Assessment indicates that hazardous substances or contamination exceeding reportable limits and

Area of Evaluation	Alternative 1: No Action	Alternative 2: Retrofit or Renovation of an Existing or Proposed Facility	Alternative 3: Safe Room Connected to an Existing Building and Beyond Original Footprint	Alternative 4: New Stand-Alone Construction in Previously Disturbed Areas	Alternative 5: New Stand-Alone Construction in Previously Undisturbed Areas
				warranting removal action is necessary, a tiered SEA will be required to assess impacts.	warranting removal action is necessary, a tiered SEA will be required to assess impacts.
Minority and Low-Income Populations	May have disproportionate adverse effects on low-income or minority populations. Populations may be disproportionately exposed to extreme wind risks.	No disproportionately high or adverse impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility.	No disproportionately high or adverse impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility.	No disproportionately high or adverse impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility.	No disproportionately high or adverse impacts on low-income or minority populations. All populations would benefit from the protection provided by the facility.
Historic Properties	No effect.	Depending on specific site, may have no effect or adverse effect to archeological or other historic resources. If Section 106 process results in an MOA or other agreement to resolve adverse effects, a tiered SEA will be required to assess impacts.	Depending on specific site, may have no effect or adverse effect to archeological or other historic resources. If Section 106 process results in an MOA or other agreement to resolve adverse effects, a tiered SEA will be required to assess impacts.	Depending on specific site, may have no effect or adverse effect to archeological or other historic resources. If Section 106 process results in an MOA or other agreement to resolve adverse effects, a tiered SEA will be required to assess impacts.	Depending on specific site, may have no effect or adverse effect to archeological or other historic resources. If Section 106 process results in an MOA or other agreement to resolve adverse effects, a tiered SEA will be required to assess impacts.
Air Quality	No effect.	Negligible to minor short-term effects.	Negligible to minor short-term effects.	Minor short-term effects.	Minor short-term effects.
Noise	No effect.	Negligible to minor effects during construction.	Minor to moderate effects during construction.	Minor to moderate effects during construction.	Minor to moderate effects during construction.

Section Six Cumulative Impacts

The CEQ regulations implementing NEPA define cumulative impacts as the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

6.1 Alternative 1: No Action

The no action alternative could have moderate cumulative effects on human health and safety and disproportionate adverse effects on minority and low-income populations. Under this alternative, FEMA would not provide grant funding for the installation or construction of safe rooms that would protect lives during a extreme wind event (hurricane, tornado, etc.). Therefore, residents of communities susceptible to these hazard risks would remain vulnerable.

6.2 Alternatives

FEMA's experience is that safe room projects would have minimal adverse cumulative impacts given the relatively small amount of land that will be physically affected by the proposed projects. These facilities constructed in localized areas near the population at risk, and the construction impacts is typically short-term and temporary. However, site and project-specific information will be needed for all projects to appropriately take into consideration the potential for cumulative impacts on the various resource areas discussed in this PEA.

FEMA will take cumulative impacts into account when evaluating whether the particular action fits within this PEA. FEMA will prepare Records of Environmental Considerations (REC) for each individual or group of actions and will take into account the unique project and site conditions. In doing this evaluation, FEMA will take a hard look at cumulative impacts when the safe room project is likely to produce moderate effects (as defined in Section 5) on a particular resource or area of concern. In some circumstances, this evaluation may indicate the need for the preparation of a tiered SEA even when the tiered SEA is not triggered by the thresholds established in Table 5-1. An example of this situation could be the development of a program by a grantee to site safe rooms in particular geographic areas (i.e. in close proximity to one another).

FEMA will also take a hard look at cumulative impacts whenever a tiered SEA is triggered under this PEA in accordance with the thresholds established in Table 5-1.

Section Seven Mitigation

FEMA will take the following measures to the extent practicable and applicable to avoid or further minimize impacts to the quality of the human environment. The general mitigation measures outlined in this section may be superseded by higher or more stringent standards required by the particular federal, or territory, tribe, or local government agency issuing a permit, license, or approval for the project.

7.1 Measures to avoid impacts to the human environment

1. Avoid sites areas characterized by susceptibility to seismic or volcanic activity, tsunamis, landslides, mudslides, structural instability, excessive erodibility, or steep slopes;
2. Avoid sites in the floodplain;
3. Avoid sites on important farmlands;
4. Avoid sites on or near TCPs;
5. Avoid sites in wetlands;
6. Avoid undertaking projects that adversely affect historic properties;
7. Avoid projects that adversely affect threatened and endangered or special status species or critical habitat.

7.2 Minimization Measures for ground-disturbing/construction activities

1. Follow applicable state, territory, tribal, and local permitting requirements for construction;
2. Water down construction site two to three times per day if dust emissions become a problem;
3. Enclose or water down exposed dirt storage piles;
4. Minimize the disturbed area and preserve vegetation to the maximum extent possible;
5. Maintain topsoil whenever possible;
6. Phase construction activities to the extent possible;
7. Control stormwater flowing to and through the project site;
8. Protect slopes by using measures such as erosion control blankets, bonded fiber matrices, turf reinforcement mats, silt fences (for moderate slopes), etc.;
9. Temporarily protect storm drain inlets until site is stabilized;
10. Retain sediment on-site and control dewatering practices by using sediment traps or basins for large areas (> 1 acre) when appropriate;
11. Establish stabilized construction entrances/exits (e.g. large crushed rocks, stone pads, steel wash racks, hose-down systems, pads);
12. Limit construction activities, including operation of heavy machinery, to normal business hours (M-F 7am-5pm);
13. Avoid engaging in construction activities within 200 feet of noise-sensitive receptors such as schools, hospitals, residential areas, nursing homes, etc.
14. Ensure adequate maintenance of equipment, including proper engine maintenance, adequate tire inflation, and proper maintenance of pollution control devices;

15. Ensure equipment at the project site uses the manufacturer's standard noise control devices (i.e., mufflers, baffling, and/or engine enclosures);
16. Reduce construction equipment idling to the maximum extent practicable;
17. Implement plans to eliminate and minimize oil or fuel spills from construction equipment;
18. Minimize the impacts of equipment staging areas;
19. Stabilize slopes promptly through temporary and permanent cover best management practices (BMPs). Following construction all remaining disturbed areas must be re-vegetated with locally acquired sources of native seeds and plants in a manner that returns the site to its pre-construction condition or better. Plantings are done during the optimum season for the species being planted. Any seeding carried out during the re-vegetation program is completed with commercially available seeds certified to be free of noxious weed seeds and other invasive species. If necessary, an irrigation system is installed to ensure establishment of the planted vegetation. The target for new plantings is an 80 percent survival rate at the end of 3 years. Invasive exotic plant species are controlled to the maximum extent practical to accomplish the re-vegetation effort. If the application of a chemical is required to control an invasive exotic plant species, the chemical is applied by a certified pesticide or herbicide applicator per labeled directions and in compliance with all federal, state, and local laws and regulations.
20. When applicable adopt measures to minimize traffic impacts during construction such as providing warning signage, limit the use of public right-of-ways for staging of equipment or materials, use of flagpersons when needed, and coordinate detours if traffic access points will be obstructed.
21. Avoid engaging in construction activities within 660 feet of a bald or golden eagle nest during nesting and fledging, as nesting eagles are quite sensitive to human activities during these times.
22. Establish an inspection and maintenance approach to ensure these measures are working adequately.
23. Avoid archeological sites by shifting ground disturbance in a particular area, when possible.

Glossary of Terms

Ground disturbance - any work or activity that results in a disturbance of the earth, including excavating, digging, trenching, plowing, drilling, tunneling, backfilling, blasting, topsoil stripping, land leveling, peat removing, quarrying, clearing and grating

Best Management Practices (BMPs) – Effective, practical, structural or nonstructural methods, schedules of activities, or prohibitions of practices which prevent or reduce the movement of sediment, nutrients, pesticides and other pollutants from the land to surface or ground water, or which otherwise protect water quality.

Historic property – Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource. Historic properties are significant at the national, tribal, regional, state, territory, or local level in American history, architecture, archaeology, engineering, or culture.

Modification – Changes to an existing building or structure resulting from the addition or removal of architectural elements, equipment, utilities, etc.

Construction – The preparation of previously disturbed or undisturbed land and the building or assembly of new buildings, structures, infrastructure and other real property on that land. The preparation of land includes removal of vegetation; site clearing, grading, and grubbing; excavation, etc. This definition does not include activities prior to construction, such as design, siting of buildings, or specification of materials, nor does it include the operation of a facility following construction.

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List of Preparers

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Appendix A: Record of Environmental Consideration

Record of Environmental Consideration

See 44 Code of Federal Regulation Part 10.

Project Name/Number:

Project Location:

Project Description:

Documentation Requirements

☐ No Documentation Required **(Review Concluded)**

☐ (Short version) All consultation and agreements implemented to comply with the National Historic Preservation Act, Endangered Species Act, and Executive Orders 11988, 11990 and 12898 are completed and no other laws apply. **(Review Concluded)**

☐ (Long version) All applicable laws and executive orders were reviewed. Additional information for compliance is attached to this REC.

National Environmental Policy Act (NEPA) Determination

☐ **Statutorily excluded from NEPA review. (Review Concluded)**
☐ Programmatic Categorical Exclusion - Category (Reference PCE in comments) **(Review Concluded)**
☐ Categorical Exclusion - Category
  ☐ No Extraordinary Circumstances exist.
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
  ☐ Extraordinary Circumstances exist (See Section IV).
  ☐ Extraordinary Circumstances mitigated. (See Section IV comments)
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ Environmental Assessment
☐ Supplemental Environmental Assessment (Reference EA or PEA in comments)
☐ Environmental Impact Statement

Comments:

Reviewer and Approvals

☐ Project is Non-Compliant (See attached documentation justifying selection).

FEMA Environmental Reviewer.
Name:

Signature_____. Date _____.

FEMA Regional Environmental Officer or delegated approving official.

Name:

Signature_____. Date _____.

I. Compliance Review for Environmental Laws (other than NEPA)

A. National Historic Preservation Act

☐ Not type of activity with potential to affect historic properties. **(Review Concluded)**
☐ Applicable executed Programmatic Agreement (insert date) Otherwise, conduct standard Section 106 review.

☐ Activity meets Programmatic Allowance # _____
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

HISTORIC BUILDINGS AND STRUCTURES

☐ No historic properties that are listed or 45/50 years or older in project area. **(Review Concluded)**
☐ Building or structure listed or 45/50 years or older in project area and activity not exempt from review.

☐ Determination of No Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☐ Determination of Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)

☐ Property a National Historic Landmark and National Park Service was provided early notification during the consultation process. If not, explain in comments

☐ No Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file).
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☐ Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file)

☐ Resolution of Adverse Effect completed. (MOA on file)
Are project conditions required ☐ Yes (see section V) ☐ No **(Review Concluded)**

ARCHEOLOGICAL RESOURCES

☐ Project affects only previously disturbed ground. **(Review Concluded)**
☐ Project affects undisturbed ground.

☐ Project area has no potential for presence of archeological resources

☐ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence or consultation on file). **(Review Concluded)**

☐ Project area has potential for presence of archeological resources

☐ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required ☐ Yes (see section V) ☐ No **(Review Concluded)**

☐ Determination of historic properties affected

☐ NR eligible resources not present (FEMA finding/SHPO/THPO concurrence on file).

Are project conditions required ☐Yes (see section V) ☐ No **(Review Concluded)**

☐ NR eligible resources present in project area. (FEMA finding/ SHPO/THPO concurrence on file)

☐ No Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)

Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☐ Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)

☐ Resolution of Adverse Effect completed. (MOA on file)

Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

B. Endangered Species Act

☐ No listed species and/or designated critical habitat present in areas affected directly or indirectly by the Federal action. **(Review Concluded)**

☐ Listed species and/or designated critical habitat present in the areas affected directly or indirectly by the Federal action.

☐ No effect to species or designated critical habitat**.** (See comments for justification)

Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☐ May affect, but not likely to adversely affect species or designated critical habitat (FEMA determination/USFWS/NMFS concurrence on file) **(Review Concluded)**

Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☐ Likely to adversely affect species or designated critical habitat

☐ Formal consultation concluded. (Biological Assessment and Biological Opinion on file)

Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

C. Coastal Barrier Resources Act

☐ Project is not on or connected to CBRA Unit or Otherwise Protected Area **(Review Concluded)**.

☐ Project is on or connected to CBRA Unit or Otherwise Protected Area. (FEMA determination/USFWS consultation on file)

☐ Proposed action an exception under Section 3505.a.6? **(Review Concluded)**

☐ Proposed action not excepted under Section 3505.a.6.

Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:

Correspondence/Consultation/References:

D. Clean Water Act

☐ Project would not affect any waters of the U.S. **(Review Concluded)**
☐ Project would affect waters, including wetlands, of the U.S.
- ☐ Project exempted as in kind replacement or other exemption. **(Review Concluded)**
- ☐ Project requires Section 404/401/or Section 9/10 (Rivers and Harbors Act) permit, including qualification under Nationwide Permits.
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

E. Coastal Zone Management Act

☐ Project is not located in a coastal zone area and does not affect a coastal zone area (**Review concluded)**
☐ Project is located in a coastal zone area and/or affects the coastal zone
- ☐ State administering agency does not require consistency review. **(Review Concluded)**.
- ☐ State administering agency requires consistency review.
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

F. Fish and Wildlife Coordination Act

☐ Project does not affect, control, or modify a waterway/body of water**. (Review Concluded)**
☐ Project affects, controls or modifies a waterway/body of water.
- ☐ Coordination with USFWS conducted
  - ☐ No Recommendations offered by USFWS. **(Review Concluded)**
  - ☐ Recommendations provided by USFWS.
    Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

G. Clean Air Act

☐ Project will not result in permanent air emissions. **(Review Concluded)**
☐ Project is located in an attainment area. **(Review Concluded)**
☐ Project is located in a non-attainment area.
- ☐ Coordination required with applicable state administering agency..
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:

Correspondence/Consultation/References:

H. Farmland Protection Policy Act

☐ Project does not affect designated prime or unique farmland. **(Review Concluded)**
☐ Project causes unnecessary or irreversible conversion of designated prime or unique farmland.
☐ Coordination with Natural Resource Conservation Commission required.
☐ Farmland Conversion Impact Rating, Form AD-1006, completed.
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

I. Migratory Bird Treaty Act

☐ Project not located within a flyway zone. **(Review Concluded)**
☐ Project located within a flyway zone.
☐ Project does not have potential to take migratory birds. **(Review Concluded)**
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ Project has potential to take migratory birds.
☐ Contact made with USFWS
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

J. Magnuson-Stevens Fishery Conservation and Management Act

☐ Project not located in or near Essential Fish Habitat. **(Review Concluded)**
☐ Project located in or near Essential Fish Habitat.
☐ Project does not adversely affect Essential Fish Habitat. **(Review Concluded)**
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ Project adversely affects Essential Fish Habitat (FEMA determination/USFWS/NMFS concurrence on file)
☐ NOAA Fisheries provided no recommendation(s) **(Review Concluded).**
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ NOAA Fisheries provided recommendation(s)
☐ Written reply to NOAA Fisheries recommendations completed.
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

K. Wild and Scenic Rivers Act

☐ Project is not along and does not affect Wild or Scenic River (WSR) - **(Review Concluded)**
☐ Project is along or affects WSR
- ☐ Project adversely affects WSR as determined by NPS/USFS. **FEMA cannot fund the action**. (NPS/USFS/USFWS/BLM consultation on file) **(Review Concluded)**
- ☐ Project does not adversely affect WSR. (NPS/USFS/USFWS/BLM consultation on file)
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

L. Other Relevant Laws and Environmental Regulations

Identify relevant law or regulations, resolution and any consultation/references

II. Compliance Review for Executive Orders

A. E.O. 11988 - Floodplains

☐ No Effect on Floodplains/Flood levels and project outside Floodplain - **(Review Concluded)**
☐ Located in Floodplain or Effects on Floodplains/Flood levels
- ☐ No adverse effect on floodplain and not adversely affected by the floodplain. **(Review Concluded)**,
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Beneficial Effect on Floodplain Occupancy/Values **(Review Concluded).**
- ☐ Possible adverse effects associated with investment in floodplain, occupancy or modification of floodplain environment
  - ☐ 8 Step Process Complete - documentation on file
    Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

B. E.O. 11990 - Wetlands

☐ No Effects on Wetland(s) and project located outside Wetland(s) - **(Review Concluded)**
☐ Located in Wetland or effects Wetland(s)
- ☐ Beneficial Effect on Wetland - **(Review Concluded)**
- ☐ Possible adverse effect associated with constructing in or near wetland
  - ☐ Review completed as part of floodplain review
  - ☐ 8 Step Process Complete - documentation on file
    Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

C. E.O. 12898 - Environmental Justice For Low Income and Minority Populations

☐ No Low income or minority population in, near or affected by the project - **(Review Concluded)**
☐ Low income or minority population in or near project area
☐ No disproportionately high and adverse impact on low income or minority population- **(Review Concluded)**
☐ Disproportionately high or adverse effects on low income or minority population
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments:
Correspondence/Consultation/References:

III. Other Environmental Issues

Identify other potential environmental concerns in the comment box not clearly falling under a law or executive order (see environmental concerns scoping checklist for guidance).

Comments:
Correspondence/Consultation/References:

IV. Extraordinary Circumstances

Based on the review of compliance with other environmental laws and Executive Orders, and in consideration of other environmental factors, review the project for extraordinary circumstances.

* A "Yes" under any circumstance may require an Environmental Assessment (EA) with the exception of (ii) which should be applied in conjunction with controversy on an environmental issue. If the circumstance can be mitigated, please explain in comments. If no, leave blank.

Yes

☐ (i) Greater scope or size than normally experienced for a particular category of action
☐ (ii) Actions with a high level of public controversy
☐ (iii) Potential for degradation, even though slight, of already existing poor environmental conditions;
☐ (iv) Employment of unproven technology with potential adverse effects or actions involving unique or unknown environmental risks;
☐ (v) Presence of endangered or threatened species or their critical habitat, or archaeological, cultural, historical or other protected resources;
☐ (vi) Presence of hazardous or toxic substances at levels which exceed federal, state or local regulations or standards requiring action or attention;
☐ (vii) Actions with the potential to affect special status areas adversely or other critical resources such as wetlands, coastal zones, wildlife refuge and wilderness areas, wild and scenic rivers, sole or principal drinking water aquifers;
☐ (viii) Potential for adverse effects on health or safety; and
☐ (ix) Potential to violate a federal, state, local or tribal law or requirement imposed for the protection of the environment.

☐ (x) Potential for significant cumulative impact when the proposed action is combined with other past, present and reasonably foreseeable future actions, even though the impacts of the proposed action may not be significant by themselves.

Comments:

V. Environmental Review Project Conditions

General comments:

Project Conditions:

Monitoring Requirements: