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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
BASP	Bastrop State Park
BMP	Best Management Practice
BUSP	Buescher State Park
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GLO	General Land Office
HMGP	Hazard Mitigation Grant Program
HVAC	Heating, Ventilation, and Air Conditioning
MDACC	MD Anderson Cancer Center
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA/NMFS	National Oceanic and Atmospheric Administration/National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OSHA	Occupational Safety and Health Administration
PL	Public Law
SWPPP	Storm Water Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
THC	Texas Historical Commission
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
SHPO	State Historic Preservation Office
USACE	United States Army Corps of Engineers
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
UT	University of Texas

1.0 Introduction

The University of Texas (UT) MD Anderson Cancer Center (MDACC) has applied for funds from the Federal Emergency Management Agency (FEMA), through the Texas Division of Emergency Management (TDEM), to conduct wildfire mitigation at the Smithville Research Center in Bastrop County, Texas. FEMA is proposing to fund the project through the Hazard Mitigation Grant Program (HMGP) under the 2008 presidential disaster declaration (DR-1791-TX Project #291) for Hurricane Ike. The scope of the proposed mitigation project is to protect the Smithville Research Center from wildfire damage through the development of defense zones along the property perimeter and building hardening measures.

In accordance with 44 Code of Federal Regulations (CFR) Part 10, this Environmental Assessment (EA) was prepared to meet the requirements of Section 102 of the National Environmental Policy Act of 1969 (NEPA), the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 CFR Parts 1500-1508), and FEMA's regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this EA is to analyze the potential environmental impacts of the proposed wildfire mitigation at the Smithville Research Center in Bastrop County, Texas. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

1.1 Project Location

The Smithville Research Center is a unique component of MDACC, with the mission to investigate the molecular biology of cancer and to develop means for cancer prevention and detection. The campus is located in the Lost Pines region of Bastrop County near Smithville, Texas, as presented on Figure 1-1. The campus is located on Park Road 1C, approximately 1.5 miles north of Texas Highway 71 and 4 miles northwest of Smithville, Bastrop County, Texas. The study area, which is comprised of 10 buildings including laboratories, research facilities, a physical plant, and office buildings, contains approximately 70 acres. The entire campus encompasses approximately 700 acres of land, presented on Figure 1-2. For purposes of evaluating potential impacts of the proposed project, the project study area was defined to include the developed area (70 acres) of the MDACC property.

2.0 Purpose and Need

Through its Hazard Mitigation Grant Program (HMGP), FEMA provides grants to states and local governments to implement long-term hazard mitigation measures. The purpose of HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

The purpose of this project is to address the Smithville Research Center's vulnerability to wildfires while adhering to State and Federal regulations. The need for the proposed wildfire mitigation project can be assessed through the following:

- Historical wildfire evidence;
- Presence of wildfire fuel; and
- Function and value of the Smithville Research Center campus.

2.1 Historical Wildfire Evidence

In 2009, the Texas Parks and Wildlife Department (TPWD) completed the *Wildfire Hazard Mitigation and Forest Management Recommendations University of Texas M.D. Anderson Cancer Center, Bastrop County*. The study evaluated the types of wildland fuel in certain areas of Bastrop County. The study presented the following historical wildfire data and also included the evaluation on wildland fuels.

The native pine-oak forest located on the MDACC property and the surrounding area is a fire-dependent ecosystem. Historically, these forests evolved with periodic fires ignited by lightning strikes and Native Americans, who may have used fire for agricultural and hunting/gathering purposes. Research has shown that major fires occurred within this habitat every 15 to 30 years and low intensity fires occurred more frequently. Over time these ecosystems developed adaptations to periodic fires and are now dependent upon fire to create the specific habitat structure or food source necessary for survival. Without wildfires, the Lost Pines forest changes and forest health declines, while the buildup of wildland fuel increases the risk of a serious wildfire.

The Lost Pines region is very susceptible to wildfires, which threaten homes, natural resources, and other critical infrastructure. A summary of historical events follows.

- 1999 - A lightning strike ignited a wildfire on MDACC property that required air and ground resources; the fire was contained to about 3 acres (TPWD, 2009).
- 2008 - Bastrop State Park experienced six wildfires (natural and human-related) on or adjacent to their property, causing about 100 acres of damage (TPWD, 2009).

- 2009 - Bastrop County's Wilderness Ridge Fire, ignited by a downed powerline, resulted in significant natural resource damage on 1,451 acres (TPWD, 2009).
- 2011 – Strong winds, low humidity, and critically dry vegetation caused a devastating wildfire season in 2011 (TFS, 2011a, 2011b). The extent of the 2011 wildfires is presented on Figure 1-1, as the red hatched area.

Although occasional wildfires are natural and necessary for the sustainability of the ecosystem, they are potentially damaging and dangerous for the facility, its inhabitants, and its activities.

2.2 Presence of Wildfire Fuel

In 2008, TPWD contracted a third party to conduct a vegetation classification and wildland fuels survey for Buescher State Park and MDACC. TPWD is working to develop wildland fire management plans for all of their properties. The completed survey of the Smithville Research Center resulted in the delineation of various vegetation associations and their corresponding wildland fuel models. These delineations, illustrated on Figure 2-1, help in wildland fire management planning, aiding in the expected fire behavior during wildfire or prescribed fire events. With the absence of fire, wildland fuels accumulate and increase the risk for a catastrophic wildfire (TPWD, 2009).

Five vegetative associations were found on MDACC property, as illustrated, and the majority of the MDACC property is Pine-Oak Woodland, which is a moderate fuel load. This association also surrounds the developed area of the Smithville Research Center, indicating a need for increased protection against wildfires.

2.3 Function and Value of Smithville Research Center Campus

The Smithville Research Center was established in 1971 as an educational and research facility focused on determining how environmental factors contribute to cancer formation. MDACC acquired 717 acres of land near Smithville from TPWD and in 1977 construction of the original buildings was completed. From the onset, the multi-disciplinary teams assembled at Smithville Research Center in the Department of Molecular Carcinogenesis have brought unique focus to complex problems, and the research program has grown rapidly in size, scope and reputation.

Since its inception, the Smithville Research Center campus has benefited from increased investment in infrastructure and facilities to keep pace with the growth of its research programs. Smithville Research Center was designated as a Nationally Recognized Environmental Center in 1996. In the last five years, \$26.7 million in new facilities and improvements were added to the campus, which included a new 23,000 square foot research laboratory building, Lab 4.

The research program of the Department of Molecular Carcinogenesis is focused on defining normal pathways that control cell differentiation, cell division, cell growth and cell survival in

order to define the factors that lead to cancer formation and progression, as well as prevention strategies.

Previous wildfire mitigation projects at the facility have cleared several areas around the facility of underbrush and wildland fuel (identified as Zone B in pink on Figure 2-2). These areas have been cleared to grass approximately 150-feet around the perimeter of the development generally following the recently constructed campus loop road in the eastern portion of the development. Outside of these cleared areas in certain locations, the forest has also been cleared of underbrush. Additional underbrush clearing has been previously completed near the northwest entrance to the campus. Table 2-1 presents the approximate estimates of the acreage associated with each of the existing zones.

Table 2-1
Estimated Existing Defense Zone Areas

Zone	Zone Description	Acres*
Zone A (Yellow)	Existing Managed Landscape	26.7
Zone B (Pink)	Managed Underbrush Removal	21.4
Unmanaged Vegetation (Green)		21.5

Note: * Areas are estimates that are based on field reviews and GIS queries.

Photos 1 through 3, in Appendix B, show the mitigation actions that have been implemented at the Smithville Research Center.

Although previous wildfire defense zones have been established around the facility, additional wildfire defense zones need to be established or enhanced for a significant portion of the facility to provide a complete wildfire barrier around the campus. The areas lacking vegetative management have been identified in green hatching on Figure 2-2 and total approximately 22 acres. The unmanaged forest areas are located in three general areas: (1) south of Lab 1 and Lab 2; (2) behind the Griffin Building, Lab 3 and the Physical Plant and extend southeast; and (3) on either side of the southern entrance. Photos 4 through 8, Appendix B, illustrate the dense forest located in these areas. If the wildfire were to begin north of the campus and move southward, there are no defense mechanisms currently in place to prevent or protect against the wildfire.

3.0 Alternatives

This section describes the alternatives that were considered in addressing the purpose and need stated in Section 2. Two alternatives are evaluated in this EA: the No-Action Alternative and the Proposed Action Alternative, which considers enhancing and establishing defense zones around the perimeter of the campus; installation of a sprinkler system; and protecting critical buildings and facilities. An additional alternative was assessed, which considered hardening all buildings, but dismissed in the evaluation process based on the associated costs and incomplete mitigation measures.

3.1 Alternatives Evaluated

3.1.1 No-Action Alternative

Under the No-Action Alternative, MDACC would not take any additional steps to reduce the risk of wildfire at the Smithville Research Center. The existing fire hazard to the campus, staff, and assets surrounding the developed area would remain under the No-Action Alternative. Loss of native flora and fauna along with their associated habitats would occur in the event of a wildfire.

3.1.2 Proposed Action Alternative

Under the Proposed Action Alternative, MDACC would enhance and establish defense zones around the perimeter of the campus; install a sprinkler system; and protect critical buildings and facilities. These proposed actions are further detailed below and are illustrated on Figure 3-1.

Defense Zones

The creation of defense zones was derived from the 2009 *Wildfire Hazard Mitigation and Forest Management Recommendations, University of Texas MD Anderson Cancer Center, Bastrop County* study conducted by the TPWD.

MDACC proposes to create 150-foot barrier zones where they currently do not exist on the campus and as the MDACC property boundary allows. These areas are presented as Zone C on Figure 3-1. Where the 150-foot defense zone is not feasible because of boundary constraints, the zone would be enhanced with a more robust sprinkler system (further described below). Three areas have been identified that would require the robust sprinkler system, including the areas on either side of the northwest entrance and the area south of Laboratories 1 and 2.

Creation of these defense zones would include the removal of all dead, decaying, and woody material; all yaupon holly, due to its flammable characteristics; and all trees and shrubs with a diameter of less than 2 inches. The remaining trees will have their branches pruned to a height of 8 feet. Although drought conditions have not severely impacted the MDACC campus, in some cases larger trees may be cut and removed if they are determined to be dead and if they add to

the fuel load in the defense zones. Larger living oak trees and pine trees will not be cut as part of the creation of defense zones. The intent of the action is to thin vegetation and ladder fuels that have accumulated in Zone C. All vegetation removal would be above ground surface. Equipment for vegetation clearing may include mowing machinery, handsaws, bobcats, grinders, and hauling trucks. Every effort will be made to hand cut when possible to minimize ground disturbance. If stump grinding is implemented and considered effective, stumps would not be excavated or mechanically removed. Preliminary estimates indicate that approximately 10 acres of vegetation would be cleared.

In general, debris resulting from the vegetation removal would be temporarily staged overnight at the MDACC campus. Vegetative material would either be staged on caliche surfaces and would be moved to its final disposal site within 24 hours; staged on asphalt surfaces and moved to its final disposal site within 72 hours; staged on undisturbed ground within an embedded enclosure which will be checked daily; or mulched and spread on site no more than 2 inches deep. All cut debris would be chipped onsite or hauled at the end of the work day to one of the temporary staging areas or to its final disposal site. Final debris disposal would be conducted in accordance with local and state regulations.

Equipment staging areas would consist of private streets, parking lots, and other areas where the ground surface has already been disturbed; thus no additional vegetation clearing would be necessary for equipment staging.

Sprinkler System

In addition to the defense zones, a wildfire sprinkler system will be installed in and around the perimeter of the campus as part of the federal action in Zones B and C. Zone B is approximately 21.4 acres in size with thinned vegetation. It is anticipated that approximately 8,000 linear feet of soil will be trenched and 8,000 linear feet of water lines will be installed to support the sprinkler system in Zone B. Currently, there is no fire suppression sprinkler system in Zone C. The north part of Zone C is approximately 9 acres in size. The south part of Zone C is approximate one acre. It is anticipated that approximately 3,800 linear feet of soil will be trenched and 3,800 linear feet of water lines will be installed to support the sprinkler system in Zone C. Some vegetation, including larger dead trees, may need to be removed in order to install the sprinkler system, but clearing will be minimal. Disturbed areas will be allowed to re-vegetate back to their previous condition.

The primary water source for the sprinkler system will be from the two storm water detention ponds located just west of Laboratory 4. A secondary source of water for the system will come from the groundwater wells located within the campus. The onsite storage tank has a capacity of 150,000 gallons of water with fire and domestic water pumps on emergency power.

Equipment staging areas would consist of private streets, parking lots, and other areas where the ground surface has already been disturbed; thus no additional vegetation clearing would be necessary for equipment staging.

Structure Hardening

Finally, critical buildings, including research laboratories and the physical plant, in Zone A (Figure 3-1) will be hardened in order to better withstand impacts from wildfire. Priority will be given to hardening the Griffin Building. The hardening measures will include mechanical additions and modifications to HVAC systems to allow for 100 percent recirculation of return air to avoid smoke infiltration. Fire resistant roofs, doors, and windows may also be installed at these buildings. Equipment staging areas would consist of private streets, parking lots, and other areas where the ground surface has already been disturbed; thus no additional vegetation clearing would be necessary for equipment staging.

3.2 Alternatives Considered and Dismissed

MDACC also considered hardening all buildings and structures located within the campus. Structural hardening measures considered included: replacing roofing material with non-combustible materials, reinforcing external walls with non-combustible materials, reinstalling windows with tempered glass, installing automatic dampers at air intakes, and replacing existing doors with fire-proof doors. This alternative was eliminated from further consideration because the cost to harden all of the buildings on campus would be cost prohibitive and would exceed the value of the hazard mitigation grant.

4.0 Affected Environment and Potential Impact

This section is organized by individual resources; it includes a description of the existing conditions at the study area, and provides an analysis of potential environmental consequences for each alternative. Where potential impacts exist, conditions or mitigation measures to offset these impacts are detailed. A summary table is provided in Section 4.7.

4.1 Physical Resources

4.1.1 Geology and Soils

Bastrop County is located within the Gulf Coastal Plains physiographic province of Texas. The province has limited topographic relief, with elevations in Bastrop County ranging from 400 feet above mean sea level (MSL) to approximately 600 feet MSL. Several geologic formations outcrop within the Plains Area and are generally composed of varying proportions of sand, silt, clay and gravel. The sand formations provide friable, deep sandy soils that contribute to the Houston toad habitat (Loomis Austin, 2007).

The study area is located in Bastrop County, in the south-central part of Texas. The campus is situated mostly on Crockett fine sandy loam soil with small portions of the campus on Edge gravelly fine sandy loam and Edge fine sandy loam (NRCS, 2012a). The study area is composed of three soils which are briefly described in the Table 4-1.

The study area is located in a developed area and surrounded by pine forest. The soils are not classified as hydric soils or prime farmland (NRCS, 2012b).

Table 4-1
Soils within the Study Area

Soil	% Slope	Description	Hydric	Prime Farmland
Crockett fine sandy loam	1 to 3	Found on ridge tops in prairies, moderately well drained, no flooding.	No	No
Edge gravelly fine sandy loam	0 to 1	Found on old, high terraces, moderately well drained, no flooding.	No	No
Edge fine sandy loam	3 to 8	Found on backslopes and side slopes, well drained, no flooding.	No	No

Sources: NRCS, 2012a, 2012b
USACE, 2002

The Farmland Protection Policy Act (7 USC 4201, *et seq*) and its regulations (7 CFR Part 658) establish criteria for identifying and considering the effects of federal programs on the conversion of farmland to non-agricultural uses. Prime farmland soils are not located within the developed area of the Smithville Research Center (NRCS, 2012a).

No Action Alternative – Under the No Action Alternative, no construction would occur and there would be no impacts to geology or soils.

Proposed Action Alternative – Under the Proposed Action Alternative, construction activities would not be deep enough to impact underlying geologic resources or seismicity. However, above-ground vegetation clearing would disturb approximately 10 acres of land around the perimeter of the campus to create the defense zones. Proposed vegetation removal would be using hand-clearing, whenever practical, and would remain above ground with care given to erosion control methods, including preserving intact root structures. Per avoidance and minimization measures outlined by FEMA and USFWS, presented in Section 4.4, mowing equipment will be set a height of at least 5 inches.

To install the sprinkler system, approximately 8,000 linear feet of soil would be trenched in Zone B and approximately 3,800 linear feet of soil in Zone C. Some vegetative clearing would be required, but efforts will be minimized and disturbed areas would be allowed to re-vegetate. The width and depth of excavation will be dependent on soil and vegetation conditions, which will be finalized during the project design phase.

Proposed vegetation removal for the creation of defense zones would be using hand-clearing, whenever practical. Although the use of equipment, such as mowing machinery, handsaws, bobcats, grinders, and hauling trucks may be utilized for vegetative clearing. The use of these less invasive vegetation clearance measures would minimize the potential for erosion and sedimentation activities to occur. The use of erosion control and best management practices (BMPs) would not result in adverse impacts to the geology and soils in the study area. The proposed project would have a minimal short-term impact on native soils.

The applicant would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and obtain a Texas Pollutant Discharge Elimination System (TPDES) permit prior to construction. Implementation of appropriate Best Management Practices (BMPs), as described in the SWPPP and required for the TPDES permit, would help minimize site runoff. BMPs would include the installation of silt fences and the revegetation of disturbed soils to minimize erosion. 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 the construction activities, work will cease until the appropriate procedures and permits can be implemented.

4.1.2 Air Quality

Under the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for air quality contaminants considered harmful to public health and the environment. The NAAQS is based on the three year average, or design value, of the fourth highest daily maximum 8-hour average ozone concentrations measured annually at each regulatory monitor. Attainment means the air quality meets the

standards set by the NAAQS. Bastrop County is currently designated in attainment of the 1997 NAAQS for ozone (Bastrop County, 2010).

No Action Alternative – Under the No Action Alternative, there would be no construction and no effect on air quality.

Proposed Action Alternative – Under the Proposed Action Alternative, minor, short-term impacts to air quality would occur during construction. Proposed vegetation removal for the creation of defense zones would be using hand-clearing, whenever practical. Although the use of equipment, such as mowing machinery, handsaws, bobcats, grinders, and hauling trucks may be utilized for vegetative clearing.

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. To reduce the emission of criteria pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained.

4.2 Water Resources

4.2.1 Surface Water

Under the Clean Water Act (CWA), the U.S. Environmental Protection Agency (EPA) established the basic framework for regulating discharges of pollutants into the Waters of the United States.

The campus is situated two miles upstream from the Buescher Lake in the sub-watershed of Hunt Branch. Hunt Branch begins east of the campus and generally flows south into Buescher Lake. Surface water drains in a radius around the campus. On the east side of the campus, water flows east through forested land for approximately 0.25 miles before draining into Hunt Branch. There are three man-made ponds in the southern part of the campus. Two storm water detention ponds are located just west of Laboratory 4. Another pond is located east of Laboratory 4, outside of the developed campus.

No Action Alternative – Under the No Action Alternative, no construction would occur and there would be no impacts to surface waters.

Proposed Action Alternative – Under the Proposed Action Alternative, minor short-term impacts to offsite surface waters may occur due to stormwater runoff transporting sediments from soils disturbed during vegetation removal and trenching associated with the sprinkler system. To reduce impacts to offsite surface waters, the applicant would implement appropriate BMPs, such as installing silt fences and revegetating bare soils. The applicant would also be required to prepare a SWPPP and obtain a TPDES permit prior to construction.

4.2.2 Groundwater

Groundwater in Bastrop, Texas includes two aquifers. The Carrizo-Wilcox forms the major aquifer in western and central Bastrop and Lee Counties. This aquifer contains both water-table and artesian zones and consists of two connected formations, the Wilcox Group and the overlying Carrizo formation. The thickness of the artesian zone ranges from 200 feet to 3,000 feet. Although the aquifer can extend for 3,000 feet, the freshwater saturated thickness of the sands averages 670 feet. The outcrop (recharge zone) region dominates most of the western part of the county and the deeper (downdip) portion runs through the central part of the county (Ashworth and Hopkins, 1995).

No Action Alternative – Under the No Action Alternative, no construction would occur and there would be no impacts to groundwater.

Proposed Action Alternative – Under the Proposed Action Alternative, no impacts to groundwater are anticipated due to the depth of the aquifer. Vegetation clearing and sprinkler system installation activities are not anticipated to reach a sufficient depth to directly impact groundwater.

4.2.3 Waters of the U.S. Including Wetlands

The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into Waters of the United States, including wetlands, pursuant to Section 404 of the Clean Water Act (CWA). Additionally, EO 11990 (Protection of Wetlands) requires Federal agencies to avoid, to the extent possible, adverse impacts to wetlands.

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map of the area indicated there are no wetlands within the proposed project site (USFWS 2012a). A site visit conducted by an Environmental Specialist on February 3, 2012, verified that there are no wetlands or other Waters of the United States on the project site.

No Action Alternative – Under the No Action Alternative, construction of the new facility would not occur and there would be no impacts to wetlands or other Waters of the United States.

Proposed Action Alternative – Under the Proposed Action Alternative, no direct impacts to Waters of the United States, including wetlands, would occur. Therefore the project would not require permitting with the USACE. Minor, short-term impacts to the surrounding drainage areas (surface water drains in a radius around the campus) may occur from the transport of sediments from ground disturbance and soil erosion during vegetation clearing and sprinkler system installation. Appropriate BMPs, including the installation of silt fences and the revegetation of disturbed soils, would be implemented to minimize soil erosion and reduce off-site sediment transport to offsite waters.

4.2.4 Floodplains

EO 11988 (Floodplain Management) requires Federal agencies to avoid direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative.

FEMA uses Flood Insurance Rate Maps (FIRMs) to identify the regulatory 100-year floodplain for the National Flood Insurance Program. Consistent with EO 11988, FIRMs were examined during the preparation of this EA. According to the FIRM, the proposed project site is located within Flood Zone X, outside of the special flood hazard area (100-year floodplain) (FEMA 2006; Community Panel Number 48021C0395E, Revised January 19, 2006). The project FIRM is presented on Figure 4-1.

No Action Alternative – Under the No Action Alternative, construction of defense zones would not occur and there would be no impacts to floodplains.

Proposed Action Alternative – Under the Proposed Action Alternative, project activities would take place outside the 100-year floodplain and would have no impact on the floodplains.

4.3 Coastal Resources

The Coastal Zone Management Act (CZMA) enables coastal States, including Texas, to designate State coastal zone boundaries and develop coastal management programs to improve protection of sensitive shoreline resources and guide sustainable use of coastal areas. The Texas General Land Office (GLO) monitors and manages coastal zone actions in partnership with the Federal government under the CZMA within the Texas Coastal Zone. All federally funded projects must be consistent with the Texas Coastal Management Program (TCMP).

The Coastal Barrier Resources Act (CBRA) of 1982, administered by USFWS, was enacted to protect sensitive and vulnerable barrier islands found along the U.S. Atlantic, Gulf, and Great Lakes coastlines and to discourage development in coastal areas. The CBRA established the Coastal Barrier Resources System (CBRS), which consists 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.

The Smithville Research Center is located approximately 120 miles from the nearest coastline. The proposed project site is located outside of the Texas Coastal Zone (GLO 2012) and outside the CBRS (USFWS 2012b).

No Action Alternative – Under the No Action Alternative, no construction would occur and there would be no impacts to coastal resources.

Proposed Action Alternative – Under the Proposed Action Alternative, activities would not occur within the Texas Coastal Zone or the CBRS; therefore there would be no impacts to coastal resources.

4.4 Biological Resources

MDACC forests are characterized as the Loblolly Pine (*Pinus taeda*) – Oak Vegetation Series. These forests are typically represented by Loblolly Pine, 50 to 60 feet in height, in the canopy layer with Post Oak (*Quercus stellata*), Sand Post Oak (*Quercus margaretta*), and Blackjack Oak (*Quercus marilandica*) occupying a broken, or incomplete, subcanopy layer at about 20 to 25 feet. Yaupon Holly (*Ilex vomitoria*) is the most common forest shrub (up to 15 feet). Farkleberry (*Vaccinium arboreum*) is present within the shrub layer along upslopes, and American Beautyberry (*Callicarpa americana*) is more common along moist drainages. Grasses and wildflowers such as Little Bluestem (*Schizachyrium scoparium*), Woolly-sheath Threeawn (*Aristida lanosa*), Purpletop Greasegrass (*Tridens flavus*), Blazingstar (*Liatris aspera*), Cat-tongue Goldenrod (*Solidago radula*), Late Purple Aster (*Symphyotrichum patens*), and Hairy Bedstraw (*Galium pilosum*) are scarce and found primarily among light gaps in the tree canopy (TPDW, 2009). The area around the developed portion of the campus is generally grassy and the area immediately surrounding developed area is forested.

The Endangered Species Act (ESA) of 1973 provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. Section 7 of the ESA requires Federal agencies, in consultation with the USFWS and/or the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA/NMFS), to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The ESA also prohibits any action that causes an unauthorized "taking" of any listed species.

The USFWS maintains lists of threatened and endangered species known to occur in each county of the United States. Table 4-2 presents the three federally listed species and their likelihood of occurrence in the study area.

**Table 4-2
Federally Listed Species with Potential to Occur in Study Area**

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence in the Study Area
<i>Bufo houstonensis</i>	Houston toad	E	The species prefers a mature, healthy forest with an open understory and breeding areas (ephemeral wet-weather ponds and other water features). ¹	Potential to occur, although the soils within the study area are not conducive for species habitat.

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence in the Study Area
<i>Spiranthes parksii</i>	Navasota ladies'-tresses	E	The species is an edaphic endemic dependent on ephemeral seeps with sandy soils, and found mainly in small clearings within post oak savanna in central east Texas. ²	Potential to occur. The study area contains an area of Pine-Oak Savanna woodlands within the Loop Road. As described in the soils description, these areas also have well-drained sandy, loamy soils with an underlying claypan.
<i>Grus americana</i>	Whooping Crane	E	Migrate to Texas during winter to croplands for feeding and palustrine wetlands and riverine habitat for roosting. ³	Not likely to occur. The study area does not include wetlands or croplands. No vegetation will be cleared near riparian areas.

Sources: (1) USFWS, 2011c
(2) USFWS, 2009
(3) USFWS, 2012.

Three federally endangered species are known to occur in Bastrop County: Houston toad (*Bufo houstonensis*); Navasota ladies'-tresses (*Spiranthes parksii*); and whooping crane (*Grus Americana*). In addition, the Smithville Research Center is located in designated critical habitat for the Houston toad.

Texas Natural Diversity Database, maintained by TPWD, reports five elemental occurrences for the Houston toad, one elemental occurrence for the Navasota ladies'-tresses, and no occurrences of the whooping crane in or near the project site. An elemental occurrence (EO ID 344) for the Houston toad, consisting of 70,000 acres, had the most recent observation of the species in 2003. This area encompasses our study area and both Bastrop and Buescher State Parks. The elemental occurrence obtained for the Navasota ladies'-tresses (EO ID 8806) includes one area, north of Buescher State Park in the University of Texas Stengl Lost Pines Biology Station. This area is 1.5 miles north of the MDACC study area. The elemental occurrence data has been included as Appendix C.

Bastrop County has been surveyed consistently from year to year since the 1970s. According to the USFWS Houston Toad 5-Year Review, the number of Houston toads in Bastrop County in 2003 was estimated to be between 100 and 200 individuals. The 2011 Houston toad breeding/survey season ended May 2011 with only six Houston toads detected in Bastrop State Park, two Houston toads detected on the Griffith League Ranch in Bastrop County, one Houston toad detected south of the Texas State Highway 290 corridor in Bastrop County, one Houston toad detected in Austin County, one Houston toad detected in Lavaca County, and one Houston toad detected on Cade Lakes in Burlison County (USFWS, 2011c). No reproductive events were

observed during the 2011 breeding season, despite extensive survey attempts (Forstner and Dixon, 2011).

MDACC sponsored a series of field investigations for the Houston toad for approximately 700 acres of MDACC property. The surveys were completed in 2007, 2008 and 2009 and were conducted to determine the presence/absence for the Houston toad. The surveys were conducted by SWCA Environmental Consultants (SWCA) according to USFWS protocol and were completed during the Houston toad breeding season between February 1 and April 30. The 700-acres were divided into three transects that were physically walked during each survey period. The results of the three years' surveys are described below in Table 4-3. No Houston toads were observed during these surveys.

**Table 4-3
Summary of Houston Toad Surveys**

Survey Year	Summary of Survey Results
2007	SWCA surveyed the Smithville Research Center property for seven nights during the 2007 Houston toad breeding season. In addition, SWCA visited three known breeding sites (off-site) throughout the surveys for use as Houston toad reference ponds. Houston toads were observed at the three reference sites on four out of seven visits. No Houston toads, however, were observed within the MD Anderson survey area during any of the seven visits. ¹
2008	SWCA surveyed the Smithville Research Center property for six nights during the 2008 Houston toad breeding season. In addition, SWCA visited two known breeding sites (off-site) throughout the surveys for use as Houston toad reference ponds. Houston toads were observed at one site (Bastrop State Park Lake) on four out of six visits. No Houston toads were observed within the MD Anderson survey area during any of the six visits. ²
2009	SWCA surveyed the Smithville Research Center property for five nights during the 2009 Houston toad breeding season. SWCA visited two known breeding sites in Bastrop State Park (BASP) and Buescher State Park (BUSP) and multiple pond locations throughout Bastrop County prior to each survey for use as Houston toad reference ponds. No Houston toads were observed within the MD Anderson survey area, BASP, or BUSP during any of the five visits. ³

Sources:

- (1) SWCA, 2007
- (2) SWCA, 2008
- (3) SWCA, 2009

An additional site reconnaissance was conducted by a URS Corporation (URS) wildlife biologist on February 3, 2012, to evaluate the presence of Houston toad habitat within the developed area of the campus. The Houston toad prefers deep, soft sands that allow the toad to burrow; the soils present at the developed area contain firm, loamy or sandy loam surfaces, as presented in the soil description above. The soil conditions within the developed area are not conducive for Houston

toad habitat. The results and supporting photographs of the February 2012 site reconnaissance are included in Appendix D.

During the site visit, no egg strands were observed within submerged shoreline vegetation. Additionally, Houston toads have not been observed utilizing any ponds on the MD Anderson property and survey area in 2007, 2008, or in 2009. Based on the results of the three surveys, it can be reasoned that Houston toads are not likely to be present at the MD Anderson property.

While no longer listed as a threatened species, the bald eagle (*Haliaeetus leucocephalus*) is protected under The Bald and Golden Eagle Protection Act of 1940, the Migratory Bird Treaty Act of 1918, and the Lacey Act of 1900. The Bald and Golden Eagle Protection Act provides protection for the bald and golden eagles by prohibiting the take, possession, sale, purchase, barter, offer to sell, transport, and export or import of any bald or golden eagle, alive or dead, including any part, nest, or egg. The Migratory Bird Treaty Act protects birds that migrate across international borders. The Lacey Act protects bald eagles by making it a federal offense to take, possess, transport, sell, import, or export their nests, eggs, and parts that are taken in violation of any state, tribal, or U.S. law. Bald eagles have been sighted in Bastrop County and have the potential to inhabit the study area as it provides desirable large trees.

No Action Alternative – Under the No Action Alternative, there would be no impacts to biological resources, including Federal and state-protected species.

Proposed Action Alternative – Under the Proposed Action Alternative, approximately 10 acres of forested land would be cleared, as defined in the alternative description.

If the project activities occur adjacent to any bald or golden eagle nest, both occupied and unoccupied, the applicant must contact FEMA and consult with the USFWS before work begins. If the project activities involve impacts to an occupied migratory bird species' nest, the applicant must contact FEMA and consult with the USFWS before work begins.

FEMA is making a “no effect” determination for Navasota ladies'-tresses (*Spiranthes parksii*) and the whooping crane (*Grus Americana*). FEMA initiated informal consultation with USFWS under Section 7 of the ESA for the Houston toad since there is a potential for the toad to be present within the project site. FEMA determined that the proposed project may affect, but is not likely to adversely affect the Houston toad given the implementation of various avoidance and mitigation measures. USFWS concurred with FEMA's determination in a letter dated September 19, 2012. FEMA and the USFWS have also determined that the proposed project will not adversely modify critical habitat.

MDACC is committed to protecting the species and will implement the agreed upon avoidance and minimization measures outlined in the informal correspondence between FEMA and USFWS, included in Appendix F.

Avoidance and Mitigation Measures

The following avoidance and minimization measures will be implemented by MDACC for the proposed FEMA-funded wildfire mitigation activities in order to minimize impact to the toad. These measures have been adapted from the USFWS Best Management Practices (2011a, 2011b); the Lost Pines Habitat Conservation Plan (Loomis Austin, 2007) and the Bastrop Utilities Habitat Conservation Plan (2005); FEMA consultations with USFWS for debris removal activities in the Bastrop burn area; and on discussions with Dr. Michael Forstner (Texas State University). Implementation of these measures is a condition of federal funding.

1. The structure hardening component of the federal action in Zone A can take place at any time of year.
2. Vegetation management activities associated with creation of defense zones and the installation of sprinkler systems in Zones B and C can only take place from July 1 to December 31 (outside of the Houston toad breeding season and emergence period). This period may be extended, with approval of FEMA and USFWS, past December 31 if it is determined that Houston toads are not yet active in the area.
3. If the project site experiences more than 2 inches of rain over a 2-day period, work in Zones B and C will cease for 4 days after the rain ends. Any vegetative debris staged on caliche or asphalt surfaces will be removed immediately to a final disposal site or to an enclosed temporary staging area (see No. 11 below).
4. Hand-clearing of vegetation shall be used when practical. The use of track equipment for clearing shall be minimized.
5. MDACC must not cut mature living pine trees and oak trees except in the rare case when a mature living tree interferes with sprinkler system installation and there is no alternative to cutting that tree.
6. The number and size of entry and exit points for heavy equipment to move into and out of forested areas will be kept to the minimum needed for conducting safe and effective vegetation management and sprinkler installation.
7. For work in Zones B and C, operation of heavy equipment (for example, tractors, large trucks, bulldozers, skidders, trenchers) cannot occur within 200 feet (61 meters) of potential Houston toad breeding sites or riparian areas. These may include ephemeral wet weather ponds and other water features, such as stock tanks, creeks, streams, drainages, wetlands, seeps, and springs. Hand cutting and clearing is required in these areas.
8. If MDACC plans to install a sprinkler system within 200 feet of the man-made pond located in Zone B on the southeast side of campus outside of Loop Road and as indicated on Figure

3-1, a silt fence must be installed around the entirety of that pond during the sprinkler system construction period.

9. Any mowing equipment used for clearing grass, forbs, and small-diameter woody vegetation will be set at a height of at least 5 inches above the ground to minimize the potential for striking toads. In cases where leaving woody stumps of 5 inches tall or greater would pose a risk of damage to equipment, MDACC may mow vegetation at less than 5 inches above ground level. In such cases mowing shall be restricted to the minimum area necessary.
10. Small excavations (e.g., trenches for sub-surface lines) must not remain open overnight. Large excavations that remain open overnight shall be appropriately fenced so as to prevent access by anurans, and shall be inspected in the morning prior to initiating installation/construction activities.
11. MDACC must stage and/or process debris that results from vegetation management activities via one or a combination of the following methods:
 - **Haul to Final Disposal Site:** Vegetative debris resulting from the proposed action can be hauled by the end of that work day to the final disposal site. If the final disposal site is not yet established as an existing operation, and it is located in Houston toad habitat, MDACC will need to submit the final disposal site plans to FEMA for re-review.
 - **Mulching:** Vegetative debris may be mulched on-site the day that it is cut and spread on the forest floor. Any mulch, chips, or other woody debris that is left on site must cover the forest floor in no more than a 1 to 2-inch layer.
 - **Temporary Staging:** Any debris that is not mulched or hauled to a final disposal site by the end of the work day, must be staged in one or a combination of the following areas:
 - **Staging on Caliche:** Vegetative debris may be temporarily staged on caliche parking areas/surfaces on the MDACC campus for a maximum of 24 hours. All debris at any one caliche site must be burned or moved to final disposal within 24 hours of being deposited at that temporary staging site.
 - **Staging on Asphalt:** Vegetative debris may be temporarily staged on asphalt parking areas/surfaces on the MDACC campus for a maximum of 72 hours. All debris at any one asphalt site must be burned or moved to final disposal within 72 hours of being deposited at that temporary staging site.
 - **Staging within an Exclosure:** Vegetative debris may be temporarily staged on undeveloped natural ground (grass, dirt, rights-of-way, etc.) on the MDACC campus within an exclosure that is separated from the natural environment by an intact silt fence that extends at least 4 inches into the ground. The silt fence must be inspected daily to ensure that it has not been compromised or breached. Any necessary silt fence repairs or replacement will be made immediately. All debris

within the enclosure(s) must ultimately be burned or moved to final disposal before January 1.

12. MDACC shall dispose of all waste materials in accordance with Texas Commission on Environmental Quality (TCEQ) standards and requirements, including obtaining any required permits for temporary staging. Final disposal of all debris will be conducted in accordance with TCEQ regulations.
13. Streams, riparian zones, wetlands, and areas near potential Houston toad breeding sites will not be used for staging equipment or refueling. Equipment must be stored, serviced, and fueled at least 200 feet away from these sensitive areas.
14. Gasoline- and diesel- fueled field equipment must be inspected daily for signs of fuel or hydraulic leaks; such leaks must be repaired promptly and measures will be taken to prevent soil contamination. All hazardous materials related to construction or maintenance activities will be properly contained, used, and/or disposed of.
15. Following vegetation management and sprinkler installation activities, MDACC will ensure that equipment used on undisturbed ground has not resulted in potential artificial breeding sites. For example, large tire ruts will be smoothed so as not to create an undesirable breeding.
16. Under no circumstances will stumps be removed mechanically (i.e., excavated or pushed).
17. Should a Houston toad be encountered during debris activities, work must cease immediately. The U.S. Fish and Wildlife Service's Clear Lake Ecological Services Office will be contacted at (281) 286-8282.

4.5 Cultural Resources

The National Historic Preservation Act (NHPA) of 1966, (Public Law [P.L.] 89-665; 16 USC 470 *et seq.*) as amended, outlines Federal policy to protect historic properties and promote historic preservation in cooperation with States, Tribal Governments, local governments, and other consulting parties. The NHPA established the National Register of Historic Places (NRHP) and designated the State Historic Preservation Office (SHPO) as the entity responsible for administering State-level programs. The NHPA also created the Advisory Council on Historic Preservation (ACHP), the Federal agency responsible for overseeing the Section 106 process and providing commentary on Federal activities, programs, and policies that affect historic properties.

Section 106 of the NHPA and its implementing regulations (36 CFR 800) outline the procedures for Federal agencies to follow to take into account the effect of their actions on historic properties. The Section 106 process applies to any Federal undertaking that has the potential to affect historic properties, defined in the NHPA as those properties (archaeological sites, standing

structures, or other historic resources) that are listed in or eligible for listing in the NRHP. Although buildings and archaeological sites are most readily recognizable as historic properties, a diverse range of resources are listed in the NRHP, including roads, landscapes, and vehicles. Under Section 106, Federal agencies are responsible for identifying historic properties within the Area of Potential Effects (APE) for an undertaking, assessing the effects of the undertaking on those historic properties, if present, and considering ways to avoid, minimize, and mitigate any adverse effects of its undertaking on historic properties, it is the primary regulatory framework that is used in the NEPA process to determine impacts on cultural resources.

No Action Alternative – Under the No Action Alternative, no construction would occur and no historic properties would be affected.

Proposed Action Alternative – The APE for the proposed project consists of the developed area (70 acres) of the MDACC property, which is comprised of 10 buildings including laboratories, research facilities, a physical plant, and office buildings, roads, parking areas, retention ponds, and forested land, some of which is maintained and some of which is previously undisturbed. Buildings that may be hardened under the Proposed Action Alternative were constructed as early as 1977, and are not considered cultural resources. Archival research conducted via the Texas Historical Commission’s (THC) Texas Archeological Sites Atlas web site indicated that no previously recorded historical or archeological sites have been identified within or in the immediate vicinity of the APE. Figure 4-2 identifies sites included in the state database in the vicinity of the project location.

The proposed project was coordinated with the SHPO and correspondence is included in Appendix F. In a letter dated March 19, 2012, the SHPO concluded that the project would not affect historic properties and that the project could proceed as planned. Based on archival research, building construction dates, and correspondence with the SHPO, FEMA has made the determination that the proposed project will have no impact on archeological or cultural resources.

In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured by MDACC, and access to the sensitive area will be restricted by MDACC. The Applicant will inform FEMA immediately, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

4.6 Socioeconomic Resources

4.6.1 Socioeconomics

Table 4-4 presents regional population trends in the State of Texas, Bastrop County, and census tract 9506, which is where the project is located. Overall, population within these geographic locations has increased over the 20-year period of 1990 - 2010. Whereas Texas experienced a 20.6 percent increase in population from 2000 to 2010, Bastrop County experienced a higher increase in population at 28.5 percent. Although Census tract 9506 experienced growth in period of 2000 to 2010, it was not significant as the growth in period of 1990 and 2000.

Table 4-4
Regional Population Trends: 1990 to 2000

Location	Population			Percent Change 1990-2000	Percent Change 2000-2010
	1990	2000	2010		
Texas	16,986,510	20,851,820	25,145,561	22.76%	20.59%
Bastrop County	38,263	57,733	74,171	50.88%	28.47%
Census Tract 9506	2,915	4,459	5,184	52.97%	16.26%

Source: USCB, 1990, 2000 and 2010b

Median household income and percent of the population below poverty level are indicators of economic conditions. This data is presented in Table 4-5.

Table 4-5
Poverty Status and Median Household Income

Category	2006 – 2010 American Community Survey		
	Texas	Bastrop County	Census Tract 9506
Median Household Income	\$49,646	\$51,829	\$46,551
% Families Below Poverty Level	13.00%	9.80%	10.00%
% People Below Poverty Level	16.80%	14.10%	12.40%

Source: USCB, 2010a

As shown in Table 4-5, the median household income for the census tract is lower than the median household income of Bastrop County; although median household incomes were both above the 2000 poverty guideline for a four person family (\$17,050) as defined by the U.S. Department of Health and Human Services (USHHS).

No Action Alternative – Under the No Action Alternative, no impacts to socioeconomic resources would occur.

Proposed Action Alternative – Under the Proposed Action Alternative, no adverse socioeconomic impacts are anticipated. The population, according to the 2010 Census, for the census block in the immediate study area is zero; therefore no impacts to nearby populations are anticipated. Additionally, the proposed alternative is to be implemented on only MDACC property within the developed area of the Smithville Research Center. The project is not expected to have a great impact on the economy of the surrounding community and the major goal of the project is to protect the valuable research housed at the facility.

4.5.2 Environmental Justice

EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) mandates that Federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.

Socioeconomic and demographic data for the project area were reviewed to determine if a disproportionate number of minority or low-income persons have the potential to be adversely affected by the proposed project. The following information, Table 4-6, was gathered from the USCB 2010 Census and the 2006-2010 American Community Survey for evaluation.

**Table 4-6
Total Population, Race, and Ethnicity**

Category	Texas		Bastrop County		Census Tract 9506	
	Number	Percent	Number	Percent	Number	Percent
Total Population	25,145,561		74,171		5,184	
Race and Ethnic Origin	Number	Percent	Number	Percent	Number	Percent
White Alone	11,397,345	45.33%	42,446	57.23%	4200	81.02%
Black or African American Alone	2,886,825	11.48%	5,535	7.46%	163	3.14%
American Indian and Alaskan Native Alone	80,586	0.32%	315	0.42%	36	0.69%
Asian Alone	948,426	3.77%	449	0.61%	17	0.33%
Native Hawaiian and Other Pacific Islander Alone	17,920	0.07%	54	0.07%	4	0.08%
Some Other Race Alone	33,980	0.14%	115	0.16%	5	0.10%
Two or More Races	319,558	1.27%	1,067	1.44%	62	1.20%
Hispanic or Latino	9,460,921	37.62%	24,190	32.61%	697	13.45%
Total Racial Minority ¹	13,748,216	54.67%	31,725	42.77%	984	18.98%

Source: USCB, 2010b

**Table 4-6
Total Population, Race, and Ethnicity**

Category	Texas		Bastrop County		Census Tract 9506	
Total Population	25,145,561		74,171		5,184	
Race and Ethnic Origin	Number	Percent	Number	Percent	Number	Percent

Notes:

1. Racial Minority = Black or African American alone, American Indian and Alaskan Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, Some Other Race alone, Two or More Races, and Hispanic or Latino.

As shown in Table 4-6, 2010 racial minority composition of 54.7 percent and 42.8 percent were reported for Texas and Bastrop County, respectively. At the project level, a 2010 racial minority composition of 18.98 percent was reported within Census tract 9506, of which 13.5 percent of the population is Hispanic or Latino.

Site observations indicate that the demographics of the residential communities adjacent to the proposed project site are consistent with that found throughout the area.

No Action Alternative – Under the No Action Alternative, no activities would occur and there would be no disproportionate impacts on minority or low-income populations.

Proposed Action Alternative –The Proposed Action Alternative would be implemented within the developed MDACC campus, and would not result in the acquisition of additional land or displacement of any population or businesses. There would be no disproportionately high or adverse impact on minority or low-income portions of the population.

4.5.3 Hazardous Materials

A preliminary investigation was conducted to determine the impact of the proposed project on potential hazardous materials sites within the study area. The purpose of this preliminary investigation was to identify sites that may have a potential adverse effect on the local environment posed by hazardous materials or petroleum contamination if disturbed by earthmoving activities during construction of the project. Because of the potentially high cost and complicated procedures required to mitigate impacts when constructing over or through potentially contaminated sites, avoidance of these areas is often the most prudent and feasible course of action.

A review of available records maintained by the USEPA and the Texas Commission on Environmental Quality (TCEQ) was conducted by searching online databases maintained by these two regulatory agencies. The purpose of the records review was to assess the potential for hazardous substance contamination within the proposed study area and the potential impacts that could result from project-related construction activities on these properties. Several regulated

facilities were identified within the campus. No facilities within 0.5-mile of the campus were identified as having confirmed petroleum releases.

No Action Alternative – Under the No Action Alternative, no construction would occur and there would be no impacts to hazardous materials or waste.

Proposed Action Alternative – Under the Proposed Action Alternative, no hazardous materials or waste impacts are anticipated. Any hazardous materials discovered, generated, or used during construction would be handled and disposed of in accordance with applicable local, State, and Federal regulations.

4.5.4 Noise

Noise is generally defined as unwanted sound. 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. EPA guidelines, and those of many other Federal agencies, state that outdoor sound levels in excess of 55 dB DNL are “normally unacceptable” for noise-sensitive land uses such as residences, schools, or hospitals.

The Smithville Research Center is not located near sensitive noise receptors (nursing homes, hospitals, etc.) and is generally surrounded by undeveloped land.

No Action Alternative – Under the No Action Alternative, no construction would occur and there would be no impacts to noise levels.

Proposed Action Alternative – Under the Proposed Action Alternative, minor short-term increases in noise levels are anticipated during the construction period. To mitigate noise impacts to nearby noise-sensitive receptors, construction activities would take place during normal business hours. Equipment and machinery utilized at the proposed project site would meet all local, State, and Federal noise regulations.

4.5.5 Transportation

The project site is located in Bastrop County near Buescher State Park. Access to the secure campus is provided by Park Road 1C via State Highway 71. The roadway network is illustrated in Figure 4-3. Because of the campus’ remoteness, traffic operations currently operate adequately.

No Action Alternative – Under the No Action Alternative, there would be no construction and no impacts to transportation would occur.

Proposed Action Alternative – Under the Proposed Action Alternative, there would be no significant long-term impact to the existing roadway network. There would be a minor

temporary increase in construction traffic on roadways leading into the campus, as well as within the campus although the increase is not anticipated to impact traffic conditions. Although road closures are not anticipated, appropriate signage would be posted on affected roadways and construction vehicles and equipment would be stored on campus during project construction to mitigate against any potential delays.

The proposed alternative would require annual maintenance of clearing the underbrush in the defense zones, although no impacts to traffic operations are anticipated. The annual maintenance period is anticipated to be brief and during maintenance construction vehicles and equipment will be stored on campus to minimize the impacts to the surrounding roadway network.

4.5.6 Public Health and Safety

EO 13045 (Protection of Children) requires Federal agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. Safety and security issues considered in this EA include the health and safety of area residents, the public-at-large, and the protection of personnel involved in the activities related to the construction of the proposed project.

No Action Alternative – Under the No Action Alternative, no construction activities would occur and there would be no impacts to public health and safety. Although no construction related safety issues are a concern, this alternative does not provide any additional wildfire protection to the campus.

Proposed Action Alternative – Under the Proposed Action Alternative, construction activities could present safety risks to those performing the activities; however, no impacts to public health and safety are anticipated. The proposed activities will provide protection against wildfires to the campus, while enhancing the safety.

To minimize risks, all construction activities would be performed by qualified personnel trained in the proper use of equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in a safe manner in accordance with the standards specified in the Occupational Safety and Health Administration (OSHA) regulations. The appropriate signage and barriers would be in place prior to construction activities to alert pedestrians and motorists of project activities. The construction contractor will be responsible for adhering to the Texas One-Call Law.

4.7 Summary

The following table summarizes the potential impacts of the Proposed Action Alternative and conditions or mitigation measures to offset those impacts.

**Table 4-8
Summary of Impacts**

Affected Environment	Impacts	Mitigation
Geology and Soils	No impacts to geology are anticipated. Minor, short-term impacts to approximately 10 acres of land where vegetation clearing would occur and 11,800 linear feet of soil where the sprinkler system would be installed. No impacts to prime and unique farmlands would occur.	SWPPP and TPDES permits must be obtained prior to construction. The construction contractor would be required to implement appropriate BMPs, including installation of silt fences and revegetation of disturbed soils to minimize erosion. Waste materials will be managed and disposed of in accordance with applicable local, State, and Federal regulations. If contaminated materials are discovered during the construction activities, work will cease until appropriate procedures and permits can be implemented.
Air Quality	Minor, short-term impacts to air quality would occur during the construction period.	Construction contractors would be required to water down construction areas when necessary, fuel-burning equipment running times would be kept to a minimum, and engines would be properly maintained.
Surface Water	Minor, short-term impacts to offsite surface waters may occur due to stormwater runoff transporting sediments from soils disturbed during vegetation and clearing installation of the sprinkler system.	The applicant would be required to obtain a SWPPP and a TPDES permit for the project. Appropriate BMPs, including installing silt fences and revegetating bare soils, would minimize runoff.
Groundwater	No impacts to groundwater are anticipated.	None
Waters of the U.S. Including Wetlands	No impacts to wetlands or other Waters of the United States are anticipated.	Appropriate BMPs would be implemented to minimize soil erosion and reduce sediment transport to offsite surface waters and wetland areas.
Floodplains	No impacts to the floodplain are	None

Affected Environment	Impacts	Mitigation
	anticipated.	
Coastal Resources	No impacts to coastal resources are anticipated.	None
Biological Resources	<p>The 10 acres to be cleared consists of forested land. The informal consultation initiated by FEMA with the USFWS reached a concurrence in September 2012. FEMA has made a “no effect” determination for Navasota ladies’-tresses (<i>Spiranthes parksii</i>) and the whooping crane (<i>Grus Americana</i>) for the activities associated with the Proposed Action Alternative. FEMA and the USFWS have determined that the Proposed Action Alternative may affect, but is not likely to adversely affect the Houston toad.</p> <p>FEMA and the USFWS have also determined that its actions will not adversely modify critical habitat.</p>	<p>MDACC is committed to protecting the Houston toad and will implement the agreed upon avoidance and minimization measures outlined in the informal correspondence between FEMA and USFWS, included in Appendix F.</p> <p>Additionally, if project activities occur adjacent to any bald or golden eagle nest, MDACC will contact FEMA and consult with the USFWS before work begins. If project activities involve impacts to an occupied migratory bird species’ nest, MDACC will contact FEMA and consult with the USFWS before work begins.</p>
Cultural Resources	No impacts to cultural resources are anticipated.	<p>In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured by MDACC, and access to the sensitive area will be restricted by MDACC. The Applicant will inform FEMA immediately, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.</p>

Affected Environment	Impacts	Mitigation
Socioeconomics	No adverse socioeconomic impacts are anticipated.	None
Environmental Justice	No disproportionately high or adverse effect on minority or low-income populations is anticipated.	None
Hazardous Materials	No hazardous materials or waste impacts are anticipated.	Any hazardous materials discovered, generated, or used during construction would be disposed of and handled in accordance with applicable local, State, and Federal regulations.
Noise	Minor short-term impacts to noise levels would occur at the proposed project site during the construction period.	Construction would take place during normal business hours and equipment would meet all local, State, and Federal noise regulations.
Transportation	A short-term, minor increase in the volume of construction traffic on adjacent roadways could cause slower traffic flow during construction activities.	Construction vehicles and equipment would be stored on-site during project construction and appropriate signage would be posted on affected roadways. The appropriate signage and barriers should be in place prior to construction activities to alert pedestrians and motorists of project activities.
Public Health and Safety	No impacts to public health and safety are anticipated.	All construction activities would be performed by qualified personnel and in accordance with the standards specified in OSHA regulations; appropriate signage and barriers would be in place prior to construction activities to alert pedestrians and motorists of project activities. The construction contractor will be responsible for adhering to the Texas One-Call Law.

5.0 Cumulative Impacts

According to CEQ regulations, cumulative impacts represent 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).” In accordance with NEPA and to the extent reasonable and practical, this EA considered the combined effect of Proposed Action Alternative and other actions occurring or proposed in the vicinity of the proposed project site.

No proposed or occurring actions by others were identified in the vicinity of the proposed project site; therefore, no cumulative impacts are anticipated.

6.0 Public Participation

FEMA is the lead Federal agency for conducting the NEPA compliance process for the proposed mitigation actions at the Smithville Research Center in Bastrop County. It is the goal of the lead agency to expedite the preparation and review of the NEPA documents and to be responsive to the needs of the community and the purpose and need of the proposed action while meeting the intent of NEPA and complying with all NEPA provisions.

Interagency reviews have been conducted in the form of agency consultation letters and the responses received from the agencies. Agencies consulted are listed in Section 7 – Agency Coordination.

A Notice of Availability of the Draft Environmental Assessment will be published in the local newspaper and on FEMA’s website (<https://edit.fema.gov/environmental-planning-and-historic-preservation-program/environmental-documents-public-notices-3>) requesting public comments. Additionally, the Draft EA will be made available for review for a period of 30 days at the Smithville Public Library, 1000 Southeast Martin Luther King Boulevard, Smithville, TX 78957. FEMA will consider and respond to all public comments in the Final EA. If no substantive comments are received, the Draft EA will become final and a Finding of No Significant Impact (FONSI) will be issued for the project.

7.0 Agency Coordination

The objective of early and frequent coordination with federal, state, and local agencies is to generate the best possible alternative for the project and to address issues or concerns of the agencies throughout the study. Agency coordination was conducted through written correspondence.

The correspondence packet included a letter, a project description, and a project area map that illustrated the project location. The letter requested agency expertise in the early identification of possible adverse economic, social or environmental effects or concerns posed by the project and solicited comments regarding the project. A copy of the correspondence packet and a copy of agency response letters are included in Appendix F. Table 7-1 summarizes the agency responses.

**Table 7-1
Summary of Agency Responses**

Responder	Comment Summary
Texas Commission on Environmental Quality	Supports finding of no significant impact and release of project funds.
Texas General Land Office	Project is outside of Texas Coastal Management Program boundary.
U.S. Army Corps of Engineers	Project does not involve activities subject to the requirements of Section 404 or Section 10.
Texas Historical Commission	No historic properties affected; project may proceed.
U.S. Fish and Wildlife Service	Directed to county level listing of federally listed threatened and endangered species. Entered into Section 7, informal consultation on one federally listed species. Concurrence was reached on September 19, 2012. MDACC is responsible for implementing avoidance and mitigation measures as a condition of federal funding.
Texas Parks and Wildlife Department	MDACC responded to recommendation letter (dated April 27, 2012) on May 17, 2012. Following this response, FEMA initiated informal consultation with the USFWS. Concurrence between FEMA and the USFWS was reached on September 19, 2012.

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