DRAFT

ENVIRONMENTAL ASSESSMENT
FOR REMOTE VIDEO SURVEILLANCE SYSTEM TOWER UPGRADE BROWNSVILLE, FORT BROWN, HARLINGEN, FALFURRIAS, AND KINGSVILLE STATIONS' AREAS OF RESPONSIBILITY U.S. BORDER PATROL, RIO GRANDE VALLEY SECTOR, TEXAS

U.S. CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, D.C.

U.S. Customs and Border Protection
Department of Homeland Security
Washington, D.C.

NOVEMBER 2016

DRAFT

ENVIRONMENTAL ASSESSMENT
FOR
REMOTE VIDEO SURVEILLANCE SYSTEM TOWER UPGRADE
BROWNSVILLE, FORT BROWN, HARLINGEN, FALFURRIAS, AND KINGSVILLE STATIONS'
AREAS OF RESPONSIBILITY
U.S. BORDER PATROL, RIO GRANDE VALLEY SECTOR, TEXAS
U.S. CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, D.C.

November 2016

Project Proponent:	Department of Homeland Security U.S. Customs & Border Protection United States Border Patrol 1901 S. Bell Street, Room 7-007 Arlington, VA 20598
Points of Contact:	Mr. Joseph Zidron U.S. Customs and Border Protection Border Patrol Facilities and Tactical Infrastructure Program Management Office 24000 Avila Road, Suite 5020 Laguna Niguel, CA 92677

DRAFT
FINDING OF NO SIGNIFICANT IMPACT
FOR
REMOTE VIDEO SURVEILLANCE SYSTEM TOWER UPGRADE
BROWNSVILLE, FORT BROWN, HARLINGEN,
FALFURRIAS, AND KINGSVILLE STATIONS'
AREAS OF RESPONSIBILITY
U.S. BORDER PATROL, RIO GRANDE VALLEY SECTOR, TEXAS
U.S. CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, D.C.

INTRODUCTION: The Border Patrol Facilities and Tactical Infrastructure (BPFTI) Program Management Office (PMO), within Department of Homeland Security's (DHS) U.S. Customs and Border Protection (CBP), has prepared an Environmental Assessment (EA) addressing the proposed upgrade of its Remote Video Surveillance System (RVSS) program within the U.S. Border Patrol's (USBP) Brownsville (BRP), Fort Brown (FTB), Harlingen (HRL), Falfurrias (FLF), and Kingsville (KIN) Stations' Areas of Responsibility (AORs), on behalf of USBP Headquarters.

USBP is the mobile uniformed law enforcement subcomponent of CBP responsible for patrolling and securing America's border between the Ports of Entry. As directed by DHS Analysis of Alternatives (AoA), CBP is investing in the USBP border security technology plan for the Rio Grande Valley (RGV) Sector. Accordingly, the new plan incorporates both the quantitative analysis of science and engineering experts and the real-world operational assessment of USBP on the ground. This plan includes the utilization of RVSS to provide long-range, persistent surveillance, enabling USBP personnel to detect, track, identify, and classify illegal entries through a series of integrated sensors and tower-based surveillance equipment.

The proposed RVSS Upgrade Program includes the construction of new RVSS towers for improved border surveillance coverage throughout the BRP, FTB, HRL, FLF, and KIN Station's AORs. The RVSS upgrade proposed for the BRP, FTB, HRL, FLF, and KIN Stations' AORs includes the following:

- Construction and maintenance of 32 new RVSS towers
- Construction and maintenance of utilities and utility corridors
- Construction, improvement, and maintenance of access roads and access drives

PROJECT LOCATION: The proposed new tactical infrastructure (TI) is located near the Rio Grande within Hidalgo, Cameron, Brooks, and Kenedy counties, Texas. The project would serve the USBP RGV Sector's BRP, FTB, HRL, FLF, and KIN Stations' AORs. There would be a total of 12 new RVSS towers and associated infrastructure in the HRL AOR, 5 new RVSS towers and associated infrastructure in the BRP AOR, 9 new RVSS towers and associated infrastructure in the FTB AOR, 2 new RVSS towers and associated infrastructure in the KIN AOR, and 4 new RVSS towers and associated infrastructure in the FLF AOR. These towers are located on Federal, private, and state lands.

PURPOSE AND NEED: The purpose of the Proposed Action is to provide improved surveillance and detection capabilities that facilitate rapid response to areas of greatest risk for illegal cross-border threats in the USBP BRP, FTB, HRL, FLF, and KIN Stations' AORs. Meeting this purpose would provide more efficient and effective interdiction while reducing the potential for adverse impacts from illegal cross-border activities on the natural and cultural environments in the BRP, FTB, HRL, FLF, and KIN Stations' AORs.

A lack of infrastructure, high volume of illicit activity, and difficult terrain (e.g., creeks, steep cliffs/slopes, riparian areas, and dense south Texas brush) within the RGV Sector affect response time and enforcement operations, thereby creating a need for a year-round, continuous, technology-based surveillance capability that can effectively collect, process, and distribute information among Border Patrol Agents (BPAs). With the RVSS upgrade, BPAs would be able to maintain surveillance over large areas, contributing to BPA safety and increasing operational effectiveness as they detect, identify, and classify incursions/illicit activity at the border and resolve the incursions with the appropriate law enforcement response.

ALTERNATIVES: CBP analyzed two alternatives in the EA. Alternative 1 is the No Action Alternative. Under the No Action Alternative, the proposed RVSS Upgrade Program would not be constructed in USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs. USBP's ability to detect and interdict cross-border violators would not be enhanced; thus, operational effectiveness would not be improved in the project area. The No Action Alternative does not meet the purpose of and need for this project.

Alternative 2 is the Proposed Action. The Proposed Action includes the construction, operation, and maintenance of 32 RVSS tower sites to provide long-term, permanent surveillance in the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs. The RVSS system provides radar or video data feeds to the command and control (C2) modular facilities. The C2 facilities integrate and display data from all their respective RVSS towers deployed within the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs. Each RVSS tower consists of a tower equipped with a suite of sensors and/or communications equipment.

The Proposed Action also includes the construction and maintenance of access drives, totaling 850 feet, and the maintenance and repair of access roads, totaling 19 miles. Access road maintenance and repairs include reconstruction, widening, or straightening of the existing road, and installation of drainage structures, and would require a 30- or 60-foot-wide temporary construction disturbance area. Drainage structures may include but are not limited to ditches, culverts, and low-water crossings.

ENVIRONMENTAL CONSEQUENCES: The Proposed Action would have permanent, negligible impacts on land use. Approximately 6.25 acres would be permanently converted from undeveloped land to law enforcement facilities, and 20.25 acres would be temporarily impacted. The new access drives would permanently impact less than 1 acre and temporarily impact 0.2 acre during construction. Four acres would be permanently impacted, while 51 acres would be temporarily impacted from repair and maintenance activities associated with the existing access roads. Temporary, minor impacts would be expected on surface water quality during construction. The withdrawal of water for construction purposes could have a temporary, minor

impact on surface water resources. Long-term, permanent impacts would occur on approximately 1 acre of potentially jurisdictional wetlands; however, these impacts would be addressed during the permitting process. Best management practices (BMPs) and standard construction procedures will be implemented to minimize the potential for erosion and sedimentation during construction.

Minor impacts on soils and vegetative habitat and negligible impacts on wildlife would occur as a result of disturbing 3.7 acres for the construction of RVSS towers and access road maintenance and repairs. Areas with highly erodible soils would be given special consideration when designing the Proposed Action to ensure incorporation of various BMPs, such as straw bales, aggregate materials, and wetting compounds to decrease erosion. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared prior to construction activities and will include pre- and post-construction measures.

Three Federally listed species have the potential to occur within the project area: northern aplomado falcon (*Falco femoralis septentrionalis*), ocelot (*Leopardus pardalis*), and Gulf Coast jaguarundi (*Puma yagouaroundi*). The Proposed Action may affect, but is not likely to adversely affect, any of these Federally listed species. No designated critical habitat occurs within the construction footprint. Endangered Species Act, Section 7, consultation with U.S. Fish and Wildlife Service (USFWS) is ongoing for this project.

No impacts on archaeological resources would occur as a result of the Proposed Action. Indirect visual impacts could occur on two NRHP-listed districts (King Ranch and Palmito Ranch Battlefield) as the result of the development of two of tower site locations (FTB Galinas Road and FLF Adairs Ranch). However, modern structures, including cell towers, oil and gas extraction equipment, and street lighting are currently present within the visual APE of these districts. Additional consultation with the THC and the Texas SHPO will occur to minimize the visual impacts and ensure no significant impacts. Indirect visual impacts on the remaining eight historic resources would occur, but given the large amount of already existing modern infrastructure (houses, towers, etc.) within the viewshed of the historic resources, the visual impacts are not considered adverse or significant.

Temporary and minor increases in air emissions would occur during construction of the RVSS towers, access drive construction, and access road maintenance and repairs. Air emissions would be below the Federal *de minimis* thresholds for construction, operation, maintenance, and repair activities. Noise level increases associated with tower and access drive construction and maintenance and repair of access roads would result in temporary, negligible impacts on wildlife and the Lower Rio Grande Valley National Wildlife Refuge and Boca Chica State Park. Noise levels associated with the operation and maintenance of the towers would have permanent, negligible impacts on nearby resources.

Negligible demands on utilities would be required as a result of the Proposed Action. Communications equipment on the proposed towers would emit electromagnetic radiation (i.e., radio waves and microwaves), and a potential for impacts could occur depending on the location; however, any adverse effects on human health or wildlife would be negligible due to the minimal exposure risk and the elevated locations in which the communications equipment would be

positioned. CBP will coordinate with the National Telecommunications and Information Administration (NTIA) regarding radio spectrum and frequency assignment.

Construction of the towers, access drives, and access roads would create a temporary, minor impact on roadways and traffic within the region. The increase of vehicular traffic near each RVSS tower site would occur to transport materials and work crews for a short period of time. Tower maintenance would also require vehicle travel to each site for fuel delivery and maintenance and operation of the proposed towers. The limited amount of anticipated vehicle trips for tower maintenance and refueling would have a long-term, negligible impact on roadways and traffic. Construction vehicles and equipment would use established roads with proper flagging and safety precautions.

The Proposed Action would have a long-term, moderate impact on aesthetic qualities within 5 miles or less of each tower. The Proposed Action would not result in exposure of the environment or public to any hazardous materials. Although several of the towers are located near residential areas, all construction activities would strictly adhere to Occupational Safety and Health Administration (OSHA) and NTIA guidelines. Access would be limited to the construction site to prevent children or others from entering the construction site. By implementing OSHA and NTIA guidelines and practicing safe construction habits, no adverse effects relative to environmental justice or protection of children issues would occur.

BEST MANAGEMENT PRACTICES: BMPs were identified for each resource category that could be potentially affected. Many of these measures have been incorporated as standard operating procedures by CBP in similar past projects. The BMPs were also identified in the EA in Section 5.

FINDING: On the basis of the findings of the EA, which is incorporated by reference and which has been conducted in accordance with the National Environmental Policy Act, the Council on Environmental Quality regulations, and Department of Homeland Security Management Directive, 023-001, Rev. 01, and Instruction Manual 023-01-001-01, Rev. 01; *Environmental Planning Program* and after careful review of the potential environmental impacts of implementing the proposal, we find there would be no significant impact on the quality of the human or natural environments, either individually or cumulatively; therefore, there is no requirement to develop an Environmental Impact Statement. Further, we commit to implement BMPs and environmental design measures identified in the EA and supporting documents.

Francis Dutch — Date
Director
Facilities Management and Engineering
U.S. Customs and Border Protection

Justin A. Bristow — Date
Acting Chief
Strategic Planning and Analysis Directorate
U.S. Customs and Border Protection

EXECUTIVE SUMMARY

INTRODUCTION: U.S. Customs and Border Protection (CBP) is the law enforcement component of the Department of Homeland Security (DHS) responsible for securing the border and facilitating lawful international trade and travel. U.S. Border Patrol (USBP) is the uniformed law enforcement component within CBP responsible for securing the Nation's borders against the illegal entry of people and goods between Ports of Entry.

CBP is proposing to upgrade the current Remote Video Surveillance Systems (RVSS) as part of the technology deployment plan for Rio Grande Valley (RGV) Sector. The RVSS upgrade would provide long-range, persistent surveillance, enabling USBP personnel to detect, track, identify, and classify illegal entries through a series of integrated sensors and tower-based surveillance equipment. The proposed RVSS Upgrade Program represents a technology solution for the distinct terrain within RGV Sector.

STUDY LOCATION: The Proposed Action would take place in the USBP Brownsville (BRP), Fort Brown (FTB), Harlingen (HRL), Falfurrias (FLF), and Kingsville (KIN) Stations' Areas of Responsibility (AORs), RGV Sector, Texas. More specifically, the proposed RVSS tower sites are located in Brooks, Cameron, Hidalgo, and Kenedy counties, Texas.

PURPOSE AND NEED: The purpose of the Proposed Action is to provide improved surveillance and detection capabilities that facilitate rapid response to areas of greatest risk for illegal cross-border threats in the USBP BRP, FTB, HRL, FLF, and KIN Stations' AORs.

The project is needed to:

1) provide more efficient and effective means of assessing cross-border activities
2) provide rapid detection and accurate characterization of potential threats
3) provide coordinated deployment of resources in the apprehension of cross-border violators
4) increase surveillance and interdiction efficiency
5) enhance the deterrence of illegal cross-border activity
6) enhance agent safety
7) enhance safety to border communities

PROPOSED ACTION AND ALTERNATIVES CONSIDERED: CBP analyzed two alternatives in this Environmental Assessment. Under the No Action Alternative (Alternative 1), the proposed RVSS Upgrade Program would not be constructed in USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs. Maintenance and repair of existing access roads would not be conducted. The No Action Alternative reflects conditions within the project area should the Proposed Action not be implemented. USBP's ability to detect and interdict cross-border violators would not be enhanced; thus, operational efficiency and effectiveness would not be improved within the area covered by the proposed towers. USBP would continue to rely solely on traditional detection methodology that includes traditional sign detection, which requires both patrolling and dragging of roads. The No Action Alternative does not meet the purpose of and need for this project.

Alternative 2 is the Proposed Action. The Proposed Action includes the construction, operation, and maintenance of 32 RVSS tower sites to provide long-term, permanent surveillance in the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs. The RVSS system provides radar or video data feeds to the command and control (C2) facilities. The C2 facilities integrate and display data from all their respective RVSS towers deployed within the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs. Each RVSS tower consists of a tower equipped with a suite of sensors and/or communications equipment, which would allow the RVSS towers to communicate with the C2 facilities.

The Proposed Action also includes the construction and maintenance of access drives, totaling approximately 850 feet, and the maintenance and repair of access roads, totaling 19 miles. Access road maintenance and repairs include reconstruction, widening, or straightening of the existing road, and installation of drainage structures, and would require a 30- or 60-foot-wide temporary construction disturbance area. Drainage structures may include but are not limited to ditches, culverts, and low-water crossings.

Other border surveillance approaches, strategies, and technologies or combinations of activities were considered as alternatives. These alternatives included unmanned aircraft systems, remote sensing satellites, unattended ground sensors, increased CBP workforce, and increased aerial reconnaissance/operations. Although these alternatives or combinations of these alternatives can be valuable tools that CBP may employ in other areas or circumstances of border incursion, they were eliminated because of logistical restrictions, environmental considerations, or functional deficiencies that fail to meet the purpose of this project.

AFFECTED ENVIRONMENT AND CONSEQUENCES: The Proposed Action would have permanent, negligible impacts on land use. Approximately 6.25 acres would be permanently converted from undeveloped land to law enforcement facilities, and 20.25 acres would be temporarily impacted. The new access drives would permanently impact less than 0.2 acre and temporarily impact, 0.7 acre during construction. One acre would be permanently impacted while 51 acres would be temporarily impacted from repair and maintenance activities associated with the existing access roads. Temporary, minor impacts would be expected on surface water quality during construction. The withdrawal of water through municipal water sources for construction purposes could have a temporary, minor impact on surface water resources. Long-term, permanent impacts would occur to approximately 1 acre of potentially jurisdictional wetlands; however, these impacts would be addressed during the permitting process. Best management practices (BMPs) and standard construction procedures will be implemented to minimize the potential for erosion and sedimentation during construction.

Minor impacts on soils and vegetative habitat and negligible impacts on wildlife would occur as a result of disturbing 3.7 acres for the construction of RVSS towers and access road maintenance and repairs. Areas with highly erodible soils would be given special consideration when designing the Proposed Action to ensure incorporation of various BMPs, such as straw bales, aggregate materials, and wetting compounds to decrease erosion. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared prior to construction activities and would include pre- and post-construction measures for all sites that are 1 acre or more.

Three Federally listed species have the potential to occur within the project area, northern aplomado falcon (*Falco femoralis septentrionalis*), ocelot (*Leopardus pardalis*), and Gulf Coast jaguarundi (*Puma yagouaroundi*). The Proposed Action may affect, but is not likely to adversely affect, any of these Federally listed species. No designated critical habitat occurs within the construction footprint. Endangered Species Act, Section 7, consultation with U.S. Fish and Wildlife Service is ongoing for this project.

Since no new archaeological sites were recorded during the surveys of the preferred towers and their associated access and utility corridors and none of the previously recorded archaeological sites were found to extend into the current footprints of the preferred tower sites and their associated access and utility corridors, no archaeological sites are anticipated to be directly affected by implementation of the Proposed Action. Indirect visual impacts could occur on two NRHP-listed districts (King Ranch and Palmito Ranch Battlefield) as the result of the development of two of tower site locations (FTB Galinas Road and FLF Adairs Ranch). However, modern structures, including cell towers, oil and gas extraction equipment, and street lighting are currently present within the visual APE of these districts. Additional consultation with the THC and the Texas SHPO will occur to minimize the visual impacts and ensure no significant impacts.

Indirect visual impacts on the remaining eight historic resources would occur, but given the large amount of already existing modern infrastructure (houses, towers, etc.) within the viewshed of the historic resources, the visual impacts are not considered adverse or significant.

Temporary and minor increases in air emissions would occur during construction of the RVSS towers, access drive construction, and access road maintenance and repairs. Air emissions would be below the Federal *de minimis* thresholds for construction, operation, maintenance, and repair activities. Noise level increases associated with tower and access drive construction and maintenance and repair of access roads would result in temporary, negligible impacts on wildlife and the Lower Rio Grande Valley National Wildlife Refuge. Noise levels associated with the operation and maintenance of the towers would have permanent, negligible impacts on nearby resources.

Negligible demands on utilities would be required as a result of the Proposed Action. Communications equipment on the proposed towers would emit electromagnetic radiation (i.e., radio waves and microwaves), and a potential for impacts could occur depending on the location; however, any adverse effects on human health or wildlife would be negligible due to the minimal exposure risk and the elevated locations in which the communications equipment would be positioned. CBP will coordinate with National Telecommunications and Information Administration (NTIA) regarding radio spectrum and frequency assignment.

Construction of the towers, access drives, and access roads would create a temporary, minor impact on roadways and traffic within the region. The increase of vehicular traffic near each RVSS tower site would occur to transport materials and work crews at each for a short period of time. Tower maintenance would also require vehicle travel to each site for fuel delivery and maintenance and operation of the proposed towers. The limited amount of anticipated vehicle trips for tower maintenance and refueling would have a long-term, negligible impact on

roadways and traffic. Construction vehicles and equipment would use established roads with proper flagging and safety precautions.

The Proposed Action would have a long-term, moderate impact on aesthetic qualities within 5 miles or less of each tower. The Proposed Action would not result in exposure of the environment or public to any hazardous materials. Although several of the towers are located near residential areas, all construction activities would strictly adhere to Occupational Safety and Health Administration (OSHA) and NTIA guidelines. Access would be limited to the construction site to prevent children or others from entering the construction site. By implementing OSHA and NTIA guidelines and practicing safe construction habits, no effects relative to environmental justice or protection of children issues would occur.

FINDINGS AND CONCLUSIONS: Based upon the analyses of the Environmental Assessment and the BMPs to be implemented, the Proposed Action would not have a significant adverse effect on the environment. Therefore, no further analysis or documentation (i.e., Environmental Impact Statement) is warranted. CBP, in implementing this decision, would employ all practical means to minimize the potential for adverse impacts on the human and natural environments.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOGRAPHS

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The Border Patrol Facilities and Tactical Infrastructure (BPFTI) Program Management Office (PMO), within Department of Homeland Security's (DHS) U.S. Customs and Border Protection (CBP) has prepared an Environmental Assessment (EA) addressing the proposed upgrade of its Remote Video Surveillance System (RVSS) program within the U.S. Border Patrol's (USBP) Brownsville (BRP), Fort Brown (FTB), Harlingen (HRL), Falfurrias (FLF), and Kingsville (KIN) Stations' Areas of Responsibility (AORs) (Figure 1-1), on behalf of USBP Headquarters.

USBP is the mobile uniformed law enforcement subcomponent of CBP responsible for patrolling and securing America's border between the Ports of Entry. As directed by DHS Analysis of Alternatives (AoA), CBP is investing in the USBP border security technology plan for the Rio Grande Valley (RGV) Sector. Accordingly, the new plan incorporates both the quantitative analysis of science and engineering experts and the real-world operational assessment of USBP on the ground (DHS 2011). This plan includes the utilization of RVSS to provide long-range, persistent surveillance, enabling USBP personnel to detect, track, identify, and classify illegal entries through a series of integrated sensors and tower-based surveillance equipment.

The proposed RVSS Upgrade Program includes the construction of new RVSS towers for improved border surveillance coverage throughout the BRP, FTB, HRL, FLF, and KIN Station's AORs. The RVSS upgrade proposed for the BRP, FTB, HRL, FLF, and KIN Stations' AORs includes the following:

- Construction and maintenance of 32 new RVSS towers
- Construction and maintenance of utilities and utility corridors
- Construction, improvement, and maintenance of access roads and approach drives

1.2 PROJECT LOCATION

The proposed new tactical infrastructure (TI) is located near the Rio Grande within Brooks, Cameron, Hidalgo, and Kenedy counties, Texas. The project would serve the USBP RGV Sector's BRP, FTB, HRL, FLF, and KIN Stations' AORs (see Figure 1-1). There would be a total of 12 new RVSS towers and associated infrastructure in the HRL AOR, 5 new RVSS towers and associated infrastructure in the BRP AOR, 9 new RVSS towers and associated infrastructure in the FTB AOR, 2 new RVSS towers and associated infrastructure in the KIN AOR, and 4 new RVSS towers and associated infrastructure in the FLF AOR. These towers are located on Federal, private, and state lands.

Figure 1-1. Project Vicinity Map

October 2016

1.3 PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is to provide improved surveillance and detection capabilities that facilitate rapid response to areas of greatest risk for illegal cross-border threats in the USBP BRP, FTB, HRL, FLF, and KIN Stations' AORs. This Proposed Action is consistent with the USBP Strategic Plan's risk-based approach to countering threats through information, integration and rapid response. It is intended to advance mission functions such as predicting illicit activity, detecting and tracking border crossings, identifying and classifying detections, and responding to and resolving suspect border crossings as threats through intelligence efforts and prioritized responses and targeted enforcement (CBP 2012). Meeting this purpose would provide more efficient and effective interdiction while reducing the potential for adverse impacts from illegal cross-border activities on the natural and cultural environments in the BRP, FTB, HRL, FLF, and KIN Stations' AORs.

1.4 NEED FOR THE PROPOSED ACTION

Insufficient infrastructure in some areas, high volume of illicit activity, and difficult terrain (e.g., creeks, coastal prairie, riparian areas, and dense south Texas brush) within the RGV Sector affect response time and enforcement operations, thereby creating a need for a year-round, continuous, technology-based surveillance capability that can effectively collect, process, and distribute information among Border Patrol Agents (BPAs). With the RVSS upgrade, BPAs would be able to maintain surveillance over large areas, contributing to BPA safety and increasing operational effectiveness as they detect, identify, and classify incursions/illicit activity at the border and resolve the incursions with the appropriate law enforcement response.

The proposed RVSS Upgrade Program is needed to

1) provide more efficient and effective means of assessing cross-border activities
2) provide rapid detection and accurate characterization of potential threats
3) provide coordinated deployment of resources for the resolution of illicit cross-border activity
4) increase surveillance and interdiction efficiency
5) enhance the deterrence of illegal cross-border activity
6) enhance agent safety

1.5 SCOPE OF ENVIRONMENTAL ANALYSIS AND DECISIONS TO BE MADE

The scope of this EA includes the direct, indirect, and cumulative effects on the natural, social, economic, and physical environments resulting from the construction, installation, operation, and maintenance of new RVSS and towers within the BRP, FTB, HRL, FLF, and KIN Stations' AORs (see Figure 1-1). The analysis also includes the potential effects associated with the construction or improvement of access roads, approach drives, and utility corridors to service these new towers.

This EA documents the potential magnitude and duration of the environmental effects of the Proposed Action and looks at alternatives to achieve the objectives. The EA allows decision makers to determine that the Proposed Action would or would not have a significant impact on the natural, social, economic, and physical environments, as well as whether the action could proceed to the next phase of project development or if an Environmental Impact Statement (EIS) is required. The process for developing the EA also allows for input and comments on the Proposed Action from the concerned public and interested government agencies to inform agency decision making. The EA has been prepared as follows:

1. Conduct interagency and intergovernmental coordination for environmental planning. The first step in the National Environmental Policy Act (NEPA) process is to solicit comments from Federal, state, and local agencies and Federally recognized tribes about the proposed project to ensure that their concerns are included in the analysis.

2. Prepare a draft EA. CBP will review and address relevant comments and concerns received from any Federal, state, and local agencies or Federally recognized tribes during preparation of the draft EA.

3. Announce that the draft EA has been prepared. A Notice of Availability (NOA) will be published in the *Corpus Christi Caller, The Monitor, Brownsville Herald, and El Periodico USA* to announce the public comment period and the availability of the draft EA and Finding of No Significant Impact (FONSI).

4. Provide a public comment period. A public comment period allows for all interested parties to review the analysis presented in the draft EA and provide feedback. The draft EA will be available to the public for a 30-day review at the Brownsville Public Library – Main Branch in Brownsville, the Harlingen Public Library in Harlingen, and the Ed Rachal Memorial Library in Falfurrias. The draft EA will also be available for download from the CBP internet web page at the following URL address: CBP Website.

5. Prepare a final EA. A final EA will be prepared following the public comment period. The final EA will incorporate relevant comments and concerns received from all interested parties during the public comment period.

6. Issue a FONSI. The final step in the NEPA process is the signature of a FONSI, if the environmental analysis supports the conclusion that impacts on the quality of the human and natural environments from implementing the Proposed Action will not be significant. In this case, no EIS would be prepared.

1.6 ENVIRONMENTAL REVIEW AND CONSULTATION REQUIREMENTS

CBP will follow applicable Federal laws and regulations. The EA is developed in accordance with the requirements of NEPA, regulations issued by the Council on Environmental Quality (CEQ) published in 40 Code of Federal Regulations (CFR) Parts 1500-1508, and DHS Directive Number 023-01, Rev. 01, and Instruction Manual 023-01-001-01, Rev. 01; *Environmental Planning Program* and other pertinent environmental statutes, regulations, and compliance

requirements. The EA will be the vehicle for verifying compliance with all applicable environmental statutes, such as the Endangered Species Act (ESA) of 1973, 16 United States Code (U.S.C.) Part §1531 et seq., as amended, the National Historic Preservation Act (NHPA) of 1966, 16 U.S.C. §470a et seq., as amended.

1.7 PUBLIC INVOLVEMENT

In accordance with 40 CFR §1501.7, 1503, and 1506.6, BPFTI initiated public involvement and agency scoping activities to identify significant issues related to the Proposed Action. BPFTI is consulting, and will continue to consult, with appropriate local, state, and Federal government agencies, as well as Federally recognized tribes, throughout the EA process. BPFTI has coordinated with the following agencies and Federally recognized tribes (Appendix A):

Federal Agencies:

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Environmental Protection Agency (USEPA)
- U.S. Army Corps of Engineers (USACE)
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)
- International Boundary and Water Commission, U.S. Section (USIBWC)
- Federal Aviation Administration (FAA)
- National Telecommunications and Information Administration (NTIA)

State Agencies:

- Texas Parks and Wildlife Department (TPWD)
- Texas State Historic Preservation Officer (SHPO)
- Texas Historical Commission (THC)
- Texas Department of Transportation (TxDOT)
- Texas Commission on Environmental Quality (TCEQ)
- Texas General Land Office (GLO)

Native American Tribes:

- Alabama-Coushatta Tribe of Texas
- The Comanche Nation
- The Osage Nation
- Mescalero Apache Tribe
- Kiowa Indian Tribe of Oklahoma
- Pawnee Nation of Oklahoma
- Tonkawa Tribe of Indians of Oklahoma
- Fort Sill Apache Tribe of Oklahoma
- White Mountain Apache Tribe
- Alabama-Quassarte Tribal Town
- Apache Tribe of Oklahoma

- Cherokee Nation
- Coushatta Tribe of Louisiana
- Kialegee Tribal Town
- Poarch Bank of Creeks
- The Quapaw Tribe of Indians
- The Seminole Nation of Oklahoma
- Thlopthlocco Tribal Town
- Tunica-Biloxi Indian Tribe
- Wichita and Affiliated Tribes

County:

- Brooks County
- Cameron County
- Hidalgo County
- Kenedy County

2.0 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action and one alternative (No Action Alternative) were identified and considered during the planning stages of the proposed project. The Proposed Action consists of the construction of a sufficient number of RVSS towers within the BRP, FTB, HRL, FLF, and KIN Stations' AORs that meet the purpose of and need for the project. As required by NEPA and CEQ regulations, the No Action Alternative reflects conditions within the project area should the Proposed Action not be implemented. The following paragraphs describe the tower site selection process.

2.1 CRITERIA FOR SITE SELECTION

Technology considered in the Proposed Action includes sensors and other surveillance assets, as well as communications and Command and Control (C2) systems along the border. This technology would communicate with the BRP, FTB, HRL, FLF, and KIN Stations' C2 facilities and would provide an overall network system of communications and surveillance within BRP, FTB, HRL, FLF, and KIN Stations' AORs. Infrastructure to be considered within USBP's plan includes roadways to and from RVSS towers, as well as support utilities. The RVSS upgrade would provide long-range persistent surveillance capability and was identified in the new border security technology plan as the most effective technology-based solution for the BRP, FTB, HRL, FLF, and KIN Stations' AORs. The RVSS Upgrade Program is expected to allow BPAs to spend less time locating illegal entries and focus efforts on interdiction of those involved in illegal cross-border activities, thereby enhancing rapid response capability through a dynamic enforcement posture.

The Proposed Action consists of the construction, operation, and maintenance of RVSS towers that provide sufficient coverage to provide improved surveillance and detection capabilities within the RGV Sector's BRP, FTB, HRL, FLF, and KIN Stations' AORs (see Figure 1-1). The RVSS tower site selection process begins with the identification of proposed tower site locations based on an initial operational requirements and assessment of BPAs in the BRP, FTB, HRL, FLF, and KIN Stations' AORs. Operationally preferred site locations were selected based on knowledge of the terrain, environment, land ownership, and operational requirements. This review process resulted in multiple conceptual field laydowns. Mapping programs, modeling, and analysis processes were also utilized to develop a laydown that achieved both optimal surveillance and communications capabilities with the minimum number of tower sites. Over time, operational requirements change in order to mitigate emerging threats or strengthen vulnerabilities. In order to adapt to changes in operational requirements, the site selection process was iterated in 2015 and 2016.

Potential tower site locations were visited as part of the conceptual field laydown from March 2015 through May 2016. During the site visits, project team personnel, including CBP Office of Administration Facilities Management and Engineering personnel and USBP, evaluated each of the locations based on accessibility, constructability, operability, and environmental considerations. Evaluation considerations included, but were not limited to, the following:

- Proximity to existing roads and the potential need for new access roads or improvements to existing roads, as well as proximity to a power source
- Basic site conditions such as the terrain, soil type, drainage, available space, and slope of the site
- Tower viewsheds and line of sight available at varying tower heights
- Proximity to sensitive biological and cultural resources, waters of the United States, floodplains, and wetlands
- Impacts on the surrounding viewshed or visual resources

Throughout the site selection process, CBP analyzed 59 new tower locations within the various AORs for use with the RVSS Upgrade Program. As a result of the site selection process, CBP down-selected 32 preferred RVSS locations (Figures 2-1, 2-2, 2-3, 2-4, and 2-5) (Appendix B). These locations were not only based on the site selection process but also because of access, environmental sensitivity, constructability, cost of construction, and tactical efficiency. The remaining 27 alternate tower site locations (see Figures 2-1, 2-2, 2-3, 2-4, and 2-5) (see Appendix B) that were considered could be viable options in the future in the event that unforeseen circumstances arise and some of the preferred tower locations become unavailable.

2.2 PROPOSED ACTION

The Proposed Action includes the construction, operation, and maintenance 32 RVSS tower sites to provide long-term, permanent surveillance in the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs (see Figures 2-1, 2-2, 2-3, 2-4, and 2-5). The RVSS would communicate with the BRP, FTB, HRL, FLF, and KIN Stations' C2 facilities and would provide enhanced surveillance coverage within BRP, FTB, HRL, FLF, and KIN Stations' AORs. Each RVSS tower would be equipped with a suite of sensors and/or communications equipment.

The Proposed Action also includes the construction and maintenance of access drives, totaling approximately 850 feet, and the maintenance and repair of access roads, totaling 19 miles. Access road maintenance and repairs include reconstruction, widening, or straightening of the existing road, as well as installation of drainage structures, and would require a 30- or 60-foot wide temporary construction disturbance area. Drainage structures may include but are not limited to ditches, culverts, and low-water crossings.

2.2.1 Tower Characteristics

Three types of tower structures are included as part of the Proposed Action: self-standing towers (SSTs), monopole towers, and relocatable towers. Only the relocatable towers would require guy wires. SSTs are steel, lattice-style structures, with a base of three circular concrete piers, each approximately 4 to 6 feet in diameter (Figure 2-6). Other foundation types may be used depending on the site-specific geotechnical characteristics. Depth of the pilings is dependent on tower height and geotechnical characteristics at each tower site, but would be expected to be less than 60 feet below ground surface (bgs). SSTs could be up to 199 feet high including lightning protection.

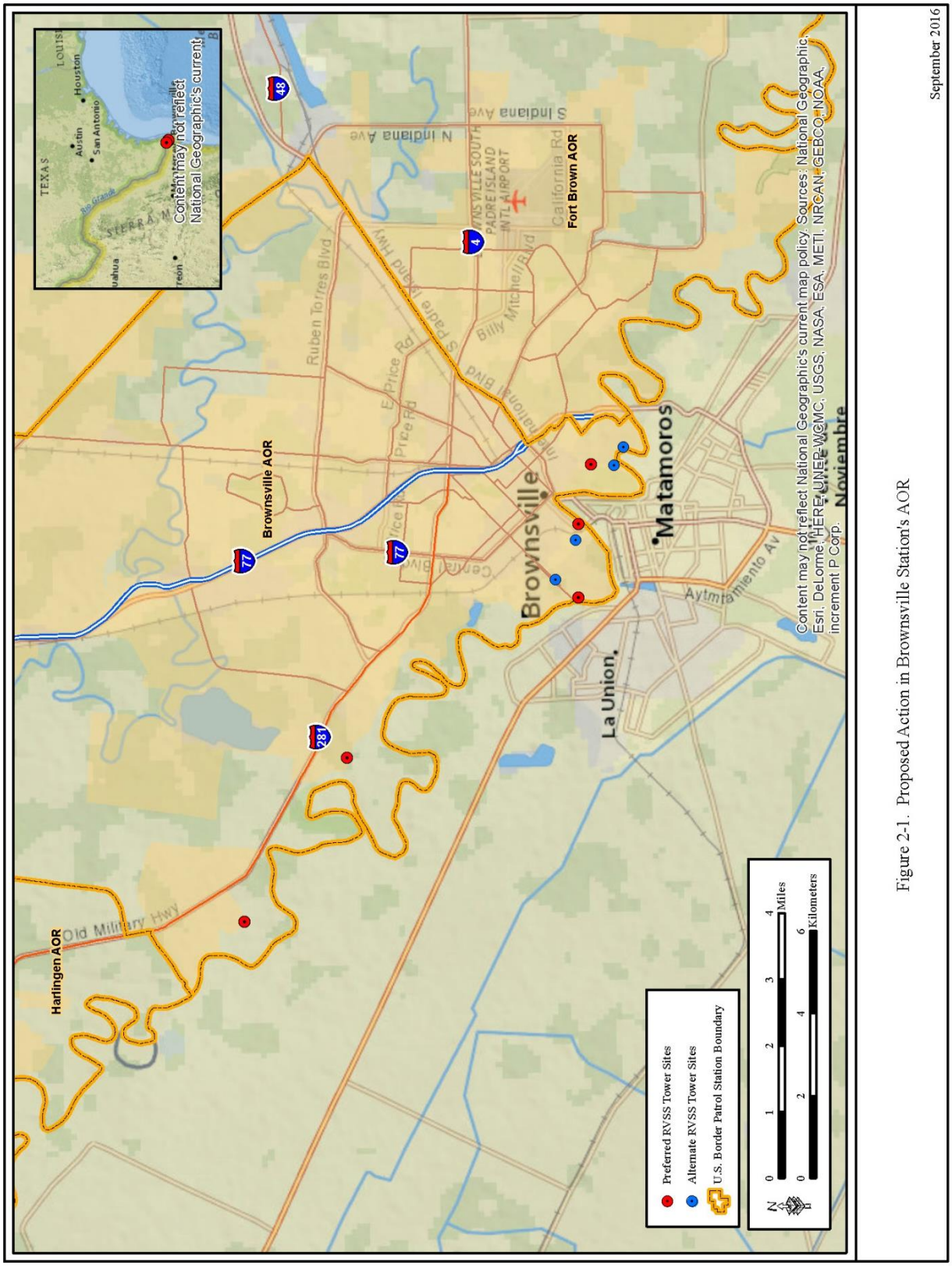

Figure 2-1. Proposed Action in Brownsville Station's AOR

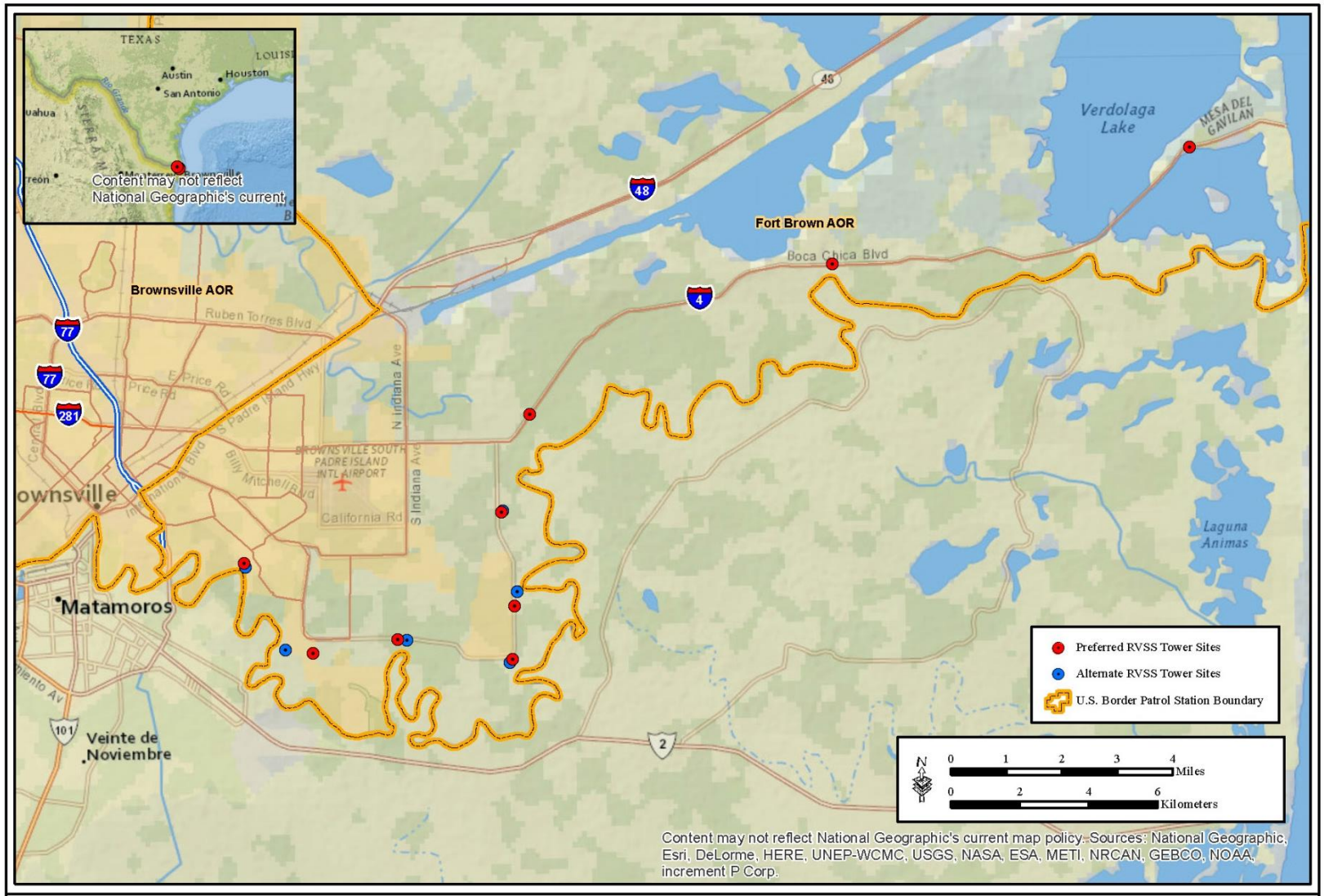

Figure 2-2. Proposed Action in Fort Brown Station's AOR

September 2016

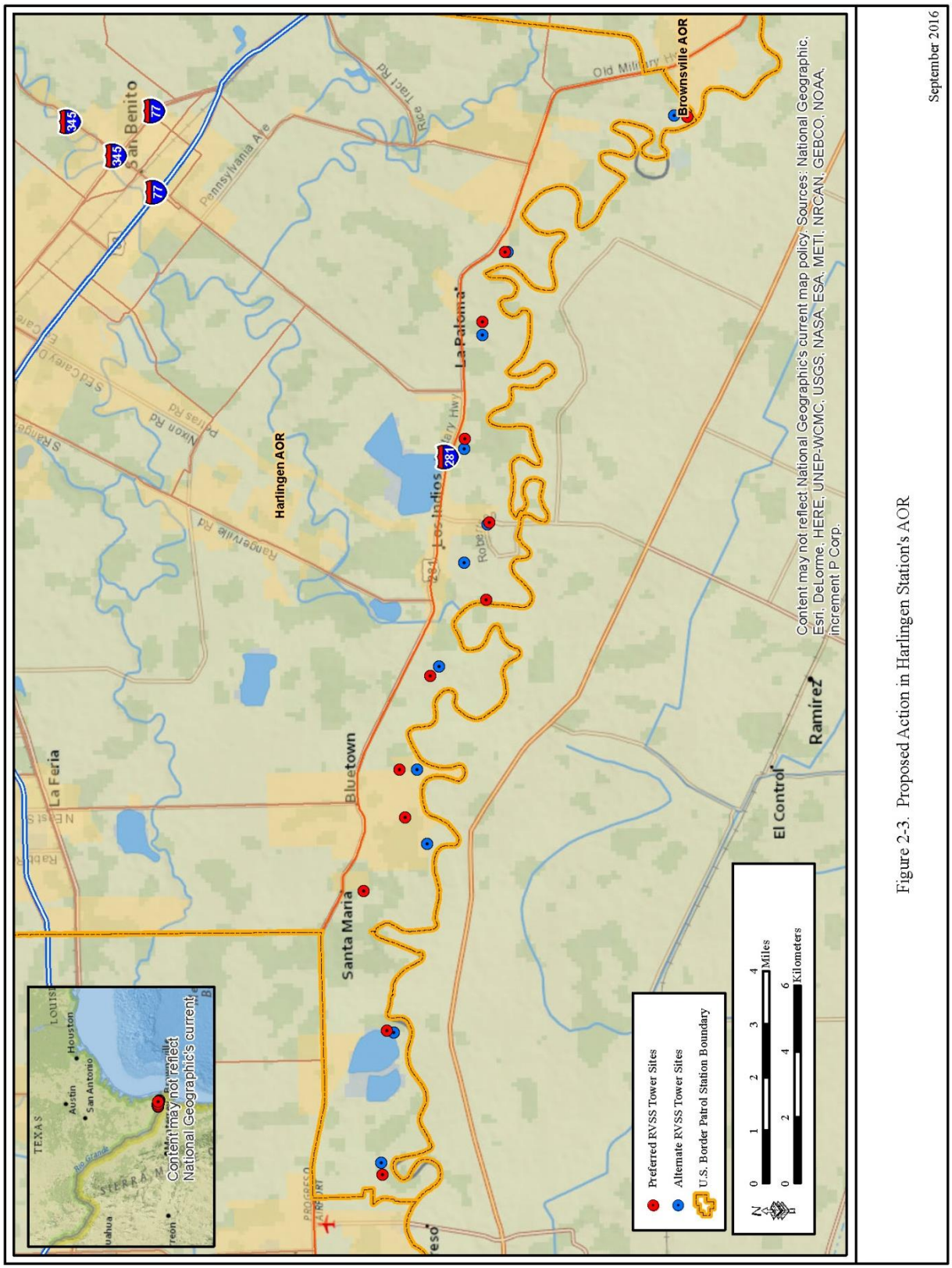

Figure 2-3. Proposed Action in Harlingen Station's AOR

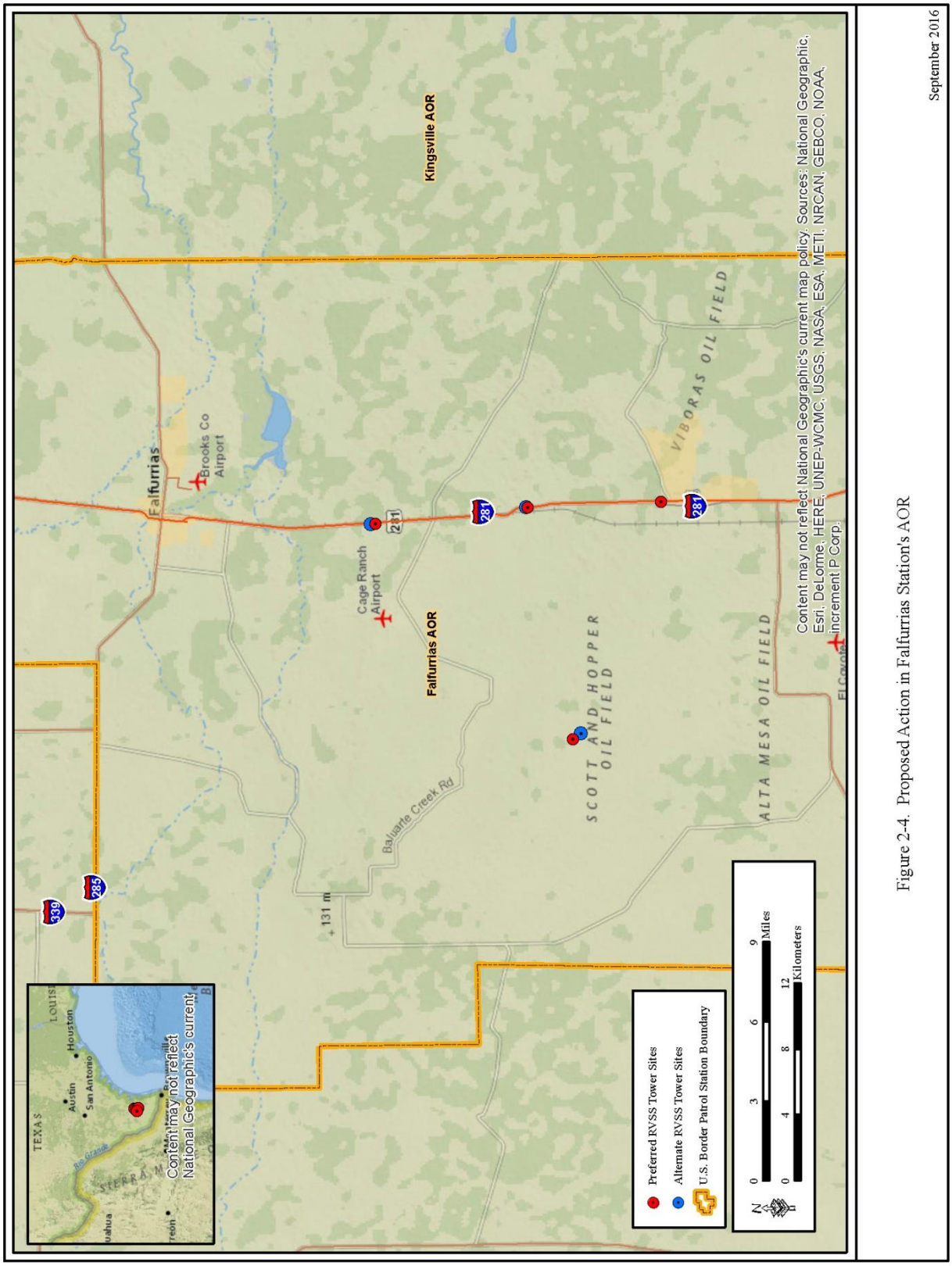

Figure 2-4. Proposed Action in Falfurrias Station's AOR

September 2016

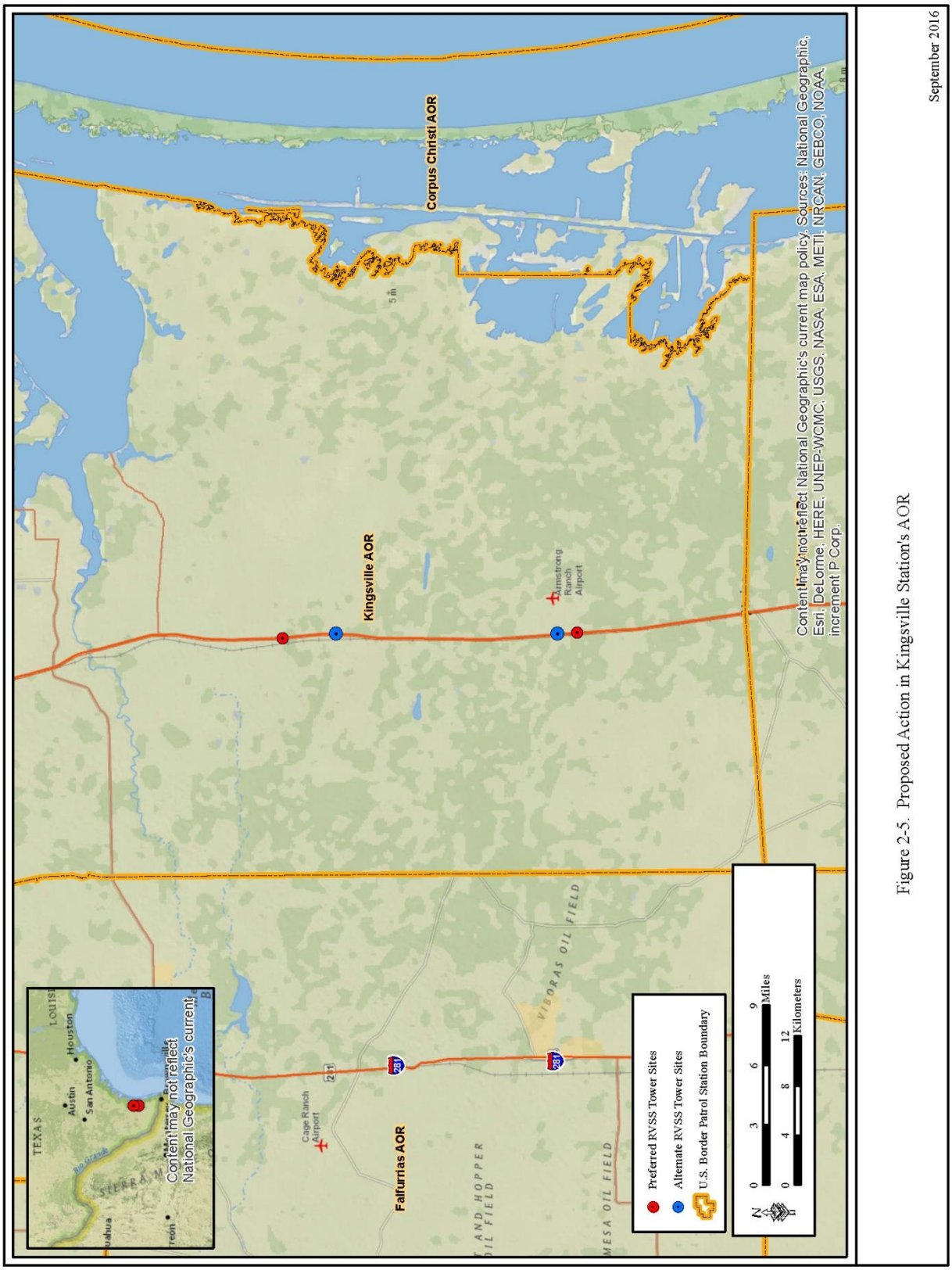

Figure 2-5. Proposed Action in Kingsville Station's AOR

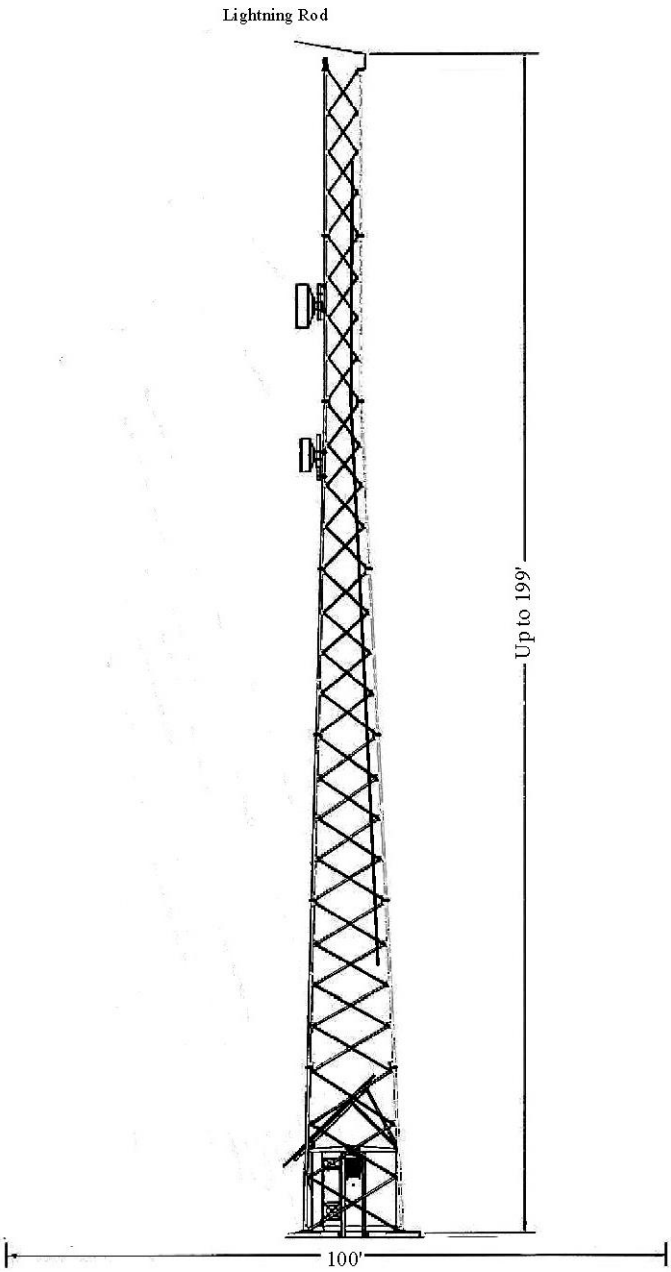

Figure 2-6. Typical Profile of SST Tower

October 2016

Monopole towers are metal, single-pole towers with reinforced steel and concrete foundations (Figure 2-7). The depth of each tower foundation is dependent on tower height and geotechnical characteristics at each tower site but is expected to range from 10 to 60 feet bgs. Monopole towers generally range in height from 60 feet to 140 feet but could be up to 199 feet high.

Relocatable towers would be towed in place on a trailer and placed on a level ground. The guy wires would be attached to the relocatable tower trailer outrigger infrastructure to stabilize the tower when extended. If necessary, the guy wires can attach to concrete barriers or other anchors to increase the tower stability as required. When fully extended these towers can reach a height of up to 120 feet.

Each tower would have the design, power requirements, and site and fence enclosure footprint described below, unless otherwise noted in the detailed proposed tower site discussions. Figure 2-8 shows the typical elements and the usual layout of those elements associated with an RVSS tower, regardless of the type of tower.

Tower Footprint

Construction of SSTs or monopole tower sites results in ground disturbance confined to a 200-foot x 200-foot area (40,000 square feet). All staging of construction equipment and materials, as necessary, occurs within this footprint during construction. Each permanent tower site footprint is expected to be up to a 100-foot x 100-foot (10,000 square feet) square shape or non-square shape, depending on site-specific conditions for both tower types, and includes a permanent parking area for vehicles.

Each tower footprint is confined to the dimensions mentioned above. Regardless of each tower site's configuration, the total area of temporary construction disturbance for each site does not exceed 30,000 square feet, and the total area of permanent disturbance does not exceed 10,000 square feet.

Tower Perimeter Fence Enclosure

Each tower site meets the minimum security requirements for CBP tower sites including the installation of a perimeter fence. The perimeter fence footprint encompasses an area up to 10,000 square feet at each tower site, regardless of tower site configuration. At minimum, an 8-foot-high perimeter fence, consisting of a 7-foot-high chain-link fence and a 1-foot barbed wire outrigger, would be erected around the site perimeter to prevent unauthorized access. Relocatable towers would also have the perimeter fence enclosure, but may not be the same as non-relocatable towers.

Tower Power Sources

Each RVSS tower would be powered by commercial grid power. It is also possible that RVSS towers may be primarily powered by solar power with grid or applicable redundant system for backup. The grid power design would be site-specific; however, commercial grid power would be overhead of the permanent disturbed area and then underground where it enters the 100- x 100-foot fenced tower site. Overhead or buried lines outside of the permanent disturbance area would be placed within access road construction buffer areas, to the extent possible, all of which would be verified to identify potential impacts on biological and cultural resources along access roads.

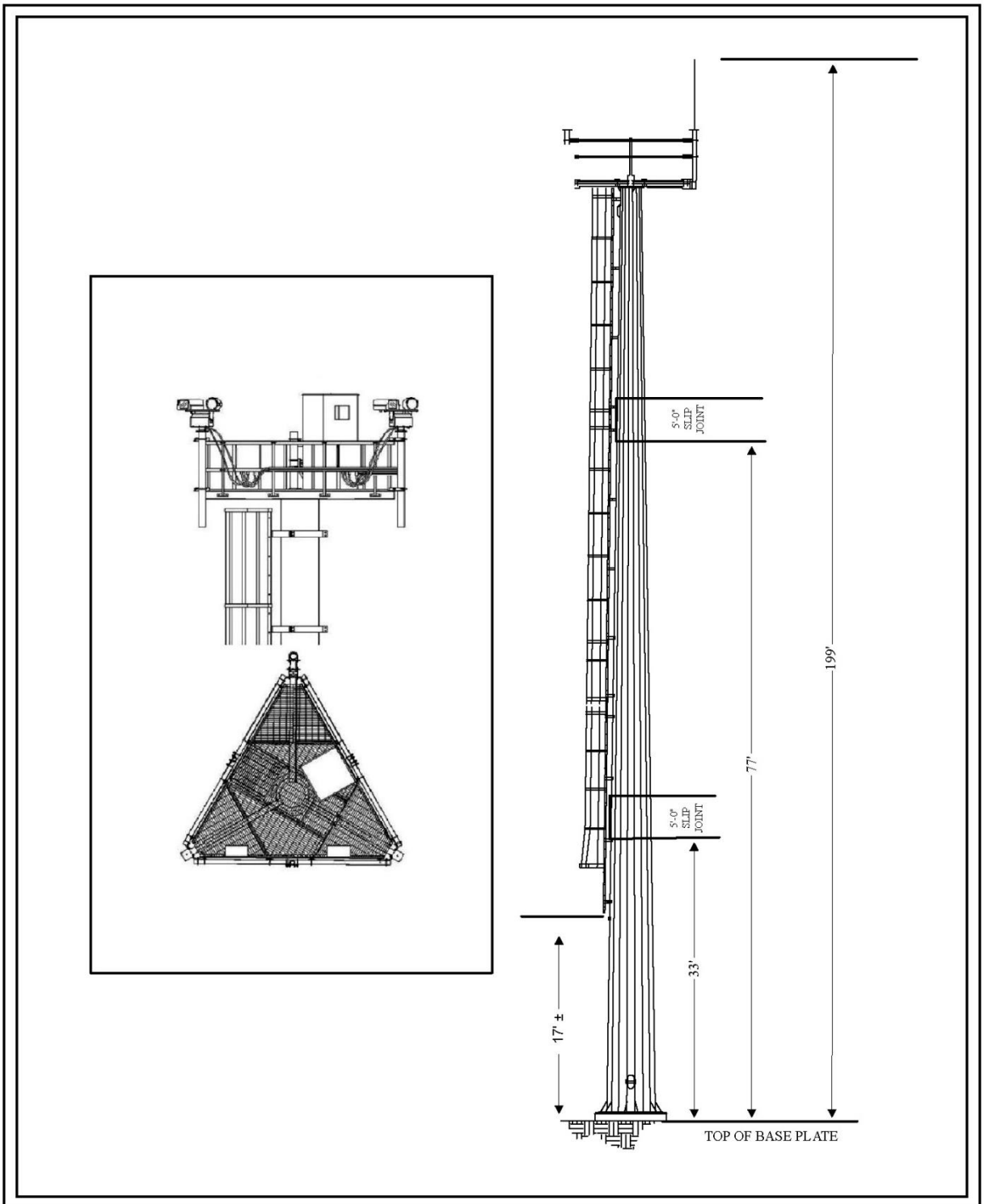

Figure 2-7. Typical Monopole Tower Profile

September 2016

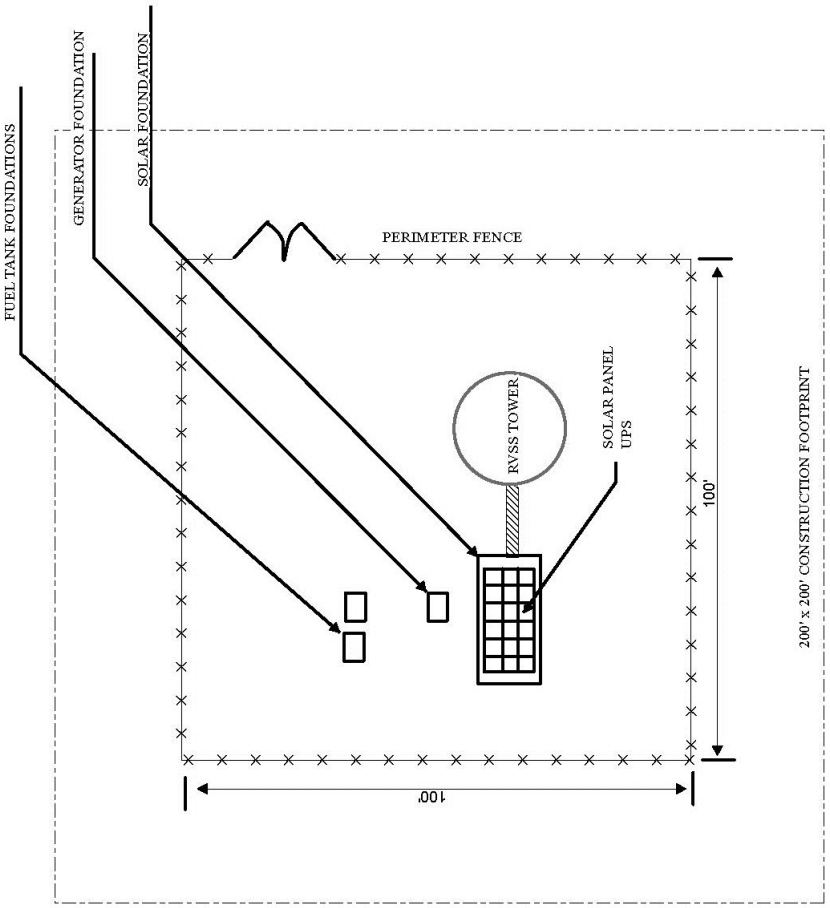

Figure 2-8. Proposed RVSS Elements

September 2016

Backup power sources may include solar panels, uninterrupted power supply (UPS) (batteries), hydrogen fuel cells, and/or a propane generator. A 1,000-gallon or smaller propane tank would be installed if a propane-fueled generator were used as a backup power source. Generators would be housed within an enclosure and would have a spill containment basin of sufficient size to contain the total volume of engine fluids. Backup power would be designed to provide a minimum 3-day supply of power in the event of primary power failure.

Sensor, Communications, and Optional Equipment

Typical designs for the RVSS towers would consist of sensor, communications, and optional equipment (e.g., spotlight). Suites of sensors would include multiple cameras (daylight or infrared cameras [or both] and video cameras). The RVSS towers would be equipped with short-range high definition, short/medium-range, long-range, or wide-angle cameras, or a combination of each, depending on the geographical area. Communications equipment could consist of microwave antennas to transmit data to the C2 facility.

Combination sensor and communications towers include equipment associated with both sensor and communications towers. The exact number and type of equipment depend on the number and types of cameras used, the area to be monitored, and other design variables. Components would be mounted on each tower between 20 and 180 feet above ground level, depending on the local terrain. The overall tower height would not exceed 199 feet above ground, which includes all elements of the tower, including the lightning protection rod, which is the highest aspect of the tower. Cameras, antennas, and parabolic antennas would be installed at heights that would ensure satisfactory line of sight and provide clear pathways for transmission of information to communications towers and the BRP, FTB, HRL, FLF, and KIN Stations. Towers generally require line-of-sight to ensure unobstructed microwave transmission signals from tower to tower. All transmit frequencies used as part of the Proposed Action would be coordinated with the National Telecommunications and Information Administration (NTIA). As part of the overall spectrum management process, the NTIA and the Federal Communications Commission (FCC) have developed radio regulations to help ensure that the various radio services operate compatibly in the same environment without unacceptable levels of radio frequency interference and emissions. While the communications systems and the frequencies in which they are operated are considered law enforcement-sensitive and cannot be provided to the public, compliance with FCC and NTIA regulations is required and ensures that recognized safety guidelines are not exceeded.

Support equipment consists of illumination equipment (lasers and spotlights) and a loud hailer. Camera systems on the RVSS towers may incorporate an eye-safe laser illuminator. The eye-safe laser illuminator would be used to direct agents or officers in the field and in the air to items of interest (IoI) being viewed by the sensor operator. Agents or officers equipped with night vision goggles (NVG) are able to readily locate the beam and locate IoIs. The laser is eye-safe at any distance and is an agent and officer safety device that enhances visibility and the ability to locate IoIs at night. The proposed spotlight would be remotely controlled with a beam width ranging from 1 to 30 degrees and provide a minimum of 20 lux and a maximum of 53 lux on an IoI at 900 feet (300 yards). Currently, it is anticipated that the spotlights would be used twice at night for a period of approximately 5 minutes for each use. Loud hailers, which would serve as a deterrent, could be mounted to the towers. The loud hailers would be used to communicate with

illegal cross-border violators, as necessary. The loud hailers would be able to broadcast both live and manually activated prerecorded voice messages to IoIs located within 900 feet (300 yards) of the device. The loud hailer would be a directional loadspeaker adjustable from 40 to 85 decibels (dB) at 300 feet (100 yards) from the device.

USFWS (2000) *Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* and USFWS (2013a) *Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning* would be implemented to include actions to reduce nighttime atmospheric lighting and the potential adverse effects of nighttime lighting on migratory bird and nocturnal flying species. The proposed tower sites may be lighted for security purposes. Security lighting may consist of a "porch light" on the tower shelter and would be controlled by a motion detector. When so equipped, the light would be shielded to avoid illumination outside the footprint of the tower site. The proposed RVSS may have infrared lighting installed for aviation safety and, if installed, any such lighting would be compatible with NVG usage. The heights of the towers would also be limited to no more than 199 feet above ground level as described in the USFWS guidance.

2.2.2 Construction of RVSS Towers

The permanent footprints of 10,000 square feet or less would be mechanically cleared of vegetation and graded for the construction of RVSS tower sites, regardless of tower type. Concrete pads would be installed as foundations for the equipment shelter, 1,000-gallon generator fuel tank and generator (Figure 2-9). A 30,000-square-foot temporary construction area around the permanent tower footprint (10,000 square feet) would be used to stage construction equipment and materials during construction activities (see Figure 2-9). The shape of the permanent tower footprint may vary depending on sensitive resources within the area, but the total area would not exceed 10,000 square feet. Parking for construction vehicles and equipment would be within the 30,000-square-foot temporary construction area during construction. The temporary construction area may be cleared but would not be graded. Following construction activities, any temporary impact areas would be revegetated with a mixture of nursery plantings or a mixture of native plant seeds (or both).

The following is a list of heavy equipment and vehicles expected to be used during each phase of RVSS site construction:

- Front-end loader or equivalent
- Drill rig
- Excavator
- Post hole digger
- Water truck
- Crane
- Bulldozer
- Concrete trucks
- Dump trucks
- Flatbed delivery truck
- Crew trucks

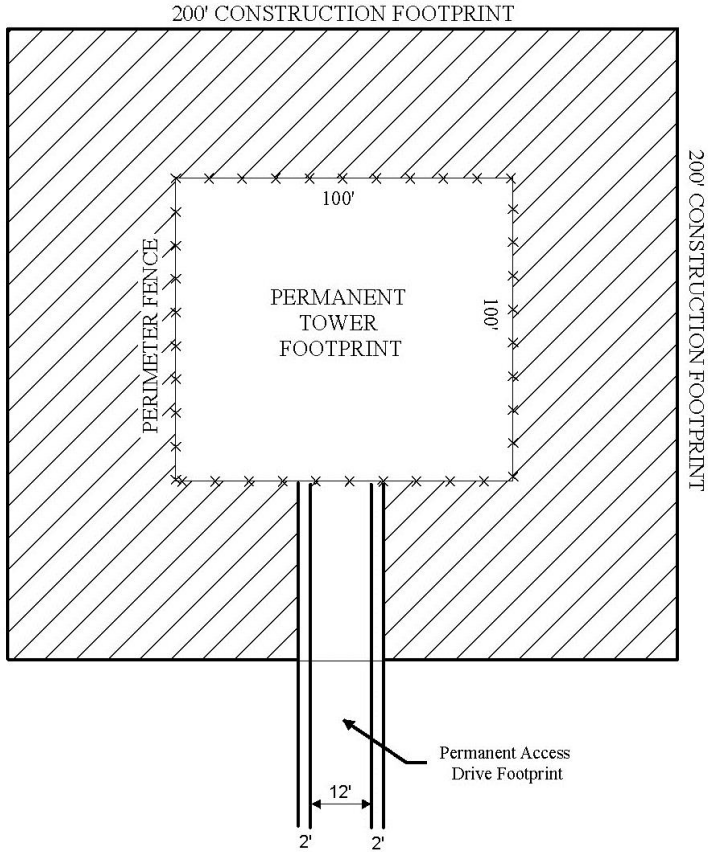

Figure 2-9. Tower Construction Footprint Schematic

September 2016

The total time for all phases of construction, including inspection and operational testing of equipment, for each proposed RVSS tower site is expected to be approximately 30 to 60 days. The installation of the suite of sensors would require approximately 30 days per RVSS tower site. All construction would be restricted to daylight hours to the greatest extent practicable.

The installation of the sensor payload requires approximately 2 days per tower site and includes up to 12 people, including delivery trucks and personnel vehicles. Following the completion of the sensor payload installation, equipment testing and system acceptance testing would be conducted as part of construction activities to check the operability of the systems. The exact details of the system acceptance testing plan are not currently known. However, based on past equipment testing and acceptance testing experience, it is anticipated that system acceptance testing may require personnel walking multiple routes near different RVSS towers for 2- to 3-hour periods individually and as a group. System acceptance testing would occur during an approximately 28-day period for all sites. Testing personnel travel by vehicles on existing roads to the test walk routes identified by CBP.

2.2.3 Operation and Maintenance of RVSS Towers

Each RVSS tower's generator subset is expected to operate a total of 1 to 5 hours twice per month for maintenance purposes. System conditioning would occur during off-grid operational schedules or if grid power is interrupted, and the generator would be operated temporarily, as needed, until grid power is again available.

Tower site maintenance includes scheduled and unscheduled maintenance. Unscheduled maintenance includes removing and replacing failed tower sensor systems or shelter components, electrical failures, structural repairs, and damage caused by storms or vandalism. Scheduled maintenance includes any planned preventive maintenance, including refueling generator tanks (i.e., propane), changing oil, other required lubricants, filters and any shelf-life item of the system. Scheduled maintenance also includes rust removal remediation, vegetation control, and general upkeep of the permanent footprint. Both scheduled and unscheduled tower maintenance require maintenance vehicles to travel to and from the RVSS sites. Currently, it is estimated that one maintenance trip per month would be required at each of the proposed RVSS towers. This trip would include maintenance and refueling efforts.

2.2.4 Access Drive and Access Road Construction, Maintenance, and Repair

Access drive construction and access road maintenance and repairs are required to move construction equipment, materials, and personnel to and from the proposed tower sites during construction. Access drive construction is required to provide access from established public or private access roads to the proposed tower sites. Maps depicting new access roads and road improvements at each proposed tower site are provided in Appendix B.

Access Drive Construction

Access drives would be constructed to provide access to RVSS sites from established public or private roads. The access drives would be constructed to provide a 12-foot-wide driving surface with 2-foot shoulders on each side. The total width of new access drives would be 16 feet. Access drives would be constructed by mechanically removing vegetation and grading native

soils. Following construction activities, any temporary impact areas would be revegetated with a mixture of nursery plantings or a mixture of native plant seeds (or both), as described previously.

Access Road Maintenance and Repair

Access roads to proposed RVSS sites would require approximately 19 miles of maintenance and repairs to existing roadways. Road maintenance and repairs include reconstruction, widening, or straightening of the existing road, and installation of drainage structures, and could require either a 30-foot-wide or a 60-foot-wide temporary construction disturbance area. Drainage structures may include but are not limited to ditches, culverts, and low-water crossings.

The access roads would be maintained and repaired to the design standard for FC-3 Graded-Earth Road. All access roads would have a driving surface of 12 feet with a 2-foot shoulder on each side of the road (16 feet total) along with improvements such as ditches, low-water crossings, turnouts, and necessary erosion protection such as riprap and gabion headwalls.

Post-construction Road Maintenance and Repair

Access road and drive maintenance would be performed to ensure full-time access to the towers and other TI. It is anticipated that road maintenance may occur up to four times per year, as necessary.

2.2.5 Summary Table

The following table (Table 2-1) is a summary of each of the preferred RVSS sites that would be used as part of the Proposed Action. Aerial photography maps for each of the proposed RVSS sites are provided in Appendix B.

2.3 NO ACTION ALTERNATIVE

The No Action Alternative serves as a basis of comparison to the anticipated effects of the other action alternatives, and its inclusion in the EA is required by NEPA regulations (40 CFR 1502.14(d)). Under the No Action Alternative, the proposed RVSS Upgrade Program would not take place. In the absence of the proposed RVSS Upgrade Program and its technological capabilities, BPAs would continue to rely solely on traditional detection methodology that includes traditional sign detection. Currently, identification, classification, response, and resolution actions require that BPAs respond to evidence of illegal entry gained through the previously mentioned tools and techniques, as well as through direct observation. BPAs, in most cases, follow physical evidence and indicators of the presence of IoIs. Under the No Action Alternative, USBP's ability to detect and interdict illicit cross-border activity would not be enhanced; thus, operational efficiency and effectiveness would not be improved within the area covered by the proposed towers.

Table 2-1. Summary of the Proposed Action RVSS Sites

Tower ID	USBP Station AOR	Function	Existing Access Drive/Road Width (ft)	Access Drive/Road Improvements
Beckwith Rd and Levee	HRL	Sensor and Communications	30	60 ft wide for 3,845 ft
Rio Rico Rd and Pump Rd	HRL	Sensor and Communications	24	30 ft wide for 6,212 ft
McMannis Bend	HRL	Sensor and Communications	20	60 ft wide for 1,762 ft
Hacienda	HRL	Sensor and Communications	14	5,024 ft (60 ft wide for 1,028 ft and 30 ft wide for 3,996 ft)
Three House Rd Southeast	HRL	Sensor and Communications	22	1,366 ft (30 ft wide for 579 ft and 60 ft wide for 787 ft)
Galveston Bend	HRL	Sensor and Communications	30	60 ft wide for 2,908 ft
San Benito Pump	HRL	Sensor and Communications	10	6,980 ft (60 ft wide for 4,274 ft and 30 ft wide for 2,706 ft)
Moodyville Rd and Levee	HRL	Sensor and Communications	None	None
Cantu Rd	HRL	Sensor and Communications	None	60f wide for 508 ft
Wells Bros Canal	HRL	Sensor and Communications	28	60 ft wide for 2,855 ft
Green Barn Rd	HRL	Sensor and Communications	24	60 ft wide for 938 ft
Concrete Canal and Levee	HRL	Sensor and Communications	20	60 ft wide for 5,907 ft
Mulberry	BRP	Sensor and Communications	20	60 ft wide for 5,824 ft
Cindy Stone	BRP	Sensor and Communications	18	60 ft wide for 708 ft
Extension of Palm	BRP	Sensor and Communications	None	None
Cusoms B&M	BRP	Sensor and Communications	None	None

Tower ID	USBP Station AOR	Function	Existing Access Drive/Road Width (ft)	Access Drive/Road Improvements
FTBGC	BRP	Sensor and Communications	24	260 ft wide for 594 ft
Zone 34	FTB	Sensor and Communications	12	60 ft wide for 2,138 ft
Pig Pens	FTB	Sensor and Communications	14	60 ft wide for 1,614 ft
East of Sable Palm Rd	FTB	Sensor and Communications	None	30 ft wide for 45 ft
Armstrong	FTB	Sensor and Communications	None	None
Alaska Rd	FTB	Sensor and Communications	None	None
Florida Rd	FTB	Sensor and Communications	20	60 ft wide for 1,162 ft
Hwy 4 Checkpoint	FTB	Sensor and Communications	None	None
Gallinas Rd	FTB	Sensor and Communications	None	None
End of Hwy 4	FTB	Sensor and Communications	None	None
Hwy 77 Armstrong	KIN	Sensor and Communications	44	30 ft wide for 4,680 ft
Juanita Section of Kenedy Ranch	KIN	Sensor and Communications	None	None
King Ranch	FLF	Sensor and Communications	None	None
Dos Haches Hopper Ranch	FLF	Sensor and Communications	20	43,917 ft (60 ft wide for 3,005 and 30 ft wide for 40,912 ft)
Checkpoint Tower	FLF	Sensor and Communications	None	None
Adairs Ranch	FLF	Sensor and Communications	None	None

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

Other border surveillance approaches, strategies and technologies, were considered as alternatives. These alternatives included unmanned aircraft systems, remote sensing satellites, unattended ground sensors, increased CBP workforce, and increased aerial reconnaissance/operations. Although these alternatives or a combination of these alternatives can be valuable tools that CBP may employ in other areas or circumstances of border incursion, they were eliminated because of logistical restrictions, environmental considerations and/or functional deficiencies that fail to meet the purpose of this project. Table 2-2 provides a discussion of each alternative evaluated and eliminated.

Table 2-2. Other Alternatives Considered but Eliminated

Other Alternatives Considered	Rationale for Elimination
Unmanned aircraft systems	Not operable in all weather conditions and do not provide persistent surveillance capability
Remote sensing satellites	Cannot provide real-time data delivery and are unreliable in certain weather conditions. Do not provide rapid detection and accurate characterization of potential threats.
Unattended ground sensors	The expanse of area required for unattended ground sensor fields to effectively cover an area similar to that of a single tower surveillance system is too vast. It would generate an unacceptably large number of used batteries that would require an extensive number of man-hours to maintain, and they would require the deployment of an agent whenever a sensor is activated which may result in undue environmental disturbances.
Increased CBP workforce	Due to the remoteness, local topography, and vegetative cover individually located agents at discrete border locations would require an unacceptably large deployment of agents in the field at all times and require a significant increase in agents to obtain a level of effective border surveillance coverage to match a single tower's persistent surveillance capabilities.
Increased aerial reconnaissance/operations	Cannot be used on a 24-hours-per-day basis and cannot operate under all weather conditions. Has limited detection capabilities in areas such as deep ravines, at nighttime and in dense vegetation. Does not provide a more efficient and effective means of assessing cross-border activities.

2.5 ALTERNATIVES SUMMARY

The two alternatives selected for further analysis are the Proposed Action and the No Action Alternative. The Proposed Action is CBP's preferred alternative for the proposed project. It fully meets the purpose of and need for the project, and the selected towers offer the best combination of towers based on the four criteria (accessibility, operability, constructability, and environmental constraints) used to assess tower site suitability. An evaluation of how the Proposed Action meets the project's purpose and need is provided in Table 2-3.

Table 2-3. Alternatives Matrix of Purpose of and Need for Alternatives

Purpose and Need	Proposed Action	No Action Alternative
Provide improved surveillance and detection capabilities that facilitate rapid response	Yes	No
Provide more efficient and effective means of assessing cross-border activities	Yes	No
Provide rapid detection and accurate characterization of potential threats	Yes	No
Provide coordinated deployment of resources in the apprehension of illicit cross-border violators.	Yes	No
Increase surveillance and interdiction efficiency	Yes	No
Enhance the deterrence of illegal cross-border activity	Yes	No
Enhance agent safety	Yes	No

3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 PRELIMINARY IMPACT SCOPING

This section describes the natural and human environments that exist within the region of influence (ROI) and the potential impacts of the No Action Alternative and Proposed Action Alternative outlined in Section 2.0 of this document. The ROI for the new RVSS tower sites comprises the Brooks, Cameron, Hidalgo, and Kenedy counties, Texas. These towers are located on Federal, private, and state lands. Only those issues that have the potential to be affected by any of the alternatives are described, per CEQ guidance (40 CFR § 1501.7 [3]).

Some topics are limited in scope due to the lack of direct effect from the Proposed Action Alternative on the resource or because that particular resource is not located within the project corridor (Table 3-1).

Table 3-1. Resources Analyzed in the Environmental Impact Analysis Process

Resource	Potential to Be Affected by Implementation of Proposed Action Alternative	Analyzed in This EA	Rationale for Elimination
Wild and Scenic Rivers	No	No	No rivers designated as Wild and Scenic Rivers (16 U.S.C. § 551, 1278[c], 1281[d]) are located within or near the project corridor.
Land Use	Yes	Yes	Not Applicable
Geology	No	No	No geologic resources would be affected.
Soils	Yes	Yes	Not Applicable
Prime Farmlands	Yes	Yes	Not Applicable
Water Resources	Yes	Yes	Not Applicable
Floodplains	Yes	Yes	Not Applicable
Vegetative Habitat	Yes	Yes	Not Applicable
Wildlife Resources	Yes	Yes	Not Applicable
Threatened and Endangered Species	Yes	Yes	Not Applicable
Cultural, Archaeological, and Historical Resources	Yes	Yes	Not Applicable
Air Quality	Yes	Yes	Not Applicable
Noise	Yes	Yes	Not Applicable
Utilities and Infrastructure	Yes	Yes	Not Applicable
Radio Frequency Environment	Yes	Yes	Not Applicable
Roadways and Traffic	Yes	Yes	Not Applicable
Aesthetic and Visual Resources	Yes	Yes	Not Applicable
Hazardous Materials	Yes	Yes	Not Applicable

Resource	Potential to Be Affected by Implementation of Proposed Action Alternative	Analyzed in This EA	Rationale for Elimination
Unique and Sensitive Areas	Yes	Yes	Not Applicable
Socioeconomics	No	Yes	Not Applicable
Environmental Justice and Protection of Children	No	Yes	Not Applicable

Impacts (consequence or effect) can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8[a]). Indirect effects are caused by the action and are later in time or further removed in distance but that are still reasonably foreseeable (40 CFR § 1508.8[b]). As discussed in this section, the alternatives may create temporary (lasting the duration of the project), short-term (up to 3 years), long-term (3 to 10 years following construction), or permanent impacts.

Whether an impact is significant depends on the context in which the impact occurs and the intensity of the impact (40 CFR § 1508.27). The context refers to the setting in which the impact occurs and may include society as a whole, the affected region, the affected interests, and the locality. Impacts on each resource can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis, the intensity of impacts would be classified as negligible, minor, moderate, or major. The intensity thresholds are defined as follows:

- Negligible: A resource would not be affected or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor: Effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate: Effects on a resource would be readily detectable, long-term, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Major: Effects on a resource would be obvious and long-term, and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

The following discussions describe and, where possible, quantify the potential effects of each alternative on the resources within or near the project area. Each tower site is considered to have a 0.25-acre permanent impact and a 0.75-acre temporary impact as a result of construction activities. Access roads that are currently over 16 feet wide are not included in the permanent impact footprint because these areas are currently road and would remain road. Further, the

existing road width was taken into consideration when calculating temporary impacts, as well. For instance, if a road has an existing 20-foot-wide footprint and it was established that a 60-foot-wide temporary footprint was needed then only 40 feet of temporary impacts were included in the temporary impact calculations. See Table 2-1 for the approximate widths of all existing access roads/drives. All impacts described below are considered to be adverse unless stated otherwise. Table 3-2 presents a summary of the permanent and temporary (construction) impacts for the No Action Alternative and Proposed Action.

Table 3-2. Temporary and Permanent Impacts Resulting from the Alternatives

Alternatives	Sites	Access Drives	Existing Access Roads	Total
Permanent Impact (acres)				
No Action	0	0	0	0
Proposed Action	8	0.2	1	9.2
Temporary Impact (acres)				
No Action	0	0	0	0
Proposed Action	24	0	51	75

3.2 LAND USE

The existing land use for the proposed tower site locations in Brooks, Cameron, Hidalgo, and Kenedy counties predominantly includes agriculture and rangeland. Nearby existing land use includes recreational use, wildlife refuges, and urban development.

Brooks County encompasses approximately 603,520 acres, with the majority of the county being classified as rangeland. The major land use is rangeland with approximately 572,917 acres in farmland. Eighty-nine percent of the farmland is classified as pastureland for the production of cattle (U.S. Department of Agriculture [USDA] 2012). The major recreation activity for Brooks County is outdoor recreation and the county seat is Falfurrias.

Cameron County encompasses approximately 570,240 acres, with the majority of the county being classified as rangeland. A total of 1,305 farms are located within Cameron County, and these farms encompass over 309,700 acres. Sixty-seven percent of the farms are classified as in agricultural production of sorghum, cotton, and vegetables (USDA 2012). Twenty-seven percent of the farms are in rangeland for the production of cattle, sheep, and pigs. The major recreational area in this county occurs at South Padre Island along the Gulf of Mexico. Brownsville is the major urban center and the county seat of Cameron County (CBP 2007).

The total amount of land in Kenedy County is approximately 933,120 acres, of which approximately 916,390 acres are in pastureland. Over 99 percent of the farms in Kenedy County are classified as pastureland (USDA 2012). The largest ranch in Kenedy County is the King Ranch, which totals over 825,000 acres ranging from Corpus Christi to Brownsville. The county seat for Kenedy County is Sarita. Recreation use in the county is associated with outdoor recreation and Padre Island National Seashore, which is located on the Gulf of Mexico. The

major urban area for Kenedy County is the county seat, Sarita (Texas State Historical Association 2016).

Hidalgo County is approximately 995,200 acres in size with approximately 795,000 acres being in farms. The major land use is agricultural production (59 percent) of crops such as sugar cane, grains, cotton, and citrus. Thirty-one percent of the farms in Hidalgo County are used as rangeland for cattle production (USDA 2012). Recreational use in this county is associated with tourism during the winter peak season at Bentson-Rio Grande Valley State Park and Santa Ana National Wildlife Refuge. Urban areas within this county include McAllen, Pharr, and Edinburg (CBP 2007).

Land uses at the RVSS tower and relay tower sites differ and are generally based on land ownership. Table 3-3 provides the landowner and land use for each of the proposed tower sites.

Table 3-3. Tower Site Land Ownership and Land Use

Tower ID	USBP Station AOR	Land Ownership Type	Land Use
Beckwith Rd and Levee	HRL	Private	Agriculture/Undeveloped
Rio Rico Rd and Pump Rd	HRL	Private	Rangeland/Undeveloped
McMannis Bend	HRL	Private	Rangeland/Undeveloped
Hacienda	HRL	City of La Feria	Agriculture/Undeveloped
Three House Rd Southeast	HRL	Private/USFWS	Agriculture/ Lower Rio Grande National Wildlife Refuge/Undeveloped
Galveston Bend	HRL	Private	Agriculture/Undeveloped
San Benito Pump	HRL	Cameron County	Rangeland/Undeveloped
Moodyville Rd and Levee	HRL	Cameron County	Developed/Mowed and Maintained
Cantu Rd	HRL	Private	Rangeland/Undeveloped
Wells Bros Canal	HRL	Private	Rangeland/Undeveloped
Green Barn Rd	HRL	Private	Agriculture/Undeveloped
Concrete Canal and Levee	HRL	Private	Rangeland/Undeveloped
Mulberry	BRP	Private	Agriculture/Undeveloped
Cindy Stone	BRP	Private	Agriculture/Undeveloped
Extension of Palm	BRP	Private	Rangeland/Undeveloped
Cusoms B&M	BRP	DHS	Developed/Mowed and Maintained
FTBGC	BRP	City of Brownsville	Rangeland/Undeveloped
Zone 34	FTB	USFWS	Lower Rio Grande National Wildlife Refuge/Rangeland/Undeveloped
Pig Pens	FTB	Private	Agriculture/Undeveloped
East of Sable Palm Rd	FTB	Private	Rangeland/Undeveloped
Armstrong	FTB	Private	Residential/Undeveloped
Alaska Rd	FTB	Private	Agriculture/Undeveloped
Florida Rd	FTB	Private	Residential/Undeveloped

Tower ID	USBP Station AOR	Land Ownership Type	Land Use
Hwy 4 Checkpoint	FTB	TxDOT	Road right-of-way (ROW)/Developed
Gallinas Rd	FTB	USFWS	Lower Rio Grande National Wildlife Refuge/ Rangeland/Undeveloped
End of Hwy 4	FTB	TxDOT	Road ROW/Undeveloped
Hwy 77 Armstrong	KIN	Private	Rangeland/Undeveloped
Juanita Section of Kenedy Ranch	KIN	TxDOT	Road ROW/Developed
King Ranch	FLF	Private	Agriculture/Undeveloped
Dos Haches Hopper Ranch	FLF	Private	Rangeland/Undeveloped
Checkpoint Tower	FLF	DHS	Developed
Adairs Ranch	FLF	Private	Rangeland/Undeveloped

3.2.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no direct impacts on land use would occur. However, land uses within the vicinity of the proposed RVSS sites are directly and indirectly affected by illegal cross-border violator pedestrian traffic and consequent law enforcement activities. These areas experience damage to native vegetation and soil compaction as a result of these activities. Under the No Action Alternative, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so illegal cross-border violator activities would continue to impact land use in the project area.

3.2.2 Alternative 2: Proposed Action

Under the Proposed Action, approximately 6.25 acres of undeveloped land would be converted to a developed land use at the new RVSS tower sites and approximately 20.25 acres would be temporarily disturbed during construction activities. The new access drives would permanently impact less than 0.2 acre and temporarily impact 0.7 acre during construction. It is estimated that approximately 1 acre would be permanently converted to a developed land use as a result of access road maintenance and repair activities. Further, approximately 51 acres would be temporarily disturbed as a result of maintenance and repair activities on the access roads to allow for construction equipment access. The direct impact from the conversion of approximately 7.45 acres of undeveloped land to law enforcement infrastructure would be minimal to moderate due to the small size of the project footprint relative to the size of the ROI.

The Proposed Action could result in indirect and long-term beneficial impacts on land use by reducing the adverse impacts of illegal cross-border violator activities in the project area. The proposed RVSS towers would enhance CBP's detection and threat classification capabilities and increase the efficiency of operational activities within the area of tower coverage. Over time the enhancement of detection capabilities and an increase in operational efficiency could increase the deterrence of illegal cross-border violator activity within the area of tower coverage.

3.3 SOILS AND PRIME FARMLAND

There are 16 soil types associated with the RVSS towers according to the Natural Resource Conservation Service's (NRCS) *Web Soil Survey of Hidalgo, Cameron, Kenedy, and Brooks County, Texas* (NRCS 2016). Each of these soil types are described in Table 3-4. The Farmland Protection Policy Act of 1980 and 1995 was established to preserve the Nation's farmland. In Section 7 of the CFR Part 657.5, prime farmlands are defined as having the best combinations of physical and chemical properties to be able to produce fiber, animal feed, and food and are available for these uses. Of the 16 soil types, there are seven that are considered prime farmland.

Table 3-4. Soil Types

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
Beckwith Rd and Levee	Matamoros silty clay – Areas of this soil are irregularly shaped and about 20 to 100 acres in size. Flooding occurs about 1 year in 10. The slopes are level to slightly concave and the gradient is less than 1 percent. Most areas of this soil are irrigated and cultivated.	No
Rio Rico Rd and Pump Rd	Camargo silt loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. Most of the acreage of this soil is cultivated and the soil is well suited to many crops.	Yes
McMannis Bend	Rio Grande Silt Loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. This soil is flooded about 1 year in 10. Most of the acreage is cultivated and irrigated, but a few fields are dry farmed. The Rio Grande series consists of deep, well-drained, nearly level to gently sloping soils on the active part of the floodplain along the Rio Grande and on alluvial fans along the its major tributaries. These soils are formed in recently deposited, friable, stratified silty sediments that are high in lime content.	No
Hacienda	Rio Grande Silt Loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. This soil is flooded about 1 year in 10. Most of the acreage is cultivated and irrigated, but a few fields are dry farmed. The Rio Grande series consists of deep, well-drained, nearly level to gently sloping soils on the active part of the floodplain along the Rio Grande and on alluvial fans along the its major tributaries. These soils are formed in recently deposited, friable, stratified silty sediments that are high in lime content.	No
Three House Rd Southeast	Matamoros silty clay – Areas of this soil are irregularly shaped and about 20 to 100 acres in size. Flooding occurs about 1 year in 10. The slopes are level to slightly concave and the gradient is less than 1 percent. Most areas of this soil are irrigated and cultivated.	No

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
Galveston Bend	Rio Grande Silt Loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. This soil is flooded about 1 year in 10. Most of the acreage is cultivated and irrigated, but a few fields are dry farmed. The Rio Grande series consists of deep, well-drained, nearly level to gently sloping soils on the active part of the floodplain along the Rio Grande and on alluvial fans along the its major tributaries. These soils are formed in recently deposited, friable, stratified silty sediments that are high in lime content.	No
San Benito Pump	Zalla loamy fine sand – This soil occurs on the floodplain along the Rio Grande, generally at an elevation of 15 to 25 feet above the present riverbed. Most areas occupy the large inside curves of the river, but a few areas are narrow and elongated. Areas of this soil range from 10 to 90 acres in size with convex slopes. Most of the acreage is either idle or used as pasture land, but a few small areas are irrigated and cultivated.	No
Moodyville Rd and Levee	Camargo silt loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. Most of the acreage of this soil is cultivated and the soil is well suited to many crops.	Yes
Cantu Rd	Laredo silty clay loam, 0 to 1 percent slopes – This deep, nearly level soil occurs on ancient stream terraces. Areas are small and irregular in shape and range in size from 10 to 75 acres, and are calcareous throughout. This soil is almost entirely used as irrigated cropland.	Yes
Wells Bros Canal	Laredo-Reynosa complex – Laredo series soils are deep, well-drained, that are nearly level to gently sloping. These soils are used for irrigated crops, pasture, and dryfarmed crops. Reynosa series soils are broad, irregularly shaped, and generally several hundred acres in size. The slope is predominantly less than 1 percent, but is as much as 2 percent in places. Most of the acreage is irrigated and cultivated.	Yes
Green Barn Rd	Camargo silt loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. Most of the acreage of this soil is cultivated and the soil is well suited to many crops.	Yes
Concrete Canal and Levee	Rio Grande Silt Loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. This soil is flooded about 1 year in 10. Most of the acreage is cultivated and irrigated, but a few fields are dry farmed. The Rio Grande series consists of deep, well-drained, nearly level to gently sloping soils on the active part of the floodplain along the Rio Grande and on alluvial fans along the its major tributaries. These soils are formed in recently deposited, friable, stratified silty sediments that are high in lime content.	No
Mulberry	Camargo silt loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. Most of the acreage of this soil is cultivated and the soil is well suited to many crops.	Yes

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
Cindy Stone	Matamoros silty clay – Areas of this soil are irregularly shaped and about 20 to 100 acres in size. Flooding occurs about 1 year in 10. The slopes are level to slightly concave and the gradient is less than 1 percent. Most areas of this soil are irrigated and cultivated.	No
Extension of Palm	Rio Grande Silt Loam, 0 to 1 percent slopes – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. This soil is flooded about 1 year in 10. Most of the acreage is cultivated and irrigated, but a few fields are dry farmed. The Rio Grande series consists of deep, well-drained, nearly level to gently sloping soils on the active part of the floodplain along the Rio Grande and on alluvial fans along the its major tributaries. These soils are formed in recently deposited, friable, stratified silty sediments that are high in lime content.	No
Cusoms B&M	Rio Grande Urban land complex, 0 to 30 percent slopes - Areas of this soil are the built-up areas of cities and towns. Rio Grande silt loam makes up about 55 percent of the complex, and urban land makes up 30 percent. The Rio Grande soil has a surface layer of light-gray calcareous silt loam about 9 inches thick. Underlying material reaches a depth of approximately 63 inches and is a light-gray and pale brown stratified silt loam and very fine sandy loam.	No
FTBGC	Grulla clay, 0 to 1 percent slopes – Areas of this soil have been cut off from the Rio Grande by major floods. Areas of this soil is found in level, long oxbows in the active floodplain. The soils are 1 to 5 feet below the surrounding landscape and have no natural drainage outlet. Areas of this soil are plane to concave and rarely exceed 40 acres in size. Permeability is very slow and runoff is ponded. Some areas remain wet several weeks each year. This soil is primarily used for irrigated crops.	No
Zone 34	Laredo-Reynosa complex – Laredo series soils are deep, well-drained, that are nearly level to gently sloping. These soils are used for irrigated crops, pasture, and dryfarmed crops. Reynosa series soils are broad, irregularly shaped, and generally several hundred acres in size. The slope is predominantly less than 1 percent, but is as much as 2 percent in places. Most of the acreage is irrigated and cultivated.	Yes
Pig Pens	Laredo-Reynosa complex – Laredo series soils are deep, well-drained, that are nearly level to gently sloping. These soils are used for irrigated crops, pasture, and dryfarmed crops. Reynosa series soils are broad, irregularly shaped, and generally several hundred acres in size. The slope is predominantly less than 1 percent, but is as much as 2 percent in places. Most of the acreage is irrigated and cultivated.	Yes
East of Sable Palm Rd	Olmito silty clay, 0 to 1 percent slopes – This nearly level soil is found on old floodplains and deltas. Most areas of this soil are in slight depressions within large areas of Laredo soils or in narrow areas between Laredo and Harlingen soils. Areas of this soil vary greatly in size and shape but are rarely greater than 150 acres in size. Permeability and runoff is slow. This soil is primarily used for irrigated crops.	Yes

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
Armstrong	Laredo silty clay loam, 0 to 1 percent slopes – This deep, nearly level soil occurs on ancient stream terraces. Areas are small and irregular in shape and range in size from 10 to 75 acres, and are calcareous throughout. This soil is almost entirely used as irrigated cropland.	Yes
Alaska Rd	Matamoros silty clay – Areas of this soil are irregularly shaped and about 20 to 100 acres in size. Flooding occurs about 1 year in 10. The slopes are level to slightly concave and the gradient is less than 1 percent. Most areas of this soil are irrigated and cultivated.	No
Florida Rd	Olmito silty clay, 0 to 1 percent slopes – This nearly level soil is found on old floodplains and deltas. Most areas of this soil are in slight depressions within large areas of Laredo soils or in narrow areas between Laredo and Harlingen soils. Areas of this soil vary greatly in size and shape but are rarely greater than 150 acres in size. Permeability and runoff is slow. This soil is primarily used for irrigated crops.	Yes
Hwy 4 Checkpoint	Lomalta clay, 0 to 1 percent slopes – This level to lightly depressional soil is generally in broad areas several hundred acres in size, but a few areas occur as long, narrow drainage ways. Areas of this soil are usually plane to concave. Permeability and runoff are very slow. Areas of this soil are primarily used for range and wildlife habitat.	No
Gallinas Rd	Sejita silty clay loam, 0 to 1 percent slopes – This soil is found only a few feet above sea level. Areas are broad, level, and several hundred acres in size. This soil is found in areas that are plane to concave. Permeability is moderately slow and runoff is very slow. Areas of this soil are primarily used for range and wildlife habitat.	No
End of Hwy 4	Galveston fine sand, hummocky, 0 to 6 percent slopes – This soil is in hummocky areas adjacent to and on the leeward side of the coastal dunes on Padre Island and Brazos Island. Areas of this soil are irregularly shaped and range from less than 10 acres to 400 acres in size. Areas containing this soil are convex in shape. Permeability is rapid and runoff is very slow. Areas of this soil are primarily used for recreation, wildlife habitat, and urban development.	No
Hwy 77 Armstrong	Falfurrias fine sand, 0 to 8 percent slopes – This very deep soil is found on uplands, mainly in a series of long, discontinuous ridges. Individual areas are long and narrow or irregular in shape and range from 40 to several thousand acres in size. This soil is somewhat excessively drained. Runoff is very slow. Permeability is rapid, and the available water capacity is low. Areas of this soil are primarily used for rangeland and wildlife habitat.	No

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
Juanita Section of Kenedy Ranch	Sarita fine sand, 0 to 5 percent slopes – This very deep soil is on broad upland plains. The surface is plane or hummocky. Areas are irregular in shape and range from 20 to several thousand acres in size. This soil is well drained. Runoff is very slow. Permeability is rapid in the upper part of the profile and moderately rapid in the lower part. Areas of this soil are mainly used for rangeland and wildlife habitat.	No
King Ranch	Falfurrias fine sand, 0 to 8 percent slopes – This very deep soil is found on uplands, mainly in a series of long, discontinuous ridges. Individual areas are long and narrow or irregular in shape and range from 40 to several thousand acres in size. This soil is somewhat excessively drained. Runoff is very slow. Permeability is rapid, and the available water capacity is low. Areas of this soil are primarily used for rangeland and wildlife habitat.	No
Dos Haches Hopper Ranch	Sarita fine sand, 0 to 5 percent slopes – This very deep soil is on broad upland plains. The surface is plane or hummocky. Areas are irregular in shape and range from 20 to several thousand acres in size. This soil is well drained. Runoff is very slow. Permeability is rapid in the upper part of the profile and moderately rapid in the lower part. Areas of this soil are mainly used for rangeland and wildlife habitat.	No
Checkpoint Tower	Falfurrias fine sand, 0 to 8 percent slopes – This very deep soil is found on uplands, mainly in a series of long, discontinuous ridges. Individual areas are long and narrow or irregular in shape and range from 40 to several thousand acres in size. This soil is somewhat excessively drained. Runoff is very slow. Permeability is rapid, and the available water capacity is low. Areas of this soil are primarily used for rangeland and wildlife habitat.	No
Adairs Ranch	Sauz fine sand, nearly level, 0 to 1 percent slopes – This very deep soil is in shallow depressions and poorly defined drainage ways. Individual areas are about 6 inches to 2 feet lower than the surrounding soils. The surface is plane or slightly concave. Areas of this soil are long and narrow or irregular in shape and range from 20 to 300 acres in size. This soil is somewhat poorly drained. Runoff is slow and permeability is moderately slow. Areas of this soil type are exclusively used for pastureland.	No

3.3.1 Alternative 1: No Action Alternative

No ground-disturbing activities would occur as a result of this alternative. Therefore, the No Action Alternative would have no direct impacts, either beneficial or adverse, on soils, including prime farmland soils. However, soils within the vicinity of the RVSS tower sites are directly and indirectly affected by illegal cross-border violator pedestrian traffic and consequent law enforcement activities. Under the No Action Alternative, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so illegal cross-border violator activities would continue to impact soils in the project area. Potential indirect benefits associated with the Proposed Action would not be realized under the No Action Alternative.

3.3.2 Alternative 2: Proposed Action

Under the Proposed Action, approximately 9.2 acres of soils (of which 2.75 acres are considered prime farmland soils) would be permanently disturbed or removed from biological production at the new RVSS tower sites and approximately 24 acres (of which 5.25 acres are prime farmlands) would be temporarily disturbed during construction activities. It is estimated that approximately 0.2 acre of soils would be permanently disturbed as a result of access drive construction and access road maintenance and repair activities. Further, approximately 51 acres would be temporarily disturbed as a result of maintenance and repair activities on existing access roads to allow for construction equipment access. The direct impact from the disturbance and removal from biological production of approximately 9.4 acres of soil (of which 2.75 acres are prime farmland soils) would be negligible due to the small size of the project footprint relative to the amount of the same soils throughout the ROI. Upon completion of construction, all temporary disturbance areas would be revegetated with a mixture of native plant seeds or nursery plantings or allowed to revegetate naturally. CBP has completed Form AD1006 and is in the process of coordinating with the NRCS regarding the insignificant loss of approximately 2.75 acres of prime farmland.

The Proposed Action could result in indirect and long-term beneficial impacts on soils within the ROI by reducing the adverse impacts of illegal cross-border violator activities in the project area. The proposed RVSS towers would enhance CBP's detection and threat classification capabilities and increase the efficiency of operational activities within the area of tower coverage. Over time the enhancement of detection capabilities and an increase in operational efficiency could increase the deterrence of illegal cross-border violator activity within the area of tower coverage.

3.4 VEGETATIVE HABITAT

Hidalgo and Brooks counties, as well as the western portion of Cameron County are located in the South Texas Brush Ecoregion as characterized by the TPWD (TPWD 2015). This ecoregion exists from east of the Rio Grande and south of the Balcones Escarpment. The average temperature is 73 degrees Fahrenheit, with an average annual rainfall ranging from 16 inches in the east to 30 inches in the west. The South Texas Brush Country Ecoregion is a diverse ecoregion because it has elements of three converging vegetative communities, Chihuahuan Desert to the west, Tamaulipan thornscrub and subtropical woodlands along the Rio Grande, and coastal grasslands to the east. It is transected by numerous arroyos and streams and is generally covered in low-growing thorny vegetation (TPWD 2015).

Common tree species for the area includes pecan (*Carya illinoiensis*), sugarberry tree (*Celtis laevigata*), anacua tree (*Ehretia anacua*), Texas ebony tree (*Pithecellobium flexicaule*), sabal palm (*Sabal palmetto*), black willow (*Salix nigra*), Texas persimmon (*Diospyros texana*), honey mesquite (*Prosopis glandulosa var. glandulosa*), lotebush (*Ziziphus obtusifolia*), huisache (*Acacia farnesiana*), and Texas wild olive (*Cordia boissieri*). Shrubs that are most common in this ecoregion include fiddlewood (*Citharexylum berlandieri*), desert yaupon (*Schaefferia cuneifolia*), Rio Grande abutilon (*Abutilon hypoleucum*), bee bush (*Aloysia gratissima*), agarita (*Mahonia trifoliolata*), American beauty-berry (*Callicarpa americana*), lantana (*Lantana urticoides*), cenizo (*Leucophyllum frutescens*), Turk's cap (*Malvaviscus drummondii*), rose pavonia (*Pavonia lasiopetala*), and autumn sage (*Salvia greggii*). Common vines, grasses, and

wildflowers according to the TPWD are marsh's pipevine (*Aristolochic* sp.), old man's beard (*Clematis drummondii*), sideoats grama (*Bouteloua curtipendula*), slender grama (*Bouteloua repens*), buffalograss (*Buchloe dactyloides*), inland sea-oats (*Chasmanthium latifolium*), plains lovegrass (*Eragrostis intermedia*), little bluestem (*Schizachyrium scoparium*), heartleaf hibiscus (*Hibiscus matianus*), scarlet sage (*Salvia coccinea*), red prickly poppy (*Argemone sanguinea*), and purple phacelia (*Phacelia bipinnatifida*) (TPWD 2015).

The eastern side of Cameron County and Kenedy County are within TPWD Ecoregion 2, Gulf Coast Prairies and Marshes. This region is characterized by shallow bays, estuaries, salt marshes, dunes, and tidal flats. Vegetation within this region is highly salt-tolerant. Common tree species for the region include sugarberry, water oak (*Quercus nigra*), willow oak (*Quercus phellos*), shumard oak (*Quercus shumardii*), southern live oak (*Quercus virginiana*), American elm (*Ulmus americana*), yaupon (*llex vomitoria*), red mulberry (*Morus rubra*), wax myrtle (*Morella cerifera*), flameleaf sumac (*Rhus lanceolata*), red buckeye (*Aesculus pavia)* , eastern red cedar (*Juniperus virginiana*), shortleaf pine (*Pinus echinata*), and loblolly pine (*Pinus taeda*). The most common shrubs include American beauty-berry, buttonbush (*Cephalanthus occidentalis*), lantana, and dwarf palmetto (*Sabal minor*). Succulents include prickly pear cactus (*Opuntia* sp.) and Spanish dagger (*Yucca gloriosa*). Common vines found within the region include pipevine, crossvine (*Bignonia capreolata*), trumpet creeper (*Campsis radicans*), Carolina jessamine (*Gelsemium sempervirens*), coral honeysuckle, maypop (*Passifloria incarnata*), and muscadine grape (*Vitis muscadinia v. rotundifolia*). Common grasses and wildflowers include big bluestem (*Andropogon gerardi*), bushy bluestem (*Andropogon glomeratus*), inland sea-oats, sugarcane plumegrass (*Saccharum giganteum*), Gulf cordgrass (*Spartina spartinae*), eastern gammagrass (*Tripsacum dactyloides*), lanceleaf coreopsis (*Coreopsis lanceolata*), coralbean (*Erythrina herbacea*), spider lily (*Hymenocallis* sp.), cardinal flower (*Lobelia cardinalis*), Turk's cap, Gulf Coast penstemon (*Penstemon tenuis*), scarlet sage (*Salvia coccinea*), Indian paintbrush (*Castilleja* sp.), beach evening primrose (*Oenothera drummondii*), showy evening primrose (*Oenothera grandis*), and meadow pink (*Sbatia campestris*) (TPWD 2015).

A complete list of floral species observed during biological surveys of the tower sites is included in Table 3-5.

Table 3-5. Observed Flora species

Species Common Name	Species Scientific Name
Trees/Shrubs	
Retama	*Parkinsonia aculeata*
Honey mesquite	*Prosopis glandulosa*
Lead tree	*Leucaena leucocephala*
Texas paloverde	*Parkinsonia texana*
Huisache	*Acacia farnesiana*
Texas ranger	*Leucophyllum frutescens*
Blackbrush acacia	*Acacia rigidula*
Spiny hackberry	*Celtis pallida*
Colima	*Zanthoxylum fagara*
Lotebush	*Ziziphus obtusifolia*
Spanish bayonet	*Yucca treculeana*

Species Common Name	Species Scientific Name
Trees/Shrubs	
Texas ebony	*Chloroleucon ebano*
Poverty weed	*Baccharis neglecta*
Castorbean	*Ricinus communis*
Hackberry	*Celtis laevigata*
Mexican ash	*Fraxinus berlandieriana*
Sabal palm	*Sabal mexicana*
Mulefat	*Baccharis salicifolia*
Black willow	*Salix nigra*
Arundo cane	*Arundo donax*
Turk's cap	*Malvaviscus drummondii*
Cacti	
Texas prickly pear cactus	*Opuntia engelmannii*
Christmas cholla	*Cylindropuntia leptocaulis*
Berlandier's alicoche	*Echinocereus berlandieri*
Forbs/Herbs	
Fingergrass	*Chloris barbata*
Green sprangletop	*Leptochloa dubia*
Cotton top	*Digitaria californica*
Switch grass	*Panicum virgatum*
Johnson grass	*Sorghum halepense*
Sacaton	*Sporobolus wrightii*
Kleberg's bluestem	*Dichanthium annulatum*
Bluestem	*Schizachyrium* sp.
Crabgrass	*Digitaria sp.*
Shoregrass	*Distichlis littoralis*
Saltgrass	*Distichlis spicata*
Sandbar lovegrass	*Eragrostis frankii*
Little bluestem	*Schizachyrium scoparium*
Gulf cordgrass	*Spartina spartinae*
Roundhead rush	*Juncus validus*
Common sandbur	*Cenchrus spinifex*
Fragrant flatsedge	*Cyperus odoratus*
Sedge	*Carex sp.*
Lovegrass	*Eragrostis sp.*
Buffelgrass	*Cenchrus ciliaris*
Bermudagrass	*Cynodon dactylon*
Silverleaf nightshade	*Solanum elaeagnifolium*
Partridge pea	*Chamaecrista fasciculata*
Pink smartweed	*Polygonum pensylvanicum*
Cheeseweed	*Malva sp.*
Common ragweed	*Ambrosia psilostachya*
Cattail	*Typha sp.*
Sea oxeye	*Borrichia frutescens*
Tarweed	*Grindelia squarrosa*
Bull nettle	*Cnidoscolus stimulosus*
Corona de cristo	*Passiflora foetida*

Species Common Name	Species Scientific Name
Trees/Shrubs	
Shrubby indian mallow	*Abutilon abutiloides*
Cory's croton	*Croton coryi*
Silverleaf sunflower	*Helianthus argophyllus*
Sunflower	*Helianthus annuus*
Sida	*Sida abutifolia*
Pie print	*Abutilon theophrasti*
Pickleweed	*Salicornia bigelovii*
Russian thistle	*Salsola tragus*
Palmer's amaranth	*Amaranthus palmeri*
Vines	
Possum grape	*Cissus incisa*
Climbing milkweed	*Funastrum cynanchoides*
Trumpet creeper	*Campsis radicans*
Old man's beard	*Clematis drummondii*
Coral vine	*Antigonon leptopus*

Although the overall ecoregion for the project corridor is the South Texas Brush Country and Gulf Coast Prairies and Marsh Ecoregions, vegetative community characteristics varied for many of the tower sites. In fact, a total of five vegetative communities were observed during biological surveys that occurred from July 2015 through June 2016 at the various tower sites. The communities include natural communities experiencing varying degrees of anthropogenic disturbances such as agriculture and developed areas. Natural vegetative community designations for proposed tower sites follow The International Ecological Classification Standard: Terrestrial Ecological Classifications for Ecological Systems of the Southern Texas Plains (NatureServe 2009). These natural community designations include the following: South Texas brush land, coastal marsh, and coastal prairie. The vegetation communities for each proposed tower location are included in Table 3-6.

3.4.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no direct impacts on vegetative habitat would occur. However, vegetative habitats within the vicinity of the proposed RVSS tower sites are directly and indirectly affected by illegal cross-border violator pedestrian traffic and consequent law enforcement activities. These areas experience damage to native vegetation and soil compaction as a result of these activities. Under the No Action Alternative, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so illegal cross-border violator activities would continue to impact land use in the project area.

3.4.2 Alternative 2: Proposed Action

The Proposed Action would have a permanent, minor impact on vegetation in the project area, approximately 2.5 acres of native vegetative communities (1.75 acres of South Texas brush land, 0.5 acre of coastal marsh, and 0.25 acre of coastal prairie) would be directly impacted as a result of the construction of the proposed RVSS towers.

Table 3-6. Tower Site Vegetative Communities

Tower ID	Vegetative Community	Dominant Vegetation Present	Site Conditions
Beckwith Rd and Levee	Agriculture	The site is an active but barren agriculture field.	The proposed tower location is a 100 percent disturbed and active agriculture field.
Rio Rico Rd and Pump Rd	South Texas brush land	The vegetative community consists of Texas ebony, honey mesquite, and sugarberry which each make up about 5 percent of the total cover. Additional observed species include coral vine, old man's beard, spiny hackberry, Palmer's amaranth, silverleaf nightshade, green sprangletop, Bermudagrass, and possum grape.	The proposed tower location is an undisturbed wooded lot. The lot is surrounded by agricultural fields on each side.
McMannis Bend	Agriculture	No vegetation is present.	The proposed tower location is a 100 percent disturbed agriculture field with no vegetation.
Hacienda	Agriculture	The site is an active agricultural field.	The proposed tower location is 100 percent disturbed active agricultural field dominated by cultivated sorghum.
Three House Rd Southeast	Agriculture/South Texas brush land	The western 75 percent of the site is in agricultural cultivation and had no vegetation. The eastern 25 percent of the site consisted of buffelgrass, honey mesquite, huisache, and retamal. Additional plant species observed include Texas paloverde, spiny hackberry, lotebush, and pie print.	The proposed tower location is 75 percent located in an active agricultural field and 25 percent located in an overgrown mesquite scrub patch.
Galveston Bend	Agriculture	No vegetation is present.	The proposed tower location is a 100 percent disturbed agriculture field with no vegetation.
San Benito Pump	Agriculture	The vegetative cover is 100 percent and is dominated by 50 percent buffelgrass and 40 percent common ragweed.	The proposed tower location is located in 100 percent disturbed pastureland.
Moodyville Rd and Levee	Developed	The primary vegetation consisted of manicured lawn grass, likely crabgrass and several small oak trees.	The proposed tower location is in a CBP Port of Entry (POE) and is regularly mowed.
Cantu Rd	Agriculture	Dominant vegetation within the proposed tower location is a relatively even mix of native and non-native grasses including Johnson grass, switchgrass, arundo grass, buffelgrass, and sacaton. Additional species observed include silverleaf nightshade and huisache.	The proposed tower location is in a completely disturbed agricultural pasture/hay field.
Wells Bros Canal	South Texas brush land	The vegetative community appears to be relict woodland or mesquite scrub. Honey mesquite is the dominant tree species at roughly 80 percent or more of the canopy cover. There are a few scattered huisache in the parcel and spiny hackberry is abundant in the understory creating a dense thicket. Additional plant species observed include buffelgrass, Johnson grass, Palmer's amaranth, silverleaf nightshade, and possum grape.	The proposed tower location is in a wooded lot bound by agricultural fields. The wooded portion of the tower site is relatively undisturbed. There is an old iron corral in the center indicating past livestock use. There is a bare-ground, gravel pad in the southern edge of the survey area that appears to be used for vehicular traffic and parking.
Green Barn Rd	Agriculture	Proposed tower site is 100 percent in an active agricultural field. The current cultivated crop is corn. Additional species observed along the edge of the site and access road include Guinea grass, silverleaf nightshade, and Bermudagrass.	The proposed tower location is 100 percent in an active agricultural field.
Concrete Canal and Levee	Agriculture	The survey area consisted of a 100 percent disturbed levee/natural gas line ROW with pasture/hay field use.	The survey area consisted of a 100 percent disturbed levee/natural gas line ROW with pasture/hay field use.
Mulberry	Agriculture	The survey area consisted of 100 percent disturbed agricultural field, no vegetation is present.	The proposed tower location is located in a 100 percent disturbed agriculture field.
Cindy Stone	Agriculture	Bermudagrass makes up approximately 70 percent of the total vegetative cover. Other species include approximately 10 percent or less of buffelgrass, Johnson grass, and switch grass. A few scattered seedling Lead trees were observed as well.	The proposed tower location is located in a 100 percent disturbed pasture/hay meadow with evidence of frequent mowing.
Extension of Palm	Agriculture	The survey area consisted of a vacant lot with some evidence of historic pasture/agricultural use. Dominant vegetative cover within the site consisted of Lead trees making up about 20 percent of cover, honey mesquite making up approximately 10 percent cover, and buffelgrass making up approximately 70 percent cover.	The proposed tower location is located on a vacant lot with evidence of historic pasture/agricultural use.
Cusoms B&M	Developed	Dominant vegetative cover consisted of crabgrass and Bermudagrass. Some Texas ranger was also observed.	The proposed tower location is located in a 100 percent disturbed, frequently mowed grass lot.
FTBGC	South Texas brush land	The proposed tower location is 100 percent disturbed South Texas brush land. The dominant vegetation includes Guinea grass and giant cane, which is approximately 80 percent of the ground cover. Other dominant species included Turk's cap and Rio Grande dewberry.	The proposed tower location is 100 percent disturbed South Texas brush land and is located next to a university campus and golf course.
Zone 34	South Texas brush land	The proposed tower location is abandoned agricultural pastureland dominated by switch grass in the understory. The canopy is dominated by lead tree at 75 percent cover. Other plant species comprising the canopy of the site include huisache at approximately 10 percent, Texas ebony at 10 percent, and hackberry at 5 percent.	The proposed tower location is 100 percent disturbed/abandoned agricultural pastureland that is now a near monoculture of switchgrass.
Pig Pens	Agriculture	The proposed tower location is located in an active agricultural field. The dominant non-cultivated vegetation consist of Bermudagrass and silverleaf nightshade. Additional species included false ragweed and common sunflower.	The proposed tower location is 100 percent disturbed active agricultural field.

Tower ID	Vegetative Community	Dominant Vegetation Present	Site Conditions
East of Sable Palm Rd	South Texas brush land	The proposed tower location is bisected by an USIBWC irrigation canal that is overgrown with mature trees of which honey mesquite makes up about 60 percent of the canopy cover, huisache makes up about 30 percent, and a mix of other trees make up about 10 percent. The understory consists of about 90 percent cover, of which switchgrass and buffelgrass. Other plant species observed include possum grape, spiny hackberry, old man's beard, cattail, and sabal palm.	The proposed tower location is an overgrown USIBWC irrigation channel ROW.
Armstrong	South Texas brush land	The proposed tower location consists of a dense thicket that is predominantly honey mesquite, Colima, and net-leafed hackberry, which covers approximately 80 percent of the site. The edges of the site are almost exclusively Guinea grass and buffelgrass. Other vegetative species observed include buttonweed, possum grape, greenbrier, Rio Grande dewberry, depression weed, huisache, Kledberg's bluestem, Texas lantana, and mallow and ash species.	The proposed tower location is an entirely undisturbed South Texas brush land habitat.
Alaska Rd	Agriculture	The proposed tower location is located in a barren agricultural field.	The proposed tower location is located in a barren agricultural field.
Florida Rd	Developed	The survey area is within a fenced residential lot. The lot is roughly 100 percent vegetated primarily with an even mix of bermudagrass and switchgrass. There are also a few landscaped honey mesquite trees.	The survey area is a 100 percent disturbed, close-mowed grass yard within a fenced residential lot.
Hwy 4 Checkpoint	Developed	Dominant vegetation observed include bermudagrass and buffelgrass.	The proposed tower location is a 100 percent disturbed, mowed and maintained road ROW.
Gallinas Rd	Coastal marsh	The proposed tower location has approximately 100 percent vegetative cover. There was an even mix of sea oxeye, tarweed, saltgrass, and pickleweed each comprising about 25 percent. Additional species observed include saltgrass and Texas prickly pear.	The proposed tower location is likely historic agricultural land that has reverted back to salt marsh origins.
End of Hwy 4	Coastal marsh	The proposed tower location has approximately 85 percent vegetative cover on the dune toe and fore dune made up of vidrillos and annual saltwort. Dominant vegetation of the back dune is primarily sea oxeye daisy, which makes up 90 percent of the ground cover. Other species observed include littlehead gumweed, saltgrass, salt heliotrope, prickly pear, and Spanish bayonet.	The proposed tower location is semi-disturbed by foot traffic and concrete culvert drainage system. This tower is located in a road ROW.
Hwy 77 Armstrong	Coastal prairie	Dominant vegetation consists of little head gumweed and slim leaf sneezeweed together comprising 50 percent of ground cover, sacahuista comprising 20 percent of ground cover, rushes were approximately 20 percent ground cover.	The proposed tower site is part of a power line ROW and was historically used as livestock pasture. Approximately 75 percent of the site is disturbed with native vegetation recolonizing.
Juanita Section of Kenedy Ranch	Developed	Proposed tower location is located in a disturbed road ROW adjacent to a rest area. The dominant vegetation consists of guinea grass, Texas thistle, white clematis, and buffelgrass. Additionla observed vegetation includes honey mesquite saplings, Spanish bayonet, Indian mallow, spiny hackberry, wild grape, gray golden aster, windmill grass, yarrow, and morning glory.	The proposed tower location is in a disturbed roadside. Discarded tires were observed on the site.
King Ranch	Developed	Dominant vegetative ground cover at the proposed tower location is old man's beard, love grass, and climbing milkweed each making up approximately 30 percent of the groundcover. Additional species observed include honey mesquite, Texas prickly pear cactus, sunflower, silverleaf sunflower, bull nettle, beebalm, Cory's croton, and shrubby Indian mallow.	This site is a highly disturbed, vegetated strip between two highway corridors. It shows evidence of frequent mowing.
Dos Haches Hopper Ranch	South Texas brush land	Dominant vegetation at the tower site is buffelgrass, making up approximately 60 percent of the ground cover. Dominant woody species located at the site is honey mesquite in the sapling stratum. Other vegetative species observed at the site included bermudagrass, long-headed cone flower, five needle dogweed, Kledberg's bluestem, bur clover, windmill grass, sensitive briar, winecup, silver croton, huisache, blackbush acacia, Texas lantana, and plume tooth beebalm, each making up 1 to 25 percent of the total groundcover.	The proposed tower location is located in a semi-disturbed South Texas brush land community dominated by buffelgrass. The site is located on an abandoned oil well pad and is adjacent to several underground oil/gas pipelines that cross the access road.
Checkpoint Tower	Developed	The proposed tower location is within the footprint of the existing USBP checkpoint station. The survey area was a thin strip located between the checkpoint station and a gas pipeline ROW. The survey area was dominated by encino live oaks in various stages of growth. Other observed species included switchgrass, rose natal grass, sunflower, and bull nettle.	The proposed tower location is situated directly between the infrastructure associated with the CBP checkpoint station and the gas pipeline ROW.
Adairs Ranch	Agriculture	The proposed tower location is an abandoned barn yard. Dominant vegetative cover includes approximately 70 percent silverleaf sunflower and 30 percent partridge pea. Other observed vegetative species include honey mesquite, bermudagrass, sida, common ragweed, little bluestem, and common sand bur.	The proposed tower location is a 100 percent disturbed barn yard.

Additionally, 7.5 acres (5.25 acres of South Texas brush land, 1.5 acres of coastal marsh, and 0.75 acre of coastal prairie) would be temporarily disturbed during construction activities. The remaining acreages impacted either permanently or temporarily from the construction of the proposed RVSS towers were located within either developed or agricultural areas.

It is estimated that approximately 1.2 acres of locally and regionally common vegetative habitat would be permanently cleared as a result of access drive construction and access road maintenance and repair activities. Further, approximately 51 acres of vegetative habitat would be temporarily disturbed as a result of maintenance and repair activities on the access roads to allow for construction equipment access.

The native vegetative communities that would be impacted by the construction of the proposed RVSS towers are both locally and regionally common, and the permanent loss of the limited amount of acreage permanently impacted would not adversely affect the population viability of any plant species in the region. In order to ensure that the Proposed Action does not actively promote the establishment of non-native and invasive species in the area, BMPs (described in Section 5.0) would be implemented to minimize the spread and reestablishment of non-native vegetation. Upon completion of construction, all temporary disturbance areas would be revegetated with a mixture of native plant seeds or nursery plantings or allowed to revegetate naturally. These BMPs, as well as measures protecting vegetation in general, would reduce potential impacts from non-native invasive species to a negligible amount.

The Proposed Action could result in indirect and long-term beneficial impacts on vegetative habitat by reducing the adverse impacts of illegal cross-border violator activities in the project area. The proposed RVSS towers would enhance CBP's detection and threat classification capabilities and increase the efficiency of operational activities within the area of tower coverage. Over time the enhancement of detection capabilities and an increase in operational efficiency could increase the deterrence of illegal cross-border violator activity within the area of tower coverage.

3.5 WILDLIFE RESOURCES

The ROI is within the Southwest Plateau and Plains Dry Steppe and Shrub Province. Common mammals within this province include whitetail deer (*Odocoileus virginianus)*, Mexican ground squirrel (*Spermophilus mexicanus*), fox squirrel (*Sciurus niger*), ringtail (*Bassariscus astutus*), raccoon *(Procyon lotor)*, gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), collared peccary (*Pecari tajacu*), striped skunk (*Mephitis mephitis*), nine-banded armadillo (*Dasypus novemcinctus*), eastern cottontail (*Sylvilagus floridanus*), desert cottontail (*Sylvilagus audubonii*), fulvous harvest mouse (*Reithrodontomys fulvescens*), hispid cotton rat (*Sigmodon hispidus*), and Gulf Coast kangaroo rat (*Dipodomys compactus*) (CBP 2007).

Bird species are especially abundant in this region as the Central and Mississippi flyways converge in south Texas. Additionally, south Texas is the northernmost range for many of the neotropical migrants of Central America. Approximately 500 avian species, including neotropical migrants, shorebirds, raptors, and waterfowl, can occur in south Texas. Common birds that frequent south Texas include the least grebe (*Tachybaptus dominicus*), mallard duck

(*Anas platyrhynchos*), hook-billed kite (*Chondrohierax uncinatus*), plain chachalaca (*Ortalis vetula*), red-billed pigeon (*Patagioenas flavirostris*), white-tipped dove (*Leptotila verreauxi*), green parakeet (*Aratinga holochlora*), red-crowned parrot (*Amazona viridigenalis*), groove-billed ani (*Crotophaga sulcirostris*), common pauraque (*Nyctidromus albicollis*), buff-bellied hummingbird (*Amazilia yucatanensis*), ringed kingfisher (*Ceryle torquata*), green kingfisher (*Chloroceryle americana*), brown-crested flycatcher (*Myiarchus tyrannulus*), great kiskadee (*Pitangus sulphuratus*), tropical kingbird (*Tyrannus melancholicus*), Couch's kingbird (*Tyrannus couchii*), green jay (*Cyanocorax yncas*), brown jay (*Cyanocorax morio*), Tamaulipas crow (*Corvus imparatus*), cave swallow (*Petrochelidon fulva*), clay-colored robin (*Turdus grayi*), long-billed thrasher (*Toxostoma longirostre*), white-collared seedeater (*Sporophila torqueola*), olive sparrow (*Arremonops rufivirgatus*), Altamira oriole (*Icterus gularis*), and Audubon's oriole (*Icterus graduacauda*) (CBP 2007).

Common reptiles and amphibians include the blue spiny lizard (*Sceloporus serrifer*), Laredo striped whiptail (*Aspidoceles laredoensis*), prairie racerunner (*Aspidoceles sexlineata viridis*), Texas spiny softshell turtle (*Apalone spinifera emoryi*), Rio Grande cooter (*Pseudemys gorzugi*), Rio Grande leopard frog (*Lithobates berlandieri*), Rio Grande chirping frog (*Eleutherodactylus cystignathoides*), Gulf Coast toad (*Incilius valliceps*), and giant (marine) toad (*Rhinella marina*) (CBP 2007).

A list of wildlife observed during biological surveys is included in Table 3-7.

Table 3-7. Observed Wildlife Species

Species Common Name	Species Scientific Name
Mammals	
Desert cottontail	*Silvilagus audubonii*
Hispid cotton rat	*Sigmodon hispidus*
Reptiles	
Texas spiny lizard	*Sceloporus olivaceus*
Brown anole	*Anolis sagrei*
Western ribbon snake	*Thamnophis sauritus*
Rio Grande chirping frog	*Syrrhophus cystignathoides*
Texas banded gecko	*Coleonyx brevis*
Rio Grande leopard frog	*Lithobates berlandieri*
Keeled earless lizard	*Holbrookia propinqua*
Birds	
Great-tailed grackle	*Quiscalus mexicanus*
Common grackle	*Quiscalus quiscula*
Couch's kingbird	*Tyrannus couchii*
Northern mockingbird	*Mimus polyglottos*
Inca dove	*Columbina inca*
Eurasian collard-dove	*Streptopelia decaocto*
Red-winged black bird	*Agelaius phoeniceus*
White-winged dove	*Zenaida asiatica*
Mourning dove	*Zenaida macroura*

Species Common Name	Species Scientific Name
Common ground dove	*Columbina passerina*
Pyrrhuloxia	*Cardinalis sinuatus*
House finch	*Carpodacus mexicanus*
Scissor-tailed flycatcher	*Tyrannus forficatus*
Great kiskadee	*Pitangus sulphuratus*
Groove-billed ani	*Crotophaga sulcirostris*
Western kingbird	*Tyrannus verticalis*
Red-eyed vireo	*Vireo olivaceus*
Eastern screech owl	*Otus asio*
Lesser goldfinch	*Carduelis psaltria*
Northern cardinal	*Cardinalis cardinalis*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Killdeer	*Charadris vociferus*
Black-necked stilt	*Himantopus mexicanus*
Golden-fronted woodpecker	*Melanerpes aurifrons*
Northern bobwhite	*Colinus virginianus*
Black-bellied whistling-duck	*Dendrocygna autumnalis*
Gray catbird	*Dumetella carolinensis*
Palm warbler	*Dendroica palmarum*
Yellow warbler	*Dendroica petechia*
Common pauraque	*Nyctidromus albicollis*
Green jay	*Cyanocorax yncas*
Turkey vulture	*Cathartes aura*
Great blue heron	*Ardea herodias*
European starling	*Sturnus vulgaris*
Northern flicker	*Colaptes auratus*
Chimney swift	*Chaetura pelagica*
Green heron	*Butorides virescens*
Barn swallow	*Hirundo rustica*
Harris's hawk	*Parabuteo unicinctus*
Carolina wren	*Thryothorus ludovicianus*

3.5.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no direct impacts on wildlife resources would occur. However, wildlife resources within the vicinity of the proposed RVSS sites are directly and indirectly affected by illegal cross-border violator pedestrian traffic and consequent law enforcement activities. These areas experience damage to wildlife habitat, disturbance of nesting/roosting areas and animals, and wildlife mortality from vehicle collision as a result of these activities. Under the No Action Alternative, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so illegal cross-border violator activities would continue to impact land use in the project area.

3.5.2 Alternative 2: Proposed Action

The permanent loss of approximately 3.7 acres (2.5 acres [tower] + 1.2 acres [roads]) would have a long-term, negligible impact on wildlife and temporary degradation of approximately 75 acres of the various vegetative habitats would have a short-term, minor impact on wildlife. Soil disturbance and operation of heavy equipment could result in the direct loss of less mobile individuals such as lizards, snakes, and ground-dwelling species, such as mice and rats. However, most wildlife would avoid any direct harm by escaping to surrounding habitat. The direct degradation and loss of habitat could also impact burrows and nests, as well as cover, forage, and other important wildlife resources. The loss of these resources would result in the displacement of individuals that would then be forced to compete with other wildlife for the remaining resources. Although this competition for resources could result in a reduction of total population size, such a reduction would be extremely minimal in relation to total population size and would not result in long-term impacts on the sustainability of any wildlife species. The wildlife habitat present in the project area is both locally and regionally common, and the permanent loss of approximately 3.7 acres of wildlife habitat would not adversely affect the population viability or fecundity of any wildlife species in the region. Upon completion of construction, all temporary disturbance areas would be revegetated with a mixture of native plant seeds or nursery plantings or allowed to revegetate naturally.

All RVSS towers may have infrared lighting installed for aviation safety, and, if installed, any such lighting would be compatible with NVG usage. All proposed RVSS tower sites may be lighted for security purposes. If installed, such lighting would consist of a "porch light" on the tower shelter controlled by a motion detector. When installed, the light would be shielded to avoid illumination outside the footprint of the tower site, and low-pressure sodium bulbs would be used. USFWS (2000) *Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* would be implemented to reduce nighttime atmospheric lighting and the potential adverse impacts of nighttime lighting on migratory bird and nocturnal flying species.

Noise associated with RVSS towers and access drive construction, access road maintenance, and repair would result in temporary, negligible impacts on wildlife. Elevated noise levels associated with construction and maintenance activities would occur. The impacts of this disturbance would include temporary avoidance of work areas and competition for unaffected resources. BMPs as outlined in Section 5.0 would reduce noise associated with operation of heavy equipment.

Noise levels associated with the operation and maintenance of the towers would have a permanent, negligible impact on wildlife species. The permanent increase in noise levels associated with operation of the proposed tower sites (i.e., generators) would be sporadic, only occurring when this equipment is operating. Noise levels would be approximately 47 A-weighted decibels (dBA) at approximately 50 feet from the generator. It is anticipated that wildlife would become accustomed to these intermittent and minimal increases in noise and that subsequent avoidance of tower sites and any adjacent habitats would be minor.

There is a possibility that the proposed RVSS towers could pose hazards to migratory birds and even some bird mortality through bird strikes with the towers or possibly guy wires on

relocatable towers. The loss of a few individual birds from the tower operation would not adversely affect the population viability or fecundity of bird species in the region. The number and extent of bird strikes in relation to the size of migratory bird populations and the extent of the migratory flyway would be minor and would not affect sustainability of migratory bird populations in the region. The Proposed Action would, however, have a long-term, negligible adverse impact on migratory birds.

BMPs would be implemented to reduce disturbance and loss of wildlife such as surveys prior to construction activities scheduled during nesting season and covering or providing an escape ramp for all steep-walled holes or trenches left open at the end of the construction workday. If relocatable towers are constructed, any guy wires would have visual markers on them to alert birds of the wires' presence. The proposed RVSS towers could provide raptor perch and nesting sites, but BMPs would also be used to discourage this activity.

3.6 THREATENED AND ENDANGERED SPECIES

The ESA was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All Federal agencies are required to implement protective measures for designated species and to use their authorities to further the purposes of the ESA. The Secretary of the Interior and the Secretary of Commerce (marine species) are responsible for the identification of threatened or endangered species and development of any potential recovery plan. USFWS is the primary agency responsible for implementing the ESA, and is responsible for birds and other terrestrial and freshwater species. USFWS responsibilities under the ESA include (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species officially recognized by USFWS as being in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally noticed in the Federal Register by the applicable agency (USFWS or National Marine Fisheries Service) for official listing as threatened or endangered. Species may be considered eligible for listing as endangered or threatened when any of the five following criteria occur: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting their continued existence.

In addition, USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the ESA; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. Although not afforded protection by the ESA, candidate species may be protected under other Federal or state laws.

Federally Listed Species

There are a total of 16 Federally endangered species and one candidate species known to occur within Hidalgo, Cameron, Kenedy, and Brooks counties (USFWS 2016a). A list of these species is presented in Table 3-8. Biological surveys of the proposed tower sites were conducted by GSRC July 2015 through June 2016. These investigations included surveys for all Federally listed and state-listed species potentially occurring at or near each proposed tower site and assessment of their suitable habitat. During the investigations no Federally listed species were observed; however, one state-listed species Texas indigo snake (*Drymarchon melanurus*), was observed. CBP has coordinated with USFWS regarding the potential impacts as they relate to the construction and maintenance activities at all the tower sites (see Appendix A).

Northern Aplomado Falcon (*Falco femoralis septentrionalis*)

Northern aplomado falcon (NAF) (Photograph 3-1) is a small, predatory bird. Its habitat consists of grasslands and open terrain in arid landscapes with scattered trees or shrubs. They currently range throughout most of South and Central America. In the United States, NAF once occupied desert grasslands and coastal prairies in Texas, New Mexico, and Arizona. The last naturally occurring pair of NAF to breed in the United States was recorded in New Mexico in 1952 (USFWS 1990). Reintroduction of the species into the United States began in 1985 in Texas, predominantly on private lands through Safe Harbor Agreements. Later, reintroductions occurred in New Mexico and Arizona, predominantly onto public lands (USFWS 2006). NAF eat mostly birds and insects and often hunt in pairs. They do not build their own nests, but use stick nests previously constructed by other birds.

Photograph 3-1. Northern Aplomado Falcon (Arkive.org)

Table 3-8. Federally Listed Species for Hidalgo, Cameron, Brooks, and Kenedy Counties, Texas

Common/Scientific Name	Federal Status	County	Habitat	Potential to Occur at Site	Effect Determination
BIRDS					
Northern aplomado falcon *(Falco femoralis septentrionalis)*	E	H,C,K,B	Open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus; nests in old stick nests of other bird species.	Yes, could use tower for perching and nesting if abandoned nests are present	May affect, not likely to adversely affect
Least tern (*Sterna antillarum*)	E	H,C,K,B	Nesting habitat of the least tern includes bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs. Highly adapted to nesting in disturbed sites, terns may move colony sites annually, depending on landscape disturbance and vegetation growth at established colonies. For feeding, least terns need shallow water with an abundance of small fish. As natural nesting sites have become scarce, the birds have used sand and gravel pits, ash disposal areas of power plants, reservoir shorelines, and other man-made sites.	No	No effect
Piping plover (*Charadrius melodus*)	T	C,K,B	Wintering migrant along the Texas Gulf Coast on beaches and bayside mud, or salt flats.	Yes	No effect, tower would be constructed outside of known overwintering period
Whooping crane (*Grus americana*)	E	K	Potential migrant via plains throughout most of the Texas Gulf Coast.	No	No effect
Red knot (*Calidris canutus rufa*)	T	K,C,B	Wintering migrant along the Texas Gulf Coast on beaches and bayside mud, or salt flats.	Yes	No effect, tower would be constructed outside of known overwintering period
Red-crowned parrot (*Amazona viridigenalis*)	C	H,C	Arid lowlands and foothills, gallery forest, deciduous woodland, and open pine-oak woodland ridges. Small populations occur in agricultural landscapes with a few large trees.	No	No effect
MAMMALS					
Gulf Coast jaguarundi *(Puma yagouaroundi)*	E	H,C	Dense, thorny scrub, especially near water.	Yes	May affect, not likely to adversely affect

Common/Scientific Name	Federal Status	County	Habitat	Potential to Occur at Site	Effect Determination
Ocelot (*Leopardus pardalis*)	E	H,C	Dense, thorny shrub lands of the Lower Rio Grande Valley and Rio Grande Plains. Deep, fertile clay or loamy soils are generally needed to produce suitable habitat.	Yes	May affect, not likely to adversely affect
West Indian manatee (*Trichechus manatus)*	E	C,K	Shallow, slow-moving waters of rivers, estuaries, saltwater bays, canals, and coastal areas.	No	No effect
PLANTS					
Star cactus (*Astrophytum asterias***)**	E	H	Grows in gravelly clays or loam soil among sparse, low shrubs, grasses, and halophytic plants in upland sites.	No	No effect
South Texas ambrosia (*Ambrosia cheiranthifolia*)	E	C	Occurs in open grasslands or savannas on soils varying from clay loams to sandy loams.	No	No effect
Walker's manioc (*Manihot walkerae*)	E	H,C	Grows in sandy, calcareous soil among low shrubs and native grasses and herbaceous plants in either full sunlight or partial shade	No	No effect
Texas ayenia *(Ayenia limitaris)*	E	H,C	Subtropical thorn woodland or tall shrubland on loamy soils of the Rio Grande Delta; known site soils include well-drained, calcareous, sandy clay loam (Hidalgo Series) and neutral to moderately alkaline, fine sandy loam (Willacy Series); also under or among taller shrubs in thorn woodland/thorn shrubland.	No	No effect
REPTILES					
Hawksbill sea turtle (*Eretmochelys imbricata)*	E	C,K	Rocky areas, coral reefs, shallow coastal areas, lagoons or oceanic islands, and narrow creeks and passes connected to the Gulf of Mexico.	No	No effect
Kemp's ridley sea turtle (*Lepidochelys kempii)*	E	C,K	Open ocean and Gulf of Mexico waters.	No	No effect
Leatherback sea turtle *(Dermochelys coriacea)*	E	C,K	Open ocean and Gulf of Mexico waters.	No	No effect
Loggerhead sea turtle *(Caretta caretta)*	E	C,K	Ranges between hundreds of miles seaward to inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers.	No	No effect

Source: USFWS 2016a.
E – Engangered, T – Threatened, C - Candidate
B – Brooks County, H – Hidalgo County, C – Cameron County, K – Kenedy County

Agricultural practices and overgrazing that encouraged brush encroachment destroyed much of the open grassland habitat in the United States that was once occupied by NAF. Channelization of desert streams destroyed wetland communities that may have been important sources of prey, and pesticide contamination also likely contributed to declines. In 2005, there were 46 pairs of NAF in captivity that produced more than 100 young per year. From captive populations, 1,142 birds have been released in Texas under Safe Harbor Agreement permits with an enrollment of more than 1.8 million acres. A total of 44 pairs have become established in south Texas and adjacent Tamaulipas, Mexico. Reintroduced NAF began breeding in 1995 and have fledged more than 244 young (USFWS 2006). In 2005, the USFWS announced plans to establish a breeding population in New Mexico and Arizona through the introduction of captive-bred falcons on private and public lands (USFWS 2006). A 5-year status review was initiated in 2010 (USFWS 2010a), no change in its status was recommended per the 5-year status review (USFWS 2014). No Critical Habitat for NAF has been declared.

Ocelot (*Leopardus pardalis*)

The ocelot (Photograph 3-2) was listed as endangered in 1982 under the authority of the Endangered Species Conservation Act of 1969 (USFWS 2010a). The 1969 Endangered Species Conservation Act maintained separate lists for foreign and native wildlife. The ocelot appeared on the foreign list, but due to an oversight, the ocelot did not appear on the native list. Following passage of the ESA, the ocelot was included on the January 4, 1974, list of "Endangered Foreign Wildlife" that "grandfathered" species from the lists under the 1969 Endangered Species Conservation Act into a new list under the ESA (USFWS 2010a). The entry for the ocelot included "Central and South America" under the "Where found" column in the new ESA list. Endangered status was extended to the United States portion of the ocelot's range for the first time with a final rule published July 21, 1982 (USFWS 1982). The "Historic range" column for the ocelot's entry in the rule reads, "U.S.A. (TX, AZ) south through Central America to South America." The entry on the current list (USFWS 2010a) is essentially the same, and reads "U.S.A. (TX, AZ) to Central and South America." The species has a recovery priority number of 5C, meaning that it has a low potential for recovery with a relatively high degree of conflict with development projects.

Photograph 3-2. Ocelot

The ocelot is a medium-sized spotted cat with nocturnal habits (USFWS 2010a). The ocelot belongs to the genus *Leopardus*, which also includes the margay (*Leopardus wiedii*) and the oncilla (*leopardus tigrinus*). The ocelot is further divided into as many as 11 subspecies that ranged from the southwestern United States to northern Argentina (USFWS 1990). Two subspecies occurred in the United States: the Texas/Tamaulipas ocelot *(L. p. albescens)* and the Arizona/Sonora ocelot *(L. p. sonoriensis)* (USFWS 2010b).

The ocelot uses a wide range of habitats throughout its range in the Western Hemisphere (USFWS 2010a). Despite this, the species does not appear to be a habitat generalist. Ocelot spatial patterns are strongly linked to dense cover or vegetation, suggesting that it uses a fairly narrow range of microhabitats (USFWS 2010a). South Texas ocelots prefer shrub communities with greater than 95 percent canopy cover and avoids areas with intermediate (50 to 75 percent) to no canopy cover (USFWS 2010a). Ocelots do not prefer and avoid communities with 75 to 95 percent canopy cover. Other microhabitat features important to ocelots appear to be canopy height (greater than 7.8 feet) and vertical cover (89 percent visual obscurity at 3 to 6 feet). Ground cover at locations used by ocelots was characterized by a high percentage of coarse woody debris (50 percent) and very little herbaceous ground cover (3 percent), both consequences of the dense woody canopy (USFWS 2010a). Between 1980 and 2010 the ocelot was documented by photographs or specimen in Cameron, Willacy, Kenedy, Hidalgo, and Jim Wells counties (USFWS 2010a). Currently, the Texas population of ocelots is believed to be fewer than 50 individuals, composing two separated populations in south Texas. The Laguna Atoscosa National Wildlife Refuge primarily supports one of these populations and the other occurs in Willacy and Kenedy counties on private ranches (USFWS 2010a). Individuals occurring in Texas outside these areas are occasionally observed but are likely wandering or released and not part of a breeding population. A third population of the Texas subspecies of ocelot occurs in Tamaulipas, Mexico, but is geographically isolated from ocelots in Texas. Genetic evidence shows little or no recent genetic exchange between these populations (USFWS 2010b). A separate subspecies of ocelot is occasionally found in southern Arizona but is disjunct from populations in Texas.

Gulf Coast Jaguarundi (*Puma yagouaroundi*)

The Gulf Coast subspecies of jaguarundi (Photograph 3-3) was listed under the ESA as endangered in 1976 (41 FR 24062). The jaguarundi is a small cat, slightly larger than a house cat (*Felis catus*). With a slender build, long neck, short legs, small and flattened head, and long tail, it resembles a weasel (*Mustela* sp.) more than other felines (USFWS 2013b).

Photograph 3-3. Gulf Coast Jaguarundi

The jaguarundi is a lowland, nocturnal species, inhabiting forest and brush (USFWS 2013b). Within Mexico it occurs in the eastern lowlands and has not been recorded in the Central Highlands (USFWS 2013). In southern Texas, jaguarundis have used dense thorny shrublands. In Texas, jaguarundis historically were limited to the southern portion of the state, including Cameron, Hidalgo, Willacy, and Starr counties (USFWS 2013b). In a boundary survey of the United States and Mexico, it was noted that evidence of jaguarundi existing along the Rio Grande was established by a skull in the collection of Dr. Berlandiere. According to Dr. Berlandiere, "the animal was common in Mexico before the conquest, but is now rare…a few have been killed on the Rio Grande near Matamoros" (USFWS 2013b). Also, in this same survey, there was a description of a skull in Dr. Berlandiere's collection from *Felis eyra*, which is now classified as the Gulf Coast jaguarundi. However, there are no verified records of the subspecies beyond extreme southern Texas, and there is not enough information to determine how abundant the subspecies was historically (USFWS 2013b). No historical records of jaguarundis have been documented north of the Rio Grande Valley of Texas (USFWS 2013b). The last confirmed sighting of this subspecies within the United States was in April 1986, when a road-killed specimen was collected 2 miles east of Brownsville, Texas, and positively identified as a jaguarundi. Numerous unconfirmed sightings have been reported since then, including some sightings with unidentifiable photographs, but no United States reports since April 1986 have been confirmed as jaguarundi. Unconfirmed sightings of jaguarundi have been reported in the mid-1980s and in 1993 for Webb County (USFWS 2013b). The closest known Gulf Coast jaguarundis to the United States border are found approximately 95 miles southwest in Nuevo Leon, Mexico. The USFWS released the first revision to the Gulf Coast Jaguarundi Recovery Plan in December 2013 (USFWS 2013b). This new recovery plan only applies to the Gulf Coast subspecies of the jaguarundi.

Piping Plover (*Charadrius melodus*)

Populations of piping plover were listed as threatened or endangered by the USFWS in 1985 (50 Federal Register 50726-50734). The Great Lakes population of piping plover is Federally listed as endangered. The Northern Great Plains and Atlantic coast piping plover populations are Federally listed as threatened species. In the fall, all of these populations migrate south, and

individuals may winter along the coast of the Gulf of Mexico or other southern locations. Individuals on the Texas coast are considered to be both Federally listed and state-listed threatened species. Piping plover begin arriving at wintering grounds in Texas as early as mid-July and may start traveling north towards breeding grounds as early as late February (Haig and Oring 1985), though they often remain in Texas through April. Observations of piping plover indicate that they prefer wide, flat, and open sandy beaches, tidal flats, and lakeshores with sparse vegetation.

Red Knot (*Calidris canutus rufa*)
The red knot is a medium-sized shore bird that migrates from its Artic breeding grounds to Tierra del Fuego in southern South America. Limited data are available on the red knot's rangewide population; however, it is believed that they overwinter along the northern Gulf Coast and in southeast U.S., as well as South America. Within Texas red knots inhabit coastal mudflats, tidal zones, and beaches. The primary diet of the red knot includes small mollusks, marine worms, and crustaceans (Audubon 2016).

Critical Habitat
The ESA also calls for the conservation of what is termed critical habitat, the areas of land, water, and air space that an endangered species needs for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. One of the primary threats to many species is the destruction or modification of essential habitat by uncontrolled land and water developments. Critical Habitat has been dedicated for the piping plover near the FTB End of Highway 4 tower site; however, the tower and construction footprint is outside of the designated Critical Habitat.

State-Listed Species
TPWD lists several state-listed species that may also occur near the various project areas in Hidalgo, Cameron, Kenedy, and Brooks counties. During biological surveys one state-listed species was observed, Texas indigo snake (TPWD 2016). Appendix C has a complete list of all state-listed species with the potential to occur in Hidalgo, Cameron, Kenedy, and Brooks counties.

3.6.1 Alternative 1: No Action Alternative
Under the No Action Alternative, there would be no direct impacts on threatened or endangered species or their habitats, as no construction activities would occur. However, the direct and long-term impacts of illegal border activities throughout the project area and surrounding areas would continue to disturb threatened or endangered species and their habitats. Cross-border violator activities create trails, damage vegetation, promote the dispersal and establishment of invasive species and can result in catastrophic wildfires. These actions have an indirect adverse impact on threatened and endangered species by causing harm to individuals and degrading habitats occupied by these species.

3.6.2 Alternative 2: Proposed Action
Three Federally listed species (ocelot, jaguarundi, and NAF) have the potential to occur within the project area. Based on the information outlined below, the Proposed Action may affect, but

is not likely to adversely affect, any of the three Federally listed species. Section 7 consultation with USFWS is ongoing. Only one state-listed species, Texas indigo snake, was observed within the project area and this species can easily avoid harm during tower construction.

Northern Aplomado Falcon

No adverse impacts on NAF are anticipated, because no nesting habitat for NAF would be impacted, limited feeding habitat would be altered, and measures to reduce potential impacts would be implemented. Increased human activity and traffic associated with construction or operation of equipment would potentially disturb NAF, causing them to take flight and depart the immediate area. After construction and installation, monthly maintenance visits, propane deliveries, and the activity of generators would similarly disturb nearby NAF. These disturbances would likely be discountable because they would be short in duration and limited in their area of impact. NAF are a highly mobile species that would easily relocate a short distance from such disturbances. However, impacts would be greater if an NAF nest were to occur in the immediate area. To minimize the likelihood of this possibility, biologists inspected each site for any sign of NAF or nests, and none were detected. Additionally, if construction occurs during the nesting season, a biologist would survey the tower site and adjacent area for signs of nesting NAF and any active nest would be avoided. Additionally, if relocatable towers are used and guy wires are installed, those guy wires would be outfitted with visual markers alerting the birds to their presence.

NAF could potentially perch on towers, and the threat of striking the towers while flying exists. However, implementation of BMPs recommended by USFWS (2000) would greatly reduce the likelihood of such impacts. These recommendations include adjustments to lighting to reduce the likelihood of bird strike, anti-perching devices, and visual markers. These measures would also minimize impacts on other bird species that are prey for NAF. NAF are visual predators, diurnally active, and agile in flight, so it is assumed they would be able to see and avoid towers that might be in their flight path. Therefore, the Proposed Action may affect, but is not likely to adversely affect, NAF. The Proposed Action would have minor insignificant impacts on the NAF.

Ocelot and Gulf Coast Jaguarundi

A total of three proposed tower sites (BRP FTBGC, FTB Zone 34, and FLF Dos Haches Hopper Ranch) occur within or near suitable habitat for the ocelot and jaguarundi. Clearing of potential habitat would occur at all of the sites where approximately 0.25 acre of potential habitat would be permanently cleared at each site for a total of 0.75 acre.

In addition to clearing, the installation of equipment would create disturbances for a maximum of 60 days at each site during the construction period. Most of these disturbances would be limited to the area immediately around the tower. When heavy equipment is in use, noise would travel a maximum of 1,138 feet from the tower site before attenuating to a noise level of 57 dBA. Since the cats are highly mobile, nocturnal species, and wary of human disturbance, they would likely avoid the disturbed area without significant adverse impacts on their health. Construction activities would be limited to daytime hours; therefore, further reducing the likelihood of adversely impacting either species. Maintenance activities and noise from generators or other equipment would periodically cause disturbance in the area around the proposed tower locations;

however, the noise emissions would also be very limited in duration (most likely 10 to 15 minutes per month for the operation of a generator) and the noise disturbance would be 47 dBA at 50 feet from the source. Additionally, light pollution in the form of spotlights and noise disturbance in the form of loud hailers used during operational activities around and near tower sites after construction would create a periodic disturbance. However, spotlight and loud-hailer use would be intermittent and of very limited duration and would likely only occur during detections of illegal cross-border violators. Approximately 0.75 acre of habitat would be permanently modified as a result of construction activity and disturbance would be limited in duration and area. Habitat is regionally common and only small areas spread throughout a vast geographic area would be impacted, additionally the project would decrease habitat trampling activity of illegal cross-border violators. These impacts are considered minor and insignificant. Therefore, the Proposed Action may affect, but is not likely to adversely affect, the ocelot and jaguarundi.

Piping Plover

Although Critical Habitat has been designated for the piping plover in Cameron County, Texas, no adverse modification of this habitat would occur as a result of the Proposed Action because none of the towers or associated roads are located within Critical Habitat. No suitable habitat occurs at any of the project sites; however, foraging and roosting habitat does exist near one of the tower sites (FTB End of Highway 4). However, CBP would construct this tower site outside of piping plover overwintering periods (i.e., May through mid-July). Therefore, no construction-related noise impacts would occur. Maintenance activities would be limited to vehicle traffic on a public highway and noise from the generator, which would not exceed the limits of the tower compound.

The likelihood of a piping plover striking the tower post-construction is discountable as evidenced in a 2008 report by USFWS that stated "the Service finds the risk of collision with these stationary structures is highly unlikely and therefore discountable…We are not aware of instances of piping plovers colliding with the many human-made structures on and immediately adjacent to nesting beaches" (USFWS 2008). Further, USFWS guidelines for communication towers would be implemented to further limit the potential for impacts as a result of the constructed towers. Therefore, CBP has determined that the Proposed Action would have no effect on this species.

Red Knot

No suitable habitat occurs at any of the project sites, but, foraging and roosting habitat does exist near one of the tower sites (FTB End of Highway 4). CBP would construct this tower site outside of red knot overwintering periods (i.e., mid-May through July). Therefore, no construction-related noise impacts would occur. Maintenance activities would be limited to vehicle traffic on a public highway and noise from the generator, which would not exceed the limits of the tower compound.

The likelihood of a red knot striking the tower post-construction is discountable, as these birds, like the piping plover, would be able to avoid the tower. Further, USFWS guidelines for communication towers would be implemented to further limit the potential for impacts as a result

of the constructed towers. Therefore, CBP has determined that the Proposed Action would have no effect on this species.

State-Listed Species

TPWD lists several state-listed species that may occur near the various project areas in Hidalgo, Cameron, Brooks, and Kenedy counties. Under the Proposed Action, approximately 2.25 acres of native habitat would be permanently impacted and approximately 7.5 acres of potential habitat would be temporarily impacted during tower construction and maintenance. Mobile species such as the Texas indigo snake may be temporarily displaced by tower construction and maintenance activities; however, these highly mobile species typically utilize large expanses of suitable habitat and the impacts of disturbance and alterations to small segments are likely to be minimal to negligible to populations of these species. Grubbing, digging, clearing, or ground-leveling activities at tower sites and along access roads may result in the incidental take of some individuals of more sedentary state-listed species such as the Texas tortoise (*Gopherus berlandieri*). The direct impacts on sedentary state-listed species would be negligible due to the BMPs to be implemented and because of the limited amount of disturbance to habitat relative to the amount of similar habitats within the ROI.

The Proposed Action could result in indirect and long-term beneficial impacts on Federally listed and state-listed species by reducing the adverse impacts of illegal cross-border violator activities in the project area. The proposed RVSS towers would enhance CBP's detection and threat classification capabilities and increase the efficiency of operational activities within the area of tower coverage. Over time the enhancement of detection capabilities and an increase in operational efficiency could increase the deterrence of illegal cross-border violator activity within the area of tower coverage.

3.7 GROUNDWATER

The major aquifer within the ROI is the Gulf Coast Aquifer, which parallels the Gulf of Mexico coastline from the western boundary of Louisiana to Mexico. This aquifer covers over 41,800 square miles with an annual use of approximately 1.1 million acre-feet. The Gulf Coast Aquifer is found in all of Hidalgo, Cameron, Kenedy, and Brooks counties. Within the Gulf Coast Aquifer lie several other aquifers including the Jasper, Evangeline, and Chicot aquifers. These aquifers are composed of discontinuous sand, silt, clay, and gravel beds. The upper portion of the Gulf Coast Aquifer is generally fresher, with saline levels increasing as the aquifer trends southward towards Mexico. The aquifer is generally used for municipal, industrial, and agricultural purposes (Texas Water Development Board [TWDB] 2011). Recharge of the Gulf Coast Aquifer occurs primarily through percolation of precipitation and is supplemented in some areas by the addition of irrigation water from the Rio Grande. Within Hidalgo, Cameron, Kenedy, and Brooks counties, the groundwater is readily available from the Gulf Coast Aquifer (TWDB 2016).

The other aquifer found in the ROI, which is classified as a minor aquifer, is the Yegua-Jackson Aquifer. The Yegua-Jackson Aquifer is found along the western boundary of the Gulf Coast Aquifer from the Texas/Louisiana border to Mexico but only covers approximately 10,900 square miles.

3.7.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no additional impacts on groundwater resources would occur because the proposed RVSS towers, access drives, or access roads would be constructed or improved.

3.7.2 Alternative 2: Proposed Action

Under the Proposed Action, water needed for construction activities would be primarily obtained from surface water sources. All water would be supplied to the construction sites by either a water truck or nearby hydrant. BMPs would be in place in case of an accidental spill of oil, petroleum, or lubricants from the water trucks to prevent this spill from entering the groundwater. Therefore, the Proposed Action would have negligible impacts on groundwater resources within the region.

3.8 SURFACE WATER AND WATERS OF THE U.S.

The Clean Water Act (CWA) §303[d][1][A] requires that each state monitor surface waters and compile a "303[d] List" of impaired streams and lakes. The proposed towers sites and associated roads are located across extreme southern Texas and are located in the Rio Grande and Nueces-Rio Grande Coastal Basins. The Rio Grande Basin enters Texas at El Paso and travels 1,248 miles to the Gulf of Mexico forming the international boundary between the United States and Mexico. It is estimated that within Texas approximately 48,259 square miles drain into surface waters that eventually flow to the Gulf of Mexico. The Nueces-Rio Grande Coastal Basin lies on the coastal plain between the Nueces River and the Rio Grande, and drains into the Laguna Madre, Baffin Bay, and Oso Bay. The total drainage area is approximately 10,442 square miles (TCEQ 2016). The TCEQ 2014 303(d) report lists three stream reaches near the proposed tower sites. The closest impaired streams to the project areas are the Rio Grande Below Falcon Reservoir, the Brownsville Ship Channel, Arroyo Colorado Tidal in Cameron County, and the Arroyo Colorado Above Tidal in Hidalgo County. Table 3-9 provides information on the impaired waterbodies near the various RVSS tower sites.

Table 3-9. Impaired Waterbodies

Sub-watershed Name & TCEQ ID	Location	Suspected Causes of Impairment	Suspected Sources of Impairment
Arroyo Los Olmos TX-2302A-01	From the Rio Grande confluence near Rio Grande City upstream to a point 24.5 miles near El Sauz	Bacteria - pathogens	Non-point source, unknown sources
Rio Grande Below Falcon Reservoir TX-2302-07	From a point 6.7 miles downstream of the International Bridge in Cameron County upstream to Falcon Dam in Starr County	Bacteria - pathogens	Sources outside state jurisdiction or borders, urban runoff/storm sewers

Sub-watershed Name & TCEQ ID	Location	Suspected Causes of Impairment	Suspected Sources of Impairment
Arroyo Colorado Above Tidal TX-2202-03	From the confluence with La Feria Main Canal just upstream of Dukes Highway to the confluence with La Cruz Resaca just downstream of FM 907	Bacteria - pathogens DDE – pesticides Mercury in fish tissue PCBs in fish tissue	Irrigated crop production (DDE; mercury in fish tissues, polychlorinated biphenyls (PCBs) in fish tissues), municipal point source dischargers (bacteria), non-point source (DDE; mercury in fish tissues, PCBs in fish tissues), unpermitted discharge of industrial/commercial waste (DDE; mercury in fish tissues, PCBs in fish tissues), urban runoff/storm sewers (bacteria)
Arroyo Colorado Tidal TX-2201-04	From confluence with Laguna Madre in Cameron/Willacy County to a point 110 yards downstream of Cemetery Road south of Port Harlingen in Cameron County	Bacteria – Enterococcus	Municipal point source discharges (bacteria), Unknown sources (bacteria), Urban runoff/storm sewers (bacteria)
Unnamed Drainage Ditch Tributary (B) in Cameron County Drainage District #3 TX-2201B-01	From the confluence with the Arroyo Colorado in Cameron County in the Rio Hondo turning basin at -97.6, 26.196 decimal degrees to a point 17.6 km upstream at the FM 510 crossing	Bacteria – Enterococcus	Unknown source (bacteria), Non-point source (bacteria)
Brownsville Ship Channel TX-2494	From the Laguna Madre confluence upstream to the Port of Brownsville	Bacteria – Enterococcus	Unknown sources (bacteria)

Waters of the United States are defined within the CWA, and jurisdiction is addressed by the USACE and USEPA. There could be temporary impacts on waters of the United States if drainage structures within agricultural ditches need replacement. These actions would be covered under Section 404 of the CWA, Nationwide Permit 14 (linear transportation projects), and are considered negligible. Wetlands are a subset of the waters of the United States that may be subject to regulation under Section 404 of the CWA (40 CFR 230.3). Wetlands are those areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. There is one tower that is currently planned to be constructed within potentially jurisdictional wetlands, which are regulated by the USACE. The tower, FTB Gallinas Road, is located in a wetland classified as PEM1 by the USFWS per the Cowardin et al. classification system. PEM1A is a palustrine emergent, persistent, temporarily flooded wetland (USFWS 2016b).

Activities that result in the dredging and/or filling of waters of the United States, including wetlands, are regulated under Sections 404 and 401 of the CWA. As such, any dredging or fill activities within the potential jurisdictional wetland would require a Department of the Army

permit for those activities under Section 404 of the CWA. In addition, a TCEQ 401 permit would also have to be obtained prior to any activities within the potentially jurisdictional wetland.

3.8.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no additional impacts on surface waters or waters of the United States would occur as a result of constructing the proposed RVSS towers, constructing access drives, or improving access roads.

3.8.2 Alternative 2: Proposed Action

The Proposed Action may potentially have temporary, negligible impacts on surface waters as a result of increases in erosion and sedimentation during periods of construction. Disturbed soils and hazardous substances (i.e., antifreeze, fuels, oils, and lubricants) could directly impact water quality during a rain event. However, due to the limited amount of surface waters present at any of the tower sites or access roads and through the use of BMPs, these impacts would be minimized. A Construction Stormwater General Permit would be obtained prior to construction, and this would require approval of a site-specific SWPPP. A site-specific Spill Prevention, Control and Countermeasure Plan (SPCCP) would also be in place prior to the start of construction. BMPs outlined in these plans would reduce potential migration of soils, oil and grease, and construction debris into local surface waters. Once the construction project is complete, the temporary construction footprints would be revegetated with native vegetation, as outlined in the SWPPP, which would mitigate the potential of non-point source pollution to enter local surface waters. The long-term, permanent impacts associated with the construction of FTB Gallinas Road would be negligible because prior to construction the proper permits (i.e., Section 404 and 401 of the CWA) would be acquired and any compensatory mitigation necessary to acquire those permits would be completed. Through the permitting process the USACE would decide if compensatory mitigation is required. If required, this usually involves purchasing mitigation credits from an established mitigation bank within the same watershed, which would offset the impacts associated with dredge or fill activities in a jurisdictional wetland. Therefore, there would be no net loss of wetlands or waters of the United States and the Proposed Action would be in compliance with Executive Order (EO) 11990.

3.9 FLOODPLAINS

A floodplain is the area adjacent to a river, creek, lake, stream, or other open waterway that is subject to flooding when there is a major rain event. Floodplains are further defined by the likelihood of a flood event. If an area is in the 100-year floodplain, there is a 1-in-100 chance in any given year that the area would flood. Federal Emergency Management Agency (FEMA) floodplain maps were reviewed to identify project locations within mapped floodplains (FEMA 2016). Eight of the proposed 32 tower sites are located within the 100-year floodplain (Table 3-10).

Table 3-10. RVSS Tower Sites Located Within the 100-Year Floodplain

Tower Name	USBP Station AOR
Customs/B&M Z30	BRP
HWY 4 Checkpoint	FTB
Gallinas Rd	FTB
End of Hwy 4	FTB
Rio Rico Rd and Pump Rd	HRL
Beckwith Rd & Levee	HRL
San Benito Pump	HRL
Hacienda Alternate	HRL

3.9.1 Alternative 1: No Action Alternative

Under the No Action Alternative no construction activities would occur within floodplains; therefore, there would be no direct impacts. However, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so illegal cross-border violator activities would continue to impact the floodplain in the project area.

3.9.2 Alternative 2: Proposed Action

The Proposed Action would not increase the risk or impact of floods on human safety, health, and welfare, or adversely impact the beneficial values that floodplains serve. Additionally, the Proposed Action would not increase duration, frequency, elevation, velocity or volume of flood events. Although eight of the towers are located within the floodplain, the construction of the tower and installation of equipment would not cause a significant impact on, or loss of, floodplain resources. CBP has reviewed FEMA's eight-step process and has met and followed the process accordingly. Additionally, CBP is coordinating with the USIBWC regarding potential impacts on the floodplain from the proposed construction of towers within the floodplain. Additionally, the locations of the towers are driven by USBP operational requirements, and as such locating these towers outside the 100-year floodplain would not meet the purpose of and need for the Proposed Action. Therefore, the Proposed Action is in accordance with EO 11988 and would result in minimal impacts on floodplain resources.

3.10 COASTAL ZONE

The Coastal Zone Management Act (CZMA) (Public Law 92-583, as amended; 16 U.S.C. §§ 1451-1464) encourages the management of coastal zone areas and provides grants to be used in maintaining these areas. It requires that Federal agencies be consistent in enforcing the policies of state coastal zone management programs when conducting or supporting activities that affect a coastal zone. This is intended to ensure that Federal activities are consistent with state programs for the protection and, where possible, enhancement of the Nation's coastal zones.

The CZMA's definition of a coastal zone includes coastal waters extending to the outer limit of state submerged land title and ownership, adjacent shorelines, and land extending inward to the extent necessary to control shorelines. A coastal zone includes islands, beaches, transitional and intertidal areas, and salt marshes. The Texas Coastal Zone encompasses the area within Texas that is seaward of the coastal designation line, which was established in response to the Oil Spill

Act of 1990 and delineates areas in which offshore oil spills would affect coastal waters and or resources. The Texas coastal zone includes all or portions of 19 counties including Cameron and Kenedy counties and has an overall acreage of approximately 8.9 million acres of land and water.

The CZMA requires that coastal states develop a State Coastal Zone Management Plan or program and that any Federal agency conducting or supporting activities affecting the coastal zone conduct or support those activities in a manner consistent with the approved state plan or program. To comply with the CZMA, a Federal agency must identify activities that would affect the coastal zone, including development projects, and must review the State Coastal Zone Management Plan to determine whether a proposed activity would be consistent with the plan.

Twelve of the proposed RVSS towers and associated roads fall within the boundaries of the Texas coastal zone. These include BRP FTBGC, FTB Alaska Road, FTB Armstrong, FTB East of Sable Palm Road, FTB End of Highway 4, FTB Florida Road, FTB Gallinas Road, FTB Highway 4 Checkpoint, FTB Pig Pens, FTB Zone 34, KIN Highway 77 Armstrong, and KIN Juanita Section of Kenedy Ranch.

3.10.1 Alternative 1: No Action Alternative

Under the No Action Alternative no construction activities would occur within the Texas coastal zone; therefore, there would be no direct impacts. However, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so illegal cross-border violator activities would continue to impact the floodplain in the project area.

3.10.2 Alternative 2: Proposed Action

Although 12 of the proposed RVSS towers and associated roads are within the boundaries of the Texas coastal zone, the impacts associated with these towers and roads would be consistent with the Texas coastal zone management plan. CBP has coordinated with the Texas General Land Office regarding impacts on the coastal zone and provided a coastal zone consistency determination for evaluation to ensure that the Proposed Action is in compliance with the CZMA. Through the coastal zone consistency determination, CBP has determined that all activities would be in compliance with the CZMA. Therefore, no significant impacts on the Texas coastal zone would occur upon implementation of the Proposed Action.

3.11 AIR QUALITY

The USEPA established National Ambient Air Quality Standards (NAAQS) for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Ambient air quality standards are classified as either "primary" or "secondary." The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than 10 microns (PM-10), particulate matter less than 2.5 microns (PM-2.5) and lead. NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare. The NAAQS are included in Table 3-11.

Table 3-11. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Times
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour [1]	None	None
	35 ppm (40 mg/m^3)	1-hour [1]	None	None
Lead	0.15 µg/m^3 [2]	Rolling 3-Month Average	Same as Primary	Same as Primary
	1.5 µg/m^3	Quarterly Average	Same as Primary	Same as Primary
Nitrogen Dioxide	53 ppb [3]	Annual (Arithmetic Average)	Same as Primary	Same as Primary
	100 ppb	1-hour [4]	None	None
Particulate Matter (PM-10)	150 µg/m^3	24-hour [5]	Same as Primary	Same as Primary
Particulate Matter (PM-2.5)	15.0 µg/m^3	Annual [6] (Arithmetic Average)	Same as Primary	Same as Primary
	35 µg/m^3	24-hour [7]	Same as Primary	Same as Primary
Ozone	0.075 ppm (2008 std)	8-hour [8]	Same as Primary	Same as Primary
	0.08 ppm (1997 std)	8-hour [9]	Same as Primary	Same as Primary
	0.12 ppm	1-hour [10]	Same as Primary	Same as Primary
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Average)	0.5 ppm	3-hour [1]
	0.14 ppm	24-hour [1]	0.5 ppm	3-hour [1]
	75 ppb [11]	1-hour	None	None

Source: USEPA 2016b at http://www.epa.gov/air/criteria.html

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb - 1 part in 1,000,000,000) by volume, milligrams per cubic meter of air (mg/m^3), and micrograms per cubic meter of air (µg/m^3).

[1] Not to be exceeded more than once per year.

[2] Final rule signed October 15, 2008.

[3] The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

[4] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

[5] Not to be exceeded more than once per year on average over 3 years.

[6] To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.

[7] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).

[8] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008) .

[9] (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

(c)USEPA is in the process of reconsidering these standards (set in March 2008).

[10] (a)USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.

[11] (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Areas that do not meet these NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 CFR Parts 51 and 93) specifies criteria and requirements for conformity determinations of Federal projects. The Federal Conformity Rule was first promulgated in 1993 by the USEPA, following the passage of Amendments to the Clean Air Act in 1990. The rule mandates that a conformity analysis be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more NAAQS.

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the General Conformity Rule. It requires the responsible Federal agency to evaluate the nature of a Proposed Action and associated air pollutant emissions and calculate emissions that may result from the implementation of the Proposed Action. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to perform a conformity determination and implement appropriate mitigation measures to reduce air emissions. The USEPA has designated Cameron, Hidalgo, Brooks, and Kenedy counties as in attainment for all NAAQS (USEPA 2016a).

Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. Greenhouse Gases (GHGs) are gases that trap heat in the atmosphere. They include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), fluorinated gases including chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HFC), and halons, as well as ground-level O_3 (California Energy Commission 2007).

The major GHG-producing sectors in society include transportation, utilities (e.g., coal and gas power plants), industry/manufacturing, agriculture, and residential. End-use sector sources of GHG emissions include transportation (40.7 percent), electricity generation (22.2 percent), industry (20.5 percent), agriculture and forestry (8.3 percent), and other (8.3 percent). The main sources of increased concentrations of GHG due to human activity include the combustion of fossil fuels and deforestation (CO_2), livestock and rice farming, land use and wetland depletions, landfill emissions (CH_4), refrigeration system and fire suppression system use and manufacturing (CFC), and agricultural activities, including the use of fertilizers (California Energy Commission 2007).

GHG Threshold of Significance

The CEQ drafted guidelines for determining meaningful GHG decision-making analysis. The CEQ guidance states that if the project would be reasonably anticipated to cause direct emissions of 25,000 metric tons (27,557 U.S. tons) or more of CO_2 GHG emissions on an annual basis, agencies should consider this a threshold for decision-makers and the public. CEQ does not propose this as an indicator of a threshold of significant impacts, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHG (CEQ 2010).

The GHGs covered by EO 13514 are CO_2, CH_4, N_2O, HFC, perfluorocarbons, and sulfur hexafluoride. These GHGs have varying heat-trapping abilities and atmospheric lifetimes. CO_2

equivalency (CO_2e) is a measuring methodology used to compare the heat-trapping impact from various GHGs relative to CO_2. Some gases have a greater global warming potential than others. N_2O for instance, have a global warming potential that is 310 times greater than an equivalent amount of CO_2 and CH_4 is 21 times greater than an equivalent amount of CO_2 (CEQ 2012).

CBP has reviewed the 2016 CEQ guidance regarding GHG emissions and the impacts of climate change in NEPA reviews. As such, CBP has evaluated potential alternatives to the Proposed Action, analyzed the direct and indirect impacts of the Proposed Action, as well as the long- and short-term impacts of the Proposed Action, suggested mitigation measures to offset GHG emissions, and included a discussion of the cumulative impacts of the Proposed Action in this EA (CEQ 2016).

3.11.1 Alternative 1: No Action Alternative

The No Action Alternative would not result in any direct impacts on air quality because there would be no construction activities. However, USBP's detection and threat classification capabilities would not be enhanced and operational efficiency would not be improved within the area of tower coverage, so illegal cross-border violator activities would continue to impact air quality in the region.

3.11.2 Alternative 2: Proposed Action

Temporary and minor increases in air pollution would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of RVSS towers and associated roads. Particulate emissions would occur as a result of construction activities such as vehicle trips on unimproved roads, bulldozing, compacting, truck dumping, and grading operations.

Fugitive dust emissions were calculated using the emission factor of 0.19 ton per acre per month (Midwest Research Institute 1996), which is a more current standard than the 1985 PM-10 emission factor of 1.2 tons per acre-month presented in AP-42 Section 13 Miscellaneous Sources 13.2.3.3 (USEPA 2001).

USEPA's NONROAD2008a model was used to calculate emissions from construction equipment. Combustion emission calculations were made for standard construction equipment, such as front-end loaders, backhoes, cranes, and cement trucks. Assumptions were made regarding the total number of days each piece of equipment would be used and the number of hours per day each type of equipment would be used.

Construction workers would temporarily increase the combustion emissions in the airshed during their commute to and from the project area. Emissions from delivery trucks would also contribute to the overall air emission budget. Emissions from delivery trucks and construction worker commuters traveling to the job site were calculated using the USEPA's on-road vehicle emission model MOVES2010a (USEPA 2009).

The total air quality emissions for the construction activities per tower were calculated to compare to the General Conformity Rule. Summaries of the total emissions for the construction of 16 towers per year, assuming it would take a full two years for the build out of all 32 RVSS

towers as described in the Proposed Action are presented in Table 3-12. Details of the conformity analyses are presented in Appendix D.

Table 3-12. Total Air Emissions from the Proposed Action Construction of 16 RVSS towers per year versus the *de minimis* Threshold Levels

Pollutant	Total (tons/year)	*de minimis* Thresholds (tons/year) [1]
CO	16.86	100
Volatile Organic Compounds (VOC)	6.66	100
Nitrous Oxides (NOx)	42.92	100
PM-10	15.77	100
PM-2.5	4.41	100
SO_2	5.75	100
CO_2 and CO_2 equivalents	18,175	25,000

Source: 40 C.F.R. § 51.853 and GSRC model projections (Appendix D).

Several sources of air pollutants would contribute to the overall air impacts of the construction project. The air results in Table 3-12 included emissions from the following sources:

- Combustion engines of construction equipment
- Construction workers commuting to and from work
- Supply trucks delivering materials to the construction site
- Fugitive dust from job-site ground disturbances

Operational Air Emissions

Operational air emissions refer to air emissions that may occur after the RVSS towers have been installed, such as maintenance and the use of generators. Generator run times for systems connected to the commercial power grid would be limited to 1 to 5 hours twice per month for maintenance purposes. System conditioning would occur during off-grid operational schedules or if grid power is interrupted, and generators would temporarily be operated, as needed, until grid power is again available. The air emissions from generators and bimonthly maintenance commutes are presented in Appendix D and are summarized in Table 3-13.

Table 3-13. Total Air Emissions (tons/year) from Generator and Commuter Activities versus the *de minimis* Threshold Levels.

Pollutant	Total (tons/year)	*de minimis* Thresholds (tons/year) [1]
CO	2.32	100
VOC	0.96	100
NOx	1.22	100
PM-10	0.03	100
PM-2.5	0.04	100
SO_2	0.0	100
CO_2 and CO_2 equivalents	330	27,557

Source: 40 C.F.R. § 51.853 and GSRC model projections (Appendix D).

As can be seen from Tables 3-12 and 3-13, the proposed construction and operational activities do not exceed Federal *de minimis* thresholds for NAAQS and GHG and, thus, would not require a Conformity Determination. Furthermore, due to the generally remote location of the various tower sites and good wind dispersal conditions, and because there are no violations of air quality standards and no conflicts with the state implementation plans, the impacts on air quality from the implementation of the Proposed Action would be negligible and would not be expected to affect the climate.

BMPs to be incorporated to ensure that fugitive dust and other air quality constituent emission levels do not rise above the minimum threshold as required per 40 CFR § 51.853(b)(1) are listed below:

- Standard construction BMPs such as routine watering of the construction site, as well as access drives to the site, would be used to control fugitive dust and thereby would assist in limiting potential PM-10 excursions during the construction phase of the Proposed Action.
- All construction equipment and vehicles would be required to be maintained in good operating condition to minimize exhaust emissions.

These BMPs and others as stated in Section 5.0 of this EA are standard practices applied for all of CBPs projects in an effort to control and reduce air quality, including GHG, emissions on an agency-wide scale to meet and adhere to CEQ guidance. Additionally, CBP is dedicated to reducing its use of non-renewable energy sources to the extent practicable. For example, where towers can be efficiently powered by photovoltaic generation, CBP would use such systems. However, where grid power is more efficient and less costly, CBP would use grid power.

3.12 NOISE

Noise is generally described as unwanted sound, which can be based either on objective impacts (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The perceived threshold of human hearing is 0 dB, and the threshold of discomfort or pain is around 120 dB (USEPA 1974). The dBA is a measurement of sound pressure adjusted to conform to the frequency response of the human ear.

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than the same level of intrusive noise during the day, at least in terms of its potential for causing community annoyance. This perception is largely because background environmental sound levels at night in most areas are also about 10 dBA lower than those during the day.

Long-term noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the USEPA and has been adopted by most Federal agencies (USEPA 1974).

Residential Homes

When noise affects humans, it can be based either on objective impacts (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). A 65 dBA DNL is the impact threshold most commonly used for noise planning purposes near residents and represents a compromise between community impact and the need for activities like construction (U.S. Department of Housing and Urban Development [HUD] 1984).

All the tower sites and access drives/access roads are located in remote locations in the ROI with the exception of towers HRL McMannis Bend, BRP Customs B&M, BRP FTBGC, FTB Armstrong, FTB Alaska Road, and FTB Florida Road, as well as their associated access roads.

National Parks and Wildlife Refuges

The Lower Rio Grande Valley National Wildlife Refuge (LRGVNWR) and Boca Chica State Park are considered sensitive noise receptors. There are seven tower sites that are located near or within the LRGVNWR or Boca Chica State Park (Table 3-14). The towers shown in Table 3-14 are those towers located within 1,138 feet (57 dBA threshold achieved) of these sensitive receptors. Table 3-14 also shows the approximate acreage impacted by noise greater than 57 dBA per tower site.

Table 3-14. Proposed Towers in or within 1,138 feet of the LRGVNWR

Tower Name	Acreage*
HRL Three House Rd Southeast	46
HRL Concrete Canal and Levee	14
HRL Green Barn Rd	2
FTB Zone 34	47
FTB Gallinas Rd	91
FTB End of Hwy 4**	72
FTB Armstrong	19

*Acreage affected by noise high than 57 dBA.
** Boca Chica State Park

Noise emission criteria for construction activities were published by the Federal Highway Administration (FHWA), which has established a construction noise abatement criterion of 57 dBA for lands, such as National Parks and Wildlife Refuges, in which serenity and quiet are of extraordinary significance (23 CFR § 722 Table 1). The 57 dBA criterion threshold is used to measure the impacts from short-term noise emissions associated with constructing the proposed towers and access drives and maintaining and repairing access roads. For long-term noise emissions, the USEPA (1978) notes that noise emissions of 55 dBA or less are suitable for areas in which quiet is a basis for use. This 55 dBA criterion threshold is used to measure the impacts from noise emissions associated with tower operations.

Noise Attenuation

As a general rule, noise generated by a stationary noise source, or "point source," would decrease by approximately 6 dBA over hard surfaces and 9 dBA over soft surfaces for each doubling of

the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet over a hard surface, then the noise level would be 79 dBA at a distance of 100 feet from the noise source and 73 dBA at a distance of 200 feet. To estimate the attenuation of the noise over a given distance, the following relationship is utilized:

$$\text{Equation 1: } dBA_2 = dBA_1 - 20 \log^{(d2/d1)}$$

Where:

dBA_2 = dBA at distance 2 from source (predicted)
dBA_1 = dBA at distance 1 from source (measured)
d_2 = Distance to location 2 from the source
d_1 = Distance to location 1 from the source
Source: California Department of Transportation (Caltrans) 1998

3.12.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed RVSS tower sites and associated roads would not experience construction or operational noise associated with the towers; however, noise emissions associated with illegal cross-border violators off-road travel and consequent law enforcement actions would be long-term and minor and would continue under the No Action Alternative.

3.12.2 Alternative 2: Proposed Action

Short-Term Construction Noise Emissions

The construction of the RVSS towers and access drives and maintenance and repairs to existing access roads would require the use of common construction equipment. Table 3-15 describes noise emission levels for construction equipment that range from 63 dBA to 85 dBA at a distance of 50 feet (FHWA 2007).

Table 3-15. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances[1]

Noise Source	50 feet	100 feet	200 feet	500 feet	1000 feet
Bulldozer	82	76	70	62	56
Concrete mixer truck	85	79	73	65	59
Crane	81	75	69	61	55
Drill rig	85	79	73	65	59
Dump truck	84	78	72	64	58
Excavator	81	75	69	61	55
Front-end loader	79	73	67	59	53
Generator	47	41	35	26	20

Source: FHWA 2007

1. The dBA at 50 feet is a measured noise emission. The 100- to 1,000-foot results are GSRC modeled estimates.

Assuming the worst case scenario of 85 dBA from general construction equipment, the noise model predicts that noise emissions would have to travel 1,138 feet before they would be attenuated to acceptable levels equal to or below 57 dBA, which is the criterion for National

Monument and Wildlife Refuges (23 CFR § 722, Table 1), or 482 feet to attenuate to 65 dBA, which is the criterion for residential receptors.

The majority of the tower sites are located in remote areas far from sensitive noise receptors such as residential homes or National Wildlife Refuges (NWRs). However, below is a list of the towers with sensitive residential noise receptors nearby and the number of residences that would be impacted as a result of the construction activities

- BRP Extension of Palm
  - 3 residences
- FTB Armstrong Primary
  - 3 residences
- FTB Alaska Road
  - 5 residences
- FTB Florida Road
  - 1 residence

The residential noise receptors may experience temporary noise intrusion equal to or greater than 65 dBA from construction equipment. Noise generated by the construction activities would be intermittent and last for approximately 2 months, after which noise levels would return to ambient levels. To minimize impacts, construction activity should be limited to daylight hours, between 8:00 a.m. to 5:00 p.m. on Monday through Friday. Therefore, the noise impacts from construction activities would be considered temporary and minor.

Approximately 219 acres of the LRGVNWR and 72 acres of Boca Chica State Park would experience elevated noise levels during construction activities (see Table 3-12). However, this noise too would be intermittent and last for approximately 2 months, after which noise levels would return to ambient levels. The same BMPs mentioned above would be used for those towers near or within the LRGVNWR. Additionally, several of the towers that could have noise impacts on the LRGVNWR would be located within or next to developed areas (i.e., FTB Armstrong) or farmed areas (i.e., HRL Three House Road Southeast) and experience high levels of noise on a constant basis currently. Therefore, noise impacts from construction of the towers in or near the LRGVNWR would be considered temporary and minor as well.

Long-Term Operational Noise

Long-term noise emissions refer to noise emissions that would occur after the new towers have been installed. All of the towers would be connected to commercial grid power. They would also have a propane generator installed for backup power. The propane generator would be expected to operate a total of 10 to 15 minutes per month for maintenance purposes. The generators used are all self-contained and generally within baffle boxes to help reduce the noise. While in operation, the generator dBA would be 47 at 50 feet from the source. System conditioning would occur during off-grid operational schedules or if grid power is interrupted, and the generator would be operated temporarily, as needed, until grid power is again available. Therefore, the noise impacts from ongoing tower activities would be considered negligible.

3.13 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

Cultural resources include historic properties, archaeological resources, and sacred sites. Historic properties are defined by the NHPA as any prehistoric or historic district site, building, structure, or object included on, or eligible for inclusion in the National Register of Historic Places (NRHP), including artifacts, records, and material remains relating to the district, site, building, structure, or object (National Park Service [NPS] 2006a). To be considered eligible for the NRHP a property would need to possess integrity of location, design, setting, materials, workmanship, feeling, and association and must also meet at least one of four criteria (NPS 2002):

A. Be associated with events that made a significant contribution to the broad pattern of our history
B. Be associated with the lives of significant persons in our past
C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
D. Have yielded, or be likely to yield, information important in history or prehistory

A Traditional Cultural Property (TCP) is a specific type of historic property that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining and the continuing cultural identity of the community (Parker and King 1998). Given the broad range in types of historic properties, historic properties can often include other types of cultural resources such as cultural items, archaeological resources, sacred sites, and archaeological collections.

Cultural items as defined by the Native American Graves Protection and Repatriation Act are defined as human remains, as well as both associated and unassociated funerary objects, sacred objects, and objects of cultural patrimony or objects that have an ongoing historical, traditional, or cultural importance to a Native American group or culture (NPS 2006b). Archaeological resources, as defined by the Archaeological Resources Protection Act (ARPA), consist of any material remains of past human life or activities that are of archaeological interest and are at least 100 years of age. Such items include, but are not limited to, pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal remains, or any portion or piece of those items (NPS 2006c). Sacred sites are defined by EO 13007, Indian Sacred Sites, as any specific, discrete, narrowly delineated location on Federal land that is identified by an Native American tribe or Native American individual determined to be an appropriately authoritative representative of an Native American religion as sacred by virtue of its established religious significance, or ceremonial use by, an Native American religion, provided that the tribe or appropriately authoritative representative of a Native American religion has informed the Federal land-owning agency of the existence of such a site (NPS 1996).

Cultural and Historic Overview

The proposed RVSS tower sites are distributed across the South Texas and Coastal Texas archaeological regions. The first evidence of human occupation in the area was during the Paleoindian period of the South Texas archaeological region. The waning of the Ice Age, or Pleistocene, 11,000 years Before Present (B.P.), showed the first evidence of the Paleoindians in the south Texas area. Their culture would last until 8000 B.P. These first people relied upon hunting and gathering subsistence and moved as nomadic bands as the seasons changed following the availability of edible vegetation and game animals in the region. Within the South Texas archaeological region, archaeological sites have recovered the remains of multiple animals, including a broad range of fish, horse, bison, rabbit, turtle, lizard, ducks, rats, and other species that the Paleoindian people used for subsistence resources. Archaeological sites in the region for this period vary from early Paleoindian terrestrial sites to eroded late Paleoindian artifacts found on the surface mixed with later Archaic period artifacts. Some of the lithic artifacts recovered are the Folsom, Clovis, Golondrina, Barber, and Angostura projectile points that range in complexity from early fluted forms to stemmed points by the end of the cultural period. (Black 1989; Hester 1989, 2004). Evidence of Paleoindian habitation within the Coastal Texas archaeological region is very limited. As a result, Ricklis (2004) states that the earliest demonstrable human occupation and exploitation of the central coast shoreline occurred during the subsequent Early Archaic period. The lack of Paleoindian sites within the Coastal Texas archaeological region is probably the result of fluctuations in sea level during the terminal Pleistocene to early Holocene. Bousman et al. (2004) note that no true coastal Paleoindian sites have been recorded because the Pleistocene coasts were flooded by rising sea levels that probably inundated such sites.

Archaeological evidence of the Early Archaic period, 8000 to 4500 years B.P., suggests considerable increase of human population along with the change to a dryer and warmer environment as compared to the evidence from the Paleoindian period. Hunting and gathering continued to be the way of life with the major change of this culture being in the designs of flint knapping (Black 1989; Hester 1980). Hester (2004) has subsequently defined two horizons that make up the early Archaic, the Early Basal-Notched horizon followed by the early Corner-Notched horizon based on distinctive forms of dart points and associated stone artifacts. In the Coastal Texas archaeological region, Ricklis (2004) also notes that there are two major prehistoric occupations during the Early Archaic period centering at ca. 7500 to 6800 B.P. and ca. 5800 to 4200 B.P. Evidence of the initial shoreline occupation dating from 7500 to 6800 B.P. consists of thick but dense lenses or strata of oyster shells (*Crassotrea virginica*) which rest at the base of the Holocene deposits and on top of the Pleistocene Beaumont Formation. Evidence for the later Early Archaic period (ca. 5800 to 4200 B.P.) occupation is better documented. Evidence from this portion of the Early Archaic similarly consists of thin strata of oyster shells near shoreline occupations and brackish-water clams (*Rangia flexuosa*) within river-influenced areas. Artifacts from excavated contexts are limited, but include chert debitage, utilized chert flakes, chert end-scrapers, shell tools (perforated shell oyster, edge-modified oyster shell), and chert dart points such as Bell, Early Triangular, Tortugas, and Gower point forms. Although the cultural deposits from this period are generally too old to preserve most bone, the presence of dart points suggests that some hunting was taking place and limited faunal evidence has been recovered at some sites (Ricklis 2004).

The South Texas artifact assemblages of the Middle Archaic period, 4500 to 2400 years B.P., are dominated by Triangular dart points, known as Tortugas and Abasolo, along with regionally specific types such as the Carrizo (Black 1989; Hester 2004). The subsistence data available, particularly from the Choke Canyon Reservoir area, suggests that plant resources were heavily utilized during this period. This is reflected in the increase in formal hearths, earth ovens, and burned rock accumulations. In the Coastal Texas region, Middle Archaic period (ca. 4500 B.P. to 2400 B.P.) radiocarbon data from them shows little occupation of the shoreline (Black 1989; Ricklis 2004). Within the Coastal Bend area, there is a continued adaptation to the littoral resources, particularly those of the estuary bays. Evidence of increased plant utilization for subsistence is also seen during the Middle Archaic period of the Coastal Texas region as suggested by the increase in the use of ground stones, as well as an increase in roasting/baking hearths. In the Coastal Bend subarea the earliest Aransas complex material start to appear in the Middle Archaic (Black 1989).

The climate during the Late Archaic period, ca. 2400 B.P. to Anno Domini (A.D.) 600/700, slowly changed to a moister environment with some of the vegetation from the arid period remaining in the western reaches of Texas. Artifacts recovered from Late Archaic sites within the South Texas archaeological region include small, corner- or side-notched dart points including Ensor, Frio, Marcos, Fairland, Shumla, Montell, and Ellis dart points. Other artifacts noted during this period include Olmos bifaces, small triangular gouge-like tools with specialized resharpening techniques, which may have also continued to be used into the Late Prehistoric period (Hester 2004). Subsistence data, as well as the presence of extensive deposits of fire-cracked rock (FCR) and grinding implements, suggest a further expanded use of plant resources during this period. Faunal data from the Late Archaic contexts show the exploitation of small animals, such as rodents (*Rodentia sp.*), rabbits (*Leporidae sp.*), turtles (*Testudines sp.*), fish, lizards (*Lacertilia sp.*), snakes (*Serpentes sp.*), and deer (*Cervidae sp.*). Land snails (*Rabdotus sp.*) and freshwater mussels (*Bivalvia sp.*) also continued to be common food sources. In the Coastal Texas archaeological region. the Late Archaic period (ca. 2400 B.P. to A.D. 800/1200) populations continued to increase, as is evident from the increase in Late Archaic period site density. Evidence for subsistence in the Coastal Bend area, during the Late Archaic, suggests the exploitation of a wide range of shellfish, fish, and small mammals, with a focus on marine resources, particularly those of estuary bays. Inland sites show a focus on plant resources, but also included the use of a variety of small mammal such as rodents and rabbits. Artifacts indicative of the Late Archaic Period include similar small, corner- or side-notched darts as seen in the South Texas archaeological region. In the Coastal Bend subarea, later Aransas complex materials are present including Ensor, Fairland, Darl, Catán, and possibly Matamoros dart points (Black 1989).

During the Late Prehistoric Period (A.D. 800 to A.D. 1600) of the South Texas archaeological region, the Late Archaic small, expanding stem dart points were replaced with still smaller expanding stem Late Prehistoric arrow points (Hester 2004). The Late Prehistoric can be divided into two time periods termed the Austin and Toyah horizons. The Austin horizon dates between roughly A.D. 800 and A.D. 1350, while the Toyah horizon dates after A.D. 1250/1300 (Black 1989; Hester 2004). The Toyah Horizon is the best documented Later Prehistoric pattern in the South Texas region. Cultural traits noted for Toyah sites included Perdiz points, small end scrapers, flake knives, beveled knives, bone-tempered pottery, perforators made on flakes,

ceramic figurines, pipes, marine shell and freshwater mussel shell ornaments, tubular bird bone beads, and spatulate objects made on bison (*Bison bison*) bone fragments (Hester 2004). Faunal material recovered from Toyah sites include abundant bison bone, though white-tailed deer may have been more extensively hunted, along with pronghorn (*Antilocarpra americana*) and a variety of smaller game. Turtles, freshwater mussels, and land snails also continue to be part of the diet. Sites, like in the latter part of the Middle Archaic, as well as the Late Archaic periods, are located along present stream channels or nearby sloughs, often buried just under the surface of natural levees. The later part of the Late Prehistoric period, which includes the Toyah horizon, also shows evidence of south Texas connections to a north-south Plains trade network (Hester 2004).

In the Coastal Texas archaeological region, the Late Prehistoric period begins somewhat later (ca. 1200 A.D.) as compared to the South Texas archaeological region. The Late Prehistoric occupations of the Coastal Texas archaeological region are divided into two cultural complexes, the Rockport complex (extends geographically from Matagorda Bay to Baffin Bay), and the Brownsville complex in the area of the Rio Grande Delta. The increased number of Late Prehistoric period sites suggests that population densities were higher during the Late Prehistoric period. In the Coastal Bend subarea, there is also a considerable amount of faunal diversity, including a variety of marine and brackish water species. Generally, arrow points and pottery are the diagnostic artifacts associated with Late Prehistoric sites in the Coastal Bend subarea. In the Coastal Bend subarea, the Fresno (triangular) and Padre (ovate) projectile points are indicative of the earlier part of the Late Prehistoric period, while the Perdiz and Bulbar Stemmed projectile points are indicative of the later part of the Late Prehistoric period. Bone-tempered pottery is common during the Late Prehistoric period in inland sites, while Rockport pottery is indicative of the Rockport Complex in the Coastal Bend subarea. The Brownsville complex is dominated by a shell working industry containing various shell tools (scrapers, gouges, projectile points, etc.) along with other ornaments such as beads, pendants, gorgets, etc. (Black 1989).

By the early nineteenth century the protohistoric native peoples of the area were either culturally or biologically extinct or displaced. As a result, the information on the historic Native American populations of the area are derived predominantly from historic documents from Spanish expeditions, missionaries, and the earliest Anglo-European explorers and settlers. The Coastal Bend subarea was inhabited by several different groups of Native Americans during the Historic Period, including the Coahuiltecans, Karankawas, Lipan Apaches, and Tonkawas. These groups were subdivided into numerous smaller bands including the Atakapa, Borado, Cavas, Capoque, Emet, Kohani, Kopani, Malaquite, Payata, and Sana Tamique, as well as others (Hester 1989; Newcombe 2002).

The Historic period chronology of the South Texas and Coastal Texas regions can be divided into five temporal subperiods: Spanish Exploration, Spanish Colonial, Mexican Colonial, Texas Republic and American, and twentieth century American periods. These historic subperiods are defined by distinct artifact assemblages along with historic archival and documentary evidence.

The Spanish Exploration period begins with the presence of European explorers, mostly of Spanish descent in the Coastal Bend region. The first Europeans thought to enter the area were Alvar Nuñez, better known as Cabeza de Vaca, along with three companions (Sánchez 1992).

The Panfilo de Narváez expedition, of which Cabeza de Vaca was a member, was shipwrecked on the upper Texas coast, at a location they described as the Isla del Malhado (Sánchez 1992; Hester 1999). The Isla del Malhado was probably Galveston Island or a nearby island, given the known ethnohistoric and archaeological record (Hester 1999). There is disagreement among historians, anthropologists, and archaeologists on the route taken by Cabeza de Vaca's group across Texas. The Krieger route, which takes Cabeza de Vaca from the upper and central Texas coast, through southern Texas, into northeastern Mexico, and perhaps back into west Texas, is the most probable of all the routes proposed given the archaeological and ethnohistoric record (Hester 1999). By 1535, Cabeza de Vaca and his three companions crossed southern Texas, reaching different points along the Rio Grande (Sánchez 1992).

The Spanish Colonial period began with the initial Spanish Exploration and settlement of the area. No real attempts to settle the area were made until the late seventeenth century in response to a French settlement established by René Robert Cavelier, Sieur de La Salle, on the Texas coast in 1568. After an unsuccessful attempt at establishing missions in east Texas during the latter part of the seventeenth century, the Spanish decided that a three-pronged approach that included mission, presidio, and civilian settlement would be the best strategy to establish a Spanish presence in the area. The Corpus Christi Bay remained unexplored until 1747, when Joaquín Prudencio de Orobio y Basterra led an expedition down the Nueces River to its mouth. After several failed attempts, the first settlement in the area was founded by Blas María de la Garza Falcòn in 1766. He established a ranch called Santa Petronila, on Petronila Creek. Despite many ranchers from the RGV applying for and receiving land grants in the lower Nueces valley during the end of the eighteenth century, the area was slow to develop. By 1794, a large ranch belonging to Juan Barrera, known as Rancho de Santa Gertrudis, was established on the north side of Corpus Christi Bay. An Indian uprising in 1812 forced many of the colonists to seek refuge in RGV. Hostilities with the Comanches and Lipans in the area continued until the end of Spanish control of the region (Long 2010; Fox 1989).

The Mexican Colonial period began with Mexican independence in 1821, the region became part of Tamaulipas. Remaining land in the area was deeded to individuals by the Tamaulipan government. After several unsuccessful attempts to establish settlements in the area, Fort Lipantitlán was established in 1831 where the road from Matamoros to Goliad crossed the river. Both Irish and German settlers also moved into the area during the 1820s and 1830s (Long 2010; Fox 1989).

The Texas Republic period began in 1836 after the Texas Revolution. During this time the region became a no man's land with both Mexican and Texan merchants engaging in illegal trading within the Nueces valley. Henry Lawrence Kinney established a trading post and fort on Corpus Christi Bay in 1839 in what would become Corpus Christi. By 1842, a post office had opened, and in 1845, the settlement experienced a brief boom, though population declined after the Mexican War (Long 2010; Fox 1989).

The Mexican War began only 3 months after Texas formal annexation to the United States. The primary issue involved in the conflict was the border between Mexico and the United States. When Texas gained its independence from Mexico in 1836, it claimed the Rio Grande as its southern boundary. In contrast, the Mexican government considered the Nueces River as the

border. In March 1846, under orders from the president, General Zachary Taylor moved his troops from Corpus Christi to Brazos Santiago near the mouth of the Rio Grande River. The Mexican government considered this movement of troops as an act of invasion and engaged the troops in battle at Palo Alto and Resca de la Palma on May 8 and 9, 1846. This prompted the U.S. Congress to pass a declaration of war, and hostilities moved south into Mexico. The war ended with the Treaty of Guadalupe Hidalgo where the United States gained California, Arizona, New Mexico, and the Rio Grande boundary of Texas, as well as portions of Utah, Nevada, and Colorado. The United States established a series of military posts along the Rio Grande as a line of defense against further armed incursions into Texas. These included Camp Ringgold (Fort Ringgold), Fort Brown, Camp Crawford (Fort McIntosh), and Fort Duncan (Bauer 2011; THC 1993).

During this period, large-scale ranching rapidly became one of the major bases of the economy (Long 2010; Fox 1989). Large ranches such as Toluca Ranch and King Ranch were established in the region. King Ranch ranks as one of the most outstanding and best known of all cattle enterprises in the history of the southwestern cattle frontier. In 1852, Richard King purchased several tracts of land fronting Santa Gertrudis Creek. The first grant obtained was the Ricón de Santa Gertrudis, consisting of approximately 15,500 acres of land at the junction of the Santa Gertrudis and San Fernando creeks near where they join Laguna Madre. This parcel included the area of present-day Kingsville. King also purchased Santa Gertrudis de la Garza consisting of approximately 4,000 acres of land. It was on this land that King would begin his cattle operation. In 1860, King founded R. King and Company, along with partners James Walworth and Mifflin Kenedy, which joined all the land titles of James Woolworth, King and his wife Henrietta, as well as Mifflin Kenedy (Coalson 2010; Chessman 2010; THC 1966). The Toluca Ranch was founded in 1880 by Florencio Saenz (1836 to 1927) on part of the Llano Grande (Big Plain) Grant which was deeded to Juan Jose Hinojosa Balli by the Spanish Crown in 1790. Saenz, a direct descendant of the Balli family, purchased a total of 15,898 acres of land to establish his ranch through multiple purchases (THC 1983).

The sectional controversies that divided the North and South in the 1850s troubled and divided Texans. The secession convention met in Austin on January 28, 1861, and was dominated by secessionists. On February 1, 1861, the delegates adopted an ordinance of secession, and on February 23 the ordinance was approved by the voters. Sam Houston, the Governor of Texas at that time and a Unionist, refused to recognize the authority of the convention and take an oath of allegiance to the new government. The convention in response declared the office of governor vacant and elevated Lieutenant Governor Edward Clark to the position (Wooster 2011). During the Civil War, King and his partners entered into several contracts with the Confederate government to supply European buyers with cotton while they, in return, supplied Confederate forces with beef, horses, imported munitions, medical supplies, clothing, and shoes. King, who also owned a steamship company, moved operations of the steamship to Matamoros under Mexican registry, which successfully avoided Union blockades for the most part. At the end of the war, King fled to Mexico, returning after securing his pardon from President Andrew Johnson in 1865 (Coalson 2010; Chessman 2010; THC 1966).

At the start of the Twentieth Century American period the St. Louis, Brownsville, and Mexico Railway was being built through south Texas to Brownsville, and Henrietta King opened several

tracts of her land for sale. Florencio Saenz also granted ROW over his property for the railroad in 1904. With the introduction of the railroad, the economic base of the area began to change from ranching to farming and dairying. The population continued to rapidly grow in the region during the early part of the twentieth century. Several industries, particularly the oil and gas industry, in the early to middle twentieth century prompted additional large population growth in the region (Stokes et al. 2009).

Previously Conducted Cultural Resources Investigations and Recorded Cultural Resources
Prior to the initial fieldwork, an archival record check was performed using the Texas Archeological Site Atlas maintained by the THC. All previously conducted archaeological investigations and archaeological sites that were located within the footprints of the proposed tower sites and their associated access roads and utility corridors were identified. In addition all NRHP-listed properties, Official Texas Historical Markers (OTHMs), Recorded Texas Historic Landmarks (RTHLs), and Historic Texas Cemeteries (HTCs) recorded within the visual areas of potential impact of the proposed towers were also identified. The visual Area of Potential Effect (APE) for this project was set at 0.5 mile in accordance with previously established visual APEs for towers that are less than 200 feet in height. The NRHP includes buildings, structures, sites, objects, and districts that possess significance at a local, state, or National level and retain sufficient integrity to convey that significance. An RTHL is a property judged by the THC to be historically and architecturally significant. The THC awards RTHL designation to buildings at least 50 years old that are judged worthy of preservation for their architectural and historical associations. The THC administers another type of marker program that is solely educational in nature and conveys no legal designation or restrictions on the property. A resource that falls within this category is listed as an OTHM. Administered by the THC, HTC designation is an official recognition of family and community graveyards and encourages preservation of historic cemeteries. The designation imposes no restrictions on private owners' use of the land adjacent to the cemetery, but provides for the recordation of the cemetery into the county deed records as a historically dedicated property worthy of preservation. Table 3-16 summarizes the previously recorded archaeological resources within the tower footprints and their associated access and utility corridors and the historic (aboveground) resources that are within the visual APEs of each tower.

Table 3-16. Summary of Previously Recorded Archaeological and Historic Resources Within the Tower and Associated Access and Utility Road Corridors and Within the 0.5-mile Visual APE, Respectively

Tower Site	Archaeological Resources	Historic Resources Resource Name (Designation)
Harlingen AOR		
HRL Beckwith Rd & Levee	41HG230 41HG215	None
HRL Cantu Rd	41CF208	Gomez cemetery (CF-C050)
HRL Concrete Canal & Levee	41CF208	None
HRL Galveston Bend	41CF167 41CF208	Los Alamos Cemetery at Galveston Ranch (CF-C008) (HTC)
HRL Green Barn Rd	41CF208	El Calaboz Cemetery (CF-C005) (HTC)
HRL Hacienda	41CF208	None

Tower Site	Archaeological Resources	Historic Resources Resource Name (Designation)
HRL McMannis Bend	None	Champion (CF-0011) (HTC)
HRL Moodyville Rd & Levee	None	None
HRL Rio Rico Rd and Pump Rd	41HG230	None
HRL San Benito Pump	41CF208	None
HRL Three House Rd Southeast	41CF208	None
HRL Wells Bros Canal	41CF208	None
Brownsville AOR		
BRP Cindy Stone	41CF208	Santa Rita Marker (OTHM 4585)
BRP Customs B&M	None	None
BRP Extension of Palm	None	None
BRP FTBGC	None	Fort Brown (district) Neale House (OTHM\RTHL 3559)
BRP Mulberry	41CF208	None
Fort Brown AOR		
FTB Alaska Rd	None	None
FTB Armstrong	None	None
FTB East of Sable Palm Rd	None	None
FTB End of Hwy 4	None	None
FTB Florida Rd	None	None
FTB Gallinas Rd	None	Palmito Ranch Battlefield (NRHP District)
FTB Hwy 4 Checkpoint	None	None
FTB Pig Pens	41CF216	None
FTB Zone 34	None	None
Falfurrias AOR		
FLF Adairs Ranch	None	King Ranch (NRHP District)
FLF Checkpoint Tower	None	King Ranch ((NRHP District) Falfurrias to Encino Road (OTHM 12799)
FLF King Ranch	None	King Ranch (NRHP District)
FLF Dos Haches Hopper Ranch	None	None
Kingsville AOR		
KIN Hwy 77 Armstrong	None	King Ranch (NRHP District)
KIN Juanita Section of Kenedy Ranch	None	None

* Not Eligible (NE), Undetermined (U)

Five previously recorded archaeological sites are located within the footprints of the proposed tower sites and their associated access roads and utility corridors. These sites include the historic Military Road (41HG230 and 41CF208), a historic artifact scatter that may represent a historic dump (41HG215), a historic artifact scatter representing a historic ranch (41CF167), and a historic plantation complex (41CF216). Military Road (41HG230/41SR397) intersects with the access roads for a large number of the proposed tower locations and is considered to be not eligible (NE) for the NRHP within portions of the ROW of the existing highway and has an undetermined eligibility (U) of the NRHP where it diverges outside of the highway ROW. The

remaining archaeological sites (41HG215, 41CF167, and 41CF216) do not have a recorded NRHP determination and are considered to have an undetermined eligibility for the NRHP.

A total of 10 previously recorded historic resources are located within the 0.5-mile viewshed of the proposed towers. Four of the historic resources are cemeteries on file with Texas Sites Atlas. Three of the four cemeteries are designated as HTCs. Two of the historic resources are NRHP-listed historic districts. Finally, three of the resources are OTHM markers or medallions. Of these tree OTHMs, one also designates as an RTHL, the Neale House.

Current Investigations

GSRC personnel conducted cultural resources surveys to identify any new archaeological resources or historic (aboveground) resources that may be located within the project footprint of the proposed towers and their associated access roads and utility corridors. No new archaeological sites or historic resources were recorded during the survey of the preferred tower locations.

The five previously recorded archaeological resources were not relocated by archaeologists during their surveys of the proposed tower sites and their associated access and utility corridors. No artifacts or features were found to extend into the project corridor from the three historic artifact scatters (41CF167, 41CF216, and 41HG215). As a result, while those sites are mapped as partially overlapping with some of the tower sites and their associated access roads, they are not considered to extend into the current footprints. The remaining two sites were the recorded portions of the historic military road (41SCF208 and 41HG230). While the existing modern road was present, archaeological investigations at those sites did not record any evidence of the original historic roadbed within the project corridors.

In addition to the archaeological resources, architectural historians revisited the previously recorded historic resources within the visual APE of the preferred tower sites to evaluate the potential visual impacts on the resources by the proposed tower.

3.13.1 Alternative 1: No Action Alternative

Under the No Action Alternative there would be no construction or improvements; therefore, no impacts would occur on cultural resources.

3.13.2 Alternative 2: Proposed Action

Since no new archaeological sites were recorded during the surveys of the preferred towers and their associated access and utility corridors and none of the previously recorded archaeological sites were found to extend into the current footprints of the preferred tower sites and their associated access and utility corridors, no archaeological sites are anticipated to be directly affected by implementation of the Proposed Action. None of the 10 previously recorded historic resources would be directly impacted by the implementation of the Proposed Action. Indirect visual impacts could occur on two NRHP-listed districts (King Ranch and Palmito Ranch Battlefield) as the result of the development of two of tower site locations (FTB Galinas Road and FLF Adairs Ranch). However, modern structures, including cell towers, oil and gas extraction equipment, and street lighting are currently present within the visual APE of these districts. Additional consultation with the THC and the Texas SHPO will occur to minimize the visual impacts and ensure no significant impacts. Indirect visual impacts on the remaining eight

historic resources would occur, but given the large amount of already existing modern infrastructure (houses, towers, etc.) within the viewshed of the historic resources, the visual impacts are not considered adverse or significant.

3.14 UTILITIES AND INFRASTRUCTURE

American Electric Power, Texas Central Company, distributes electrical energy on behalf of the various Retail Electric Providers operating within the project area. Commercial grid power is either currently available or would be acquired for the proposed RVSS towers, if that method of powering the towers is chosen.

3.14.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the proposed RVSS towers would not be constructed. The No Action Alternative would not affect the availability of utilities or require construction of additional facilities.

3.14.2 Alternative 2: Proposed Action

The Proposed Action would result in negligible impacts on the availability of utilities throughout the ROI because of the limited amperage needed by each tower to operate all equipment and because all towers would be tied into an existing and available service transmission line.

3.15 ROADWAYS AND TRAFFIC

The major roadways in Brooks County include U.S. Highway 281, Texas State Highway (SH) 285 and Farm to Market Road (FM) 755. U.S. Highway 281 runs north-south from Brownsville, Texas, to the Texas/Oklahoma state line. SH 285 is a major east-west highway through Falfurrias, Texas connecting Falfurrias to Kingsville, Texas, and Hebbronville, Texas. FM 755 runs east-west through the southern portion of the county.

The major Federal highways through Cameron County are Interstate 2 (I-2), which runs east-west from I-69E in Harlingen to Hidalgo County line; I-69E, a south-north freeway from Brownsville to the Willacy County line; U.S. Highways 77 and 83, which run through Harlingen to Brownsville; and U.S. Highway 281, which runs east-west adjacent to the Rio Grande. U.S. Highway 83 is one of the longest north-south U.S. highways in the U.S. The highway starts in Brownsville, Texas, at the Veterans International Bridge on the U.S. Mexico border and terminates north of Westhope, North Dakota, at the Canada-U.S. border.

Major Texas State Highways in Cameron County include SH 4, an east-west highway that runs from the Gateway International Bridge in Brownsville to the Gulf of Mexico at Boca Chica State Park, paralleling the Rio Grande; SH 48 and 100, east-west highways between Brownsville at Port Isabell, Texas; and SH 107, an east-west highway that runs between mission and Combes Texas. Cameron County is densely populated and has numerous FM roadways.

There is only one major highway through Kenedy County, U.S. Highway 77.

3.15.1 Alternative 1: No Action Alternative

Under the No Action Alternative, impacts on roadways and traffic would remain status quo.

3.15.2 Alternative 2: Proposed Action

With the implementation of the Proposed Action, construction activities at the RVSS tower sites would have a temporary, minor impact on roadways and traffic within the project area. An increase of vehicular traffic along U.S. Highway 83, U.S. Highway 281, SH 4, U.S. Highway 77, and the adjacent county roads would occur to supply materials and work crews to the RVSS tower sites during the construction phase and also in support of tower maintenance and refueling trips.

Tower maintenance requires vehicle travel to each of the proposed tower sites for fuel delivery, maintenance and operations of the proposed RVSS tower sites. The number of maintenance trips and refueling trips would be limited, as all of the towers would be equipped with commercial grid power. Traffic impacts associated with tower maintenance would be long-term and negligible.

3.16 AESTHETIC AND VISUAL RESOURCES

Federal lands are often assigned visual resource inventory classes. Neither the State of Texas nor the USFWS have an established visual resource impact inventory classification system; however, the Bureau of Land Management (BLM) visual zone classes were used as a means to quantify the visual impacts of each RVSS tower site analyzed in this EA. These landscapes are often subdivided into three distance zones based on relative visibility from observation points: foreground-middleground, background, and seldom-seen. The foreground-middleground zone includes areas seen from highways, rivers, or other viewing locations that are less than 5 miles away and where management activities might be viewed in detail. This zone can be more visible to the public and changes may be more noticeable. The background zone includes areas beyond the foreground-middleground zone but usually less than 15 miles away. This does not include areas in the background that are so distant that the only thing discernible is the form or outline. Areas that are not visible within the foreground-middleground zone or background zone are in the seldom-seen zone (BLM 2009).

The ROI consists of gently rolling hills covered with mesquite, Texas ebony, huisache, wild olive, cactus, and native grasses. Many oxbow lakes are found throughout. Other aesthetic resources include the Rio Grande, agricultural and ranch land, the LRGVNWR, Texas State Parks, World Birding Centers, and many urban areas. Metropolitan areas adjacent to the project area include Harlingen, Brownsville, Fort Brown, Kingsville, and Falfurrias. U.S. Highways 83, 77, and 281 are the main roads through the project area.

The LRGVNWR is located in the four most southern counties of Texas along the international border between the U.S. and Mexico. The Lower Rio Grande Valley is where four climates (temperate, desert, coastal, and subtropical) converge, creating one of the most biologically diverse regions in North America. It is approximately 90,788 acres in size. The refuge follows the Rio Grande along the last 275 river miles, connecting isolated tracts of land managed by

private landowners, non-profit organizations, the State of Texas, and Laguna Atascosa NWR and Santa Ana NWR (USFWS 2015).

The Laguna Atascosa NWR encompasses more than 97,000 acres in two units: the Bahia Grande and the South Padre Unit located along the Gulf Coast in Cameron County. The refuge consists of thorn forest intermingled with freshwater wetlands, coastal prairies, mudflats, and beaches. Dense patches of thorny brush can be found among unique wind-blown clay dunes known as lomas. The refuge provides habitat for wintering waterfowl and is a premiere bird-watching destination. Additionally, the largest population of ocelots in the U.S. is found within the refuge (USFWS 2015).

The TPWD manages the Boca Chica State Park located near Brownsville, Texas, in the Boca Chica Sub-Delta of the Rio Grande. It is an undeveloped sandy peninsula approximately 1,000 acres in size off Highway 4. It is used for recreational activities such as fishing, swimming, surfing, and birding (City-Data.com 2015).

The TWPD also manages the Resaca De La Palma State Park in partnership with the World Birding Center. The Resaca De La Palma is located in Brownsville, Texas off U.S. highway 281. It is 1,200 acres of wetlands, woodlands, and savannah habitats (World Birding Center 2015).

There are three World Birding Centers located in the project ROI. The World Birding Center consists of a partnership between TPWD, Rio Grande Valley communities, and the USFWS. The World Birding Center is a network of nine distinctly different and unique birding sites along a 120-mile historic river road. Their mission is to protect native habitat, while increasing the understanding and appreciation of birds and wildlife. Besides the Resaca De La Palma State Park, the World Birding Center is composed of the Harlingen Arroyo Colorado and the South Padre Island Birding and Nature Center (World Birding Center 2015).

The Palo Alto Battlefield National Historic Park is also located on the north side of Brownsville, near the city of Los Frenos, Texas in Cameron County and it is managed by the NPS.

3.16.1 Alternative 1: No Action Alternative

Under the No Action Alternative there would be no construction and, thus, there would be no impacts on aesthetic or visual resources.

3.16.2 Alternative 2: Proposed Action

The Proposed Action would have a long-term, moderate impact on aesthetic qualities within the project area. Depending on the location and elevation of the viewer, it is possible that most of the proposed RVSS or relay towers would be visible from up to 5 miles away. However, due to the existing levees, vegetation, and development that are within the project area, no towers are expected to be visible from more than 5 miles away. Because the LRGVNWR and Boca Chica State Park are natural areas and thus, have a greater aesthetic quality, the view of the towers from these areas would have a greater visual resources impact within the project area than the other towers. Illegal cross-border activities within the LRGVNWR and Boca Chica State Park create tons of debris, trash, and unauthorized trails annually within these areas. In addition, these

activities detract from visitor experiences while visiting the LRGVNWR and Boca Chica State Park. However, as a result of the reduction and potential elimination of illegal cross-border activities within the LRGVNWR and Boca Chica State Park due to the towers located within or near the LRGVNWR and Boca Chica State Park. The offsetting beneficial impacts those same towers would have on the overall visitor experience at the LRGVNWR and Boca Chica State Park would greatly outweigh the moderate adverse impacts of the towers themselves.

Temporary aesthetic and visual resource impacts during the construction phase of the project would occur at the RVSS tower sites. Generally these temporary impacts would involve the presence of construction equipment on the landscape and temporary ground disturbances. Post-construction revegetation with native species and surface contouring would be utilized to minimize and reduce these temporary impacts.

3.17 HAZARDOUS MATERIALS

Hazardous materials are substances that cause physical or health hazards (29 CFR 1910.1200). Materials that are physically hazardous include combustible and flammable substances, compressed gases, and oxidizers. Health hazards are associated with materials that cause acute or chronic reactions, including toxic agents, carcinogens, and irritants. Hazardous materials are regulated in Texas by a combination of mandated laws promulgated by the USEPA and the TCEQ.

A Transaction Screen Site Assessment was conducted for each proposed RVSS tower site in accordance with the American Society for Testing and Materials International Standard E1528-06. These assessments were performed to evaluate any potential environmental risk associated with the construction and operation of the proposed RVSS towers. Each assessment included a search of Federal and state records of known hazardous waste sites, potential hazardous waste sites and remedial activities and included sites that are either on the National Priorities List or being considered for the list. One tower site had evidence of hazardous materials or recognized environmental conditions detected during the site inspections conducted from July 2015 through July 2016 and during the review of state and Federal records. Hazardous materials indications resulted from previous or ongoing oil and gas exploration and production activities on or adjacent to the sites and from dumping.

The following tower sites exhibit a potential risk to CBP for existing hazardous materials.

FLF Dos Haches Hopper Ranch – There is a high-pressure valve assembly protruding from the ground (Photograph 3-4) on this site. It may be related to a prior oil and gas well on the property, in which case there is still production infrastructure underground with a potential pollution and safety problem for excavations.

Photograph 3-4. High-pressure valve located at FLF Dos Haches Hopper Ranch tower site

3.17.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no new RVSS towers would be installed; therefore, no existing hazardous materials risks would be encountered and no potential for hazardous materials spills during tower installations would be realized. No impacts from hazardous materials would result from the No Action Alternative.

3.17.2 Alternative 2: Proposed Action

Installation of RVSS towers at the sites indicated for the Proposed Action would involve the use of heavy construction equipment. There is a potential for the release of hazardous materials such as fuels, lubricants, hydraulic fluids, and other chemicals during the construction of the tower sites and erection of the towers. The impacts from spills of hazardous materials during construction would be minimized by utilizing BMPs during construction such as fueling only in controlled and protected areas away from surface waters, maintaining emergency spill cleanup kits at all sites during fueling operations, maintaining all equipment in good operating condition to prevent fuel and hydraulic fluid leaks, and protecting surface waters on and near the tower sites from stormwater runoff.

If hazardous materials are encountered at the FLF Dos Haches Hopper Ranch tower site indicated above during excavation, proper cleanup and disposal of any contaminated soil by a certified hazardous waste transporter would occur, thereby minimizing impacts on the environment and preventing contamination of soil or surface waters off-site.

No hazardous materials would be used for the normal operation and maintenance of the RVSS towers. Backup electrical generators would be powered by propane or natural gas to avoid the

potential for spilled fuel contamination. Therefore, impacts from hazardous materials due to implementation of the Proposed Action would be minor.

3.18 RADIO FREQUENCY ENVIRONMENT

The radio frequency (RF) environment refers to the presence of electromagnetic (EM) radiation emitted by radio waves and microwaves on the human and biological environment. EM radiations are self-propagating waves of electric and magnetic energy that move through space via radio waves and microwaves emitted by transmitting antennas. RF is a frequency or rate of oscillation within the range of about 3 hertz and 300 gigahertz. This range corresponds to a frequency of alternating current and electrical signals used to produce and detect radio waves. The EM radiation produced by radio waves and microwaves carry energy and momentum and can interact with matter.

The FCC is responsible for licensing frequencies and ensuring that the approved uses would not interfere with television or radio broadcasts or substantially affect the natural or human environments. The FCC adopted recognized safety guidelines for evaluating RF exposure in the mid-1980s (Office of Engineering and Technology [OET] 1999). Specifically, in 1985, the FCC adopted the 1982 American National Standards Institute (ANSI) guidelines to evaluate exposure due to RF transmitters that are licensed and authorized by the FCC (OET 1999). In 1992, ANSI adopted the 1991 Institute of Electrical and Electronics Engineers (IEEE) standard as an American National Standard (a revision of its 1982 standard) and designated it as ANSI/IEEE C95.1-1992 (OET 1999). The FCC proposed to update its rules and adopt the new ANSI/IEEE guidelines in 1993, and in 1996 the FCC adopted a modified version of the original proposal.

The FCC's guidelines are also based on the National Council on Radiation Protection and Measurements (NCRP) exposure guidelines. The NCRP and ANSI/IEEE exposure criteria identify the same threshold levels at which harmful biological impacts may occur. The whole-body human absorption of RF energy varies with the frequency of the RF signal. The most restrictive limits on exposure are in the frequency range of 30 to 300 megahertz where the human body absorbs RF energy most efficiently when exposed in the air field of an RF transmitting source (ANSI/IEEE C95.1-1992).

There are two tiers or exposure limits: occupational or "controlled" and general or "uncontrolled." Operational exposure is when people are exposed to RF fields as a part of their employment and they have been made fully aware of the potential exposure and can exercise control over their exposure. Uncontrolled exposure is when the general public is exposed or when persons employed are not made fully aware of the potential for exposure or cannot exercise control over their exposure.

In order for a transmitting facility or operation to be out of compliance with the FCC's RF guidelines in an area where levels exceed Maximum Permissible Exposure (MPE) limits, it must first be accessible to the public. The MPE limits indicate levels above which people may not be safely exposed regardless of the location where those levels occur.

Adverse biological impacts associated with RF energy are typically related to the heating of tissue by RF energy. This is typically referred to as a "thermal" effect, where the EM radiation emitted by an RF antenna passes through and rapidly heats biological tissue, similar to the way a microwave oven cooks food. The Health Physics Society indicates that numerous studies have shown that environmental levels of RF energy routinely encountered by the general public are typically far below levels necessary to produce significant heating and increased body temperature and are generally only associated with workplace environments near high-powered RF sources used for molding plastics or processing food products. In such cases, exposure of human beings to RF energy could be exceeded, thus requiring restrictive measures or actions to ensure their safety (Kelly 2007).

There is also some concern that signals from some RF devices could interfere with pacemakers or other implanted medical devices. However, it has never been demonstrated that signals from a microwave oven are strong enough to cause such interference (OET 1999). Furthermore, EM shielding was incorporated into the design of modern pacemakers to prevent RF signals from interfering with the electronic circuitry in the pacemaker (OET 1999).

Other non-thermal adverse effects such as disorientation of passing birds by RF waves are also of concern. Past studies on effects of communications towers were noted by Beason (1999) during the 1999 Workshop on Avian Mortality at Communication Towers (Evans and Manville 2000). During this workshop, Beason (1999) noted that most research on RF signals produced by communications towers generally have no disorientation effects on migratory birds. However, more research is needed to better understand the effects of RF energy on the avian brain.

Currently, CBP, USFWS, local law enforcement agencies, and the military use 2-way radios as part of their daily operations in the project area. Further, several of these agencies operate and maintain radio repeaters within the ROI.

3.18.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the new communications equipment would not be installed or operated. Daily radio operations by CBP and USFWS, and local law enforcement would continue within the project area. The existing RF emitted would continue to have adverse, negligible impacts on the human or natural environments.

3.18.2 Alternative 2: Proposed Action

The Proposed Action would install new communications equipment within the project area. As with any RF transmitter, all of these systems would emit RF energy and EM radiation; therefore, a potential for adverse impacts could occur. However, any adverse impacts on human safety and wildlife would likely be negligible due to the minimal exposure limits associated with both the type of equipment used and the tower site location. The risk of exposure is further minimized because the tower would be up to 199 feet tall. The distance between the antennas (on top of the tower) and human populations would be too great to present a significant exposure risk. Under normal operating conditions, maintenance personnel working within the tower site would not be exposed to any RF energy that exceeds MPE limits set by the FCC.

Given the height of the antennas, this is true for maintenance personnel servicing groundlevel equipment; however, those who climb the tower could be exposed. All CBP tower climbers would have RF monitors that would alarm to indicate an unsafe RF environment. Additionally, RF hazard warning signage would be in place on the site.

Though greater research is required to have a better understanding of the effects of RF energy on the avian brain, the potential impacts on passing birds are expected to be negligible as well. Any disorientating effect, if experienced, would be temporary and would occur only at distances close to the antennas.

No RF energy levels emitted from the proposed equipment are outside OSHA safety standards.

3.19 SOCIOECONOMICS

This socioeconomics section outlines the basic attributes of population and economic activity in Brooks, Cameron, Hidalgo, and Kenedy counties in Texas, which is the ROI for socioeconomics.

Demographic data, shown in Table 3-17, provide an overview of the socioeconomic environment in the ROI. Hidalgo County, the most populous county in the ROI, grew at an average annual rate of 3.2 percent, compared with 2.1 percent for Texas and more than three times the growth rate for the U.S. of 0.9 percent. Cameron County grew at an average annual rate of 1.7 percent from 2000 through 2015, below the average annual growth rate for Texas but still well above the U.S. average annual growth rate for that time period. Brooks and Kenedy counties, which have much smaller populations than Cameron County, registered population decreases for the 2000 through 2015 time period, with average annual growth rates of -0.7 and -0.04 percent, respectively.

Table 3-17. Population, Income, Labor Force, and Unemployment

	2015 Population Estimate*	Average Annual Growth Rate 2000-2015 (percent)	Per Capita Income (2015)	Per Capita Income As A Percent of U.S. (2015)	Annual Average Labor Force (2015)	Annual Average Unemployment Rate (2015) (percent)
Brooks County	7,230	-0.6	$14,353	50	2,603	10.0
Cameron County	422,156	1.7	$14,898	52	164,295	7.1
Hidalgo County	842,304	3.2	$14,525	51	305,333	7.9
Kenedy County	407	-0.1	$13,959	49	284	2.8
Texas	27,469,114	2.1	$26,513	93	13,142.426**	4.5
U.S.	321,418,820	0.9	$28,555	100		5.3

Source: U.S. Census Bureau 2000, 2015a, and 2015b; U.S. Census 2016. BLS 2016a, 2016b, and 2016c
*As of July 1, 2015 **As of December 2015

Per capita income data show that the ROI counties are very low-income, with per capita incomes that are approximately half the U.S. average. With the exception of Kenedy County, which has a

low population and low unemployment rate (2.8 percent), the ROI counties have unemployment rates that are well above Texas (4.5 percent) and the U.S. (5.3 percent).

3.19.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the proposed RVSS upgrade would not be constructed in the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs, so no direct socioeconomic impacts would be expected. Indirect impacts from illegal activity would continue, and indirect impacts from cross-border violator activities and subsequent USBP interdiction activities would be greater under the No Action Alternative than the Preferred Alternative.

3.19.2 Alternative 2: Preferred Alternative

The Proposed Action would have temporary, minor adverse socioeconomic impacts in some of the areas immediately adjacent to some of the towers. Most of the 32 proposed towers are located in rural areas, and socioeconomic impacts related to their construction, operation, and maintenance would be negligible. The closest occupied residence to a tower is approximately 300 feet away. For the few sites where homes are located in the vicinity of the proposed tower or access road, residents may experience minor increases in traffic, noise, and dust associated with construction; however, these impacts would be temporary. For the few sites that impact agricultural lands, landowners may experience minor, temporary impacts associated with construction, as a result of increases in traffic, noise, and dust. In a few cases, a proposed tower may cause land to be taken out of agricultural production, resulting in permanent impacts to landowners. With more than 2.5 million acres of agricultural production in the ROI (U.S. Department of Agriculture [USDA] 2012), impacts on the counties overall would be negligible. However, the RVSS upgrade would allow the USBP to focus efforts on interdiction of those involved in illegal cross-border activities and spend less time locating illegal entries, thereby enhancing rapid response capabilities. Agents could be more efficiently deployed to patrol the more remote sections of the BRP, FTB, HRL, FLF, and KIN Stations' AORs, which would likely contribute to a decrease in cross-border violators. The decrease in cross-border violator activities could have a beneficial impact on the incidence of crime and enhance safety in USBP BRP, FTB, HRL, FLF, and KIN Station's AORs, providing long-term beneficial impacts in the region. Temporary minor beneficial impacts in the form of jobs and income for area residents, revenues to local businesses, and sales and use taxes to counties, cities, and the State of Texas from locally purchased building materials could be realized if construction materials are purchased locally and local construction workers are hired for tower construction and installation.

3.20 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by President Clinton on February 11, 1994. It was intended to ensure that proposed Federal actions do not have disproportionately high and adverse human health and environmental impacts on minority and low-income populations and to ensure greater public participation by minority and low-income populations. It required each agency to develop an agency-wide environmental justice strategy. A Presidential Transmittal Memorandum issued with the EO states that "each Federal agency shall analyze the environmental impacts, including human health, economic and social impacts, of Federal actions, including impacts on minority

communities and low-income communities, when such analysis is required by the NEPA 42 U.S.C. § 4321, et seq." The Department of Defense has directed that NEPA would be used to implement the provisions of the EO.

EO 12898 does not provide guidelines as to how to determine concentrations of minority or low-income populations. However, analysis of demographic data on race and ethnicity and poverty provides information on minority and low-income populations that could be affected by the proposed actions. The 2010 Census reports numbers of minority individuals and the U.S. Census American Community Survey (ACS) provides the most recent poverty estimates available. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific Islander, or Other. Poverty status is used to define low-income. Poverty is defined as the number of people with income below poverty level, which was $24,036 for a family of four in 2015, according to the U.S. Census Bureau (U.S. Census Bureau 2015c). A potential disproportionate impact may occur when the percent minority in the study area exceeds 50 percent and/or the percent low-income exceeds 20 percent of the population. Additionally, a disproportionate impact may occur when the percent minority and/or low-income in the study area are meaningfully greater than those in the region.

Table 3-18 presents U.S. Census data for minority population and poverty rates for the ROI.

Table 3-18. Minority and Poverty

	Minority Population (Percent)	All Ages in Poverty (Percent)
Brooks County	92.0	36.0
Cameron County	89.7	34.8
Hidalgo County	92.6	34.6
Kenedy County	73.1	26.1
Texas	55.7	17.7
U.S.	37.2	15.6

Source: U.S. Census Bureau 2015a and 2015b

Protection of Children

EO 13045 requires each Federal agency "to identify and assess environmental health risks and safety risks that may disproportionately affect children" and "ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. The potential for impacts on the health and safety of children is greater where projects are located near residential areas.

3.20.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the proposed RVSS upgrade would not be constructed in the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs. There would be no impacts on people, so there would be no disproportionately high and adverse human health or environmental impacts on minority populations and low-income populations, nor would there be any environmental health or safety risks that could disproportionately affect children.

3.20.2 Alternative 2: Preferred Alternative

Under the Proposed Action, the towers would be located in counties that are home to high poverty and high minority populations. However, most of the adverse impacts would be temporary impacts, including minor increases in traffic, noise, and dust associated with construction, related to the construction of towers. The construction site would be fenced off to avoid accidental entry into the construction zone. All entry and egress points into the construction zone would be gated and locked upon completion of work for the day to minimize the potential for accidental entry during non-work hours, and proper signage would be attached to the perimeter fence. The closest occupied residence to a tower is approximately 300 feet away. Permanent, adverse impacts would be minor, primarily impacting landowners with land in agricultural production and rangelands. The Proposed Action would not result in disproportionately high and adverse human health or environmental impacts on minority populations and low income populations, nor would there be environmental health or safety risks that disproportionately affect children.

3.21 SUMMARY OF IMPACTS

Table 3-19 is provided to summarize the impacts of the No Action Alternative and Proposed Action on each of the elements discussed in this section (Affected Environment).

Table 3-19. Summary Matrix of Potential Impacts

Affected Environment	No Action Alternative (Alternative 1)	Proposed Action (Alternative 2)
Land Use	No direct impacts would occur.	The Proposed Action would have a permanent, negligible impact on land use. Approximately 6.25 acres of undeveloped land would be converted to a developed land use.
Soils	No direct impacts would occur.	The Proposed Action would have a direct, minor impact on soils. Permanent impacts on approximately 9.2 acres of soil would occur through the conversion of undeveloped land to use as RVSS tower sites. The permanent footprint for the access roads and drives would encompass approximately 0.2 acre; an additional 51 acres of soil would be temporarily disturbed during tower construction and access road maintenance and repair.
Vegetative Habitat	No direct impacts would occur.	The Proposed Action would permanently alter approximately 3.7 acres of native vegetative habitat, including tower footprints and access drives. The plant communities associated with the RVSS tower sites are both locally and regionally common, and the permanent loss of approximately 3.7 acres of vegetation would not adversely affect the population viability of any plant or animal species in the region.
Wildlife Resources	No direct impacts would occur.	The Proposed Action would have a long-term, negligible impact on wildlife resources due to the permanent removal of approximately 3.7 acres of habitat. The temporary degradation of approximately 75 acres of disturbed and native habitat and the noise impacts associated with construction activities would have a short-term, negligible impact on wildlife.
Protected Species and Critical Habitats	No direct impacts would occur.	The Proposed Action may affect, but is not likely to adversely affect, NAF, ocelot, and jaguarundi. No designated critical habitat is present within the project footprint.
Groundwater	No direct impacts would occur.	Negligible impact on groundwater resources.
Surface Waters and Waters of the United States	No direct impacts would occur.	Surface water quality could be temporarily impacted during construction activities as a result of erosion and sedimentation. Negligible to minor impacts on surface water resources from usage for construction purposes. Minor impact to wetlands and waters of the United States; however, impacts would be mitigated through permitting process.
Floodplains	No direct impacts would occur.	Impacts on floodplains would be minor and all proper permits would be obtained prior to construction.
Coastal Zone	No direct impacts would occur.	Negligible impact on coastal zone, impacts would be consistent with CZMA.
Air Quality	No direct impacts would occur.	Temporary and minor increases in air pollution would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction and the maintenance and repair of access roads.
Noise	No direct impacts would occur.	Temporary and negligible increases in noise would occur during construction and maintenance and repair of access roads.
Cultural Resources	No direct impacts would occur.	No direct impacts on cultural or historical resources; however, indirect adverse visual impacts on two NRHP Historic Districts would occur as a result of the construction of to two of the proposed tower sites (FTB Galinas Road and FLF Adairs Ranch). Therefore, continued consultation with the THC and the Texas SHPO would be required to minimize the visual impacts and reduce the affects to less than adverse or significant levels.
Utilities and Infrastructure	No direct impacts would occur.	Negligible demands on power utilities would be required as a result of the Proposed Action.
Roadways and Traffic	No direct impacts would occur.	Construction activities would have a temporary, minor impact on roadways and traffic within the region. The increase of vehicular traffic would occur to supply materials and work crews at each tower site during construction.
Aesthetics and Visual Resources	No direct impacts would occur.	The Proposed Action would have a long-term, moderate impact on aesthetic qualities within the project area. Most towers would be visible up to 5 miles away from the tower. Temporary aesthetic impacts during the construction phase of the project would occur at the tower sites, and these impacts would include the visual impacts of construction equipment.
Hazardous Material	No direct impacts would occur.	The Proposed Action would not result in the exposures of the environment or public to any hazardous materials. The potential exists for minor releases of petroleum, oil, and lubricant during construction or operational activities. BMPs would be implemented to minimize any potential contamination at the tower sites during construction activities and tower operation.
Socioeconomics	No direct impacts would occur	Minor to negligible impacts would occur.

4.0 CUMULATIVE IMPACTS

This section of the EA defines cumulative impacts, identifies past, present, and reasonably foreseeable projects relevant to cumulative impacts, and analyzes the potential cumulative impacts associated with the implementation of the Proposed Action and other projects/programs planned within the ROI, which comprises the USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs.

4.1 DEFINITION OF CUMULATIVE IMPACTS

The CEQ defines 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 actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR § 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state, or local) or individuals. CEQ guidance on cumulative impacts requires the definition of the scope of the other actions and their interrelationship with the Proposed Action (CEQ 1997). The scope must consider geographic and temporal overlaps with the Proposed Action and all other actions occurring within the ROI. Informed decision making is served by consideration of cumulative impacts resulting from activities that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

This cumulative impacts analysis summarizes expected environmental impacts from the combined impacts of past, current, and reasonably foreseeable future activities affecting any part of the human or natural environment impacted by the Proposed Action. Activities were identified for this analysis by reviewing CBP and USBP documents, news/press releases, and published media reports, and through consultation with planning and engineering departments of local governments and state and Federal agencies.

4.2 PAST IMPACTS WITHIN THE REGION OF INFLUENCE

The ecosystems within the ROI have been significantly impacted by historical and ongoing activities such as ranching, livestock grazing, mining, agricultural development, cross-border violator activity and resulting law enforcement actions, and climate change. All of these actions have, to a greater or lesser extent, contributed to several ongoing threats to the ecosystem, including loss and degradation of habitat for both common and rare wildlife and plants and the proliferation of roads and trails due to cross-border violator activity and resulting law enforcement actions. Although activities that occurred on Federal lands (Department of Interior and BLM) were regulated by NEPA, the most substantial impacts of these activities within the ROI such as ranching, livestock grazing, and cross-border violator activity and resulting law enforcement actions, were not or are not regulated by NEPA and did not include efforts to minimize impacts.

4.3 CURRENT AND REASONABLY FORESEEABLE CBP PROJECTS WITHIN AND NEAR THE REGION OF INFLUENCE

USBP has conducted law enforcement actions along the border since its inception in 1924 and has continuously transformed its methods as new missions, modes of operations of cross-border violators, agent needs, and national enforcement strategies have evolved. Development and maintenance of training ranges, station and sector facilities, detention facilities, roads, and fences have impacted thousands of acres, with synergistic and cumulative impacts on soil, wildlife habitats, water quality, and noise. Beneficial impacts, too, have resulted from the construction and use of these roads and fences, including, but not limited to, increased employment and income for border regions and its surrounding communities; protection and enhancement of sensitive resources north of the border; reduction in crime within urban areas near the border; increased land value in areas where border security has increased; and increased knowledge of the biological communities and prehistory of the region through numerous biological and cultural resources surveys and studies.

With continued funding and implementation of CBP's environmental conservation measures, including use of biological monitors, wildlife water systems, and restoration activities, adverse impacts due to future and ongoing projects would be avoided or minimized. Recent, ongoing, and reasonably foreseeable proposed actions would result in cumulative impacts; however, the cumulative impacts would not be significant. CBP is currently planning, is conducting, or has completed several projects in or adjacent to USBP's BRP, FTB, HRL, FLF, and KIN Stations' AORs, including the following:

- Demolition of eight USBP owned housing units at Falcon Village, Texas, which included completely removing all housing and related infrastructure (fences, underground storage tanks, aboveground storage tanks, septic tanks, cisterns, walkways, and trees and vegetation). Falcon Village is located at the southeastern tip of Falcon Lake in Starr County, Texas.
- Construction, operation, and maintenance of USBP Falfurrias Station Traffic Checkpoint.
- Establishment of a 6-acre construction staging/laydown area adjacent to the proposed Falfurrias Station Traffic Checkpoint and temporarily grading approximately 8 acres within an existing gas pipeline ROW adjacent to the checkpoint.
- Maintenance and repair of tactical infrastructure along the US/Mexico international border in the El Paso, Big Bend, Del Rio, Laredo, and RGV sectors.
- Construction and maintenance of 40 RVSS and three relay towers and associated roads within the Rio Grande City, McAllen, and Weslaco Station's AORs.

In addition, TxDOT, the LRGVNWR, and other private parties are currently planning or conducting several projects in the ROI and include the following:

- Improvements to U.S. highway 281 (Military Highway) between farm to market (FM) 3248 FM 1421. The project includes expanding the existing road from a 2-lane road to a 4-lane road with a continuous center turn lane and would entail constructing left and right turn lanes at intersections.

- A secondary access point to and from South Padre Island. This project was proposed by the Cameron County Regional Mobility Authority, in partnership with TxDOT and the FHWA several years ago. Completed environmental clearances were expected in summer 2016.
- East Loop Corridor project which consists of building a non-tolled roadway from U.S. 77/83 north of the Veterans International Bridge at Los Tomates to SH 4 south of the Port of Brownsville. The project would be conducted in two phases for a total of 11.64 miles of roadway
- Yearly LRGVNWR farmland phase-out and revegetation program and participation in the Friends of the Wildlife Corridor campaign. Since 1997 LRGVNWR and Friends of the Wildlife Corridor have implemented these programs and approximately 300 acres per year are revegetated with native vegetation creating habitat corridors.
- Annova LNG Common Infrastructure, LLC plans to construct, own, and operate a liquefied natural gas (LNG) production, storage, and export facility on the southern bank of the Brownsville Ship Channel at mile marker 8.2 in Cameron County. The site is owned by the Port of Brownsville and leased by Annova. The project would affect approximately 580 acres of land, of which 400 acres would be permanently converted for operation of the project.
- Texas LNG Brownsville LLC is planning to construct and operate a LNG liquefaction and export terminal on the Brownsville Ship Channel located in Cameron County. The planned project would occupy an approximately 625-acre property secured via lease from the Brownsville Navigation District by Texas LNG. Of the approximately 625 acres, approximately 185 acres would support permanent operational facilities and the remaining acreage would be undisturbed or temporarily disturbed.
- Rio Grande LNG, LLC and Rio Bravo Pipeline Company, LLC have proposed to construct and operate interrelated LNG terminal and natural gas infrastructure projects. This project would involve and LNG export terminal and marine facilities to accommodate LNG vessels along the Brownsville Ship Channel in Cameron County, Texas. Construction and operation of the planned terminal would disturb about 750 acres of land within a 1,000-acre parcel to accommodate the liquefaction facilities, marine berth, and turning basin.
- Space Exploration Technologies Corporation (SpaceX) is building a non-government owned launch site for commercial orbital launches. SpaceX is located at the terminus of SH 4 in Cameron County, Texas. The total site acreage is approximately 86 acres. The FAA concluded in a 2013 Draft EIS that "no significant impact on the environment" would occur upon construction and operation of the SpaceX facility.

A summary of the anticipated cumulative impacts relative to the Proposed Action is presented below. The discussion is presented for each of the resources described previously.

4.4 ANALYSIS OF CUMULATIVE IMPACTS

Impacts on each resource were analyzed according to how other actions and projects within the ROI might be affected by the No Action Alternative and Proposed Action. Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis the intensity of impacts would be classified as negligible, minor,

moderate, or major. These intensity thresholds were previously defined in Section 3.1. A summary of the anticipated cumulative impacts on each resource is presented below.

4.4.1 Land Use

A major impact would occur if any action is inconsistent with adopted land use plans or if an action would substantially alter those resources required for, supporting or benefiting the current use. About half of the project area is currently undeveloped scrub and brush rangeland located in rural areas. Under the No Action Alternative, land use would not change. However, cross-border violator activities would continue to impact land use in the project area. Although the Proposed Action would convert approximately 6.25 acres of undeveloped land to a developed use, the Proposed Action and other CBP actions would not initiate an increase of development in the immediate vicinity of the projects. Therefore, the Proposed Action, when combined with past and proposed actions in the region, would not be expected to result in a major cumulative adverse impact.

4.4.2 Soils

A major impact on soils would occur if the action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction and would create a risk to life or property, or if there would be a substantial reduction in agricultural production or loss of prime farmland soils. Modification of soils would not occur under the No Action Alternative; however, soils would continue to be impacted due to cross-border violator activity in the area of tower coverage. The Proposed Action and other CBP actions would not substantially reduce prime farmland soils or agricultural production regionally, as much of the land developed by CBP has not been previously used for agricultural production. Pre- and post-construction SWPPP measures would be implemented to control soil erosion. Indirect beneficial impacts due to the deterrence of cross-border violator activity within the area of tower coverage resulting in a reduction in soil disturbances are anticipated. The permanent impact on 9.2 acres of soils (of which 2.75 acres are considered prime farmland soils) from the Proposed Action, when combined with past and proposed actions in the region, would not be considered a major cumulative adverse impact.

4.4.3 Vegetative Habitat

A major impact on vegetation would occur if a substantial reduction in ecological processes, communities, or populations would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. Vegetative habitat would not be disturbed or removed under the No Action Alternative since the proposed RVSS towers and associated road construction and improvements would not occur. However, long-term direct and indirect impacts on vegetation communities would continue as a result of cross-border violator activities that create unauthorized roads and trails, damage vegetation and promote the dispersal and establishment of nonnative invasive species. The South Texas Brush Country and Gulf Coast Prairies and Marshes ecoregions encompasses approximately 28,000 and 14,840 square miles, respectively, in south Texas. Therefore, due to the permanent impact of only 3.7 acres (road and tower site) on native vegetation, in conjunction with other past, ongoing and proposed regional projects, the Proposed Action would not create a major cumulative impact on vegetative habitat in the region.

4.4.4 Wildlife Resources

A major impact on wildlife and aquatic resources would occur if a substantial reduction in ecological processes, communities, or populations would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. Under the No Action Alternative, no direct impacts on wildlife or wildlife habitats would occur. However, off-road cross-border violator activity and required interdiction actions would continue to degrade wildlife habitat through a loss of cover, forage, nesting or other opportunities and potentially a loss of suitable habitat over large areas. The wildlife habitat present in the project area is both locally and regionally common. In fact, the USFWS has a program that revegetates approximately 300 acres of existing farmland per year with native vegetation. Therefore, due to the permanent impact of only 3.7 acres of native habitat, in conjunction with other past, ongoing, and proposed regional projects, the amount of habitat potentially removed would be minor on a regional scale. Thus, the Proposed Action would not create a major cumulative impact on wildlife populations in the region.

4.4.5 Threatened and Endangered Species

A major impact on protected species would occur if any action resulted in a jeopardy opinion for any endangered, threatened, or rare species. Under the No Action Alternative, there would be no direct impacts on threatened or endangered species or their habitats as no construction activities would occur. However, the direct and long-term impacts of illegal border activities throughout the project area and surrounding areas would continue due to the creation of trails, damage to vegetation, and the promotion of the dispersal and establishment of invasive species which can result in catastrophic wildfires.

Although potential habitat for the jaguarundi, ocelot, NAF, red knot, and piping plover exists at and near the proposed RVSS tower sites, the construction, operation, and maintenance activities associated with the towers and road improvements, construction, and maintenance would either not likely adversely affect or not effect these species. Likewise, BMPs, which limit potential impacts on these species, would be in place during the construction of the Proposed Actions and would continue to be in place once the RVSS towers are operational. Thus, when combined with other existing and proposed actions in the region, the Proposed Action would not result in major cumulative impacts on protected species or designated Critical Habitats. Any indirect, cumulative impacts on protected species would be negligible to minor.

4.4.6 Groundwater, Surface Water, Waters of the U.S., and Floodplains

Under the No Action Alternative, no impacts on water resources would occur because the construction of the proposed RVSS towers and associated access drives and maintenance and repair of access roads would not occur. No groundwater withdrawals are expected as a result of the Proposed Action; therefore, there would be no cumulative impacts. Drainage patterns of surface waters would not be impacted by the Proposed Action and minimal amounts of surface waters for construction purposes would be used within the USBP RGV Sector. Water quality would remain unchanged under the Proposed Action. A potentially jurisdictional wetland would be impacted; however, through the permitting process a no net loss of wetlands would be achieved. Therefore, no cumulative impacts would occur on wetlands. As mentioned previously, specific erosion and sedimentation controls and other BMPs would be in place during construction as standard operating procedures. There is potential to impact the 100-year

floodplain as a result of the Proposed Action; however, CBP is coordinating with the USIBWC regarding potential impacts on the floodplain from the proposed construction of towers within the floodplain. The reforestation of current agricultural land would have a minimal impact on flows within the floodplain. Therefore, the Proposed Action, in conjunction with other past, ongoing, and proposed regional projects, would not create a major cumulative impact on water resources in the region.

4.4.7 Air Quality

No direct impacts on air quality would occur due to construction activities under the No Action Alternative; however, fugitive dust emissions created by illegal cross-border violators and resulting law enforcement actions, as well as vehicle traffic on authorized roads, would continue. The emissions generated during the construction of the RVSS tower sites, and all associated road construction, repair, and improvement would not exceed Federal *de minimis* thresholds and would be short-term and minor. Generator emissions would be sporadic and would not exceed Federal *de minimis* thresholds. There would be a negligible long-term increase in vehicular traffic in the region's airshed as a result of the additional 64 maintenance trips required per year. Therefore, the Proposed Action, when combined with other past, ongoing, and proposed actions in the region, would not result in major adverse cumulative impacts.

4.4.8 Noise

A major impact would occur if ambient noise levels permanently increased to over 65 dBA in general or greater than 57 dBA within or near the LRGVNWR or Boca Chica State Park. Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed RVSS tower sites and associated roads would not experience construction or operational noise associated with the towers; however, noise emissions associated with cross-border violators and consequent law enforcement actions would be long-term and minor and would continue under the No Action Alternative. The vast majority of the noise generated by the Proposed Action would occur during RVSS tower construction, road construction, road improvement, and road maintenance. These activities would be temporary and would not contribute to cumulative impacts on ambient noise levels. Operational noise would also be sporadic and would not increase ambient noise conditions above 65 dBA or 57 dBA within refuge lands. Thus, the noise generated by the Proposed Action, when considered with the other existing and proposed actions in the region, would not result in a major cumulative adverse impact.

4.4.9 Cultural Resources

Although no impacts on cultural resources would occur from construction activities under the No Action Alternative, potential adverse impacts on cultural resources would continue to occur due to cross-border violators within the area of tower coverage. The Proposed Action would not directly affect cultural resources or historic properties; however, the Proposed Action could have an indirect adverse impact on two NRHP-listed Historic Districts. These Historic Districts are the Kings Ranch and Palmitto Ranch Battlefield. The Kings Ranch District has historically been compromised with development such as oil and gas refineries, tanks, and cell towers similar to the Proposed Action. Additionally, the TX SHPO has concurred that no adverse impacts to the Palmitto Ranch Battlefield District would occur through the construction and operation of the SpaceX facilities and program, which is located adjacent to the district. Therefore, when the Proposed Action is combined with other existing and proposed actions in the region, the

Proposed Action would not result in major cumulative impacts on cultural resources or historic properties. Additionally, beneficial impacts in the form of increased knowledge of the past, including site density and distribution, would be realized as a result of surveys conducted as part of the Proposed Action, and other past, ongoing, and proposed actions in the region.

4.4.10 Utilities and Infrastructure

Actions would be considered to cause major impacts if they require greater utilities or infrastructure use than can be provided. The proposed RVSS towers would not be constructed under the No Action Alternative, so the availability of utilities would not be affected. All of the proposed RVSS towers would connect to existing commercial grid power infrastructure. The use of commercial grid power would not require greater utilities or infrastructure than can be provided since the RVSS tower sites are located near existing commercial grid power infrastructure. Therefore, when combined with past, ongoing, or proposed actions in the region, no major cumulative adverse impact on utilities or infrastructure would occur as a result of the Proposed Action.

4.4.11 Roadways and Traffic

Impacts on traffic or roadways would be considered to cause major impacts if the increase of average daily traffic exceeded the ability of the surface streets to offer a suitable level of service for the area. Under the No Action Alternative, impacts on roadways and traffic would remain status quo. In general, the roads in the vicinity of the RVSS towers sites are very lightly traveled and construction activities for the Proposed Action would be limited in duration, and maintenance trips would be sporadic. Therefore, when combined with past, ongoing, or proposed actions in the region, no major cumulative adverse impact on roadways and traffic would occur as a result of the Proposed Action.

4.4.12 Aesthetics and Visual Resources

Actions that cause the permanent loss of the characteristics that make an area visually unique or sensitive would be considered to cause a major impact. Aesthetics would not be directly affected by the No Action Alternative because no towers would be constructed, however, discarded debris and trash resulting from cross-border violator activity would be expected to continue and would increasingly detract from the visual quality of the project area. No major impacts on visual resources would occur from construction of the proposed RVSS tower sites and road construction, repair, or improvements. However, the proposed towers would be readily visible from 3 to 5 miles depending on the location and elevation of an observer. The Proposed Action, in conjunction with other past, ongoing, and proposed actions in the region, would result in moderate adverse cumulative impacts on the region's visual resources.

4.4.13 Hazardous Materials

Major impacts would occur if an action creates a public hazard, if the project area is considered a hazardous waste site that poses health risks, or if the action would impair the implementation of an adopted emergency response or evacuation plan. Under the No Action Alternative, no impacts associated with the use of hazardous materials would be expected. Only minor increases in the use of hazardous substances would occur as a result of the Proposed Action. BMPs would be implemented to minimize the risk from hazardous materials during construction at the RVSS tower sites. One of the proposed RVSS tower sites has the potential to encounter petroleum

fluids during construction. If hazardous materials are encountered at the one tower sites during construction, proper cleanup and disposal of any contaminated soil would minimize the impact on the environment and prevent contamination of soil or surface waters off-site. Through the use of BMPs, no health or safety risks would be created by the Proposed Action. The impacts of the Proposed Action, when combined with other past, ongoing, and proposed actions in the region, would not be considered a major cumulative impact.

4.4.14 Radio Frequency (RF) Environment

Under the No Action Alternative, daily radio operations by CBP and other law enforcement would continue; however the RVSS tower sites would not be installed or operated. There would be no impacts on the existing RF environment or impacts on the human or natural environment. The communications and sensor equipment proposed as part of the tower project would emit EM and RF; however, the equipment proposed by CBP was certified to be safe for humans and wildlife at normal exposure levels. CBP would seek NTIA certification for communications equipment. No other known actions would affect the EM and RF environment within the project area; thus, the Proposed Action would have a negligible cumulative impact.

4.4.15 Socioeconomics and Environmental Justice

Although no impacts on socioeconomics or environmental justice would occur from construction activities under the No Action Alternative, potential adverse impacts on socioeconomics or environmental justice would continue to occur due to cross-border violators within the area of tower coverage. No adverse direct impacts would occur on socioeconomics or environmental justice issues as a result of the Proposed Action; therefore, no adverse cumulative impacts would occur. However, construction of the proposed RVSS towers would have temporary cumulative beneficial impacts on the region's economy due to temporary employment and sales taxes generated through the purchase of construction-related items such as fuel and food. When combined with the other currently proposed or ongoing projects within the region, the Proposed Action is considered to have minor beneficial cumulative impacts.

5.0 BEST MANAGEMENT PRACTICES

This chapter describes those measures that would be implemented to reduce or eliminate potential adverse impacts on the human and natural environments. Many of these measures have been incorporated as standard operating procedures by CBP on past projects. BMPs would be presented for each resource category that would be potentially affected. It should be emphasized that these are general BMPs and the development of specific BMPs would be required for certain activities implemented under the action alternatives. The proposed BMPs would be coordinated through the appropriate agencies and land managers/administrators, as required.

It is Federal policy to reduce adverse impacts through the sequence of avoidance, minimization, and, finally, compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc., and is typically coordinated with the USFWS and other appropriate Federal and state resource agencies.

5.1 GENERAL PROJECT PLANNING CONSIDERATIONS

1. If security lights are necessary, only low-sodium bulbs that are both shielded and motion-activated will be used.

2. If required, night-vision-friendly strobe lights necessary for CBP operational needs will use the minimum wattage and number of flashes per minute necessary to ensure operational safety.

3. Avoid contamination of ground and surface waters by storing concrete wash water, and any water that has been contaminated with construction materials, oils, equipment residue, etc., in closed containers on-site until removed for disposal. This wash water is toxic to wildlife. Storage tanks must have proper air space (to avoid rainfall-induced overtopping), be on-ground containers, and be located in upland areas instead of washes.

4. Avoid lighting impacts during the night by conducting construction and maintenance activities during daylight hours only. If night lighting is unavoidable, 1) use special bulbs designed to ensure no increase in ambient light conditions, 2) minimize the number of lights used, 3) place lights on poles pointed down toward the ground, with shields on lights to prevent light from going up into sky, or out laterally into landscape, and 4) selectively place lights so they are directed away from all native vegetative communities.

5. CBP will notify USFWS land managers 2 weeks before any project construction and maintenance activities begin and within one week after project construction and maintenance activities are completed.

6. CBP will avoid the spread of non-native plants by not using natural materials (e.g., straw) for on-site erosion control. If natural materials must be used, the natural material would be certified weed and weed-seed free. Herbicides not toxic to listed species that may be in the area can be used for non-native vegetation control. Application of herbicides will follow

Federal guidelines and can be used in a accordance with label directions. A USFWS Pesticide Use Permit will be obtained prior to applying herbicides on USFWS lands.

7. CBP will ensure that all construction will follow DHS *Directive 025-01* for Sustainable Practices for Environmental, Energy, and Transportation Management.

8. CBP will place drip pans under parked equipment and establish containment zones when refueling vehicles or equipment.

5.2 SOILS

1. Clearly demarcate the perimeter of all new areas to be disturbed using flagging or temporary construction fencing. Do not allow any disturbance outside that perimeter.

2. The area of disturbance will be minimized by limiting deliveries of materials and equipment to only those needed for effective project implementation.

3. Within the designated disturbance area, grading or topsoil removal will be limited to areas where this activity is needed to provide the ground conditions necessary for construction or maintenance activities.

4. Only those roads necessary for construction of tower sites will be constructed or repaired.

5. Road repairs will avoid making windrows with the soils once grading activities are completed, and any excess soils will be used on-site to raise and shape the tower site or road surface as applicable.

6. Roads will be properly designed and located such that the widening of existing or created roadbed beyond the design parameters due to grading and use will be avoided or minimized.

7. Properly design and locate roads such that the potential for roadbed erosion into Federally listed species habitat will be avoided or minimized.

8. Rehabilitation will include revegetating or the distribution of organic and geological materials (i.e., boulders and rocks) over the disturbed area to reduce erosion while allowing the area to naturally vegetate.

9. Vehicular traffic associated with the construction activities and operational support activities will remain on established roads to the maximum extent practicable.

5.3 BIOLOGICAL RESOURCES

1. Materials used for on-site erosion control will be free of non-native plant seeds and other plant parts to limit potential for infestation.

2. Identify by its source location any fill material, sandbags, hay bales, and mulch brought in from outside the project area. These materials will be free of non-native plant seeds and other plant parts to limit potential for infestation.

3. Native seeds or plants, which are compatible with the enhancement of protected species, will be used to revegetate temporarily disturbed areas.

4. Obtain materials such as gravel, topsoil, or fill from existing developed or previously used sources that are compatible with the project area and are from legally permitted sites. Do not use materials from undisturbed areas adjacent to the project area.

5. The number of vehicles traveling to and from the project site and the number of trips per day will be minimized to reduce the likelihood of disturbing animals in the area or injuring animals on the road.

6. Construction vehicle speed limits will not exceed 35 miles per hour (mph) on major unpaved roads (i.e., graded with ditches on both sides) and 25 mph on all other unpaved roads. During periods of decreased visibility (e.g., night, poor weather, curves), do not exceed speeds of 25 mph.

7. To prevent entrapment of wildlife species, ensure that excavated, steep-walled holes or trenches are either completely covered by plywood or metal caps at the close of each workday or provided with one or more escape ramps (at no greater than 1,000-foot intervals and sloped less than 45 degrees) constructed of earthen fill or wooden planks.

8. Each morning before the start of construction or maintenance activities and before such holes or trenches are filled, ensure that they are thoroughly inspected for trapped animals. Ensure that any animals discovered are allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, and before construction activities resume, or are removed from the trench or hole by a qualified person and allowed to escape unimpeded.

9. The Migratory Bird Treaty Act (16 U.S.C. 703-712, [1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989]) requires that Federal agencies coordinate with the USFWS if a construction activity would result in the take of a migratory bird. If construction or clearing activities are scheduled during nesting season (March 1 through September 1) within potential nesting habitats, surveys will be performed to identify active nests. If construction activities will result in the take of a migratory bird, then coordination with the USFWS and TPWD will be required and applicable permits would be obtained prior to construction or clearing activities. Other mitigation measure that would be considered is to install visual markers on any guy wires used, schedule all construction activities outside nesting season, negating the requirement for nesting bird surveys. The proposed RVSS towers would also comply with USFWS guidelines for reducing fatal bird strikes on communications towers (USFWS 2000), to the greatest extent practicable.

10. Anti-perching devices such as bird-b-gone, daddi long legs, or bird spikes will be incorporated into the site design and installed on the tower.

11. CBP will not, for any length of time, permit any pets inside the project area or adjacent native habitats. This BMP does not pertain to law enforcement animals.

12. The backup generator noise at the tower site will not exceed existing day-night average ambient noise levels, to the greatest extent practicable.

5.4 PROTECTED SPECIES

1. All contractors, work crews (including military personnel), and CBP personnel in the field performing construction and maintenance activities will receive environmental awareness training. At a minimum, environmental awareness training will provide the following information: maps indicating occurrence of potentially affected and Federally listed species; the general ecology, habitat requirements, and behavior of potentially affected Federally listed species; the BMPs listed here and their intent; reporting requirements; and the penalties for violations of the ESA. It will be the responsibility of the project manager(s) to ensure that their personnel are familiar with general BMPs, the specific BMPs presented here, and other limitations and constraints. Photographs of potentially affected Federally listed species will be incorporated into the environmental awareness training and posted in the contractor and resident engineer's offices where they will remain through the duration of the project, and copies will be made available that can be carried while conducting proposed activities. In addition, training in identification of non-native invasive plants and animals will be provided for contracted personnel engaged in follow-up monitoring of construction sites.

5.5 CULTURAL RESOURCES

1. Vehicular traffic associated with the construction activities and operational support activities will remain on established roads to the maximum extent practicable. NRHP-eligible sites (recommended and determined) and those of undetermined eligibility, as detailed in Section 3.12, should be avoided and will be demarked with green flagging tape.

2. In the event that unanticipated archaeological resources are discovered during construction or any other project-related activities, or should known archaeological resources be inadvertently affected in a manner that was not anticipated, the project proponent or contractor shall immediately halt all activities in the immediate area of the discovery and take steps to stabilize and protect the discovered resource until it can be evaluated by a qualified archaeologist.

5.6 AIR QUALITY

1. BMPs will include the placement of flagging and construction fencing to restrict traffic within the construction limits in order to reduce soil disturbance. Soil watering will be utilized to minimize airborne particulate matter created during construction activities. Bare ground may be covered with hay or straw to lessen wind erosion during the time between tower construction and the revegetation of temporary impact areas with a mixture of native plant seeds or nursery plantings (or both). All construction equipment and vehicles will be kept in good operating condition to minimize exhaust emissions.

5.7 WATER RESOURCES

1. Wastewater is to be stored in closed containers on-site until removed for disposal. Wastewater is water used for project purposes that is contaminated with construction materials or from cleaning equipment and thus carries oils or other toxic materials or other contaminants as defined by Federal or state regulations.

2. Avoid contamination of ground and surface waters by collecting concrete wash water in sealable containers and disposing of it off-site.

3. Avoid contaminating natural aquatic and wetland systems with runoff by limiting all equipment maintenance, staging, and laydown and dispensing hazardous liquids, such as fuel and oil, to designated upland areas.

4. Cease work during heavy rains and do not resume work until conditions are suitable for the movement of equipment and materials.

5. Erosion control measures and appropriate BMPs, as required and promulgated through a site-specific SWPPP and engineering designs, will be implemented before, during, and after soil-disturbing activities.

6. Areas with highly erodible soils will be given special consideration when preparing the SWPPP to ensure incorporation of various erosion control techniques, such as straw bales, silt fencing, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion.

7. All construction and maintenance contractors and personnel will review the CBP-approved spill protection plan and implement it during construction and maintenance activities.

8. Wastewater from pressure washing must be collected. A ground pit or sump can be used to collect the wastewater. Wastewater from pressure washing must not be discharged into any surface water.

9. If soaps or detergents are used, the wastewater and solids must be pumped or cleaned out and disposed of in an approved facility. If no soaps or detergents are used, the wastewater must first be filtered or screened to remove solids before being allowed to flow off-site. Detergents and cleaning solutions must not be sprayed over or discharged into surface waters.

12. Road maintenance will be designed and implemented so that the hydrology of streams, ponds, and other water course are not altered.

13. Properly design and locate roads such that the potential for entrapment of surface flows within the roadbed due to grading will be avoided or minimized.

5.8 NOISE

1. All generators will have an attached muffler or use other noise-abatement methods in accordance with industry standards.

2. Avoid noise impacts during the night by conducting construction and maintenance activities during daylight hours only.

3. All OSHA requirements will be followed. To lessen noise impacts on the local wildlife communities, construction will only occur during daylight hours. All motor vehicles will be properly maintained to reduce the potential for vehicle-related noise.

5.9 SOLID AND HAZARDOUS WASTES

1. BMPs will be implemented as standard operating procedures during all construction activities, and will include proper handling, storage, and/or disposal of hazardous and/or regulated materials. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be completed in accordance with accepted industry and regulatory guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips. Although it is unlikely that a major spill would occur, any spill of reportable quantities will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock) will be used to absorb and contain the spill.

2. CBP will contain non-hazardous waste materials and other discarded materials, such as construction waste, until removed from the construction and maintenance sites. This will assist in keeping the project area and surroundings free of litter and reduce the amount of disturbed area needed for waste storage.

3. CBP will minimize site disturbance and avoid attracting predators by promptly removing waste materials, wrappers, and debris from the site. Any waste that must remain more than 12 hours should be properly stored until disposal.

4. All waste oil and solvents will be recycled. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed of in accordance with all applicable Federal, state, and local regulations, including proper waste manifesting procedures.

5. Solid waste receptacles will be maintained at the construction staging area. Non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Solid waste will be collected and disposed of by a local waste disposal contractor.

6. Disposal of used batteries or other small quantities of hazardous waste will be handled, managed, maintained, stored, and disposed of in accordance with applicable Federal and state rules and regulations for the management, storage, and disposal of hazardous materials, hazardous waste and universal waste. Additionally, to the extent practicable, all batteries will be recycled locally.

7. All rainwater collected in secondary containment will be pumped out, and secondary containment will have netting to minimize exposure to wildlife.

8. A properly licensed and certified hazardous waste disposal contractor will be used for hazardous waste disposal, and manifests will be traced to final destinations to ensure proper disposal is accomplished.

5.10 ROADWAYS AND TRAFFIC

1. Construction vehicles will travel and equipment will be transported on established roads with proper flagging and safety precautions.

6.0 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that Federal agencies identify "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented" (42 U.S.C. § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an action result in the loss of future options for a resource. Usually, this is when the action affects the use of a nonrenewable resource or it affects a renewable resource that takes a long time to renew. An irretrievable commitment of resources is typically associated with the loss of productivity or use of a natural resource (e.g., loss of production or harvest).

Most impacts for this project are short-term and temporary or, if long-term, are negligible. An irreversible commitment of resources includes the commitments of labor, energy/fossil fuels, and construction materials (e.g., sand, gravel, steel, aluminum). However, not all this material would be irreversibly committed because some of it may be recovered and recycled later. An irreversible commitment of resources would also include the commitment of land and natural resources, such as soils and vegetation, located within the project area. However, not all of this would be irreversible because much of the land could be converted back to prior use at a future date. The loss of agricultural land (land used for grazing and farming) would result in irretrievable impacts on agricultural production during construction and operation of the tower sites though. The accidental or unintentional removal or disturbance of previously unidentified cultural resources could result in the irretrievable and irreversible loss of data. However, BMPs decrease the likelihood of this occurring. No irreversible or irretrievable impacts on wetlands or Federally protected species or their habitat is anticipated as mitigation for any lands lost would be coordinated between the USACE, USFWS, and CBP.

7.0 REFERENCES

Audubon. 2016. Guide to North American Birds, Red Know (*Calidris canutus*). Internet URL: http://www.audubon.org/field-guide/bird/red-knot.

Bauer, K. Jack. 2011. "Mexican War." *Handbook of Texas Online*. Internet URL: http://www.tshaonline.org/handbook/online/articles/qdm02. Last Accessed: August 27, 2011. Published by the Texas State Historical Association.

Beason, Robert. 1999. *The Bird Brain: Magnetic Cues, Visual Cues, and Radio Frequency (RF) Effects*. Robert C. Beason, Ph.D., Biology Department, State University of New York, Geneseo, NY 14454. Ph. 716/ 245-5310. Internet URL: http://www.fws.gov/ migratorybirds/issues/towers/beason.html.

Black, Stephen L. 1989. South Texas Plains. In *From the Gulf to the Rio Grande: Human Adaptation in Central, South, and Lower Pecos Texas* by Thomas R. Hester, Stephen L. Black, D. Gentry Steele, Ben W. Olive, Anne A. Fox, Karl J. Reinhard, and Leland C. Bement. Arkansas Archeological Survey Research Series No. 33. Prepared by the Center for Archaeological Research at the University of Texas, San Antonio, Texas A&M University, and the Arkansas Archeological Survey, Fayetteville.

Bousman, C. Britt, Barry W. Baker, and Anne C. Kerr. 2004. Paleoindian Archeology in Texas. In *The Prehistory of Texas* edited by Timothy K. Perttula. Texas A&M University Press, College Station, Texas.

Bureau of Land Management (BLM). 2009. *U.S. Department of the Interior—BLM Manual H-8410-1-Visual Resources Inventory*. Internet URL: http://www.blm.gov/nstc/ VRM/8410.html.

California Department of Transportation (Caltrans). 1998. Technical Noise Supplement by the California Department of Transportation, Environmental Program Environmental Engineering-Noise, Air Quality, and Hazardous Waste Management Office. October 1998, Page 24-28.

California Energy Commission 2007. 2007 Integrated Energy Policy Report, CEC-100-2007-008-CMF.

Chessman, Bruce S. 2010. "KING, RICHARD," *Handbook of Texas Online.* Internet URL: http://www.tshaonline.org/handbook/online/articles/KK/fki19.html. Last Accessed: July 1, 2010. Published by the Texas State Historical Association.

City-Data.com. 2015. *Boca Chica State Park is an undeveloped park in Texa*s. Internet URL: http://www.city-data.com/articles/Boca-Chica-State-Park-is-an-undeveloped.html.

Coalson, George O. 2010. "KLEBERG COUNTY," *Handbook of Texas Online*. Internet URL: http://www.tshaonline.org/handbook/online/articles/KK/hck10.html. Last Accessed: July 1, 2010. Published by the Texas State Historical Association.

Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects: Under the National Environmental Policy Act.* January 1997. Internet URL: http://ceq.hss.doe.gov/nepa/ccenepa/exec.pdf.

CEQ. 2010. Memorandum for Heads of Federal Departments and Agencies. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. Nancy H. Sutley, February 18, 2010.

CEQ. 2012. Federal Greenhouse Gas Accounting and Reporting Guidance. June 4, 2012.
Department of Homeland Security (DHS). 2011. *Report on the Assessment of the Secure Border Initiative-Network (SBInet) Program*. Office of the Secretary, Washington, D.C.

CEQ. 2016. Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews. August 1, 2016. *Memorandum For Heads of Federal Departments and Agencies.*

Department of Homeland Security (DHS). 2011. *Report on the Assessment of the Secure Border Initiative-Network (SBInet) Program*. Office of the Secretary, Washington, D.C.

Evans, W. R., and A. M. Manville, II (eds.). 2000. "Avian mortality at communication towers." *Transcripts of Proceedings of the Workshop on Avian Mortality at Communication Towers*. August 11, 1999, Cornell University, Ithaca, NY. Internet URL: http://migratorybirds.fws.gov/issues/towers/agenda.html.

Federal Emergency Management Agency (FEMA). 2016. FEMA Flood Map Service Center. Internet URL: https://msc.fema.gov/portal.

Federal Highway Administration (FHWA). 2007. Special Report: Highway construction Noise: Measurement, Prediction, and Mitigation, Appendix A Construction Equipment Noise Levels and Ranges. Internet URL: www.fhwa.dot.gov/environment/noise/highway/hcn06.htm.

Fox, Anne A. 1989. Historic Anglo-European Exploration and Colonization. In *From the Gulf to the Rio Grande: Human Adaptation in Central, South, and Lower Pecos Texas* by Thomas R. Hester, Stephen L. Black, D. Gentry Steele, Ben W. Olive, Anne A. Fox, Karl J. Reinhard, and Leland C. Bement. Arkansas Archeological Survey Research Series No. 33. Prepared by the Center for Archaeological Research at the University of Texas, San Antonio, Texas A&M University, and the Arkansas Archeological Survey, Fayetteville.

Haig, S.M. and L.W. Oring. 1985. The distribution and status of the piping plover throughout the annual cycle. Journal of Field Ornithology 56:266–273.

Hester, Thomas R. 1980. *Digging into South Texas Prehistory: A Guide for Amateur Archaeologists*. Corona Publishing Company, San Antonio, Texas.

Hester, Thomas R. 1989. Historic Native American Populations. In *From the Gulf to the Rio Grande: Human Adaptation in Central, South, and Lower Pecos Texas* by Thomas R. Hester, Stephen L. Black, D. Gentry Steele, Ben W. Olive, Anne A. Fox, Karl J. Reinhard, and Leland C. Bement. Arkansas Archeological Survey Research Series No. 33. Prepared by the Center for Archaeological Research at the University of Texas, San Antonio, Texas A&M University, and the Arkansas Archeological Survey, Fayetteville.

Hester, Thomas R. 1999. Artifacts, Archeology, and Cabeza de Vaca in Southern Texas and Northeastern New Mexico. *Bulletin of the Texas Archeological Society* 70:17-28.

Hester, Thomas R. 2004. The Prehistory of South Texas. In *The Prehistory of Texas* edited by Timothy K. Perttula. Texas A&M University Press, College Station, Texas.

Kelly, C. 2007. "Health Physics Society, Radiofrequency (RF) Radiation." Internet URL: http://hps.org/hpspublications/articles/rfradiation.html.

Long, Christopher. 2010. "NUECES COUNTY," *Handbook of Texas Online*. Internet URL: http://www.tshaonline.org/handbook/online/articles/NN/hcn5.html. Last Accessed: July 1, 2010. Published by the Texas State Historical Association.

Midwest Research Institute. 1996. *Improvement of Specific Emission Factors* (BACM Project No. 1). Prepared for South Coast Air Quality Management District. SCAQMD Contract 95040, Diamond Bar, CA. April 1996.

National Park Service (NPS). 1996. Executive Order 13007. Internet URL: http://www.nps.gov/history/local-law/eo13007.htm. Last Accessed: January 19, 2016.

NPS. 2002. National Register Bulletin: How to Apply the National Register Criteria for Evaluation. National Register Bulletin No. 15, prepared by the staff of the National Register of Historic Places, finalized by Patrick W. Andrus, and edited by Rebecca H. Shrimpton. Internet URL: http://www.nps.gov/nr/publications/bulletins/nrb15/. Last Accessed: January 19, 2016.

NPS. 2006a. National Historic Preservation Act, As Amended in Federal Historic Preservation Laws published by the National Center for Cultural Resources, National Park Service, Department of the Interior. Internet URL: http://www.nps.gov/history/local-law/FHPL_HistPrsrvt.pdf. Last Accessed: January 19, 2016.

NPS. 2006b. Native American Graves Protection and Repatriation Act, As Amended in Federal Historic Preservation Laws published by the National Center for Cultural Resources, National Park Service, Department of the Interior. Internet URL: http://www.nps.gov/history/local-law/FHPL_NAGPRA.pdf. Last Accessed: January 19, 2016.

NPS. 2006c. Archaeological Resources Protection Act, As Amended in Federal Historic Preservation Laws published by the National Center for Cultural Resources, National Park Service, Department of the Interior. Internet URL: http://www.nps.gov/history/local-law/FHPL_ArchRsrcsProt.pdf. Last Accessed: January 19, 2016.

Natural Resources Conservation Service (NRCS). 2016. Web Soil Survey. Internet URL: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. Last Accessed: August 4, 2016.

NatureServe. 2009. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. U.S.A. Data current as of 08 October 2009.

Newcombe, Jr., W.W. 2002. *The Indians of Texas: From Prehistoric to Modern Times*. University of Texas Press. Thirteenth Edition. Austin, Texas.

Office of Engineering and Technology (OET). 1999. *Questions and Answers about Biological Effects Potential Hazards of Radiofrequency Electromagnetic Fields*. OET, Federal Communications Commission Bulletin Number 56, Fourth Edition, August 1999. Internet URL: http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf.

Parker, Patricia L. and Thomas F. King. 1998. National Register Bulletin: Guidelines for Evaluating and Documenting Traditional Cultural Properties. National Register Bulletin No. 38, National Park Service. Internet URL: http://www.nps.gov/nr/publications/bulletins/nrb38/. Last Accessed: January 19, 2016.

Ricklis, Robert A. 2004. Prehistoric Occupation of the Central and Lower Texas Coast: A Regional Overview in *The Prehistory of Texas* edited by Timothy K. Pertula. Texas A&M University Press, College Station, Texas.

Sánchez, J. P. 1992. From El Paso to Eagle Pass: Spanish Entradas along the Lower Rio Grande in the Sixteenth and Seventeenth Centuries. *Bulletin of the Texas Archeological Society* 63:53-66.

Stokes, Anne V., Brenda Swann, Monte Kim, Len E. Winters, and Norma Barrera 2009. *Naval Air Station Kingsville: Integrated Cultural Resources Management Plan, 2009 to 2014*. Integrated Cultural Resource Management Plan prepared by Southeastern Archaeological Research, Inc. Jonesville, Florida, Naval Facilities Engineering Command, Southeast, Naval Air Station, Jacksonville, Florida, and Naval Air Station Kingsville, Kingsville, Texas.

Texas Commission on Environmental Quality (TCEQ). 2016. Atlas of Texas Surface Waters. Internet URL: http://www.tceq.state.tx.us/publications/gi/gi-316/index.html.

Texas Historical Commission (THC). 1966. Kings Ranch. NRHP District Information on file with the THC, Austin, Texas.

THC 1983. Rancho Toluca. NRHP District Information on file with the THC, Austin, Texas.

Texas Parks and Wildlife Department (TPWD). 2015. Plant Guidance by Ecoregions, Ecoregion 6 – South Texas Brush Country. Internet URL: https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/wildscapes/ecoregions/ecoregion_6.phtml.

TPWD. 2016. Wildlife Division, Diversity and Habitat Assessment Programs. TPWD County Lists of Protected Species and Species of Greatest Conservation Need. [Hidalgo County, Cameron County, Brooks County, and Kenedy County January 7, 2016]. February 2, 2016.

Texas State Historical Association. 2016. Kenedy County. Internet URL: https://tshaonline.org/handbook/online/articles/hck04.

Texas Water Development Board (TWDB). 2011. Aquifers of Texas, Report 380.

TWDB. 2016. Rio Grande Regional Water Planning Group. 2016 Region M Water Plan, Chapter 3: Water Supplies. Internet URL: http://www.riograndewaterplan.org/downloads/2016RWP/RWP_V1_Chapter3.pdf.

U.S. Bureau of Labor Statistics (BLS). 2016a. Local Area Unemployment Statistics. Labor Force Data by County 2015 Annual Averages and Unemployment Rates for States. Internet URL: http://www.bls.gov/lau/.

BLS. 2016b. Employment Status of the Civilian Noninstitutional Population by Sex, Race, Hispanic or Latino Ethnicity, Marital Status, and Detailed Age, 2015 Annual Averages. Internet URL: http://www.bls.gov/lau/.

BLS. 2016c. Interactive database. Labor force data for Texas. December 2015. Internet URL: http://data.bls.gov/timeseries/LASST480000000000006?data_tool=XGtable.

U.S. Census Bureau. 2000. 2000 Decennial Census. Internet URL: http://factfinder2.census.gov/.

U.S. Census Bureau. 2015a. American Community Survey, 5-Year Estimates, 2010-2014. DP05: Demographic and Housing Estimates. Internet URL: http://factfinder2.census.gov/.

U.S. Census Bureau. 2015b. American Community Survey, 5-Year Estimates, 2010-2014. DP03: Selected Economic Characteristics. Internet URL: http://factfinder2.census.gov/.

U.S. Census Bureau. 2015c. Poverty Thresholds for 2015 by Size of Family and Number of Related Children Under 18 Years.

U.S. Census Bureau. 2016. Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015. Internet URL: http://factfinder2.census.gov/.

U.S. Customs and Border Protection (CBP). 2007. Environmental Impact Statement for Construction, Maintenance, and Operation of Tactical Infrastructure, Rio Grande Valley Sector, Texas.

CBP. 2012. *2012-2016 Border Patrol Strategic Plan*. CBP Office of Border Patrol. Washington, DC 20229. Internet URL: http://www.cbp.gov/linkhandler/cgov/border_security/border_patrol/bp_strat_plan/bp_strat_plan.ctt/bp_strat_plan.pdf.

CBP. 2014. *Draft Environmental Assessment for Integrated Fixed Towers on the Tohono O'Odham Nation in the Ajo and Casa Grande Stations' Area of Responsibility, U.S. Border Patrol Tucson Sector, Arizona, U.S. Customs and Border Protection, Department of Homeland Security*.

U.S. Department of Agriculture (USDA). 2012. National Agricultural Statistics Service, Census of Agriculture. Brooks, Cameron, Hidalgo, and Kenedy Counties, Texas. Internet URL: http://www.agcensus.usda.gov.

U.S. Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Report 550/9-74-004.

USEPA. 1978. Protective Noise Levels, Condensed Version of EPA Levels Document. November 1978, EPA 550/9-79-100.

USEPA. 2001. *Procedures Document for National Emission Inventory, Criteria Air Pollutants 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards Research Triangle Park NC 27711.

USEPA. 2009. Policy Guidance on the Use of MOVES2010 for State Implementation Plan Development, Transportation Conformity and Other Purposes. Office of Transportation and Air Quality. USEPA-420-B-09-046.

USEPA. 2016a. Welcome to the Green Book Nonattainment Areas for Criteria Pollutants. Internet URL: www.epa.gov/oar/oaqps/greenbk. Last Accessed: October 11, 2013.

USEPA. 2016b. Internet URL: http://www.epa.gov/air/criteria.html.

U.S. Fish and Wildlife Service (USFWS). 1982. Endangered and threatened wildlife and plants; endangered status for U.S. population of the ocelot. Federal Registar 47: 31 670-31 672.

USFWS. 1990. Northern aplomado falcon recovery plan. U.S. Fish and Wildlife Service. Albuquerque, New Mexico. 56.pp

USFWS. 2000. "Service Guidance on the Siting, Construction, Operation, and Decommissioning of Communications Towers." Memorandum to Regional Directors from Director Jamie Rappaport Clark. September 14, 2000.

USFWS. 2006. Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of Northern Aplomado Falcons in New Mexico and Arizona and Availability of Draft Environmental Assessment. Federal Register 70(26): 6819.

USFWS. 2008. Final Biological Opinion, Cape Wind Associates, LLC, Wind Energy Project, Nantucket Sound, Massachusetts, Formal Consultation # 08-F-0323.

USFWS. 2010a. Draft Ocelot (*Leopardus pardalis*) Recovery Plan, First Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico.

USFWS. 2010b. Endangered and Threatened Wildlife and Plants; 5-Year Status Reviews of 14 Southwestern Species. Federal Register 75(59):15454.

USFWS. 2013a. "Revised Voluntary Guidelines for Communication Tower Design, Siting, Operation, Retrofitting, and Decommissioning." Suggestions Based on Previous USFWS Recommendations to FCC Regarding WT Docket No. 03-187, FCC 06-164, Notice of Public Rulemaking, "Effects of Communication Towers on Migratory Birds" (2007), Docket No. 08-61, FCC's Antenna Structure Registration Program (2011), Service 2012 Wind Energy Guidelines, and Service 2013 Eagle Conservation Plan Guidance. Submitted by Albert M. Manville, September 27, 2013.

USFWS. 2013b. Gulf Coast jaguarundi (*Puma yagouaroundi cacomitli*) Recovery Plan, First Revision. USFWS, Southwest Region. Albuquerque, New Mexico.

USFWS. 2014. *Northern Aplomado Falcon 5-Year Review: Summary and Evaluation*. Internet URL: http://ecos.fws.gov/docs/five_year_review/doc4436.pdf.

USFWS. 2015. *National Wildlife Refuge System.* Internet URL: http://www.fws.gov/refuges/.

USFWS. 2016a. Information for Planning and Conservcation (IPaC). Proposed, Candidate, Threatened, and Endangered Species. Internet URL: https://ecos.fws.gov/ipac/.

USFWS. 2016b. National Wetland Inventory, Wetlands Code Interpreter. Internet URL: http://107.20.228.18/decoders/wetlands.aspx.

U.S. Housing and Urban Development (HUD). 1984. 24 CFR Part 51 - Environmental Criteria and Standards Sec. 51.103 Criteria and standards 44 FR 40861, July 12, 1979, as amended at 49 FR 12214, March 29, 1984.

Wooster, Ralph A. 2011. "Civil War," *Handbook of Texas Online*. Internet URL: http://www.tshaonline.org/handbook/online/articles/qdc02. Last Accessed: August 23, 2001. Published by the THC.

World Birding Center. 2015. Welcome to the World Birding Center. Internet URL: http://www.theworldbirdingcenter.com.

8.0 ACRONYMS/ABBREVIATIONS

ACS	U.S. Census American Community Survey
A.D.	Anno Domini
ANSI	American National Standards Institute
AoA	Analysis of Alternatives
AOR	Area of Responsibility
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
bgs	Below ground surface
BLM	Bureau of Land Management
BMP	Best management practice
B.P.	Before Present
BPA	Border Patrol Agent
BPFTI	Border Patrol Facilities and Tactical Infrastructure
BRP	Brownsville
C2	Command and Control
CBP	U.S. Customs and Border Protection
CEQ	Council on Environmental Quality
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
DHS	Department of Homeland Security
DNL	Day-night average sound level
EA	Environmental Assessment
EIS	Environmental Impact Statement
EM	Electromagnetic
E.O.	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FCR	fire-cracked rock
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLF	Falfurrias
FONSI	Finding of No Significant Impact
FM	Farm to Market
Ft	foot
FTB	Fort Brown

GHGs	Greenhouse Gas
GLO	General Land Office
HFC	hydrochlorofluorocarbons
HRL	Harlingen
HTC	Historic Texas Cemetery
HUD	U.S. Department of Housing and Urban Development
IEEE	Institute of Electrical and Electronics Engineers
I	Interstate
IoI	items of interest
KIN	Kingsville
LNG	liquefied natural gas
LRGVNWR	Lower Rio Grande Valley National Wildlife Refuge
MPE	Maximum Permissible Exposure
mph	miles per hour
NO_2	nitrous dioxide
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAF	Northern Aplomado Falcon
NCRP	National Council on Radiation Protection and Measurements
NE	not eligible
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NTIA	National Telecommunications and Information Administration
NVG	night vision goggles
NWR	National Wildlife Refuge
O_3	Ozone
OET	Office of Engineering and Technology
OSHA	Occupational Safety and Health Administration
OTHM	Official Texas Historical Marker
PCB	polychlorinated biphenyl
POE	Port of Entry
PM-2.5	particulate matter less than 2.5 microns
PM-10	particulate matter less than 10 microns
PMO	Program Management Office
RF	radio frequency
RGV	Rio Grande Valley
ROI	region of influence
ROW	right-of-way
RTHL	Recorded Texas Historic Landmark
RVSS	Remote Video Surveillance System
SH	State Highway
SHPO	Texas State Historic Preservation Officer

SO_2	sulphur dioxide
SpaceX	Space Exploration Technologies Corporation
SPCCP	Spill Prevention, Control and Countermeasure Plan
SST	Self-standing towers
SWPPP	Stormwater Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
TCP	Traditional Cultural Property
TI	Tactical infrastructure
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
U	Undetermined eligibility
UPS	uninterrupted power supply
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USIBWC	International Boundary and Water Commission, U.S. Section

9.0 LIST OF PREPARERS

The following people were primarily responsible for preparing this EA.

Name	Agency/ Organization	Discipline/ Expertise	Experience	Role in Preparing EA
Joe Zidron	CBP, BPFTI	Environmental Planning	10 years	Project Management
Audra Upchurch	CBP, BPFTI	Environmental Planning	15 years	EA review
Chris Ingram	GSRC	Biology/Ecology	38 years of EA/EIS studies	EA review
Josh McEnany	GSRC	Biology	16 years of environmental and NEPA	Project Manager – EA preparation and review
Logan McCardle	GSRC	Biology	2 years of natural resources	EA preparation and survey
Steve Oivanki	GSRC	Geology	40 years; hazardous materials	EA preparation
John Ginter	GSRC	Biology	24 years; Biology	EA preparation and survey
John Lindemuth	GSRC	Archaeology	25 years of professional archaeology/cultural resources	EA preparation and survey
Erin Edwards	GSRC	Architectural History	8 years of professional architectural history	EA preparation and survey
Alexis Thomas	GSRC	Architectural History	7 years of professional architectural history	EA preparation and survey
Ann Guissinger	GSRC	Economics	36 years of economics	EA preparation
Sharon Newman	GSRC	GIS/Graphics	23 years of GIS/graphics	GIS/graphics