DRAFT

ENVIRONMENTAL ASSESSMENT

FOR REMOTE VIDEO SURVEILLANCE SYSTEM TOWER UPGRADE RIO GRANDE CITY, MCALLEN, AND WESLACO STATIONS' AREAS OF RESPONSIBILITY

U.S. BORDER PATROL, RIO GRANDE VALLEY SECTOR, TEXAS

Department of Homeland Security
U.S. Customs and Border Protection
U.S. Border Patrol

SEPTEMBER 2016

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FOR
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RIO GRANDE CITY, McALLEN, AND WESLACO 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.

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FINDING OF NO SIGNIFICANT IMPACT
FOR
REMOTE VIDEO SURVEILLANCE SYSTEM TOWER UPGRADE
RIO GRANDE CITY, McALLEN, AND WESLACO STATIONS'
AREAS OF RESPONSIBILITY
U.S. BORDER PATROL, RIO GRANDE VALLEY SECTOR, TEXAS
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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), is preparing an Environmental Assessment (EA) addressing the proposed upgrade of its Remote Video Surveillance System (RVSS) program within the U.S. Border Patrol's (USBP) Rio Grande City (RGC), McAllen (MCS), and Weslaco (WSL) Stations' Areas of Responsibility (AORs). BPFTI has prepared an EA 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 RGC, MCS, and WSL Station's AORs. The RVSS upgrade proposed for the RGC, MCS, and WSL Stations' AORs includes:

- Construction and maintenance of 40 new RVSS towers and three relay towers
- Construction and maintenance of utilities and utility corridors
- Construction, improvement, and maintenance of access roads and approach drives

PROJECT LOCATION: The proposed new tactical infrastructure (TI) is located near the Rio Grande within Starr and Hidalgo Counties, Texas. The project would serve the USBP RGV Sector's RGC, MCS, and WSL Stations' AORs. There would be a total of 18 new RVSS towers and associated infrastructure in the RGC AOR, 12 new RVSS towers and associated infrastructure in the MCS AOR, and 10 new RVSS towers and associated infrastructure in the WSL AOR. Three relay towers, one per AOR, would also be constructed. 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 RGC, MCS, and WSL 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 RGC, MCS, and WSL 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 Environmental Assessment (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 Rio Grande City (RGC), McAllen (MCS), or Weslaco (WSL) 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 and need for this project.

Alternative 2 is the Proposed Action. The Proposed Action includes the construction, operation, and maintenance of 40 RVSS and three relay tower sites to provide long-term, permanent surveillance in the USBP's RGC, WSL, and MCS 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 and relay towers deployed within the USBP's RGC, WSL, and MCS 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 0.5 mile, and the maintenance and repair of access roads, totaling 25 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 7.75 acres would be permanently converted from undeveloped land to law enforcement facilities, and 23.25 acres would be temporarily impacted. The new access drives would permanently impact less than 1 acre and temporarily impact 2 acres during construction. Four acres would be permanently impacted while 100 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 8.25 acres for the construction of RVSS and relay 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 and one candidate species have the potential to occur within the project area: northern aplomado falcon (*Falco femoralis septentrionalis*), ocelot (*Leopardus pardalis*), and Gulf Coast jaguarundi (*Herpailusrus yagouaroundi cacomitli*). The Proposed Action may affect, but is not likely to adversely affect, any of the 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.

A total of 17 archaeological sites would be directly affected by implementation of the Proposed Action. Six of the 17 archaeological sites are not considered eligible for listing in the National Register of Historic Places (NRHP) and are not considered significant archaeological resources. The remaining 11 archaeological resources are considered to have an undetermined eligibility for the NRHP. CBP will attempt to avoid these 11 sites. If avoidance is not possible the effects on these 11 archaeological resources, prior to their assessment for the NRHP, would be considered adverse and significant. Mitigation measures would be developed in consultation with the Texas State Historic Preservation Officer, as well as other interested parties, to reduce the effects to less than significant levels. The mitigation measures would be outlined in a Historic Properties Treatment Plan (HPTP) and would be implemented prior to the initiation of construction. The implementation and completion of the HPTP would reduce the project effects to non-significant levels.

Temporary and minor increases in air emissions would occur during construction of the RVSS and relay 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 and relay 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. Proper fencing would be installed around 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 effect relative to environmental justice or protection of children issues would occur.

BEST MANAGEMENT PRACTICES: 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, 023-01 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

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 Rio Grande City (RGC), McAllen (MCS), and Weslaco (WSL) Stations' Areas of Responsibility (AORs), RGV Sector, Texas. More specifically, the proposed RVSS tower sites are located in Starr and Hidalgo 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 along approximately 120 miles of the United States/Mexico border in the USBP RGC, MCS, and WSL 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 (EA). Under the No Action Alternative (Alternative 1), the proposed RVSS Upgrade Program would not be constructed in USBP's RGC, MCS, and WSL 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 40 RVSS and three relay tower sites to provide long-term, permanent surveillance in the USBP's RGC, WSL, and MCS 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 and relay towers deployed within the USBP's RGC, WSL, and MCS 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 0.5 mile, and the maintenance and repair of access roads, totaling 25 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 combination 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 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, 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 7.75 acres would be permanently converted from undeveloped land to law enforcement facilities, and 23.25 acres would be temporarily impacted. The new access drives would permanently impact less than 1 acre and temporarily impact 2 acres during construction. Four acres would be permanently impacted while 100 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 8.25 acres for the construction of RVSS and relay 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.

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

A total of 17 archaeological sites would be directly affected by implementation of the Proposed Action; however, six of the sites are not considered eligible for listing in the National Register of Historic Places (NRHP) and are not considered significant archaeological resources. The remaining 11 archaeological sites are considered to have an undetermined eligibility for the NRHP. CBP will attempt to avoid these 11 sites. If avoidance is not possible, the effects on these 11 archaeological resources, prior to their assessment for the NRHP, would be considered adverse and significant. Mitigation measures would be developed in consultation with the Texas State Historic Preservation Officer, as well as other interested parties, to reduce the effects to less than significant levels. The mitigation measures would be outlined in a Historic Properties Treatment Plan (HPTP) and would be implemented prior to the initiation of construction. The implementation and completion of the HPTP would reduce the project effects to non-significant levels.

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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 and relay 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 effect 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.

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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) is preparing an Environmental Assessment (EA) addressing the proposed upgrade of its Remote Video Surveillance System (RVSS) program within the U.S. Border Patrol's (USBP) Rio Grande City (RGC), McAllen (MCS), and Weslaco (WSL) Stations' Areas of Responsibility (AORs) (Figure 1-1). BPFTI is preparing this EA on behalf of the 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 RGC, MCS, and WSL Station's AORs. The RVSS upgrade proposed for the RGC, MCS, and WSL Stations' AORs includes:

- Construction and maintenance of 40 new RVSS towers and three relay 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 Starr and Hidalgo counties, Texas. The project would serve the USBP RGV Sector's RGC, MCS, and WSL Stations' AORs (see Figure 1-1). There would be a total of 18 new RVSS towers and associated infrastructure in the RGC AOR, 12 new RVSS towers and associated infrastructure in the MCS AOR, and 10 new RVSS towers and associated infrastructure in the WSL AOR. Three relay towers, one per AOR, would also be constructed. These towers are located on Federal, private, and state lands.

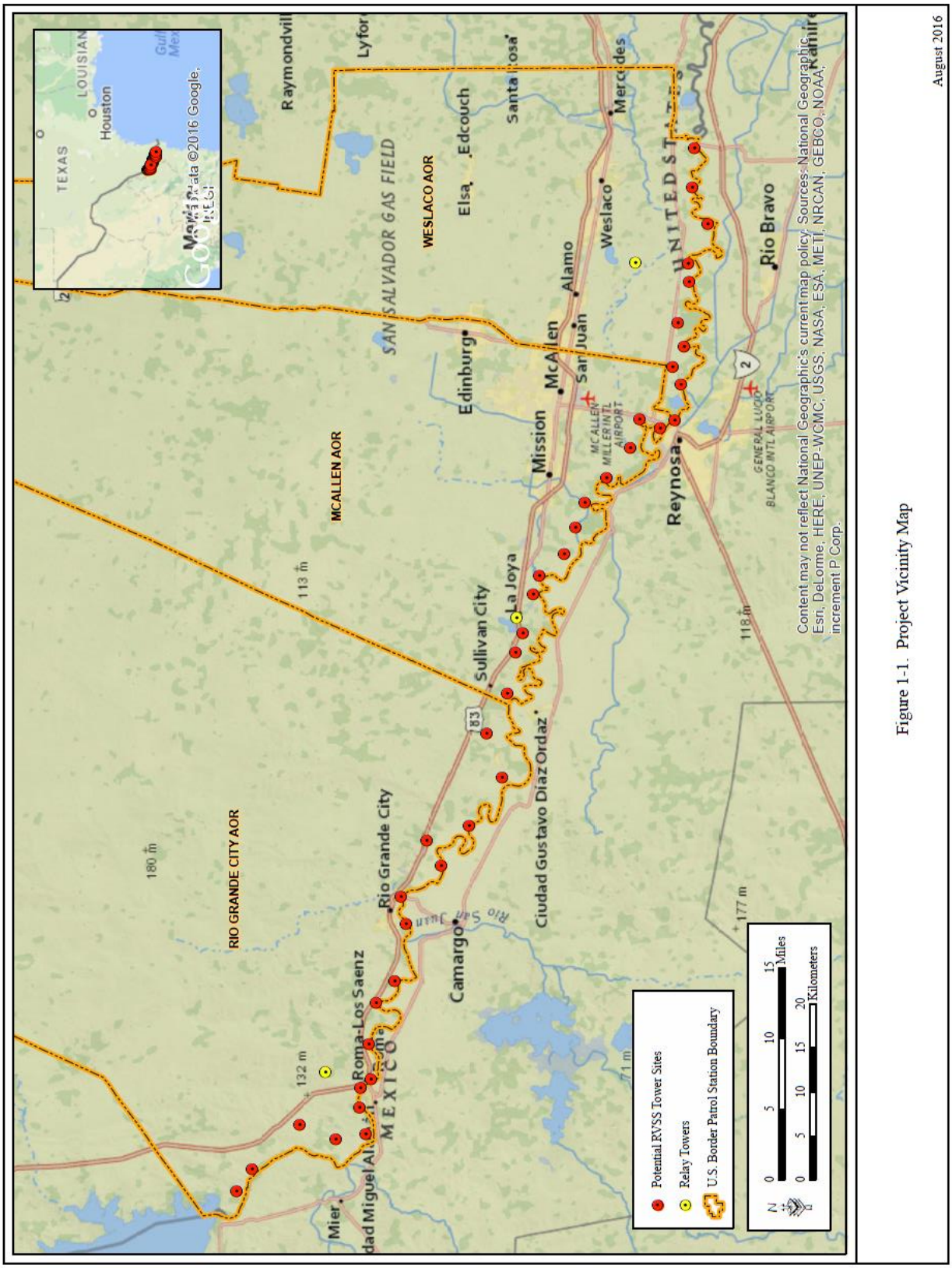

Figure 1-1. Project Vicinity Map

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 RGC, MCS, and WSL 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 RGC, MCS, and WSL Stations' AORs.

1.4 NEED FOR THE PROPOSED ACTION

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.

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 the EA will include 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 RGC, MCS, and WSL 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.

The EA will document the significance of the environmental effects of the Proposed Action and will look at alternatives to achieve the objectives. The EA will allow decision makers to determine that the Proposed Action will or will not have a significant impact on the natural,

social, economic, and physical environments, as well as whether the action can 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 will be 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 *Laredo Morning Times, 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 Rio Grande City Public Library in Rio Grande City, the McAllen Public Library in McAllen, and the Weslaco Public Library in Weslaco. The draft EA will also be available for download from the CBP internet web page at the following URL address: http://www.cbp.gov/about/environmental-cultural-stewardship/nepa-documents/docs-review.

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)
- 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)

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:

- Starr County
- Hidalgo 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 RGC, MCS, and WSL 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 project 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 RGC, MCS, and WSL Stations' C2 facilities and would provide an overall network system of communications and surveillance along approximately 120 miles of border. 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 RGC, MCS, and WSL 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 RGC, MCS, and WSL 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 RGC, MCS, and WSL 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 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 77 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 40 preferred RVSS and three relay tower locations (Figures 2-1, 2-2, and 2-3) (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 34 alternate tower site locations (see Figures 2-1, 2-2, and 2-3) (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 40 RVSS and three relay tower sites to provide long-term, permanent surveillance in the USBP's RGC, MCS, and WSL Stations' AORs (see Figures 2-1, 2-2, and 2-3). The RVSS would communicate with the RGC, MCS, and WSL Stations' C2 facilities and would provide enhanced surveillance coverage along approximately 120 miles of border. 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 0.5 mile, and the maintenance and repair of access roads, totaling 25 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.

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 2-4). 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.

Monopole towers are metal, single-pole towers with reinforced steel and concrete foundations (Figure 2-5). 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.

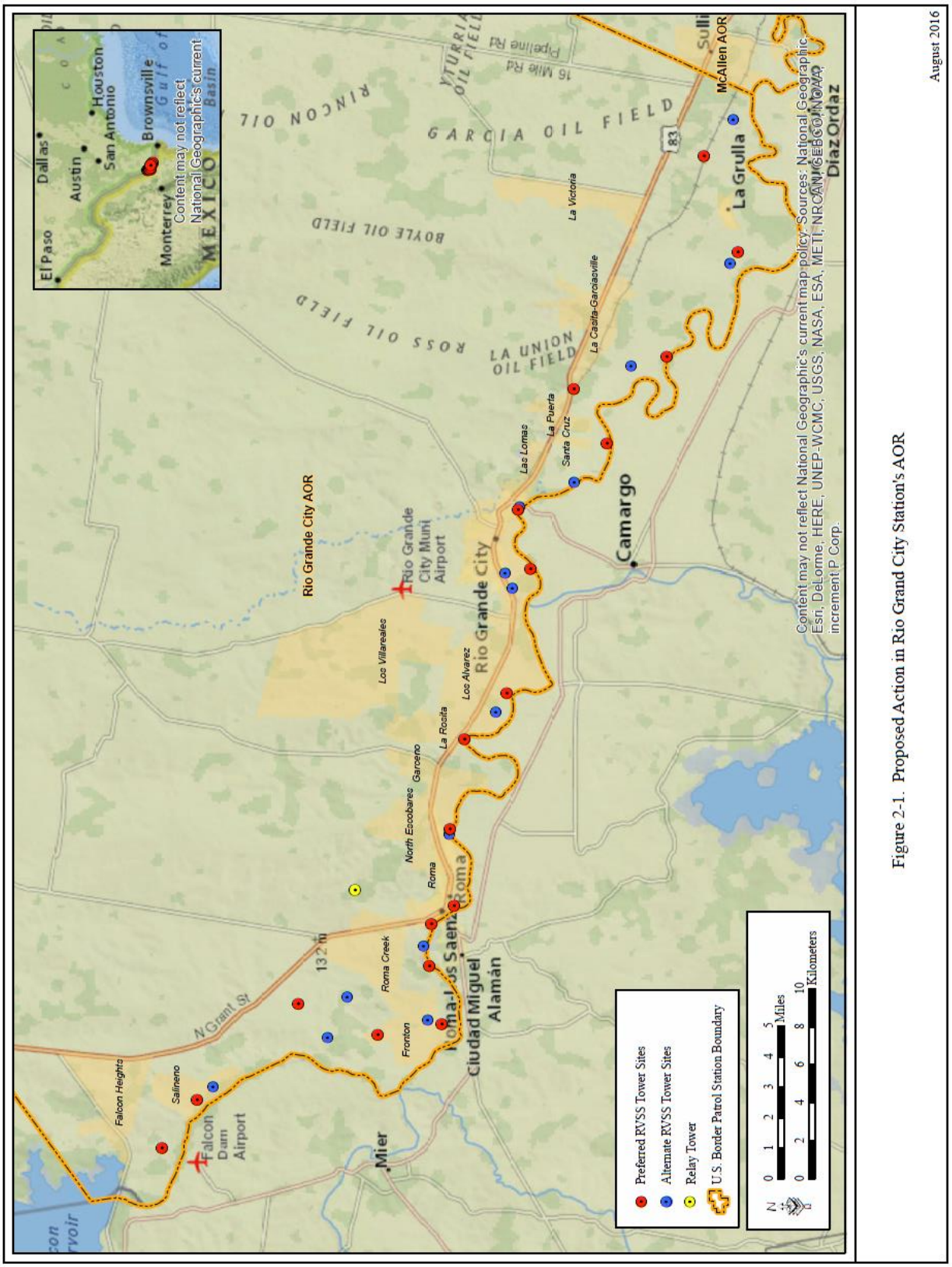

Figure 2-1. Proposed Action in Rio Grand City Station's AOR

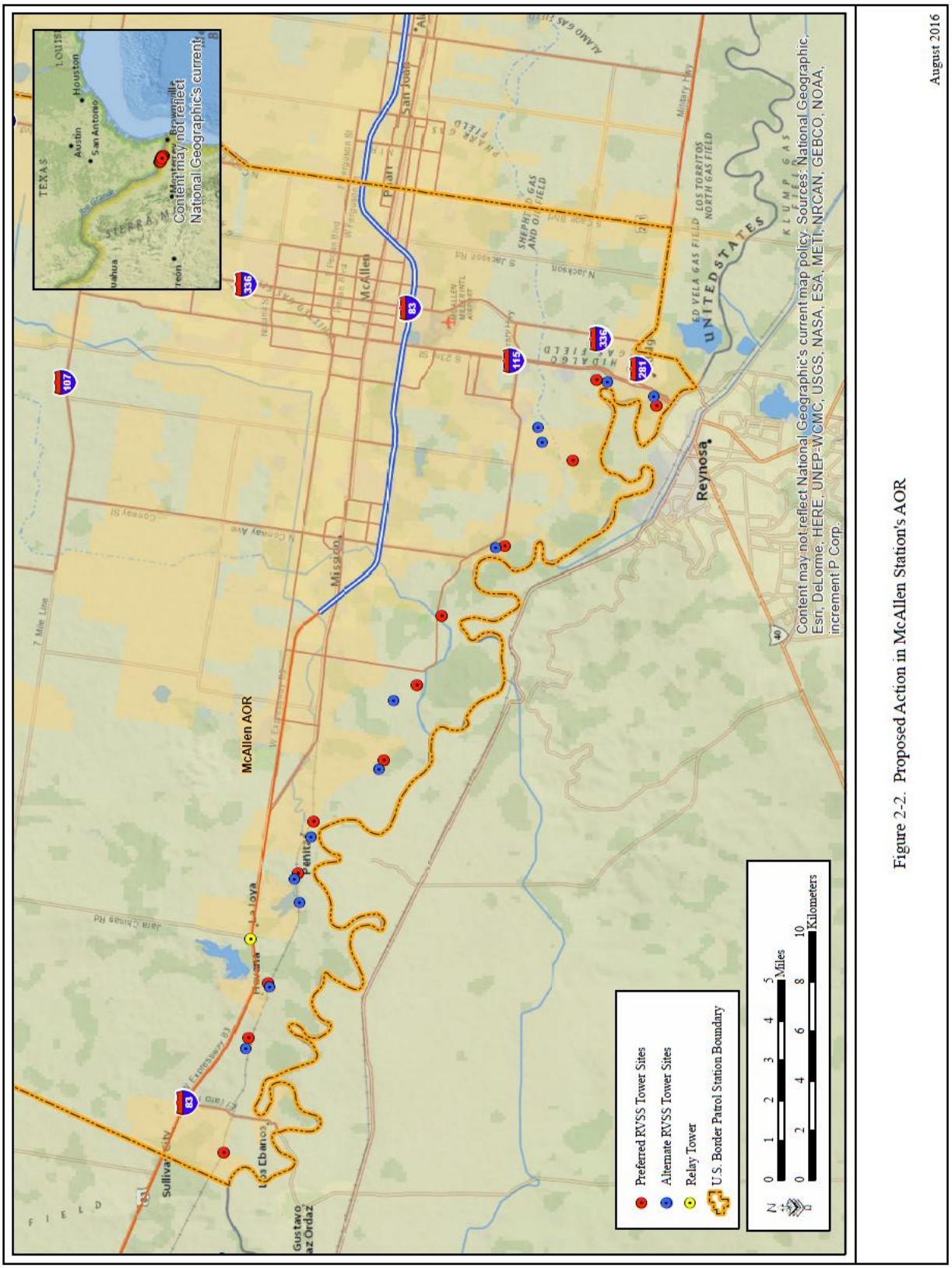

Figure 2-2. Proposed Action in McAllen Station's AOR

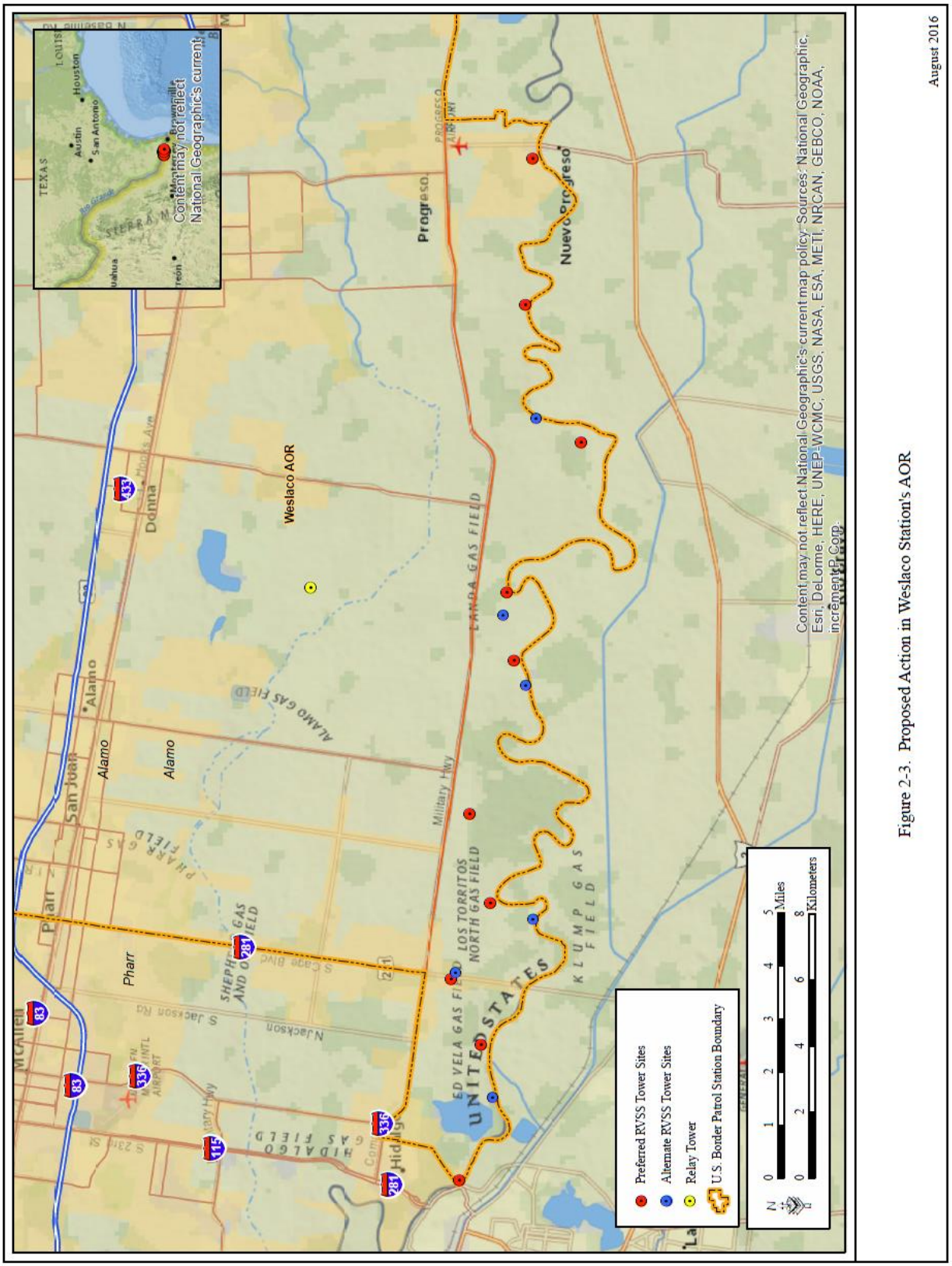

Figure 2-3. Proposed Action in Weslaco Station's AOR

August 2016

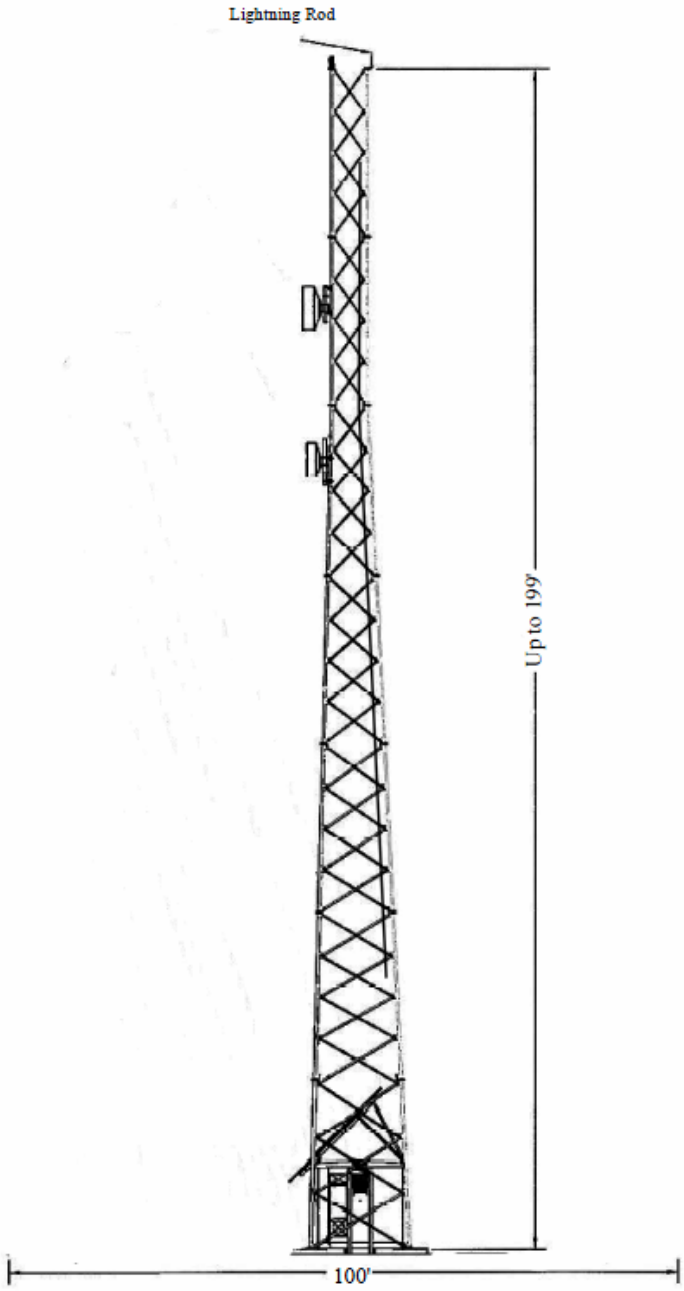

Figure 2-4. Typical Profile of SST Tower

July 2016

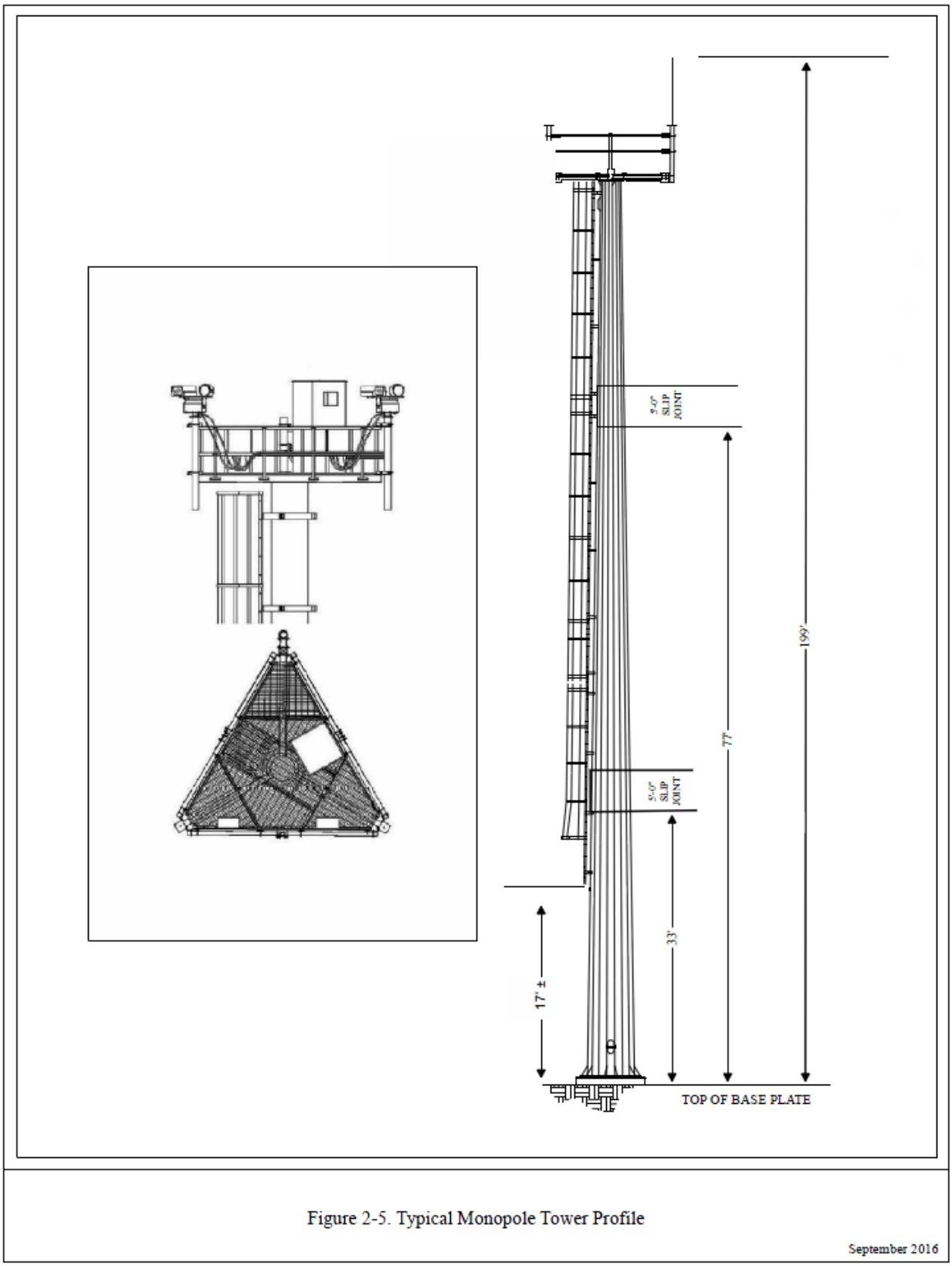

Figure 2-5. Typical Monopole Tower Profile

September 2016

Relocatable towers are towed in place on a trailer and placed on a level ground. The guy wires will attach 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 2-6 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, will be erected around the site perimeter to prevent unauthorized access. Relocatable towers would also have the same perimeter fence enclosure.

Tower Equipment Shelter

An equipment shelter would be located either on concrete or piers within the perimeter fencing of each proposed relay tower site. The shelters would be air conditioned to maintain proper equipment operating temperatures. The equipment shelters may also be equipped with an air blower or active cooling system that forces filtered ambient air through the shelter for electronics cooling during normal tower operation.

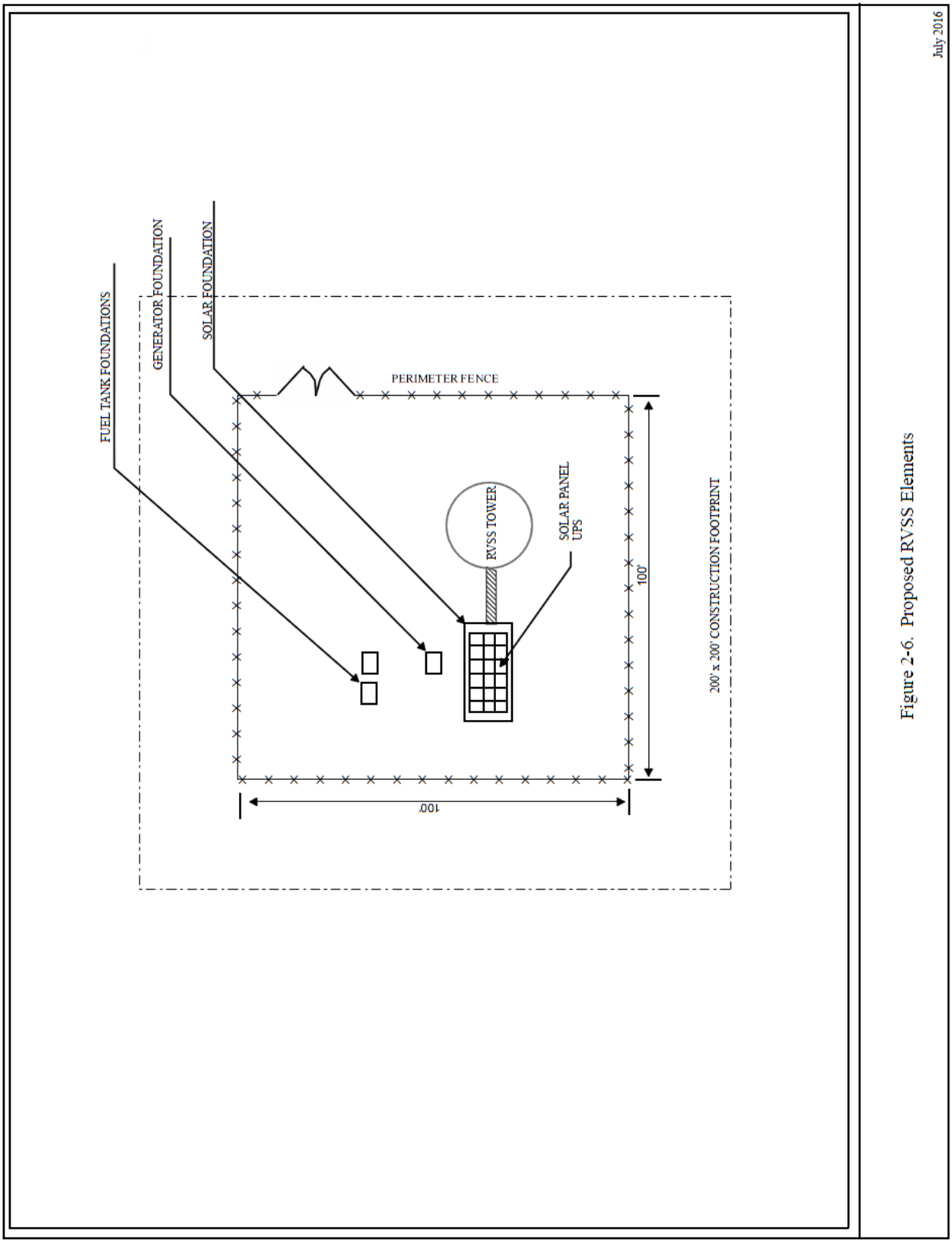

Figure 2-6. Proposed RVSS Elements

Tower Power Sources

Each RVSS tower will 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. 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, an optional equipment (e.g., spotlight). Suites of sensors would include multiple cameras (daylight, infrared [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 lighting protection rod, which is the highest aspect of the tower. Cameras, antennas, and parabolic antennas would be installed at heights that will ensure satisfactory line of sight and provide clear pathways for transmission of information to communications towers and the RGC, MCS, and WSL 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 will 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 will 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 a 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 (2013) *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 will 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 2-7). 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 (Figure 2-7). The shape of the permanent tower footprint may vary depending on sensitive resources within the area, but the total area will not exceed 10,000 square feet. Parking for construction vehicles and equipment will 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 will be revegetated with a mixture nursery plantings or a mixture of native plant seeds (or both).

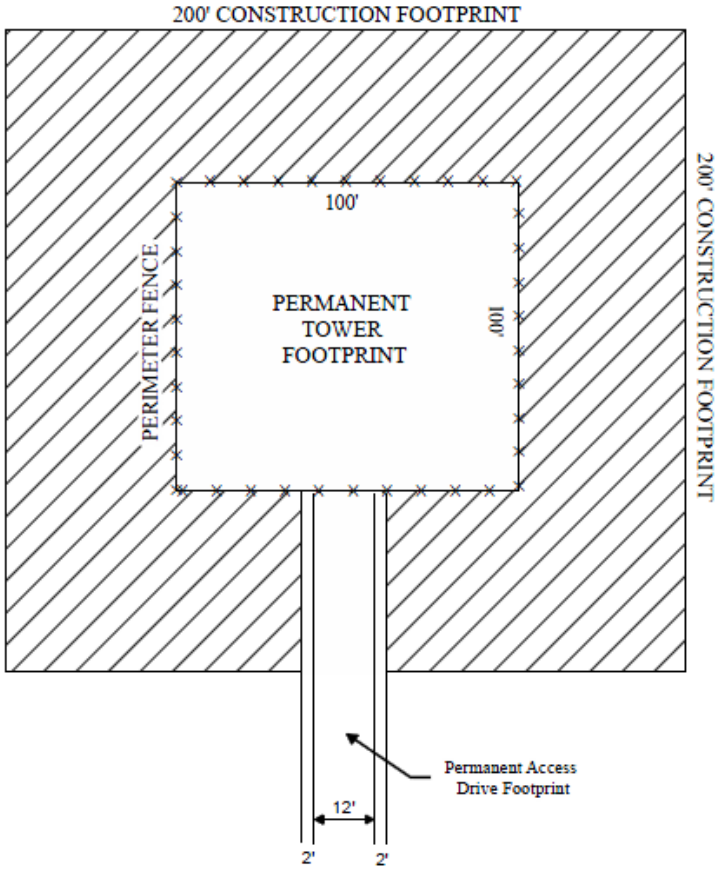

Figure 2-7. Tower Construction Footprint Schematic

July 2016

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

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. Sensor equipment needs to be tested. 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 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 25 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 six times per year, as necessary.

2.2.5 Summary Table

The following table (Table 2-1) is a summary of each of the potential RVSS sites that could 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
Inside Mustang Gate Chapeno	RGC	Sensor and Communications	12	2,710 ft (30 ft wide for 2,328 ft and 60 ft wide for 382 ft)
N of Bench Landing Salineno	RGC	Sensor and Communications	16	60 ft wide for 1,400 ft
NW of 3 Car Garage Fronton	RGC	Sensor and Communications	12	60 ft wide for 3,827 ft
Papa Hill	RGC	Sensor and Communications	20	60 ft wide for 9,281 ft
Rock Crossing	RGC	Sensor and Communications	None	1,366 ft (30 ft wide for 579 ft and 60 ft wide for 787 ft)
Speedios Escobares	RGC	Sensor and Communications	10	60 ft wide for 357 ft
Azteca	RGC	Sensor and Communications	12	60 ft wide for 5,710 ft
Tower near Silos RGC	RGC	Sensor and Communications	23	30 ft wide for 570 ft
Near Blas Chapas La Puerta	RGC	Sensor and Communications	None	None
N of Gas Starr Crossover	RGC	Sensor and Communications	16	60 ft wide for 4,191 ft
N of Silver Tanks	RGC	Sensor and Communications	20	30 ft wide for 654 ft
S of Blue White Pipes	RGC	Sensor and Communications	16	60 ft wide for 6,120 ft
NW of Horse Corrals Fronton	RGC	Sensor and Communications	18	60 ft wide for 2,699 ft
South of La Rosita Church	RGC	Sensor and Communications	None	60 ft wide for 384 ft

Tower ID	USBP Station AOR	Function	Existing Access Drive/Road Width (ft)	Access Drive/Road Improvements
Los Velas	RGC	Sensor and Communications	20	30 ft wide for 7,352 ft
N of Dairy Pump	RGC	Sensor and Communications	16	2,177 ft (60 ft wide for 1,945 ft and 30 ft wide for 232 ft)
La Casita Main	RGC	Sensor and Communications	16	60 ft wide for 10,203 ft
Igloo House	RGC	Sensor and Communications	None	None
RGC Relay Tower	RGC	Communications	16	60 ft wide for 9,150 ft
Penitas Pump	MCS	Sensor and Communications	None	None
Floodway	MCS	Sensor and Communications	18	30 ft wide for 3,516 ft
Inspiration Canal	MCS	Sensor and Communications	18	30 ft wide for 534 ft
Mac Pump	MCS	Sensor and Communications	None	60 ft wide for 927 ft
Banworth Canal	MCS	Sensor and Communications	None	None
South Sam Fordyce	MCS	Sensor and Communications	28	60 ft wide for 1,498 ft
Twin Bridges	MCS	Sensor and Communications	8	60 ft wide for 1,896 ft
Hidalgo POE	MCS	Sensor and Communications	None	None
HC Irrigation District #6	MCS	Sensor and Communications	None	None
Madero	MCS	Sensor and Communications	18	1,362 ft (60 ft wide for 1,227 and 30 ft wide for 135 ft)

Tower ID	USBP Station AOR	Function	Existing Access Drive/Road Width (ft)	Access Drive/Road Improvements
Abram Tx	MCS	Sensor and Communications	10	60 ft wide for 753 ft
GF Military Area	MCS	Sensor and Communications	None	None
MCS Relay Tower	MCS	Communications	None	None
South Settling Basin	WSL	Sensor and Communications	12	7,701 ft (60 ft wide for 6,373 ft and 30 ft wide for 1,328 ft)
Dyers Farms	WSL	Sensor and Communications	12	60 ft wide for 5,447 ft
Donna Canal	WSL	Sensor and Communications	16	2,552 ft (60 ft wde for 1,805 ft and 30 ft wide for 746 ft)
Pharr POE South	WSL	Sensor and Communications	20	30 ft wide for 1414 ft
Pig Pen Road	WSL	Sensor and Communications	20	60 ft wide for 3,886 ft
Santa Ana Refuge	WSL	Sensor and Communications	22	60 ft wide for 1,945 ft
South Tower Road	WSL	Sensor and Communications	16	60 ft wide for 4,546 ft
Nogales East	WSL	Sensor and Communications	14	30 ft wide for 7,795 ft
Whiskey Tree	WSL	Sensor and Communications	20	30 ft wide for 3,247 ft
Retamal South	WSL	Sensor and Communications	18	14,353 ft (60 ft wide for 6,353 ft and 30 ft wide for 7,999 ft)
WSL Relay Tower	WSL	Communications	16	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 illegal aliens	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 is the Starr and Hidalgo 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	Potentially 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

Resource	Potentially to Be Affected by Implementation of Proposed Action Alternative	Analyzed in This EA	Rationale for Elimination
Hazardous Materials	Yes	Yes	Not Applicable
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 effects.

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 footprint 20-feet-wide 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 Alternative.

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	10.75	1	4	15.75
Permanent Impact (acres)				
No Action	0	0	0	0
Proposed Action	32.25	2	100	134.25

3.2 LAND USE

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

Starr County encompasses approximately 786,600 acres, with the majority of the county being classified as rangeland. A total of 1,165 farms are located within the Starr County, and these farms encompass over 668,000 acres. Sixty-seven percent of the farms are classified as rangeland for the production of cattle, sheep, hogs and horses (U.S. Department of Agriculture [USDA] 2012). Twenty percent of the farms are in agricultural production of sorghum, cotton, and vegetables. The major recreational area in this county occurs at the International Falcon Reservoir. Rio Grande City is the major urban center and the county seat of Starr County (CBP 2007).

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 farms 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	Land Ownership Type	Land Use
RGC Azteca	Private	Rangeland/Undeveloped
RGC NW of Horse Corrals Fronton	Private	Agriculture/Undeveloped
RGC Igloo House	Private	Developed/Residential
RGC La Casita Main	USFWS	Lower Rio Grande National Wildlife Refuge/ Agriculture/Undeveloped
RGC South of LaRosita Church	Private	Developed/Disturbed
RGC Los Velas	Private	Rangeland/Undeveloped
RGC Inside Mustang Gate Chapeno	Private	Developed Gas and Oil
RGC N of Bench Landing Salineno	Private	Rangeland/Undeveloped
RGC N of Dairy Pump	Private	Agriculture/Undeveloped
RGC N of Gar Starr Crossover	Private	Rangeland/Undeveloped
RGC N of Silvertanks Military	Private	Rangeland/Undeveloped
RGC Near Blas Chapas La Puerta	Private	Developed
RGC NW of 3 Car Garage Fronton	Private	Rangeland/Undeveloped
RGC Papa Hill	Private	Rangeland/Undeveloped
RGC Relay Tower	Private	Rangeland/Undeveloped
RGC Rock Crossing	Private	Developed/Mowed and Maintained
RGC S of Blue White Pipes	Private	Rangeland/Undeveloped
RGC Speedios Escobares	Private	Agriculture/Undeveloped
RGC Tower near Silos RGC	Rio Grande City Consolidated School District	Developed
MCS Abram Tx	Private	Rangeland/Undeveloped
MCS Banworth Canal	USFWS	Lower Rio Grande National Wildlife Refuge/Agriculture/Undeveloped
MCS Floodway	Private	Rangeland/Undeveloped
MCS GF Military Area	Private	Rangeland/Undeveloped
MCS HC Irrigation District #6	Private	Developed/Mowed and Maintained
MCS Hidalgo POE	Private	Developed/Mowed and Maintained
MCS Inspiration Canal	Private	Developed/Disturbed
MCS MacPump	Private	Developed/Mowed and Maintained
MCS Madero	Private	Agriculture/Undeveloped
MCS Penitas Pump	Private	Rangeland/Undeveloped
MCS Relay Tower	Private	Rangeland/Undeveloped
MCS South Sam Fordyce	USFWS	Lower Rio Grande National Wildlife Refuge/Undeveloped
MCS Twin Bridges	Private	Agriculture/Undeveloped

Tower ID	Land Ownership Type	Land Use
WSL Donna Canal	USFWS	Lower Rio Grande National Wildlife Refuge/Undeveloped
WSL Dyer's Farms	Private	Agriculture/Undeveloped
WSL Nogales East	Private	Agriculture/Undeveloped
WSL Pharr POE South	City of Pharr, Texas	Developed/Mowed and Maintained
WSL Pig Pen Road	Private	Agriculture/Undeveloped
WSL Relay Tower	Private	Developed/Parking Lot
WSL Retamal South	USFWS	Lower Rio Grande National Wildlife Refuge/Undeveloped
WSL Santa Ana Refuge	Private	Agriculture/Undeveloped
WSL South Settling Basin	USFWS	Lower Rio Grande National Wildlife Refuge/Undeveloped
WSL South Tower Road	Private	Rangeland/Undeveloped/Wetland
WSL Whiskey Tree	CBP	Developed/Mowed and Maintained

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 and relay 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 7.75 acres of undeveloped land would be converted to a developed land use at the new RVSS tower sites and approximately 23.25 acres would be temporarily disturbed during construction activities. The new access drives would permanently impact less than 1 acre and temporarily impact 2 acres during construction. It is estimated that approximately 4 acres would be permanently converted to a developed land use as a result of access road maintenance and repair activities. Further, approximately 100 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 11.75 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 23 soil types associated with the RVSS towers and relay towers. 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 23 soil types, there are eight that are considered prime farmland.

Table 3-4. Soil Types

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
RGC Azteca	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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
RGC NW of Horse Corrals Fronton	Copita fine sandy loam, 0 to 3% slope (Cp) – Areas of this soil are elongated or irregularly shaped and range from 50 to several hundred acres in size. Most of the acreage is used as range/pasture land but some scattered fields are dry farmed. The Copita series consists of moderately deep, well-drained, nearly level to gently undulating soils of the uplands. These soils are droughty as a result of the high lime content.	No
RGC Igloo House	Jimenez-Quemado Complex (JQ) – Areas of this soil complex consist of very shallow to shallow, gently sloping, intricately mixed Jimenez and Quemado soils. These soils are on convex uplands in small, dissected, irregularly shaped areas ranging from 25 to 50 acres in size. Jimenez soil is excessively drained, undulating to hilly, very gravelly soils that are shallow over caliche. These soils are on high terraces and ridges along the Rio Grande and have a high lime content. Slope ranges from 3 to 20%. Quemado soils are well-drained, undulating to hilly, very gravelly soils that are shallow over caliche. The slopes range from 2 to 20%.	No
RGC La Casita Main	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
RGC South of LaRosita Church	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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
RGC Los Velas	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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
RGC Inside Mustang Gate Chapeno	Copita fine sandy loam, 0 to 3% slope (Cp) – Areas of this soil are elongated or irregularly shaped and range from 50 to several hundred acres in size. Most of the acreage is used as range/pasture land but some scattered fields are dry farmed. The Copita series consists of moderately deep, well-drained, nearly level to gently undulating soils of the uplands. These soils are droughty as a result of the high lime content.	No
RGC N of Bench Landing Salineno	Catarina clay association, 0 to 5% slopes (Cn) – Areas of these soils are irregularly shaped or elongated and are as much as several hundred acres in size. They are dissected by many drainage ways and by a few shallow gullies and rills. These soils are droughty due to rapid runoff potential. The soil has high clay content and is highly saline. Areas of this soil type are typically used as range (livestock grazing).	No
RGC N of Dairy Pump	Matamoros silty clay (Mm) – 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%. Most areas of this soil are irrigated and cultivated.	No
RGC N of Gar Starr Crossover	Matamoros silty clay (Mm) – 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%. Most areas of this soil are irrigated and cultivated.	No

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
RGC N of Silvertanks Military	Reynosa silty clay loams (Re) – Areas of this soil are broad, irregularly shaped, and generally several hundred acres in size. The slope is predominantly less than 1%, but is as much as 2% in places. Most of the acreage is irrigated and cultivated.	Yes
RGC Near Blas Chapas La Puerta	McAllen fine sandy loam (Mc) – Areas of this soil are broad, irregularly shaped, and as much as several hundred acres in size. The slope is predominantly less than 1%, but the slope range is 0 to 3%. Most of the acreage is used for range, but a few areas are dry farmed. This soil is suited to irrigation, and can be revegetated to native grassland.	No
RGC NW of 3 Car Garage Fronton	Copita fine sandy loam, 0 to 3% slope (Cp) – Areas of this soil are elongated or irregularly shaped and range from 50 to several hundred acres in size. Most of the acreage is used as range/pasture land but some scattered fields are dry farmed. The Copita series consists of moderately deep, well-drained, nearly level to gently undulating soils of the uplands. These soils are droughty as a result of the high lime content.	No
RGC Papa Hill	Jimenez-Quemado Complex (JQ) – Areas of this soil complex consist of very shallow to shallow, gently sloping, intricately mixed Jimenez and Quemado soils. These soils are on convex uplands in small, dissected, irregularly shaped areas ranging from 25 to 50 acres in size. Jimenez soil is excessively drained, undulating to hilly, very gravelly soils that are shallow over caliche. These soils are on high terraces and ridges along the Rio Grande and have a high lime content. Slope ranges from 3 to 20%. Quemado soils are well-drained, undulating to hilly, very gravelly soils that are shallow over caliche. The slopes range from 2 to 20%.	No
RGC Relay Tower	Jimenez-Quemado Complex (JQ) – Areas of this soil complex consist of very shallow to shallow, gently sloping, intricately mixed Jimenez and Quemado soils. These soils are on convex uplands in small, dissected, irregularly shaped areas ranging from 25 to 50 acres in size. Jimenez soil is excessively drained, undulating to hilly, very gravelly soils that are shallow over caliche. These soils are on high terraces and ridges along the Rio Grande and have high lime content. Slope ranges from 3 to 20%. Quemado soils are well-drained, undulating to hilly, very gravelly soils that are shallow over caliche. The slopes range from 2 to 20%.	No
RGC Rock Crossing	Rio Grande Silt Loam, 1 to 3% slopes (RgB) – 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

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
RGC S of Blue White Pipes	Catarina clay association, 0 to 5% slopes (Cn) – Areas of these soils are irregularly shaped or elongated and are as much as several hundred acres in size. They are dissected by many drainage ways and by a few shallow gullies and rills. These soils are droughty due to rapid runoff potential. The soil has high clay content and is highly saline. Areas of this soil type are typically used as range (life stock grazing).	No
RGC Speedios Escobares	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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
RGC Tower near Silos RGC	Lagloria silt loams (La) – Areas of this soil are broad, irregularly shaped, and generally several hundred acres in size. The slope is predominantly less than 1% but is as much as 2%. Almost all acreage is cultivated and irrigated, and a variety of crops do well.	Yes (if irrigated)
MCS Abram Tx	Matamoros silty clay (Mm) – 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%. Most areas of this soil are irrigated and cultivated.	No
MCS Banworth Canal	Cameron silty clay (Ca) – This soil is deep, nearly level and found on ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are small and irregular in shape and range from 10 to 45 acres. This soil is moderately well drained, surface runoff is slow, and permeability is moderately low. Most areas of this soil are cultivated, and is suitable for various crops.	Yes
MCS Floodway	Camargo silt loam, 0 to 1% slopes (CaA) – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. Most of the acreage of this soil are cultivated and the soil is well suited to many crops.	No
MCS GF Military Area	McAllen fine sandy loam (Mc) – Areas of this soil are broad, irregularly shaped, and as much as several hundred acres in size. The slope is predominantly less than 1%, but the slope range is 0 to 3%. Most of the acreage is used for range, but a few areas are dry farmed. This soil is suited to irrigation, and can be revegetated to native grassland.	No

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
MCS HC Irrigation District #6	Harlingen clay, saline (HcB) – This deep, nearly level saline soil occurs on broad areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregularly shaped and range from 10 to 500 acres. This soil is moderately well drained, surface runoff very slow, permeability is low, and the available water capacity is very low. This soil is moderately to highly saline as a result of over irrigation and evaporation of slightly saline water.	No
MCS Hidalgo POE	Camargo silt loam, 0 to 1% slopes (CaA) – 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.	No
MCS Inspiration Canal	Runn silty clay (RuA) – This soil is deep, nearly level soil occurs on areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregularly shaped, and range from 10 to 250 acres in size. This soil is moderately well drained, with slow surface runoff, and permeability is low. This soil is suitable for various crops.	Yes
MCS MacPump	Laredo silty clay loam, 0 to 1% slopes (LaA) – 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
MCS Madero	Reynosa silty clay loams (Re) – Areas of this soil are broad, irregularly shaped, and generally several hundred acres in size. The slope is predominantly less than 1%, but is as much as 2% in places. Most of the acreage is irrigated and cultivated.	Yes
MCS Penitas Pump	Runn silty clay (RuA) – This soil is deep, nearly level soil occurs on areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregularly shaped, and range from 10 to 250 acres in size. This soil is moderately well drained, with slow surface runoff, and permeability is low. This soil is suitable for various crops.	Yes
MCS Relay tower	McAllen fine sandy loam (Mc) – Areas of this soil are broad, irregularly shaped, and as much as several hundred acres in size. The slope is predominantly less than 1%, but the slope range is 0 to 3%. Most of the acreage is used for range, but a few areas are dry farmed. This soil is suited to irrigation, and can be revegetated to native grassland.	No

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
MCS South Sam Fordyce	McAllen fine sandy loam (Mc) – Areas of this soil are broad, irregularly shaped, and as much as several hundred acres in size. The slope is predominantly less than 1%, but the slope range is 0 to 3%. Most of the acreage is used for range, but a few areas are dry farmed. This soil is suited to irrigation, and can be revegetated to native grassland.	No
MCS Twin Bridges	Harlingen clay (Ha) – This deep, nearly level soil occurs on broad areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregular in shape, range in size from 25 to 900 acres and are entirely calcareous. This soil is moderately well drained, surface runoff is very slow, and permeability is very low. This soil is used almost entirely as irrigated cropland.	No
WSL Donna Canal	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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
WSL Dyer's Farms	Rio Grande silty clay loam (Rr) – This soil is nearly level. It occurs as irregularly shaped areas ranging from 20 to 200 acres in size. Flooding occurs about 1 year in 10. Most of the acreage is irrigated and cultivated.	No
WSL Nogales East	Camargo silt loam, 0 to 1% slopes (CaA) – Areas of this soil are broad, irregularly shaped, and several hundred acres in size. Most of the acreage of this soil are cultivated and the soil is well suited to many crops.	No
WSL Pharr POE South	Harlingen clay (Ha) – This deep, nearly level soil occurs on broad areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregular in shape, range in size from 25 to 900 acres and are entirely calcareous. This soil is moderately well drained, surface runoff is very slow, and permeability is very low. This soil is used almost entirely as irrigated cropland.	No
WSL Pig Pen Road	Camargo silt loam, 0 to 1% slopes (CaA) – 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.	No

Tower ID	Dominant Soil Unit Mapped & Description	Prime Farmland Soil (Yes/No)
WSL Relay Tower	Harlingen clay (Ha) – This deep, nearly level soil occurs on broad areas of ancient stream terraces. Slopes are predominantly less than 0.5% but range from 0 to 1%. Areas are broad and irregular in shape, range in size from 25 to 900 acres and are entirely calcareous. This soil is moderately well drained, surface runoff is very slow, and permeability is very low. This soil is used almost entirely as irrigated cropland.	No
WSL Retamal South	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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
WSL Santa Ana Refuge	Reynosa silty clay loams (Re) – Areas of this soil are broad, irregularly shaped, and generally several hundred acres in size. The slope is predominantly less than 1%, but is as much as 2% in places. Most of the acreage is irrigated and cultivated.	No
WSL South Settling Basin	Zalla loamy fine sand (Za) – 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
WSL South Tower Rd	Camargo silt loam, 0 to 1% slopes (CaA) – 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.	No
WSL Whiskey Tree	Rio Grande Silt Loam, 0 to 1% slopes (RgA) – 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

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 and relay 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 10.75 acres of soils (of which 1.75 acres are considered prime farmland soils) would be permanently disturbed or removed from biological production at the new RVSS tower sites and approximately 32.25 acres (of which 5.25 acres are prime farmlands) would be temporarily disturbed during construction activities. It is estimated that approximately 5 acres of soils would be permanently disturbed as a result of access drive construction and access road maintenance and repair activities. Further, approximately 100 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 15.75 acres of soil (of which 1.75 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.

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

The project corridor is located in the South Texas Brush Ecoregion as characterized by the Texas Parks and Wildlife Department (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). A complete list of floral species observed during biological survey 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*
Tamarisk	*Tamarix* sp.
Brasil	*Condalia hookeri*
Texas kidney wood	*Eysenhardtia texana*
Tree tobacco	*Nicotiana glauca*
Huisache	*Acacia farnesiana*
Huisachillo	*Acacia schaffneri*
Texas paloverde	*Parkinsonia texana*
Texas ranger	*Leucophyllum frutescens*
Blackbrush acacia	*Acacia rigidula*
Spiny hackberry	*Celtis pallida*
Colima	*Zanthoxylum fagara*
Lotebush	*Ziziphus obtusifolia*
Junco	*Koeberlinia spinosa*
Spanish bayonet	*Yucca treculeana*
Texas ebony	*Chloroleucon ebano*
Castorbean	*Ricinus communis*
Poverty weed	*Baccharis neglecta*
Arundo cane	*Arundo donax*
Mulefat	*Baccharis salicifolia*
Poison sumac	*Toxicodendron vernix*
Hackberry	*Celtis laevigata*
Mexican ash	*Fraxinus berlandieriana*
Sabal palm	*Sabal mexicana*
Berlandier's acacia	*Acacia berlandieri*
Wild olive	*Cordia boissieri*

Species Common Name	Species Scientific Name
Guayacan	*Guaiacum angustifolium*
Coyotillo	*Karwinskia humboldtiana*
Cacti	
Texas prickly pear cactus	*Opuntia engelmannii*
Christmas cholla	*Cylindropuntia leptocaulis*
Dog cholla	*Grusonia schotti*
Yellow flowered pincushion	*Mammillaria sphaerica*
Strawberry cactus	*Echinocereus enneacanthus*
Pencil cactus	*Echinocereus poelgeri*
Peruvian apple cactus	*Cereus peruvianus*
Rio Grande Valley barrel cactus	*Ferocactus hamatacanthus*
Vines	
Possum grape	*Cissus incisa*
Old man's beard	*Clematis drummondii*
Forbs/Herbs	
Fingergrass	*Chloris barbata*
Threeawn grass	*Aristida sp.*
Guinea grass	*Urochloa maxima*
Kleberg's bluestem	*Dichanthium annulatum*
Crabgrass	*Digitaria sp.*
Fragrant flatsedge	*Cyperus odoratus*
Buffelgrass	*Cenchrus ciliaris*
Hairy grama	*Bouteloua hirsute*
Timothy grass	*Phleum pretense*
Little bluestem	*Schizachyrium scoparium*
Goldenweed	*Isocoma drummondii*
Russian thistle	*Salsola tragus*
Berlandier wolfberry	*Lycium berlandieri*
Palmer’s amaranth	*Amaranthus palmeri*
Silverleaf sunflower	*Helianthus argophyllus*
Sunflower	*Helianthus annuus*
Sida	*Sida abutifolia*
Pie print	*Abutilon theophrasti*
Seepweed	*Suaeda sp.*
Tarweed	*Grindelia squarrosa*
Pink smartweed	*Polygonum pensylvanicum*
Cheeseweed	*Malva sp.*
Common ragweed	*Ambrosia psilostachya*
Camphorweed	*Heterotheca subaxillaris*
Devil's claw	*Probiscidea sp.*
Woody crinklemat	*Tiquilia canescens*
Bee brush	*Aloysia gratissima*

Species Common Name	Species Scientific Name
Lippia	*Lippia alba*
Snakeweed	*Gutierrezia sp.*
Senna	*Senna bauhinioides*
Kalanchoe	*Kalanchoe sp.*
Bermuda grass	*Cynodon dactylon*
Fingergrass	*Chloris barbata*
Silverleaf nightshade	*Solanum elaeagnifolium*
Jicamilla	*Jatropha cathartica*
Sangre de drago	*Jatropha dioica*
Hairy grama	*Bouteloua hiruste*
Sida	*Sida abutifolia*
Wolfweed	*Lycium sp.*
Indian mallow	*Abutilon palmeri*
Krameria	*Krameria sp.*
Scorpion's tail	*Heliotropium angiospermum*
Sweet gaura	*Gaura drummondii*

Although the overall ecoregion for the project corridor is the South Texas Brush Country Ecoregion, vegetative community characteristics varied for many of the tower sites. In fact, a total of eight vegetative communities were observed during biological surveys that occurred from July 2015 through March 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 (Nature Serve 2009). These natural community designations include the following: Tamaulipan thornscrub, Tamaulipan grassland, south Texas brush land, and subtropical riparian woodland. 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 and relay 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.

Table 3-6. Tower Site Vegetative Communities

Tower ID	Vegetative Community	Dominant Vegetation Present	Site Conditions
RGC Azteca	Tamaulipan thornscrub	Almost 100% of the vegetative ground cover is composed of Guinea grass, and buffelgrass. Retama, saltcedar and honey mesquite are the dominant canopy cover. Other plant species present are huisache, Texas ranger, spiny hackberry, Colima, net-leafed hackberry, possum grape, and giant ragweed.	The proposed tower location is a 60% disturbed patch of Tamaulipan thornscrub. Several piles of fill dirt and a large pit are present along the access road to this site. Access road edge vegetation consists of a near monoculture of Guinea grass.
RGC NW of Horse Corrals Fronton	Agriculture	Buffelgrass makes up the majority of non-cultivated vegetative ground cover. Sapling honey mesquites are distributed sparsely throughout the site.	The proposed tower location is a 100% disturbed active agricultural field.
RGC Igloo House	Developed	Bermuda grass is the dominant vegetative ground cover. Honey mesquite, Texas ranger, coyotillo, lotebush, and Spanish bayonet (likely landscaped) are also present at this site.	The proposed tower location is a disturbed residential lot.
RGC La Casita Main	Agriculture	Little native vegetation is present. Non-native vegetation present includes Bermuda grass, buffelgrass, tree tobacco, Russian thistle, Palmer's amaranth, and silverleaf nightshade	The proposed tower location is 100% disturbed active agricultural field dominated by cultivated sorghum.
RGC South of LaRosita Church	Developed	Honey mesquite, tree tobacco, Texas prickly pear cactus, Christmas cholla, spiny hackberry, lotebush, strawberry cactus, yellow flowered pincushion, and Rio Grande Valley barrel cactus. Much of the cacti appear to be landscape plantings and not natural populations.	The proposed tower location is entirely disturbed residential area and livestock yard situated within a Tamaulipan thornscrub community. Several derelict automobiles and tractors are present at the site. Additionally, the site contains a large trash dump.
RGC Los Velas	South Texas brush land	Bermuda grass, buffelgrass, bunch grass, and silverleaf nightshade make up the dominant ground cover within the proposed site location and along the access road edge. Saltcedar is the predominant canopy cover at the site and sapling retama is sparsely distributed throughout the site and along the access road edge. Other plant species present are possum grape, old man's beard, and camphorweed.	The proposed tower location is a disturbed patch of South Texas brush land adjacent to an active agricultural field.
RGC Inside Mustang Gate Chapeno	Tamaulipan thornscrub	Buffelgrass is the dominant vegetative ground cover being present on approximately 40% of the site. Approximately 60% of the site is bare ground. Honey mesquite and huisache makes up the dominant canopy/shrub cover at the site and black brush acacia is also present.	The proposed tower location is 100% disturbed and contains a derelict natural gas well pad and associated infrastructure. This site is currently being used as active rangeland for cattle grazing.
RGC N of Bench Landing Salineno	Tamaulipan thornscrub	Joint fir, spiny hackberry, common bee brush, black brush acacia, Texas ranger, and lotebush make up approximately 60% of the vegetative ground and shrub cover at this site. Texas ebony and retama made up the dominant canopy cover. Other vegetative species present are Spanish bayonet, Christmas cholla, Texas prickly pear, guayacan, and buffelgrass.	The access road leading to the site is heavily disturbed by vehicle traffic and trash dumping. The proposed tower location is lightly disturbed Tamaulipan thornscrub dominated by native vegetation, with heavy limestone soils.
RGC N of Dairy Pump	Agriculture	Dominant vegetation within the proposed tower location is cultivated sorghum.	The proposed tower location is completely disturbed agricultural field surrounded by a saltcedar and retama thicket.
RGC N of Gar Starr Crossover	Agriculture	Poverty weed, Bermuda grass, and buffelgrass make up over 90% of the vegetative ground cover at this site. Other plant species present are sunflower and camphorweed.	The proposed tower location is completely disturbed overgrown agricultural field. The access road is crossed by a natural gas pipeline.
RGC N of Silvertanks Military	Tamaulipan grassland	Buffelgrass makes up over 80% of the vegetative ground cover. Honey mesquite, Texas paloverde, huisache, black brush, spiny hackberry, and Colima were the prevalent canopy and shrub cover. Other plant species present are lotebush, sangre de drago, coyotillo, Spanish bayonet, Texas prickly pear cactus, and Christmas cholla.	The proposed tower location is active rangeland disturbed by livestock grazing and infestation of non-native vegetative species (buffelgrass). Several open dumps containing household waste associated with residences adjacent to the access road footprint are present along the access road.
RGC Near Blas Chapas La Puerta	Developed	Buffelgrass and woody crinklemat make up approximately 50% of the ground cover at the proposed tower location. Honey mesquite is the dominant canopy cover. Other plant species present are huisache, Bermuda grass, Texas paloverde, Texas ranger, Russian thistle, Texas prickly pear, and Christmas cholla.	The proposed tower location is a vacant residential lot that is partially disturbed by vehicle and pedestrian traffic, as well as dumping of debris, discarded tires, and other waste.
RGC NW of 3 Car Garage Fronton	Tamaulipan grassland	Buffelgrass makes up approximately 65% of the vegetative ground cover. Canopy cover is predominantly honey mesquite and huisache. Other plant species present are Texas prickly pear, Texas paloverde, Texas ranger, Colima, black brush acacia, lotebush, strawberry cactus, Texas ebony, and Spanish bayonet.	The proposed tower location is Tamaulipan grassland and is heavily disturbed by livestock grazing.
RGC Papa Hill	Tamaulipan thornscrub	Dominant vegetative cover within the proposed tower location consisted primarily of shrub species including joint fir, black brush acacia, Texas ranger, lotebush, Colima, spiny hackberry, and common bee brush occurring on 60% of the site. Other plant species present are Spanish bayonet, barrel cactus, hair-covered cactus, Christmas cholla, Texas prickly pear, buffelgrass, and little bluestem.	The proposed tower location is relatively undisturbed Tamaulipan thornscrub, dominated by native vegetation and containing heavy limestone soils.

Tower ID	Vegetative Community	Dominant Vegetation Present	Site Conditions
RGC Relay Tower	Tamaulipan thornscrub	Dominant vegetative cover within the proposed tower location consisted primarily of shrub species including joint fir, black brush acacia, Texas ranger, lotebush, Colima, spiny hackberry, huisachillo and common bee brush occurring on 90% of the site and along the access road. Other plant species present are Spanish bayonet, barrel cactus, Christmas cholla, Texas prickly pear, sangre de drago, wolf weed, krameria, and guayacan.	The proposed tower location is relatively undisturbed Tamaulipan scrub dominated by native vegetation and containing heavy limestone soils. The access road passes through an active oil and natural gas exploration field and oil/gas collection and storage infrastructure is present in various locations along the access road. Additionally, natural gas pipelines cross the access road in five locations.
RGC Rock Crossing	Agriculture	Non-cultivated vegetation within the proposed tower location consists of sunflower, buffelgrass, and Guinea grass which collectively make up approximately 80% of the ground cover within the unplowed edges of the site. Within the site ground cover is dominated by a senesced row crop likely sorghum. Other plant species present along the access road are lotebush and silverleaf nightshade.	The proposed tower location is a 100% disturbed agricultural field with little native vegetation. Edge vegetation along the access road has been mechanically clear along most of its reach.
RGC S of Blue White Pipes	Tamaulipan grassland	The proposed tower location 100% vegetated rangeland with some scrub formations. Buffelgrass dominates the understory at approximately 75% cover, and honey mesquite dominates the canopy at approximately 35% cover. Lotebush is found at about 20% cover, huisache makes up about 10% of the total canopy cover, and guayacan makes up roughly 5% of the total cover. Most of the honey mesquite trees have a diameter at base height (DBH) greater than 4 inches.	The proposed tower location is 100% vegetated Tamaulipan grassland with some scrub formations indicating that the area is reverting to Tamaulipan thornscrub potentially due to overgrazing. The tower site itself does not show evidence of recent disturbance.
RGC Speedios Escobares	Agriculture	The proposed tower location is abandoned agricultural field dominated by buffelgrass. The surrounding area is honey mesquite thicket. Other plant species present along the edges of the site and along the access road are silverleaf nightshade, huisache, giant ragweed, false ragweed, scorpion's tail, spiny hackberry, and little bluestem.	The proposed tower location is 100% disturbed abandoned agricultural field that is now a near monoculture of buffelgrass which forms greater than 90% of the total ground cover. The access road leading to the site runs through residential area and an area where farm equipment is stored. Several piles of household waste, debris, and discarded tires are located along the access road.
RGC Tower near Silos RGC	Developed	Buffelgrass is the dominant vegetative ground cover and is present on approximately 40% of the site. Retama and honey mesquite make up the dominant canopy cover, being present approximately 30% of the site. Other plant species present are landscaped ash trees, Chinese tallow tree, net leafed hackberry, huisache, Bermuda grass, and possum grape.	The proposed tower location appears to be about 50% disturbed currently with gravel roads. Historically it may have been an old commercial lot with adjacent grain elevator scale house that was built within a patch of Tamaulipan scrub. There is evidence of continued vehicular traffic. A storage building and telecommunications tower are present adjacent to the site. Additionally, discarded tires have been dumped throughout the site.
MCS Abram Tx	South Texas brush land	Approximately 20% of the proposed tower location is vegetated with sunflower and pie print. Canopy cover is composed of honey mesquite which occurs on approximately 20% of the site. None of the honey mesquites on the property are greater than 4 inches in DBH. Other plant species present are retama, Russian thistle, and silverleaf nightshade.	The proposed tower location appears to be recently cleared south Texas brush land.
MCS Banworth Canal	Agriculture	The proposed tower location consisted of an active plowed field with no native vegetation. The dominant vegetative ground cover is cultivated sorghum. Non-cultivated vegetation observed included scattered Bermuda grass, silver leaf nightshade, and common sunflower occurring patchily along the edges of the site.	The proposed tower location is an entirely disturbed active agricultural field.
MCS Floodway	Tamaulipan grassland	The proposed tower location is dominated by Bermuda grass with patches of buffelgrass which collectively make up over 90% of the ground cover within the site and along the access road. Other plant species present are sow thistle, southern pepperweed, retama, saltcedar, black brush acacia, and silverleaf nightshade.	The proposed tower location is 100% disturbed pasture land adjacent to levee being grazed by goats. Ground cover is almost completely dominated by Bermuda grass. Tires and farm equipment are discarded/being stored at site.
MCS GF Military Area	Tamaulipan grassland	Buffelgrass was the dominant cover type at approximately 80% cover. Honey mesquite was the dominant canopy cover occurring on approximately 15% of the site. Other species present are lotebush, coyotillo, Texas prickly pear, Texas ranger, huisache, black brush acacia, spiny hackberry, strawberry cactus, and Colima.	The proposed tower location appears to be active pastureland/cropland created within a Tamaulipan thornscrub community. Historical uses may also include a burrow pit in the southwest corner. Several discarded tires are present within the site.
MCS HC Irrigation District #6	Developed/Mowed and Maintained	Dominant vegetation at the proposed tower location is Bermuda grass, giant ragweed, false ragweed, sow thistle, sea oxeye daisy, and five-needle dogweed, which collectively made up over 90% of the ground cover within the footprint.	The proposed tower location 100% disturbed mowed and maintained grass lot.
MCS Hidalgo POE	Developed/Mowed and Maintained	The proposed tower location has approximately 100% vegetative cover. Bermuda grass makes up about 70% of the cover with buffelgrass, at about 15% and arundo cane at about 15%. Approximately 30% of the site has low 1- to 2-meter retama resprouts from the frequent mowing disturbance. The existing access road is wide and paved. Unpaved areas are the same vegetative composition and condition as the above survey area.	The proposed tower location is an entirely disturbed, frequently mowed lot adjacent to a levee road and CBP POE.

Tower ID	Vegetative Community	Dominant Vegetation Present	Site Conditions
MCS Inspiration Canal	Developed	The proposed tower location has approximately 75% vegetative cover and 25% bare ground and vehicle paths. Vegetation at the site is predominantly Bermuda grass, with some buffelgrass along the SE edge. A few other species make up approximately 10% and includes castorbean, common sunflower, spiny hackberry, Russian thistle, and huisache.	The proposed tower location is a 100% disturbed, frequently mowed lot, situated within what was historically a patch of subtropical riparian woodland associated with the Rio Grande floodplain. There is an existing CBP mobile tower at the site.
MCS MacPump	Developed/Mowed and Maintained	Bermuda grass and buffelgrass are the dominant vegetative ground cover, collectively covering greater than 95% of the site. Lead tree and huisache are the dominant canopy cover at the site both occurring on approximately 10% of the total site. Other plant species present include silverleaf nightshade, Palmer's amaranth, common sunflower, and Guinea grass. Access road has the same conditions without as many trees.	The proposed tower location is 100% disturbed frequently mowed lot. Approximately 40% of the site is bare ground.
MCS Madero	Agriculture	Non-cultivated vegetation consisted primarily of Bermuda grass along the edge of the agricultural field. No native vegetation was observed at the site.	The proposed tower location is an active agricultural field (citrus grove).
MCS Penitas Pump	South Texas brush land	Dominant vegetative ground cover at the proposed tower location is buffelgrass, which represent 70% of the ground cover. Dominant canopy and shrub cover is honey mesquite and huisache, which together cover approximately 70% of the site. None of the tree species on the site had a DBH greater than 4 inches. Other plant species present are retama and common sunflower	The proposed tower location is active horse pasture situated in what was historically south Texas brush land. The site was being grazed by horses at the time of the survey.
MCS Relay tower	South Texas brush land	Vegetative ground cover along the edges of the proposed tower location is dominated by Guinea grass. Within the patch interior, herbaceous ground cover gives way to leaf litter and bare ground. Dominant canopy cover at the site was honey mesquite. Approximately 800 honey mesquite trees were present on the site most of which were greater than 4 inches in DBH. Dominant understory vegetative cover was spiny hackberry occurring on approximately 60% of the site. Other plant species present are junco, wolf weed, Peruvian apple cactus, retama, huisachillo, Indian mallow, Texas prickly pear, lotebush, and dog cholla.	The proposed tower location is a disturbed and isolated patch of south Texas brush land dominated by honey mesquite trees. The site is adjacent to the city of La Joya water treatment facility. Fire hydrants and storm drains are also present on the site. Evidence of household trash dumping and disturbance from intermittent pedestrian traffic was also observed.
MCS South Sam Fordyce	Tamaulipan grassland	The proposed tower location is almost entirely vegetated, with approximately 80% of the vegetative ground cover being buffelgrass. An additional 10% of the vegetative ground cover was made up of common sunflower. Little canopy cover was present at site. Shrubby honey mesquite trees, Texas paloverde, and lead tree were present along the edges of the site and scattered patchily within the interior of the site. Total canopy cover was less than 10%. Other plant species present are hairy grama, camphorweed, fingergrass, and sida.	The proposed tower location appears to have historically been agricultural or pasture land that has more recently been overtaken by a coastal grassland community. There is no evidence of recent grazing or mowing. Discarded tires were present at the site.
MCS Twin Bridges	Agriculture	The proposed tower location is an active, and recently plowed agricultural field. No native vegetation was observed at the site. Palmer's amaranth grew patchily within the site, contributing less than 2% to the total ground cover.	The proposed tower location is a totally disturbed, active, and recently plowed agricultural field.
WSL Donna Canal	South Texas brush land	Almost 100% of the proposed tower location is vegetated with most of the ground cover being composed of Guinea grass. The site contains approximately 70% canopy and shrub cover made up predominantly of honey mesquite and huisache. Other plant species present are Mexican ash, retama, spiny hackberry, poverty weed, and snakeweed.	The proposed tower location appears to be active pasture land situated within South Texas brush land. The site is partially disturbed by ongoing livestock grazing.
WSL Dyer's Farms	Agriculture	The proposed tower location is entirely unvegetated. Small amounts of saltcedar, buffelgrass, retama, huisache, and honey mesquite are present along the access road to the site.	The proposed tower location is a 100% disturbed active agricultural field.
WSL Nogales East	Agriculture	Non-cultivated vegetation occurred primarily along the access road leading to the proposed tower location and the site boundary, and consisted primarily of common sunflower, silverleaf nightshade, false ragweed, and Palmer's amaranth.	The proposed tower location is 100% disturbed active agricultural bounded on all sides by other active agricultural field. Two irrigation canals cross the access road leading to the site.
WSL Pharr POE South	Developed	Approximately 80% of the proposed tower location is vegetated primarily with Bermuda grass. Other plant species present are Johnson grass, Guinea grass, Kleberg's bluestem, common sunflower, and silverleaf nightshade.	The proposed tower location is 100% disturbed intermittently mowed and maintained road margin situated between United States Highway 81 and an active agricultural field. An existing mobile tower is present.
WSL Pig Pen Road	Agriculture	The proposed tower location is within an active, recently plowed agricultural field and is predominantly bare ground. Most of the non-cultivated vegetation occurs along the boundary of the site and along the access road. Plant species present in these areas are Peruvian peppertree, Palmer's amaranth, Guinea grass, Russian thistle, silverleaf nightshade, common sunflower, cheeseweed, and bindweed.	The proposed tower location is an active recently plowed agricultural field and is predominantly bare ground..
WSL Relay Tower	Developed	The proposed tower location is largely unvegetated, and dominated by bare ground. A small amount of false ragweed is present along the site boundaries.	The proposed tower location is a 100% disturbed agricultural equipment storage lot.

Tower ID	Vegetative Community	Dominant Vegetation Present	Site Conditions
WSL Retamal South	Agriculture	The proposed tower location is primarily bare ground, with almost no vegetative ground cover. Patches of Bermuda grass, Palmer's amaranth, silverleaf nightshade, false ragweed, and Johnson grass occur along the access road leading to the site.	The proposed tower location is an entirely disturbed, recently plowed active agricultural field.
WSL Santa Ana Refuge	Agriculture	The proposed tower location is primarily bare ground, with almost no vegetative ground cover. Patches of Bermuda grass, silverleaf nightshade, and false ragweed occur along the access road leading to the site.	The proposed tower location is an entirely disturbed, recently plowed active agricultural field.
WSL South Settling Basin	Subtropical riparian woodland	Approximately 70% of the proposed tower location is vegetated with much of the ground cover being comprised of mule fat. Huisache, castorbean, and honey mesquite, are found at a density of approximately 10% of the cover each. Retama makes up approximately 5% of the total cover. Other plant species present are spiny hackberry, old man's beard, tree tobacco, possum grape, false ragweed, common sunflower sweet gaura, buffelgrass, and saltcedar. Edge vegetation along the access road was similar in composition.	The proposed tower location is within a sub-tropical riparian woodland adjacent to the Rio Grande. There is no evidence of recent disturbance except for two track dirt roads for vehicle access.
WSL South Tower Rd	Floodplain wetland	The proposed tower location is in an overgrown thicket dominated by Brazilian pepper tree comprising 60-70 % of the total cover. Retama is also present at a rate of approximately 20-30% cover, and sabal palms, are also scattered throughout the survey area. Other plant species present are flagrant flatsedge, lipia, and pink smartweed.	The proposed tower location is relatively undisturbed, and the vegetation and hydrological conditions indicate that the site is within a potentially jurisdictional wetland. There was standing water throughout the site footprint, and the site appeared to experience frequent flooding.
WSL Whiskey Tree	Developed/Mowed and Maintained	Approximately 80 % of the proposed tower location is vegetated by a near monoculture of frequently mowed and maintained Bermuda grass. Along the proposed the access road route, a few weedy species were present including old man's beard and common ragweed.	The proposed tower location is a frequently mowed and maintained lot located between active agricultural fields, and a crop storage/processing facility.

3.4.2 Alternative 2: Proposed Action

The Proposed Action would have a permanent, minor impact on vegetation in the project area, approximately 4.25 acres of native vegetative communities (1 acre of Tamaulipan scrub, 1.5 acres of Tamaulipan grassland, 1.25 acres of south Texas brush land, 0.25 acre of sub-tropical riparian woodland, and 0.25 acre of floodplain wetland) would be directly impacted as a result of the construction of the proposed RVSS and relay towers. Additionally, 14.75 acres (3.0 acres of Tamaulipan thornscrub, 4.5 acres of Tamaulipan grassland, 5.75 acres of south Texas brush land, 0.75 acre of subtropical riparian woodland, and 0.75 acre of floodplain wetland) would be temporarily disturbed during construction activities. The remaining acreages impacted either permanently or temporarily from the construction of the proposed RVSS and relay towers were located within either developed or agricultural areas.

It is estimated that approximately 4 acres of locally and regionally common vegetative habitat would be permanently cleared as a result of access road maintenance and repair activities. Further, approximately 102 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 and relay 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 nonnative 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 the 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*), muscovy 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 the 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*
Southern plains woodrat	*Neotoma micropus*
Coyote	*Canis latrans*
Black-tailed jackrabbit	*Lepus californicus*
Collared peccary	*Pecari tajacu*
Reptiles	
Texas spiny lizard	*Sceloporus olivaceus*
Prairie racerunner	*Aspidoscelis sexlineatus*
Speckled racer	*Drymobius margaritiferus*
Texas horned lizard	*Phrynosoma cornutum*
Birds	
Great-tailed grackle	*Quiscalus mexicanus*

Species Common Name	Species Scientific Name
Common grackle	*Quiscalus quiscula*
Couch's kingbird	*Tyrannus couchii*
Northern mockingbird	*Mimus polyglottos*
Feral rock doves	*Columbina livia*
Greater roadrunner	*Geococcyx californianus*
Red-winged blackbird	*Agelaius phoeniceus*
White-winged dove	*Zenaida asiatica*
Pyrrhuloxia	*Cardinalis sinuatus*
House finch	*Carpodacus mexicanus*
Scissor-tailed flycatcher	*Tyrannus forficatus*
Great kiskadee	*Pitangus sulphuratus*
Mourning dove	*Zenaida macroura*
Common ground dove	*Columbina passerina*
Swainson's hawk	*Buteo swainsoni*
Northern cardinal	*Cardinalis cardinalis*
Cactus wren	*Campylorhynchus brunneicapillus*
Killdeer	*Charadris vociferus*
Black vulture	*Coragyps atratus*
Northern bobwhite	*Colinus virginianus*
Black-tailed gnatcatcher	*Polioptila melanura*
Green jay	*Cyanocorax yncas*
Turkey vulture	*Cathartes aura*
Summer tanager	*Piranga rubra*
Crested caracara	*Caracara cheriway*
Great crested flycatcher	*Myiarchus crinitus*

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 and relay 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 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 8.25 acres (4.25 acres [tower] + 4.0 acres [roads]) would have a long-term, negligible impact and temporary degradation of approximately 132.25 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 effects 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 8.25 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 and relay towers may have infrared lighting installed for aviation safety, and, if installed, any such lighting would be compatible with NVG usage. All proposed RVSS and relay 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* and *Recommendations for Design and Construction of Cell Phone and Other Towers* (USFWS 2008) would be implemented to reduce nighttime atmospheric lighting and the potential adverse effects of nighttime lighting on migratory bird and nocturnal flying species.

Noise associated with RVSS and relay 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 effects 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 57 A-weighted decibels (dBA) at approximately 40 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 and relay 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 effect 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 and relay 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 submitted to Congress 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 nine Federally endangered species and one candidate species known to occur within Hidalgo County and Starr County (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 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 horned lizard (*Phrynosoma cornutum*) 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 and Star 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	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	S	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
Red-crowned parrot (*Amazona viridigenalis*)	C	H	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	S, H	Dense, thorny scrub, especially near water.	Yes	May affect, not likely to adversely affect
Ocelot (*Leopardus pardalis*)	E	S, H	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
PLANTS					
Star cactus (*Astrophytum asterias***)**	E	S, H	Grows in gravelly clays or loam soil among sparse, low shrubs, grasses, and halophytic plants in upland sites.	No	No effect

Common/Scientific Name	Federal Status	County	Habitat	Potential to Occur at Site	Effect Determination
Zapata bladderpod (*Physaria thamnophila*)	E	S	Open, evergreen thorn shrub lands on gravelly to sandy loams derived from Eocene formations. Known site soils include Catarina series soils, Zapata-Maverick soils, and soils in the Copita soils. The plants often grow entangled in small shrubs and cactus clumps and are often associated with blackbush acacia, cenzio, and calderona.	No	No effect
Ashy dogweed (*Thymophylla tephroleuca*)	E	S	Restricted to unique soils found in south Texas. The known populations of ashy dogweed are located on the sandy pockets of Maverick-Catarina, Copita-Zapata, and Nueces-Comita soils of southern Webb and northern Zapata counties. Although ashy dogweed has been observed in areas where the ground has been disturbed, it is not known whether this species actually prefers disturbance or if it grows equally well on disturbed and undisturbed sites.	No	No effect
Walker's manioc (*Manihot walkerae*)	E	S, H	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	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

Source: USFWS 2016a.
E – Engangered, T – Threatened, C - Candidate
S – Starr County, H – Hidalgo 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 and the oncilla. 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 or 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 bush (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 jaguarondi.

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.

Zapata's bladderpod (*Physaira thamnophila*) has designated critical habitat units in Texas. On December 22, 2000, the USFWS designated seven tracts within the Lower Rio Grande National Wildlife Refuge (USFWS 2004). A total of 5,160 acres of habitat has been designated as Critical Habitat. All of the designated Critical Habitat for the Zapata bladderpod occurs in Starr County with seven of the eight units occurring on the Lower Rio Grande Valley Wildlife Refuge properties. The lone unit not on USFWS property consists of a 1.36-acre tract of private lands. These units include the Cuellar, Chapeno, and Arroyo Morteros Tracts located south and southwest of the Falcon Heights subdivision; the Las Ruinas, Los Negros, and Arroyo Ramirez Tracts located west and northwest of the city of Roma; and the La Puerta Tract located southeast of Rio Grande City.

State-Listed Species

TPWD lists several state-listed species that may also occur near the various project areas in Starr and Hidalgo counties. The only state-listed species observed during biological surveys was the Texas horned lizard (*Phrynosoma cornutum*), which is listed as threatened (TPWD 2016). Appendix C has a complete list of all state-listed species with the potential to occur in Starr and Hidalgo 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 or candidate species and would not adversely modify designated critical habitat for the Zapata bladderpod. Section 7 consultation with USFWS is ongoing. Only one state-listed species, Texas horned lizard, was observed within the project area and this species can easily avoid harm during tower construction.

Northern Aplomado Falcon

No adverse effects 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 effect. NAF are a highly mobile species that would easily relocate a short distance from such disturbances. However, effects would be greater if a 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.

Ocelot and Gulf Coast Jaguarundi

A total of 10 proposed tower sites (RGC Inside Mustang Gate Chapeno, RGC North of Bench Landing Salineno, RGC South of Blue and White Pipes, RGC Papa Hill, RGC Azteca, RGC North of Gar Starr Crossover, RGC South Sam Fordyce, WSL South Settling Basin, WSL South Tower Road, and WSL Donna Canal) occur within or near suitable habitat for the ocelot and jaguarundi. Clearing of potential habitat would occur at nine of the sites where approximately 0.25 acre of potential habitat would be permanently cleared at each site. No potential habitat would be cleared at the RGC Azteca site, because the proposed tower site is located in an open area devoid of shrubby vegetation; however, potential habitat occurs nearby.

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 A-weighted decibel (dBA). Since the cats are highly mobile, nocturnal species, and wary of human disturbance, they would likely avoid the disturbed area without significant adverse effects 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 2.25

acres 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. Therefore, the Proposed Action may affect, but is not likely to adversely affect, the ocelot and jaguarundi.

State-Listed Species

TPWD lists several state-listed species that may occur near the various project areas in Starr and Hidalgo counties. Under the Proposed Action, approximately 4.25 acres of native habitat will be permanently impacted and approximately 14.75 acres of potential habitat would be temporarily impacted during tower construction and maintenance. Mobile species such as the Texas horned lizard and Texas indigo snake (*Drymarchon melanurus*) may be temporarily displaced by tower construction and maintenance activities, however these highly mobile species typically utilize large expanses of suitable habitat and the effects 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 County and most of Starr County. 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 Starr and Hidalgo counties the available groundwater from the Gulf Coast Aquifer is estimated to be approximately 7,400 acre-feet per year (TWDB 2016). It should be noted that groundwater is not a significant source of water within southern Starr or Hidalgo counties; surface water from the Rio Grande is the major water supply source.

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. The western portion of Starr County is located in this aquifer (Starr County Groundwater Conservation District [GCD] 2013).

3.7.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no additional impacts on groundwater resources would occur as a result of constructing the proposed RVSS and relay towers, constructing access drives, or improving access roads.

3.7.2 Alternative 2: Proposed Action

Under the Proposed Action, water needed for construction activities would be obtained from surface water sources. All water would be supplied to the construction sites either by 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 travel 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 Arroyo Los Olmos in Starr County, the Rio Grande Below Falcon Reservoir, 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-2302-04	From McAllen International Bridge (U.S. Highway 281) upstream to Falcon Dam	Bacteria - pathogens	Sources outside state jurisdiction or borders, urban runoff/storm sewers
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, 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)

Waters of the United States are defined within the CWA, and jurisdiction is addressed by USACE and USEPA. There could be temporary impacts to 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 13 (linear transportation) 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, WSL South Tower Road, is located in a wetland classified as PUBFx by the USFWS per the Cowardin et al. classification system. PUBFx is a palustrine, unconsolidated bottom, semipermanently flooded wetland that was likely created by humans (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 and relay 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 effects 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 WSL South Tower Road would be negligible because prior to construction the proper permits would be acquired and any mitigation necessary to acquire those permits would be completed. 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 (E.O.) 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 will flood. Federal Emergency Management Agency (FEMA) floodplain maps were reviewed to identify project locations within mapped floodplains (FEMA 2016). Twenty-seven of the proposed 43 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
Azteca Tertiary	RGC
La Casita Main	RGC
Los Velas	RGC
N of Dairy Pump	RGC
N of Gar Starr Crossover	RGC
Rock Crossing	RGC
S of Blue White Pipes	RGC
South of La Rosita Church	RGC
Speedios Escobares	RGC
Banworth Canal	MCS
Floodway	MCS
GF Military Area	MCS
HC Irrigation District #6	MCS
Inspiration Canal	MCS
MacPump	MCS

Tower Name	USBP Station AOR
Madero	MCS
Relay Tower	MCS
Donna Canal	WSL
Dyers Farms	WSL
Nogales East	WSL
Pig Pen Road	WSL
Retamal South	WSL
Santa Ana Refuge	WSL
South Settling Basin	WSL
South Tower Road	WSL
Whiskey Tree	WSL
Santa Ana Refuge	WSL

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 27 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 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 E.O. 11988 and would result in minimal impacts on floodplain resources.

3.10 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 2016a 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 Starr and Hidalgo counties as in attainment for all NAAQS (USEPA 2016b).

Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. Greenhouse Gases (GHG) 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 effects, 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 GHG covered by E.O. 13514 are CO_2, CH_4, N_2O, HFC, perfluorocarbons, and sulfur hexafluoride. These GHG 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 greenhouse gases 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).

3.10.1 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.

3.10.2 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 and relay 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. Construction activities would also generate minimal hydrocarbon, NO_2, CO_2, and SO_2 emissions from construction equipment and support vehicles. Fugitive dust would be generated during these construction activities, especially during the road improvement activities. Fugitive dust and other emissions would minimally increase during construction; however, these emissions would be temporary and return to pre-project levels upon the completion of construction. Emissions as a result of the Proposed Action are expected to be below the *de minimus* threshold (i.e., 100 tons per year) and therefore would not be considered significant. BMPs, such as dust suppression and maintaining equipment in proper working condition would reduce the temporary construction impacts. Furthermore, due to the generally remote location of the various tower sites, good wind dispersal conditions, and because both Starr and Hidalgo counties are in attainment, impacts to air quality are expected to be minimal under the Proposed Action.

Operational Air Emissions

Operational air emissions refer to air emissions that may occur after the RVSS and relay 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. Previous calculations completed for towers with the same footprints and operational requirements as the proposed RVSS and relay towers produced an annual total CO_2 and CO_2 equivalent air emissions of approximately 34 and 165 tons/year/tower, respectively (CBP 2014). Based on these annual total air emissions per tower, it is estimated that a total approximate CO_2 and CO_2 equivalent air emissions for the 43 towers would be 1,462 and 7,095 tons/year/tower, respectively. These values are well below the *de minimis* combined CO_2 and CO_2 equivalent threshold of 27,557 tons/year. Therefore, the proposed construction and operational activities would not exceed Federal *de minimis* thresholds for NAAQS and GHG and, thus, would not require a Conformity Determination. As 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 will 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.

3.11 NOISE

Noise is generally described as unwanted sound, which can be based either on objective effects (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 effects (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 RGC Igloo House, RGC Rock Crossing, RGC South of LaRosita

Church, RGC North of Dairy Pump, RGC Tower Near Silos, MCS GF Military Area, and MCS Relay Tower and their associated access roads.

National Parks and Wildlife Refuges

The Lower Rio Grande Valley National Wildlife Refuge (LRGVNWR) is considered a sensitive noise receptor. There are 15 tower sites that are located near or within the LRGVNWR. The towers shown in Table 3-12 are those towers located on the LRGVNWR or within 1,138 feet (57 dBA threshold achieved). Table 3-12 also shows the approximate acreage impacted by noise greater than 57 dBA per tower site.

Table 3-12. Proposed Towers in or within 1,138 feet of the LRGVNWR

Tower Name	Acreage*	Tower Name	Acreage
RGC La Casita Main	58	MCS HC Irrigation District #6	13
RGC Los Velas	24	MCS Hidalgo POE	50
RGC North of Gar Starr Crossover	51	MCS Madero	24
RGC Papa Hill	40	MCS South Sam Fordyce	57
MCS Abram Tx	3	WSL Donna Canal	43
MCS Banworth Canal	57	WSL Retamal South	93
MCS Floodway	13	WSL South Settling Basin	50
MCS GF Military Area	7		

*Acreage affected by noise high than 57 dBA.

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," will 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:

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

3.11.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed RVSS and relay 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.

3.11.2 Alternative 2: Proposed Action

Short-Term Construction Noise Emissions

The construction of the RVSS and relay towers and access drives and maintenance and repairs to existing access roads would require the use of common construction equipment. Table 3-13 describes noise emission levels for construction equipment that range from 63 dBA to 85 dBA at a distance of 50 feet (FHWA 2007).

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.

Table 3-13. 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.

The majority of the tower sites are located in remote areas far from sensitive noise receptors such as residential homes or National Wildlife Refuges. 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

- RGC Igloo House
  - 27 residences
- RGC Rock Crossing
  - 21 residences
- RGC South of LaRosita Church
  - 3 residences and 1 church (LaRosita Church)
- RGC North of Dairy Pump
  - 4 residences
- RGC Tower Near Silos
  - 8 residences
- MCS GF Military Area
  - 4 residences
- MCS Relay Tower
  - 6 residences

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 576 acres of the LRGVNWR 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., MCS Hidalgo POE) or farmed areas (i.e., RGC LaCasita Main) 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.

3.12 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 (NAGPRA) 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 2000c). 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 1989a; 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 1989a; 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 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 1989a; 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 the shows little occupation of the shoreline (Black 1989a; 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 Coastal Texas 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 1989a).

The climate during the Late Archaic period, ca. 2400 B.P. to 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, rabbits, turtles, fish, lizards, snakes, and deer. Rabdotus snails and mussels also continue 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 1989a).

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 1989a; 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 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 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 which 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 1989a).

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; A. 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; A. 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; A. 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; A. 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 1966a). 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 1966a).

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 right-of-way (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 effect 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 3-14 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.

Six 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 41SR397), lithic procurement/quarry sites (41SR384 and 41SR403), a farmstead/homestead (41HG162), and a historic brick kiln (41HG32). 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 the ROW of the existing highway and has an undetermined eligibility (U) of the NRHP where it diverges outside of the highway ROW. Two of the sites (41SR384 and 41HG162) have been determined to be not eligible for inclusion in the NRHP and not considered to be significant archaeological resources. The remaining two archaeological sites (41SR403 and 41HG32) do not have a recorded NRHP determination and are considered to have an undetermined eligibility for the NRHP.

Table 3-14. 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 (Eligibility)	Historic Resources Resource Name (Designation)
Rio Grande City AOR		
RGC NW of Horse Corrals Fronton	None	Old Fronton Cemetery (Cemetery) New Fronton Cemetery (Cemetery)
RGC Igloo House	None	Roma District (NRHP Listed) Roma City Hall (OTHM/RTHL) Noah Cox House (OTHM/RTHL) Old Garcia Home (OTHM/RTHL) Our Lady of Refuge Catholic Church (OTHM/RTHL) Old Roma Convent Building (OTHM/RTHL) Knights of Columbus Hall (OTHM/RTHL) Early Commercial Center (OTHM/RTHL) Manuel Guerra Store Marker (OTHM/RTHL) Memorial Hospital (OTHM/RTHL)
RGC La Casita Main	41SR397 (U)	None
RGC Los Velas	None	Los Velas Cemetery
RGC Inside Mustang Gate Chapeno	None	Chapeno Cemetery
RGC N of Bench Landing Salineno	None	Salineno Cemetery
RGC N of Dairy Pump	None	Los Garzas Cemetery Unknown Grave
RGC N of Silvertanks Military	41SR397 (U)	None
RGC Papa Hill	41SR403 (U)	None
RGC Relay Tower	41SR384 (NE)	None
RGC Rock Crossing	None	Queen of Peace Memorial Park
RGC Tower near Silos RGC	None	Fort Ringgold Historic District (NRHP Listed)
McAllen AOR		
MCS Abram Tx	41HG230 (U)	Abram Cemetery Garden of Angels Cemetery
MCS Banworth Canal	None	Havana (OTHM) Havana Cemetery
MCS GF Military Area	41HG230 (U)	Cuevitas Cemetery
MCS HC Irrigation District #6	41HG230 (U)	None
MCS Hidalgo POE	None	Hidalgo-Reynosa Bridges (OTHM)
MCS Inspiration Canal	41HG230 (U)	None
MCS MacPump	41HG230 (U)	Louisiana-Rio Grande Canal Company Irrigation System (NRHP Listed)
MCS Madero	41HG230 (U)	La Lomita (NRHP Listed) La Lomita Chapel (OTHM/RTHL) La Lomita Farm (OTHM) Juan David Blackburn (OTHM)
MCS South Sam Fordyce	41HG230 (U)	Hidalgo County's First Oil Well (OTHM)
MCS Twin Bridges	41HG230 (U)	Penitas (OTHM) Bentsen-Rio Grande Valley State Park (OTHM)

Tower Site	Archaeological Resources (Eligibility)	Historic Resources Resource Name (Designation)
Weslaco AOR		
WSL Dyer's Farms	41HG230 (U)	Louisiana-Rio Grande Canal Company Irrigation System (NRHP-listed)
WSL Nogales East	41HG230 (U)	None
WSL Pharr POE South	41HG162 (NE)	Louisiana-Rio Grande Canal Company Irrigation System (NRHP-listed)
WSL Pig Pen Road	41HG230 (U)	None
WSL Retamal South	41HG32 (U)	None
WSL Santa Ana Refuge	None	Louisiana-Rio Grande Canal Company Irrigation System (NRHP-listed)
WSL South Settling Basin	41HG230 (U)	Louisiana-Rio Grande Canal Company Irrigation System (NRHP-listed)
WSL South Tower Rd	None	Weber Cemetery
WSL Whiskey Tree	None	Guzman-Toluca Cemetery

* Not Eligible (NE), Undetermined (U)

A total of 34 previously recorded historic resources are located within the 0.5-mile viewshed of the proposed towers. Fourteen of the historic resources are cemeteries on file with Texas Sites Atlas. None of the 14 cemeteries are designated as HTCs. Four of the historic resources are NRHP-listed historic districts. Finally, 17 of the resources are OTHM markers or medallions. Of these 17 OTHM, 10 are also designated as RTHLs.

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. Table 3-15 summarizes the new archaeological and historic resources recorded during the surveys conducted for this EA.

A total of 11 archaeological sites and six isolated finds were found within the footprints of the proposed towers and their associated access and utility corridors. Seven of the newly recorded archaeological sites would require additional archaeological investigations in order to determine their significance and whether they would be eligible for inclusion in the NRHP. Until additional archaeological investigations are conducted and the sites' eligibility for the NRHP is determined, the sites should be treated as if they are eligible for the NRHP. The remaining five sites are not considered eligible for inclusion on the NRHP and are not considered significant archaeological resources. The six isolated finds are loci that do not contain the minimal material to be considered an archaeological site. By their nature they are considered not eligible for the NRHP and are not considered to be a significant archaeological resource.

Table 3-15. Summary of Newly Recorded Archaeological and Historic Resources by tower

Tower Site	Archaeological Resources (Eligibility)	Historic Resource Name (Designation)
Rio Grande City AOR		
RGC NW of Horse Corrals Fronton	IO-HorseCorral-P-1 (NE)	None
RGC La Casita Main	LaCasitaMain-P-1 (NE)	None
RGC Inside Mustang Gate Chapeno	None	Mustang Cemetery (New)
RGC N of Bench Landing Salineno	Salineno-P-1 (U)	None
RGC N of Silvertanks Military	None	None
RGC NW of 3 Car Garage Fronton	3cargarage-P-1 (U) IO-3cargarage-P-2 (NE) 3cargarage-P-3 (U)	None
RGC Papa Hill	None	None
RGC Relay Tower	Relay-1 (NE) Relay-2 (U) Relay-3 (NE)	None
RGC S of Blue White Pipes	IO-BlueandWhite-P-1 (NE) BlueandWhite-P-2 (NE)	None
RGC Speedios Escobares	None	None
McAllen AOR		
MCS HC Irrigation District #6	Irrigation-T-1 (U)	None
MCS Inspiration Canal	None	Rio Grande Valley State Veterans Cemetery (New)
MCS Madero	IO-Madero-A-1 (NE)	None
MCS Relay tower	IO MCS-Relay-2	None
MCS South Sam Fordyce	IO-Fordyce-P-1 (NE) Fordyce-P-2 (U) Fordyce-P-3 (U)	None

* Not Eligible (NE), Undetermined (U)

Archaeologists relocated and updated one previously recorded archaeological site (41HR403). The site was found to be in good condition and its boundary was extended to the south and east. While the portion of the site within the current survey corridor was revisited, a large portion of the site extended outside of the current survey corridor and was not investigated. As a result, additional archaeological investigations would be needed to make an NRHP determination for the site and the site is still considered to have an undetermined eligibility. The remaining five previously recorded archaeological resources were not relocated by archaeologists during their surveys of the proposed tower sites. Recent construction of a natural gas pipeline, port-of-entry, and an earthen levee impacted three of the previously recorded archaeological sites, 41SR384, 41HG162, and 41HG32 respectively. The portions of these sites that cross the current project corridor are considered destroyed by the recent construction activities. The remaining two sites were the recorded portions of the historic military road (41HG230 and 41SR 397). 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 corridor.

In addition to the archaeological resources, two historic resources were recorded during the survey of the proposed towers and access roads. All of the newly recorded historic resources were cemeteries, which were found adjacent to the towers and their associated access road and utility corridors. None of the cemeteries recorded were evaluated to determine if they qualify as

an HTC. Architectural historians also revisited the previously recorded historic resources within the visual APE of the proposed tower sites to evaluate the potential visual impacts on the resources by the proposed tower.

3.12.1 Alternative 1: No Action Alternative

Under the No Action Alternative there would be no construction and no impacts would be anticipated to cultural resources.

3.12.2 Alternative 2: Proposed Action

Under the Proposed Action a total of 17 archaeological sites could be directly affected by implementation of the Proposed Action. Six of the 17 archaeological sites are not considered eligible for listing in the NRHP and are not considered significant archaeological resources. The remaining 11 archaeological resources are considered to have an undetermined eligibility for the NRHP. Three of the 11 archaeological resources consisted of previously recorded resources that were not relocated during the current surveys. As a result, those resources are not considered to extend within the current survey areas. Effects on the remaining eight archaeological resources, prior to their assessment for the NRHP, would be considered adverse and significant. Mitigation measures would be developed in consultation with the Texas SHPO, as well as other interested parties, to reduce the effects to less than significant levels. The mitigation measures would be outlined in a Historic Properties Treatment Plan (HPTP) and would be implemented prior to the initiation of construction. The implementation and completion of the HPTP would reduce the effect to a non-significant level.

None of the 37 previously recorded and newly recorded historic resources would be directly impacted by the implementation of the Proposed Action. Indirect visual impacts on the 37 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 effects are not considered adverse or significant.

3.13 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 all proposed RVSS and relay towers.

3.13.1 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.

3.13.2 Alternative 2: Proposed Action

The Proposed Action would result in negligible effects 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.

3.14 ROADWAYS AND TRAFFIC

U.S. Highway 83 / Interstate 2 is the primary route for vehicular traffic through the Lower Rio Grande Valley. U.S. Highway 83 is one of the longest north-south U.S. Highways in the United States. The highway starts in Brownsville, Texas at the Veterans International Bridge on the United States Mexico border and terminates north of Westhope, North Dakota, at the Canada-United States border. U.S. Highway 83 runs roughly east-west through the Lower Rio Grande Valley. U.S. Highway 281 / Interstate 69C is the main north-south route connecting San Antonio, Texas, to Pharr, Texas. There are five United States-Mexico border crossings within the ROI, which are located in the cities of Roma, Rio Grande, Mission, Hidalgo, and Pharr, Texas. Additionally, there are numerous local, city, and county roads that transect the ROI. County Road 1430, runs east-west through Hidalgo County between the Rio Grande and U.S. Highway 83.

3.14.1 Alternative 1: No Action Alternative

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

3.14.2 Alternative 2: Proposed Action

With the implementation of the Proposed Action, construction activities at the RVSS and relay 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, and the adjacent county roads would occur to supply materials and work crews to the RVSS and relay 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 and relay 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.

3.15 AESTHETIC AND VISUAL RESOURCES

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, the Falcon International Reservoir, agricultural and ranch land, the LRGVNWR, and many urban areas. Metropolitan areas adjacent to the project area include McAllen, Edinburg, Mission, Rio Grande City, and Pharr. U.S. Highways 83 and U.S 281 are the main roads through the project area.

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. The three zones are: 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 far 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).

3.15.1 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.

3.15.2 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 a 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. Those towers located nearby or within the LRGVNWR would have a greater visual resources impact within the project area than the other towers because of the nature of the LRGVNWR. However, the offsetting beneficial impacts those same towers would have on the overall visitor experience at the LRGVNWR as a result of the reduction and potential elimination of illegal cross-border activities within the LRGVNWR 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 and relay 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.

3.16 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 and relay 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 and relay 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. Several tower sites had evidence of

hazardous materials or recognized environmental conditions detected during the site inspections conducted from June 2015 through June 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.

RGC South of La Rosita Church – This site is located behind a dwelling where a wide variety of junk, debris, garbage, and some hazardous materials have been dumped for about 40 years. The materials on the site include several junk automobiles and motors, an abandoned farm tractor, used batteries, barrels with unknown contents, household garbage, and piles of debris from unknown sources. There is a potential to encounter petroleum fluids and other hazardous materials when excavating on the property. The debris, including the automobiles, would need to be removed to an authorized landfill prior to use of the property by CBP.

MCS Abram, Texas – This site is located adjacent to an active gas condensate production well and facility. There are aboveground storage tanks (ASTs) containing condensate and produced water adjacent to the site, as well as the active production well. There is evidence of soil staining by petroleum products adjacent to the piping and the ASTs, indicating spills in the past. The operator of the well could not be contacted to verify that no ground contamination exists. There is a potential to encounter petroleum fluids when excavating on the property.

3.16.1 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.

3.16.2 Alternative 2: Proposed Action

Installation of RVSS and relay 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 two tower sites 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 and relay 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.

3.17 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 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 effects 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 effects 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.

3.17.1 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.

3.17.2 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 effects could occur. However, any adverse effects 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 will have RF monitors that would alarm to indicate an unsafe RF environment. Additionally, RF hazard warning signage will 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 effects 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 Occupational, Safety, and Health Administration (OSHA) safety standards.

3.18 SOCIOECONOMICS

This socioeconomics section outlines the basic attributes of population and economic activity in Starr and Hidalgo counties in Texas.

Demographic data, shown in Table 3-16 provide an overview of the socioeconomic environment in the ROI. The U.S. Census 2015 estimated population in Hidalgo and Starr counties totaled 842,304 and 63,795, respectively. Hidalgo County grew at an average annual rate of 3.2 percent, much faster than the 2.1 percent rate for the state of Texas. The population of Starr County grew at an average annual rate of 1.3 percent, which was lower than the state and Hidalgo County, but still greater than average annual growth for the United States.

Per capita income data (U.S. Census Bureau 2015) show that the study area counties are relatively poor counties. Per capita income is far below the state and National averages, with Hidalgo County at 50.9 percent and Starr County at 41.8 percent of the National average. In 2015, average annual unemployment rate for Hidalgo County of 7.9 percent was high compared to Texas (4.5 percent) and the U.S. (5.3 percent). The average annual unemployment rate in Starr County (13.6 percent) is extremely high compared to the state and the Nation.

Table 3-16. Population, Income, Labor Force, and Unemployment

	2015 Population Estimate*	Average Annual Growth Rate 2000-2015 (Percent)	Per Capita Income (Dollars)	Per Capita Income As a Percent of the United States (Percent)	Annual Average Labor Force (2015)	Unemployment Rate (2015) (Percent)
Hidalgo County	842,304	3.2	$14,525	50.9	331,632	7.9
Starr County	63,795	1.3	$11,935	41.8	25,757	13.6
Texas	27,469,114	2.1	$26,513	92.8	13,078,304	4.5
United States	321,418,820	0.9	$28,555	100		5.3

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

3.18.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the proposed RVSS upgrade would not be constructed in the USBP's RGC, MCS, and WSL 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.

3.18.2 Alternative 2: Proposed Action

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 40 proposed towers are located in rural areas, and socioeconomic impacts related to their construction, operation, and maintenance would be negligible. 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 almost 800,000 acres in Hidalgo County and approximately 668,000 acres in Starr County in agricultural production (U.S. Department of Agriculture [USDA] 2012), impacts on the counties overall would be negligible. There is one residence used as a weekend retreat, located along Guerra Avenue in Rio Grande City, that would be directly and permanently impacted by construction, operation, and maintenance of tower (RGC Igloo House). 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 RCG, MCS, and WSL, Stations' AORs, which would likely contribute to a decrease in cross-border violators. The decrease in cross-border violator activities could have a beneficial effect on the incidence of crime and enhance safety in USBP RGC, WSL, and MCS 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.

3.19 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 effects 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 effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42

U.S.C. section 4321, et seq." The Department of Defense (DoD) has directed that NEPA will 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 $24,447 for a family of four in 2015, according to the U.S. Census Bureau (U.S. Census Bureau 2015d). 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 3-17 presents U.S. Census data for minority population and poverty rates for the ROI.

Table 3-17. Minority and Poverty

	Minority Population (Percent)	All Ages in Poverty (Percent)
Hidalgo County	92.6	34.6
Starr County	96.6	38.9
Texas	55.7	17.7
United States	37.2	15.6

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

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.

3.19.1 Alternative 1: No Action Alternative

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

3.19.2 Alternative 2: Proposed Action

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. Permanent, adverse impacts would be minor, impacting one landowner with a weekend retreat cabin and on several landowners with land in agricultural production and rangelands. Additionally, 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. Further, proper signage would be attached to the perimeter fence. The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low income populations, nor would there be environmental health or safety risks that disproportionately affect children.

3.20 SUMMARY OF IMPACTS

Table 3-18 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 3-18. 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 7.75 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 10.75 acres of soil would occur through the conversion of undeveloped land to use as RVSS and relay tower sites. The permanent footprint for the access roads and drives would encompass approximately 5 acres; an additional 132 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 4.25 acres of native vegetative habitat, including tower footprints and access drives. The plant communities associated with the RVSS and relay tower sites are both locally and regionally common, and the permanent loss of approximately 4.25 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 4.25 acres of habitat. The temporary degradation of approximately 132 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.
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.	Eleven archaeological resources are considered to have an undetermined eligibility for the NRHP. Effects on these 11 archaeological resources, prior to their assessment for the NRHP, would be considered adverse and significant. However, mitigation measures would be developed in consultation with the Texas SHPO, as well as other interested parties to reduce the effects to less than significant levels. Indirect beneficial impacts in the form of increased knowledge of the past, including site density and distribution, are realized as a result of surveys conducted as part of this EA. Previously recorded and unidentified cultural resource sites located within the project area and regionally would receive increased protection from disturbance as a result of enhanced surveillance capabilities and improved operational efficiency.
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 will 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 RGC, MCS, and WSL 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 effects 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 effects 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 (DOI 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 effects, 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 will result in cumulative impacts; however, the cumulative impacts will not be significant. CBP is currently planning, is conducting, or has completed several projects in the USBP's RGC, MCS, and WSL 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 storate 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 32 RVSS towers and associated roads within the Falfurrias, Brownsville, Harlingen, Fort Brown, and Kingsville Station's AORs.

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

- Improvements to US 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 will entail constructing left and right turn lanes at intersections.
- Improvements to FM 494 between state highway (SH) 107 and FM 1924 (Mile 3). The project includes construction of four 12-foot-wide travel lanes, one 16-foot-wide continuous left turn lane, 10-foot-wide outside shoulders, 6-foot sidewalks where needed, an underground storm drain system, and two drainage outfalls.
- Construction of a US 83 relief route from FM 886 to Showers Road in La Joya, Texas. The project consists of constructing a four-lane controlled access expressway facility

within a usual 350-foot-wide to a maximum 450-foot-wide ROW. The project begins approximately 1.0 mile east of FM 886 (El Faro Road) and runs east approximately 0.50 mile west of Showers Road. The total project length is projected to be approximately 8.9 miles.

- Improvements to Interstate 2 (I-2) and Bicentennial Boulevard in McAllen, Texas. The project consists of replacing the I-2 underpass at Bicentennial Boulevard with an overpass, raising bridges and overpasses on 23rd Street and 10th Street, changing entrance and exit ramps along I-2, resurfacing I-2 from FM 2220 to McColl Road, as well as utility, sidewalk, and crosswalk signal improvements.
- 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.

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 will 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 7.25 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 effect.

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 7.25 acres of soils (of which 1.75 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 effect.

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 and relay 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 ecoregion encompasses approximately 28,000 square miles in south Texas. Therefore, due to the permanent impact of only 8.25 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 effect 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 8.25 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 effect 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, and NAF exists at and near the proposed RVSS and relay tower sites, the construction, operation, and maintenance activities associated with the towers and road improvements, construction, and maintenance would not likely adversely affect 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 and relay 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 and relay 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 effects. 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 effect 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 and relay 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 no long-term increase in vehicular traffic in the region's airshed. 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. Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed RVSS and relay 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 and relay 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 effect.

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 affect cultural resources or historic properties once mitigation measures have been implemented but is anticipated to provide increased protection from disturbance due to the deterrence of cross-border violators within the area of tower coverage. Therefore, the Proposed Action, when combined with other existing and proposed actions in the region, 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, are 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 and relay towers would not be constructed under the No Action Alternative, so the availability of utilities would not be affected. All of the proposed RVSS and relay 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 and relay 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 effect 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 and relay towers sites are very lightly travelled 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 effect 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 and relay 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 and relay tower sites. One of the proposed RVSS tower sites has debris and automobiles that would require removal and disposal to an approved off-site location. Another site could have potential to encounter petroleum fluids during construction. If hazardous materials are encountered at the two 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 effects of the Proposed Action, when combined with other past, ongoing, and proposed actions in the region, would not be considered a major cumulative effect.

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 and relay tower sites would not be installed or operated. There would be no impacts on the existing RF environment or effects 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 will 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 effect.

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 and relay 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 will 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 will 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 will be required for certain activities implemented under the action alternatives. The proposed BMPs will 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 according to in 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 shall 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 (MBTA) (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 and relay 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 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 open 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

Bauer, K. Jack. 2011. "Mexican War." *Handbook of Texas Online*. Electronic document, http://www.tshaonline.org/handbook/online/articles/qdm02, 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. 1989a. 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 Energy Commission 2007. 2007 Integrated Energy Policy Report, CEC-100-2007-008-CMF.

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

Coalson, George O. 2010. "KLEBERG COUNTY," *Handbook of Texas Online*. Electronic document: 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.

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. 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.

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*. Electronic document: http://www.tshaonline.org/handbook/online/articles/NN/hcn5.html, accessed July 1, 2010. Published by the Texas State Historical Association.

National Park Service (NPS). 1996. Executive Order 13007. Electronic document, http://www.nps.gov/history/local-law/eo13007.htm, 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. Electronic resource, 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. Electronic document, http://www.nps.gov/history/local-law/FHPL_HistPrsrvt.pdf. 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. Electronic document, http://www.nps.gov/history/local-law/FHPL_NAGPRA.pdf. 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. Electronic document, http://www.nps.gov/history/local-law/FHPL_ArchRsrcsProt.pdf. Accessed January 19, 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, Electronic resource, 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.

Starr County Groundwater Conservation District (GCD). 2013. *Starr County GCD Management Plan*. October 2013

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, TX.

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 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, Wildlife Division, Diversity and Habitat Assessment Programs. TPWD County Lists of Protected Species and Species of Greatest Conservation Need. [Hidalgo County, Starr County, 1/7/2016]. 2/2/2016.

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. States and selected areas: Employment status of the civilian noninstitituioal population, 1976 to 2015 annual averages.

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

U.S. Census Bureau. 2015a. American Community Survey (ACS), 5-Year Estimates, 2010-2014. Per Capita Income in the Past 12 Months: B19301. Internet URL: http://factfinder2.census.gov/.

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

U.S. Census Bureau. 2015c. ACS, 5-Year Estimates, 2010-2014. Poverty Status in the Past 12 Months: S1701. Internet URL: http://factfinder2.census.gov/.

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

U.S. Census Bureau, Population Division. 2016a. 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. Hidalgo and Starr 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. 2016a. . Internet URL: http://www.epa.gov/air/criteria.html

USEPA. 2016b. Welcome to the Green Book Nonattainment Areas for Criteria Pollutants. www.epa.gov/oar/oaqps/greenbk. Last Accessed. 10/11/13.

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. 14 September 2000.

USFWS. 2004. Zapata Bladderpod (*Lesquerella thamnophila*) Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. I-vii + 30pp., Appendices A-B.

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. 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, 27 September 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. 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: https://www.co.kittitas.wa.us/uploads/cds/land-use/Administrative%20Segregations/SG-04-11091%20Rinehart/PUBFx%20Wetlands%20Code%20Interpreter.pdf.

US 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, Mar. 29, 1984.

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

8.0 ACRONYMS/ABBREVIATIONS

ACS	U.S. Census American Community Survey
ANSI	American National Standards Institute
AoA	Analysis of Alternatives
AOR	Area of Responsibility
ARPA	Archaeological Resources Protection Act
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BGS	Below ground surface
BLM	Bureau of Land Management
BMP	Best management practices
BPA	Border Patrol Agents
BPFTI	Border Patrol Facilities and Tactical Infrastructure
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_2	Carbon dioxide
CWA	Clean Water Act
dBA	A-weighted decibel
DHS	Department of Homeland Security
DNL	Day-night average sound level
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EM	Electromagnetic
E.O.	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FCR	fire-cracked rock
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GCD	Groundwater Conservation District
GHG	Greenhouse Gases
HFC	hydrochlorofluorocarbons
HTC	Historic Texas Cemeteries
HUD	U.S. Department of Housing and Urban Development
IEEE	Institute of Electrical and Electronics Engineers
IoI	items of interest
LRGVNWR	Lower Rio Grande Valley National Wildlife Refuges
MCS	McAllen
MPE	Maximum Permissible Exposure
N_2O	nitrous oxide

NAAQS	National Ambient Air Quality Standards
NAF	Northern Aplomado Falcon
NAGPRA	Native American Graves Protection and Repatriation Act
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
NRHP	National Register of Historic Places
NTIA	National Telecommunications and Information Administration
NVG	night vision goggles
OET	Office of Engineering and Technology
OSHA	Occupational Safety and Health Administration
OTHM	Official Texas Historical Markers
OTIA	Office of Technology Innovation and Acquisition
POE	Port of Entry
PMO	Program Management Office
RF	radio frequency
RGC	Rio Grande City
RGV	Rio Grande Valley
ROI	region of influence
ROW	right-of-way
RTHL	Recorded Texas Historic Landmarks
RVSS	Remote Video Surveillance Systems
SHPO	Texas State Historic Preservation Officer
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
TWDP	Texas Water Development Board
TxDOT	Texas Department of Transportation
U	Undetermined eligibility
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
WSL	Weslaco

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APPENDIX A
CORRESPONDENCE

APPENDIX B
RIO GRANDE CITY, MCALLEN, AND WESLACO STATIONS' SITE AND ROAD MAPS

APPENDIX C
STATE LISTED SPECIES