WRITTEN RE-EVALUATION OF THE 2014 FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE SPACEX TEXAS LAUNCH SITE

Introduction and Background

Introduction

This written re-evaluation (WR) evaluates whether supplemental environmental analysis is needed to support the Federal Aviation Administration (FAA) Office of Commercial Space Transportation decision to issue launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a private launch site on privately owned property in Cameron County, Texas.

The affected environment and environmental impacts of construction and operation of a private launch site in Cameron County, Texas were analyzed in the 2014 *Final Environmental Impact Statement for the SpaceX Texas Launch Site* (2014 EIS; FAA 2014a). The FAA's Record of Decision (ROD) was issued for this action on July 9, 2014. Following the ROD, a WR (FAA 2014b) was developed in November 2014 to re-evaluate modifications to the site design of the control center area. Since publication of the 2014 EIS and ROD, and the 2014 WR, SpaceX has updated facility design plans. SpaceX is again proposing to modify the site design of the control center area as well as the vertical launch area (VLA). This WR provides the determination of whether the contents, analyses, and conditions of approval in the 2014 EIS and ROD remain current and substantially valid. The FAA and other consulting parties executed a Programmatic Agreement (PA) and a subsequent MOA, to mitigate adverse effects on historic properties. In accordance with Stipulation VIII of the PA, the FAA notified the Section 106 Signatories and Invited Signatories (referred to as consulting parties) of the proposed changes to the control center area and determined the changes did not require modifying the PA. Additional information is provided in the Historical, Architectural, Archeological, and Cultural Resources section below.

Issuance of launch licenses and experimental permits is a major Federal action subject to the requirements of the National Environmental Policy Act of 1969 (NEPA). As such, the FAA must assess the potential environmental impacts of SpaceX's proposed modifications to the control center area and VLA. The FAA's environmental policies and procedures for implementing NEPA (FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*) provide that the FAA may prepare a WR to determine whether the contents of previously prepared environmental documents remain substantially valid or whether significant changes to a previously analyzed Proposed Action require the preparation of a supplemental EIS.

In accordance with Paragraph 9-2.c of FAA Order 1050.1F, the preparation of a new or supplemental EIS is not necessary when the following can be documented:

1. The proposed action conforms to plans or projects for which a prior EA and FONSI have been issued or a prior EIS has been filed and there are no substantial changes in the action that are relevant to environmental concerns;
2. Data and analyses contained in the previous EA and FONSI or EIS are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts; and
3. Pertinent conditions and requirements of the prior approval have been, or will be, met in the current action.

This WR provides documentation for the above three factors as well as the FAA's conclusion that the contents of the 2014 EIS remain current and substantially valid and the decision to issue launch licenses and/or experimental permits to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a private launch site in Cameron County, Texas does not require the preparation of a new EA or EIS.

During preparation of this WR, the FAA distributed a draft copy of the WR to the parties involved in the National Historic Preservation Act Section 106 consultation for the project—Texas State Historic Preservation Officer (SHPO), National Park Service (NPS), Advisory Council on Historic Preservation, U.S. Fish and Wildlife Service (USFWS), and Texas Parks and Wildlife Department. The FAA received comments from the SHPO and NPS. The FAA considered these comments when finalizing the WR. The comments and FAA's responses are included in Attachment 1.

Background

The NEPA process for SpaceX's original proposal was initiated with the publication of the Notice of Intent in the *Federal Register* on April 10, 2012 (77 FR 21619-21620). The FAA published a Notice of Availability (NOA) of the Draft EIS in the *Federal Register* on April 19, 2013 (78 FR 23629-23630). The NOA described the Proposed Action, provided the public hearing date and time, informed the public on how to obtain a copy of the Draft EIS, and initiated the public comment period. The FAA also announced the availability of the Draft EIS and the public hearing date in area newspapers. Flyers were posted in the local area to announce the NOA and comment period for the Draft EIS. Copies of the Draft EIS were distributed the week of April 8, 2013. The FAA sent notification letters, e-mails, and compact discs (CDs) containing the Draft EIS to individuals; Federal, State, and local agencies; elected officials; various interest groups that were part of the mailing list compiled during the scoping period; and Native American tribes.

At the request of Environmental Protection Agency (EPA) Region 6, the public comment period was extended by 21 days until June 24, 2013 (78 FR 35067). The FAA held a formal public hearing in

Brownsville, Texas on May 7, 2013. The EPA issued an NOA for the Final EIS on June 6, 2014 (79 FR 32729). The FAA signed its ROD on July 9, 2014.

Proposed Action

The FAA's Proposed Action, which was the subject of the ROD and is described in full in Section 2.1 of the 2014 EIS, is to issue launch licenses and/or experimental permits to SpaceX. The launch licenses and/or experimental permits would allow SpaceX to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a private launch site in Cameron County, Texas. To support these launches, SpaceX would construct a vertical launch area and a control center area in Cameron County, approximately 17 miles east-northeast of the Brownsville/South Padre Island International Airport and approximately 5 miles south of South Padre Island. The previously approved Proposed Action remains the same as described in the 2014 EIS with exception of proposed modifications to the VLA and Parcels 1 and 2 of the control center area, as described below.

Control Center Area Parcel 1

Figure 1 shows the layout of the 4-acre Parcel 1 as analyzed in the 2014 EIS. After the FAA issued its ROD, in November 2014, SpaceX proposed expanding Parcel 1 by approximately 7.2 acres (for a total of 11.2 acres) to include development of a solar array and excluding development in Parcels 2 and 3 (which were a combined 8.4 acres) as analyzed in the 2014 EIS. SpaceX was proposing to condense all control center area infrastructure into one parcel. The FAA prepared a WR (FAA 2014b) to determine if supplemental NEPA analysis was required for the proposed parcel expansion and installation of a solar array. Figure 2 shows the revised layout of Parcel 1 that was re-evaluated in the 2014 WR.

Figure 1. Original Proposed Layout of Control Center Area Parcel 1 (Exhibit 2.4-1b in 2014 EIS)

Figure 2. Updated Proposed Layout of Control Center Area Parcel 1 (2014 WR)

Now, SpaceX is proposing to expand Parcel 1 by approximately 1.6 acres for a total of approximately 12.8 acres (and include development in Parcel 2, as described below). There would be 2 acres of adjacent land held as a buffer. While SpaceX has no current plans to develop these 2 acres, this land could be developed in the future. If so, the FAA would undertake further environmental analysis to the extent necessary, in compliance with FAA Order 1050.1F. Figure 3 shows the latest proposed layout of Parcel 1.

Planned facilities for Parcel 1 still include two payload processing hangars, two launch control center buildings, a launch vehicle processing hangar, and miscellaneous supporting equipment as described in the 2014 EIS. A solar array is still planned to be installed on Parcel 1, but the exact layout and extent of the array is still to be determined. The solar array would be located within the current proposed layout (Figure 3). The solar array would be about 5 feet tall, composed of non-highly-reflective materials, and oriented east towards the Gulf of Mexico and away from the Palmito Ranch Battlefield National Historic Landmark (NHL).

Figure 3. Current Proposed Layout of Control Center Area Parcel 1
(Solar Array Location to be Determined)

Control Center Area Parcel 2

Figure 4 shows the layout of the 4.4-acre Parcel 2 as analyzed in the 2014 EIS. As documented in the 2014 WR, SpaceX proposed excluding development in this parcel. Now, SpaceX is proposing to expand Parcel 2 by approximately 1.6 acres for a total of approximately 6 acres. Figure 5 shows the latest proposed layout of Parcel 2. The lighter blue portions in Figure 5 represent the proposed expansion of 1.6 acres.

Figure 4. Original Proposed Layout of Control Center Area Parcels 2 and 3 (Exhibit 2.4-1a in 2014 EIS)

Figure 5. Current Proposed Layout of Control Center Area Parcel 2 (Light Blue Represents Proposed Expansion)

As presented in the 2014 EIS, Parcel 2 included a launch control center and associated supporting infrastructure. All of this infrastructure is now proposed to be located in Parcel 1 (see Figure 3 above). SpaceX's current proposed layout for Parcel 2 is shown in Figure 6.

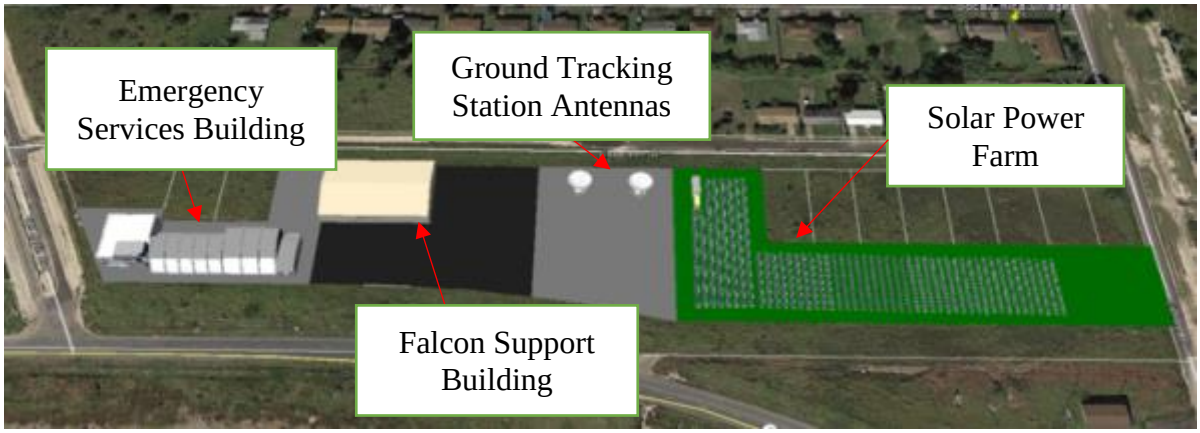

Figure 6. Proposed Infrastructure for Control Center Area Parcel 2

The proposed changes to Parcel 2 include replacing the buildings/facilities shown in Figure 4 (or Exhibit 2.4-1a in the EIS) with the following:

- Emergency Services Building
- Falcon Support Building
- Solar Array

SpaceX proposes to maintain the receivers/antenna dishes in Parcel 2. However, SpaceX proposes changes to the dimensions of the receivers, as noted below.

Emergency Services Building

The Emergency Services Building, which was not included in the 2014 EIS, is proposed to be constructed within the same footprint of Parcel 2 that was analyzed in the Final EIS. The majority of this 8,000 square foot, three-story building will be approximately 25 feet tall; the observation area will be approximately 46 feet tall. The building will be used to house emergency responders that provide emergency support to the launch site and to provide office space to site personnel. It will be located on the west side of the property. As shown in Figure 4, no development was proposed in this specific location. The building will also have a 10,000 square foot garage to house fire trucks, ambulances, equipment, and supplies. To minimize visual impacts to the landscape, exterior building colors will be selected in coordination with the NPS and in accordance with the *Memorandum of Agreement Among the Federal Aviation Administration, the Texas State Historic Preservation Officer, National Park Service, the Advisory Council on Historic Preservation, Space Exploration Technologies Corp., United States Fish and Wildlife Service, and Texas Parks and Wildlife Department, Regarding Mitigation Measures for the Construction and Operation of the SpaceX Texas Launch Site, Cameron County, Texas* (MOA, February 2015).

Falcon Support Building

The Falcon Support Building, which was not included in the 2014 EIS, is proposed to be constructed within the same footprint of Parcel 2 that was analyzed in the Final EIS. This 15,000 square foot, one-story building will be approximately 30 feet tall. It will be used to house office space for site personnel, a kitchen area, a dining area, and shipping and receiving operations. The building will be located on the west side of the property. To minimize visual impacts to the landscape, exterior building colors will be selected in coordination with the NPS and in accordance with the MOA.

Solar Array

Part of the solar array is proposed to be constructed within the same footprint of Parcel 2 that was analyzed in the Final EIS. A portion of the array would be located on land not previously considered in the 2014 EIS, as shown in Figure 7 below. The solar array would encompass approximately 2.5 acres, with each solar panel being approximately five feet tall and used to provide power to the control center area, VLA, and the University of Texas Rio Grande Valley's STARGATE facilities. The solar array would be located on the east side of the property. It would also include a small structure, approximately 12 feet tall and 300 square feet, to house batteries for power storage. The solar array would be composed of non-highly-reflective materials and oriented away from the NHL (for example, see Figure 8). As shown in Figure 8, the solar array would face east towards the Gulf of Mexico and away from the NHL.

Figure 7. Control Center Area Parcel 2 – Proposed Location of Solar Array in Orange

Figure 8. Looking West (Towards the NHL) at the Control Center Area Parcel 2 (Parcel 1 in the Background)

Receivers/Antenna Dishes

The satellite dishes are proposed to be constructed within the same footprint of Parcel 2 that was analyzed in the Final EIS. The Final EIS described the receivers/antenna dishes as follows:

> One or more antenna dishes would be required to receive data from the launch vehicle in flight, and to possibly communicate commands to the vehicle as needed. The most likely requirement would be for S-band reception. The antenna mounts would be approximately 20 square feet and would be located within the site fence line in an optimal location for good reception. Antenna dishes would be no larger than 20 feet in diameter and 25 feet high.

SpaceX proposes to install 2 satellite dishes (one of which is already installed). Each satellite dish would be approximately 41 feet tall, with approximately 900 square-foot pads. They would be used to receive data from launch vehicles during flight and to communicate commands to the launch vehicles if needed. The antennas would be located on the north side of Parcel 2, in the middle of the property.

Vertical Launch Area

Figure 9 shows the layout of the of the 56.5-acre VLA as analyzed in the 2014 EIS. SpaceX did not propose any changes to the VLA in November 2014.

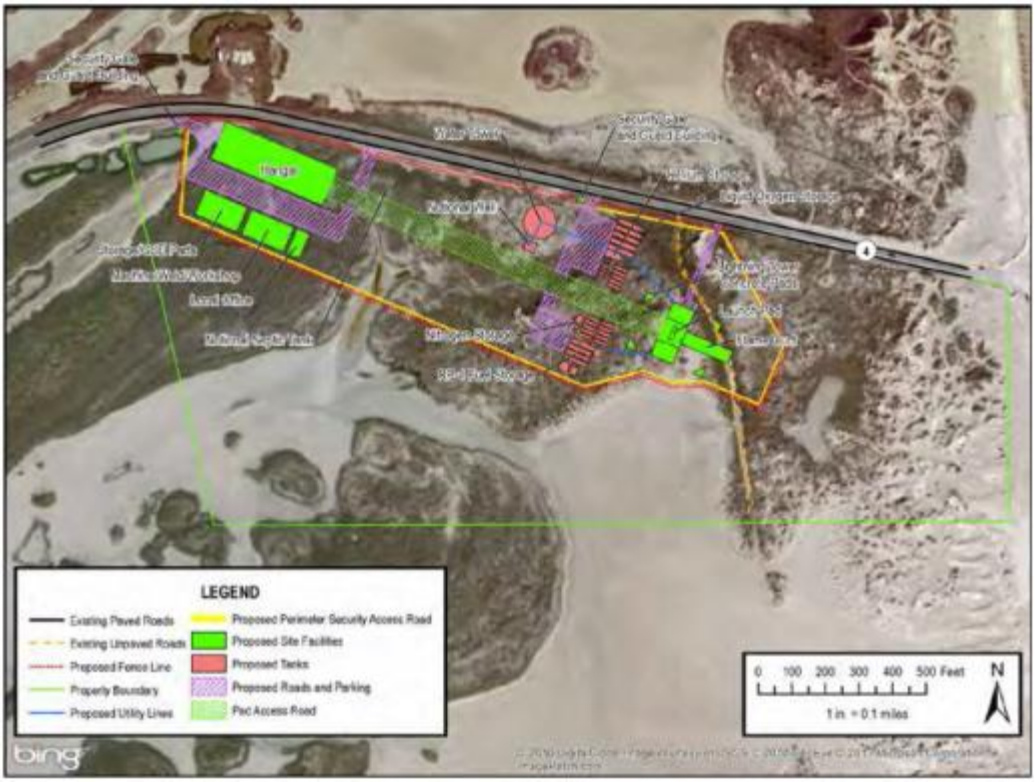

Figure 9. Original Proposed Layout of the Vertical Launch Area (Exhibit 2.1-3 in 2014 EIS)

SpaceX is currently proposing to add 1,400 feet of security fence and approximately 800 feet of associated security road adjacent to the fence at the VLA (see Figure 10). The yellow line represents the security road. The proposed fence is shown in red. The fence would connect with existing SpaceX security fence.

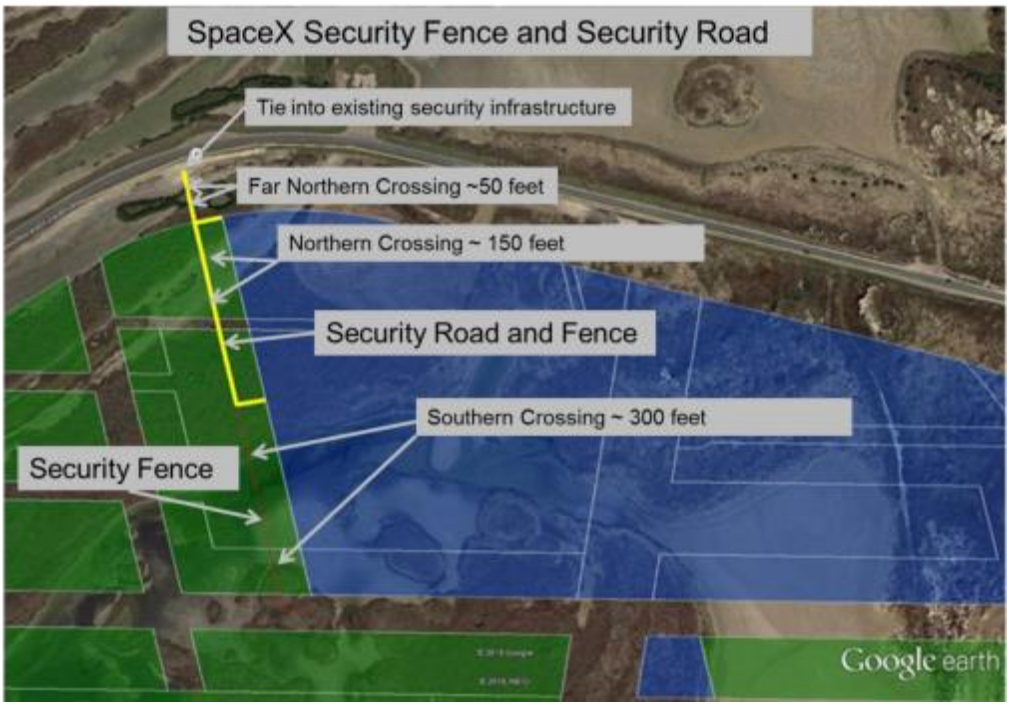

Figure 10. Proposed Security Fence at the Vertical Launch Area

In summary, SpaceX's current proposal as analyzed in this WR includes developing a total of 17.2 acres for the control center area (compared to a total of 12.4 acres analyzed in the 2014 EIS) and adding a security fence and security road to the VLA. SpaceX has indicated they are still planning on developing infrastructure (support buildings and solar array) in Parcel 3; however, to-date, SpaceX has not provided the FAA with details. Therefore, this WR does not consider any updates to Parcel 3. At such time SpaceX presents the FAA with proposed modifications to Parcel 3, the FAA would undertake further environmental analysis to the extent necessary, in compliance with FAA Order 1050.1F.

The modifications to control center area Parcels 1 and 2 and the VLA, as described above, are being analyzed in this WR. There would be no changes to operations as described in the 2014 EIS as a result of these modifications.

In accordance with FAA Order 1050.1F, the Associate Administrator of the Office of Commercial Space Transportation has determined a WR is needed to determine whether the previously prepared 2014 EIS remains valid and the Proposed Action does not require the preparation of a supplemental or new EIS. This determination focuses on the current affected environment and the potential impacts of the Proposed Action and how they relate to the information and analysis presented in the 2014 EIS. Thus, this WR determines if the analysis of the affected environment and environmental impacts in the 2014 EIS remain an applicable, accurate, and substantially valid means of reflecting the potential environmental impacts of issuing launch licenses and/or experimental permits to SpaceX. If the FAA determines through this WR that the 2014 EIS is still current and valid, the FAA may use the 2014 EIS to support the decision to issue launch licenses and/or experimental permits to SpaceX to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch

vehicles and a variety of reusable suborbital launch vehicles from a private launch site in Cameron County, Texas.

Affected Environment

There are no changes to the existing conditions for the environmental impact categories analyzed in the 2014 EIS. The Region of Influence (ROI) defined for direct effects on historical, architectural, archaeological, and cultural resources, which was defined as the "direct impacts Area of Potential Effects (APE)," has changed. In consultation with the SHPO, the FAA defined a direct impacts APE[1] for the VLA and the control center area. The direct impacts APE for the VLA was defined as the entire 56.5-acre site. This ROI is expanded to include the footprint of the proposed security fence and road. The direct impacts APE for the control center area was defined as the limits of all three parcels on which development would occur. This ROI is expanded by approximately 1.6 acres for Parcel 1[2] and 1.6 acres for Parcel 2. All other ROIs remain unchanged. The proposed expansions of the APEs were reviewed by the Section 106 consulting parties. The SHPO and ACHP concurred with the changes to the APEs (see Attachment 3).

Reevaluation of Environmental Consequences

Because SpaceX's modifications to Parcels 1 and 2 would not affect launch-related operations as discussed in the 2014 EIS, this WR focuses on re-evaluating construction-related impacts.

Air Quality

Air quality impacts under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those impacts described for construction of the VLA. The 2014 EIS concluded that the estimated emissions from construction and operation of the launch site represent an extremely small percentage of the Cameron County regional emissions and would not cause any National Ambient Air Quality Standards (NAAQS) to be exceeded. Emissions associated with expanding Parcels 1 and 2 to account for additional infrastructure (emergency services building, Falcon support building, and solar array) and expanding the footprint of the VLA to add the security fence and road would be temporary and less than the total emissions considered in the 2014 EIS. Emissions associated with the Proposed Action are therefore within the scope of impacts analyzed in the 2014 EIS. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact on air quality.

Biological Resources (including Fish, Wildlife, and Plants)

Biological resource impacts under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those impacts

[1] The APE for indirect effects was defined as a 5-mile radius centered upon the proposed VLA.
[2] Note that in 2014 WR, the ROI for Parcel 1 was expanded by approximately 7.2 acres. Thus, since publication of the 2014 EIS, the ROI for Parcel 1 has expanded by a total of approximately 8.8 acres.

described for construction of the VLA. In the 2014 EIS, the FAA determined that a total of 15.74 acres of upland habitat would be removed as a result of the construction of the vertical launch and control center areas. In accordance with Section 7 of the Endangered Species Act (ESA), the FAA prepared a Biological Assessment (BA) and entered into formal consultation with U.S. Fish and Wildlife Service (USFWS) to address potential effects to ESA-listed species, species proposed for listing, and critical habitat. Based on the analysis presented in the BA, the FAA determined the Proposed Action "may affect and is likely to adversely affect" the following species: piping plover and its critical habitat, red knot, northern aplomado falcon, Gulf Coast jaguarundi, ocelot, and Kemp's ridley, hawksbill, leatherback, loggerhead, and green sea turtles. The FAA determined the Proposed Action "may affect, but is not likely to adversely affect" the West Indian manatee. Consultation with USFWS was completed with issuance of a Biological Opinion (BO) on December 18, 2013. The BO concurred with the findings in the BA and concluded no jeopardy to any species and no adverse modification to critical habitat. The BO specified non-discretionary "terms and conditions" that are necessary to minimize impacts to listed species and critical habitat. The FAA is committed to implementing the "conservation measures" and "terms and conditions" outlined in the BO to minimize potential effects to ESA-listed species and critical habitat.

The Proposed Action would not introduce any additional construction-related effects that are outside the scope of impacts analyzed in the 2014 EIS and the USFWS BO. As a part of the 2014 WR, SpaceX coordinated with the USFWS regarding the proposed solar array. On September 2, 2014, Mary Orms from the USFWS noted via email that the USFWS does not have any objections to a change in design or inclusion of a solar array.

The FAA re-initiated consultation with the USFWS on January 26, 2017 to assess potential effects on ESA-listed species as a result of installing a security fence and road at the VLA. After learning of SpaceX's proposed changes to the control center area site design, the FAA expanded the consultation with USFWS to include these changes. The correspondence associated with this consultation is attached (Attachment 2). The FAA concluded no take of species beyond that issued in the BO is anticipated from the proposed modifications to the control center area and VLA. An additional take of approximately 0.082 acre of piping plover critical habitat would occur from installation of the security fence and road. On June 7, 2017, the USFWS stated they would like to concur with the FAA's effect determinations, but requested additional information. The FAA provided the USFWS the requested information. The USFWS stated they plan to amend the BO to account for the additional incidental take of piping plover critical habitat (see Attachment 2). Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid and the Proposed Action would not result in a significant impact on biological resources.

Climate

Climate-related impacts under the Proposed Action would be less than those impacts described in the 2014 EIS because the Proposed Action does not include emissions from launches, which comprise the majority of the overall project's GHG emissions. Climate impacts were addressed in Appendix L of the 2014 EIS. The 2014 EIS concluded that greenhouse gas (GHG) emissions from construction would be less than 800 metric tons of carbon dioxide equivalent (CO_2e) per year for the estimated two-year construction period. GHG emissions under the Proposed Action would be

minimal, and the source of emissions would be temporary, occurring only during the period of construction. Expanding the VLA and Parcels 1 and 2 to account for additional infrastructure would not result in climate-related impacts. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact related to climate.

Coastal Resources

Coastal resource impacts under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those impacts described for construction of the VLA. Although not required by the Coastal Zone Management Act,[3] during preparation of the 2014 EIS, a Federal Consistency Determination was submitted to the Texas General Land Office (TGLO). The TGLO raised no objections to the Federal Consistency Determination. Based on this consultation, the FAA determined construction and operation of the launch site was consistent with the enforceable policies of the Texas Coastal Management Program. The Federal Consistency Determination remains unchanged as a result of SpaceX's current proposal to modify the VLA and Parcels 1 and 2. Therefore, the Proposed Action is still consistent with the Texas Coastal Management Program. No impacts on coastal resources would occur from construction of the control center. Installing the security fence and road at the VLA would impact an additional 0.08 acres of coastal wetlands. SpaceX is currently modifying its Clean Water Act (CWA) Section 404 permit with the U.S. Army Corps of Engineers (USACE; see Water Resources below). Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact on coastal resources.

Department of Transportation Act Section 4(f)

Impacts on Section 4(f) properties under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. The 2014 EIS determined construction and operation of the VLA and control center area would not result in a physical or constructive use of any Section 4(f) property. The Proposed Action would not result in any potential construction-related impacts on Section 4(f) properties which would be considered outside the scope of impacts analyzed in the 2014 EIS. Construction would occur on previously analyzed parcels or on land directly adjacent to the previously analyzed parcels. The Proposed Action would not affect Section 4(f) properties. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact on Section 4(f) properties.

Farmlands

There are no farmlands located within or near the VLA and Parcels 1 and 2. Farmlands were dismissed from analysis in the 2014 EIS. Thus, the Proposed Action would not affect farmlands.

[3] Because the applicant (SpaceX) is seeking a license from the FAA, and the action is not a direct Federal activity (15 CFR part 930), the FAA is not required to submit a consistency determination. Rather, the applicant (SpaceX) is required to submit a consistency certification.

Hazardous Materials, Solid Waste, and Pollution Prevention

Impacts related to hazardous materials, solid waste, and pollution prevention under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those impacts described for construction of the VLA. Construction of the VLA and control center area would use products containing hazardous materials, including paints, solvents, oils, lubricants, acids, batteries, surface coating, and cleaning compounds. Through the implementation of appropriate handling and management procedures for hazardous materials, hazardous wastes, and solid wastes, the potential for impacts would be avoided or minimized. Batteries associated with the solar array would be subject to the implementation of appropriate handling and management procedures as described in the 2014 EIS. A potential hazardous material release associated with the solar array, although unlikely, would be subject to the management procedures described in the 2014 EIS and SpaceX's Hazardous Materials Emergency Response Plan. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the revised Proposed Action would not result in a significant impact related to hazardous materials, solid waste, and pollution prevention.

Historical, Architectural, Archeological, and Cultural Resources

Historical, architectural, archeological, and cultural resource impacts under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. The 2014 EIS determined construction and operation of the vertical launch and control center areas would directly impact the historic integrity of the NHL through visual impacts, including vertical construction of towers and lighting. The FAA and other consulting parties executed a PA and an MOA to mitigate adverse effects on historic properties. Under the Proposed Action, to avoid or minimize visual impacts on the NHL, any infrastructure over 30 feet tall would be painted a color that is agreed-upon by the consulting parties, in accordance with the MOA. No additional impacts to the historic integrity of the Palmito Ranch Battlefield NHL or any other historic property would occur from the proposed modifications of the VLA and Parcels 1 and 2. Additional information on visual impacts is found below in the visual effects section.

In accordance with Stipulation VIII of the PA, the FAA notified the Section 106 consulting parties of the proposed changes to the control center area and determined the changes did not require modifying the PA. On February 7, 2017, the FAA sent a letter to the consulting parties identifying the proposed changes to the VLA. The FAA received responses from the Texas Historical Commission and the Advisory Council on Historic Preservation. Both parties agreed that the proposed changes do not require modifying the PA. Similarly, on May 1, 2017, the FAA sent another letter to the consulting parties regarding the proposed changes to the VLA (see Attachment 3). The FAA determined the proposed changes do not require modifying the PA. The only comments the FAA received were from the Advisory Council on Historic Preservation, which concurred with the FAA's determination.

As part of the 2014 WR, a qualified contractor conducted a metal detector survey of the area in Parcel 1 that SpaceX was proposing to include. No historic resources were located, only modern

materials. As part of the 2014 EIS, an archeological survey of the entire boundary of Parcel 2 (see Figure 4 above) was conducted. No archaeological resources were found during that survey. As was done in 2014, a qualified contractor conducted a metal detector survey of the proposed expanded area of Parcel 2 (see Figure 5 above). No historic properties or other cultural resources were identified by the survey. On June 30, 2017, the FAA submitted the survey report to the Texas Historical Commission for review. On July 26, 2017, the Texas Historical Commission concurred with the findings in the report. The survey report and correspondence with the Texas Historical Commission is attached (Attachment 3).

Similarly, the same contractor will conduct a metal detector survey of the proposed expanded area of the VLA before construction commences. The survey will be conducted in compliance with the Programmatic Agreement and Section 106 regulations. The FAA will send the survey report to the Texas Historical Commission for review. If any archeological resources are located, the FAA will consult with the State Historic Preservation Officer and any other parties, as applicable. The Proposed Action is not expected to impact archeological resources. Any unanticipated discoveries during construction would be subject to the management guidelines established in the Unanticipated Discoveries Plan. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact on historical, architectural, archeological, and cultural resources.

Land Use

Land use impacts under the Proposed Action would be slightly more than those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. Additional impacts would occur as a result of expanding Parcel 1 by 1.6 acres (in addition to 7.2 acres expanded in 2014) and Parcel 2 by 1.6 acres to account for the current proposed design of the control center area. Construction of the control center area would change land use from vacant, residential lots to a mixed-use facility. Construction of the VLA would change land use from vacant, undeveloped, open space, to a mixed-use facility. Since Cameron County does not have a land use plan or zoning in unincorporated areas, these land use changes do not violate local land use ordinances. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact on land use.

Natural Resources and Energy Supply

Impacts related to natural resources and energy supply under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. Energy required for construction activities would predominantly be associated with operating construction equipment and generators, which would require the supply of gasoline and diesel fuels. Although construction may have a minimal requirement for single-phase electrical power, no significant impact to energy supply is anticipated. It is possible the solar array could provide for all of the power demands of the launch site, making the launch site self-sustaining, utilizing a fully renewable energy source. If utility upgrades were not needed, the use of solar technology would have a beneficial effect on energy supply. The region

surrounding Brownsville has sufficient supply of aggregate to meet the requirements for construction in the control center area. No significant impacts to municipal water supply in Brownsville, or groundwater supply in Cameron County, were identified in the 2014 EIS. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact related to natural resources and energy supply.

Noise and Noise-Compatible Land Use

Noise and noise-compatible land use impacts from the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. The 2014 EIS concluded significant impacts to land use compatibility would occur as a result of increased personnel working on-site, traffic, and noise generated from operational activities and from increased noise during launches, particularly to Boca Chica Village (a residential area) and the surrounding public lands. The Proposed Action would not generate noise or result in compatible land use impacts beyond the noise levels and impacts discussed in the 2014 EIS. The total number of employees associated with the newly proposed buildings (emergency services building and the Falcon support building) on a normal day would be approximately 40–50 people. This would not substantially add to the overall traffic along SH4 and would not affect daily average sound levels experienced at the NHL. The launch area is adjacent to State Highway 4, which provides the only access to Boca Chica Beach and is thusly subject to traffic noise. Beach visitors frequent this area where vehicles can drive onto the beach. Accordingly, the data and analyses contained in the 2014 EA remain substantially valid, and the Proposed Action would not result in a significant impact related to noise and noise-compatible land use.

Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

Impacts related to socioeconomics, environmental justice, and children's environmental health and safety risks under the Proposed Action would be comparable those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. The 2014 EIS concluded construction and operation of the launch site might have a beneficial impact on the local economy through direct spending, and that the related economic activity might lead to indirect job creation in areas such as the accommodation and food services and retail trade sectors. Construction activities would not result in significant impacts to the housing market. The Proposed Action would not strain the capacity or affect the quality of emergency response, medical, or public education services. Changes to the viewshed from State Highway 4 would be similar and affect all viewers equally and would therefore not result in disproportionate impacts to environmental justice populations (including minorities and low-income populations). The Proposed Action would not disproportionately adversely affect children's environmental health and safety. While effects on property values cannot be quantified, potential effects to quality of life for Boca Chica Village residents would still occur based on changes to the noise environment, visual viewshed, nighttime light emissions, traffic, and numbers of people in the vicinity. The Proposed Action would not result in additional construction-related impacts related to this impact category which are outside the scope of impacts analyzed in the 2014 EIS. Accordingly, the data and analyses

contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact related to socioeconomics, environmental justice, and children's environmental health and safety risks.

Visual Effects (including Light Emissions)

Visual effects under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. The 2014 EIS determined construction activities would impact the visual environment of residents of Boca Chica Village and travelers on State Highway 4, but the impacts would be intermittent, temporary, and minimized through SpaceX's Lighting Management Plan. In addition, the 2014 EIS concluded that operation of the VLA and control center area would likely have a significant impact on visual resources along State Highway 4 and the Palmito Ranch Battlefield NHL, and that nighttime launch operations (occurring only once per year) would result in considerably higher levels of light emissions than those currently present at Boca Chica Village. The Proposed Action would not result in any potential construction-related visual impacts that are outside the scope of impacts analyzed in the 2014 EIS. Construction would occur on previously analyzed parcels or on land directly adjacent to the analyzed parcels. SpaceX submitted photos looking from the eastern edge of the NHL towards the existing antenna and STARGATE facility (Attachment 4). Neither the antenna or STARGATE facility are visible or discernable to the naked eye. Based on these photos, as well as the MOA's color stipulation, the FAA does not believe the addition of the emergency services building and Falcon support building will substantially change the landscape as viewed from the NHL in a way that was not previously considered in the 2014 EIS. The solar arrays would be approximately five feet tall, composed of non-highly-reflective materials, and oriented away from the NHL. Thus, the solar arrays would not be visible to the naked eye from the NHL.

Operations-related lighting (i.e., nighttime lighting of buildings and facilities) associated with the new infrastructure (i.e., emergency services building and Falcon support building) would not substantially add to the overall lighting of the control center area. All activities would adhere to SpaceX's Facility Design and Lighting Management Plan, which is intended to minimize lighting impacts on the night sky. All lighting at the control center area would be directed downward. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact related to visual effects.

Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

Impacts on water resources under the Proposed Action would be comparable to those impacts described in the 2014 EIS for construction of the control center area and less than those described for construction of the VLA. There would be no impacts to Wild and Scenic Rivers. Regarding wetlands, the 2014 EIS concluded construction of the launch site (namely the VLA) would result in approximately 6.19 acres of wetland impacts, including direct impact to approximately 3.34 acres of wetlands and the indirect impact to approximately 2.85 acres of wetlands. Additional efforts to avoid and minimize wetland impacts (as a result of the wetland permitting process with the USACE

during preparation of the EIS) resulted in a reduction of potential direct and indirect wetland impacts to 3.90 acres. A freshwater emergent wetland is located near the north tip of the expanded Parcel 1. This wetland is outside the area to be developed and would not be affected. There are no wetlands within Parcel 2. Therefore, there would be no wetland impacts from developing the control center area. Installation of the security fence and road in the VLA would impact approximately 0.08 acres of wetlands. SpaceX is currently modifying its CWA Section 404 permit with the USACE to account for these impacts and address mitigation.

The VLA and the control center area are located within the 100-year floodplain. The 2014 EIS determined approximately 4.22 acres of floodplain Zone V10 and 4.37 acres of Zone A8 would be filled in the VLA, and approximately 13.4 acres of Zone A8 would be filled in the control center area. The EIS concluded that based on the expected notable adverse impacts on some of the natural and beneficial floodplain values, the Proposed Action would result in a significant floodplain encroachment per Department of Transportation Order 5650.2. In the 2014 EIS, the FAA determined there were no practicable alternatives that would totally avoid impacts to wetlands and floodplains. Expansion of Parcels 1 and 2 would result in an additional 3.2 acres of floodplain impacts. Installation of the security fence and road would be located within the 100-year floodplain.

The proposed construction in the VLA and control center area would be conducted in accordance with applicable county zoning and would be coordinated with the Cameron County floodplain administrators to receive a development permit. Additional coordination with Cameron County would be required to ensure the proposed construction meets the requirements of the National Flood Insurance Program (NFIP). The NFIP permits development in the floodway if it can be demonstrated that “no-rise” in the base flood elevation will occur. All construction would occur on previously analyzed parcels, or on land directly adjacent to the analyzed parcels.

The emergency services building and Falcon support building would provide a source of potable water for employees as well as water for daily operations at these facilities. At this time, SpaceX is planning to provide water to the control center by transporting water to the site. Appendix K of the 2014 EIS discussed transporting water to the launch site by truck, including a maximum of 112 truck deliveries of potable water per year. Adding the emergency services building and Falcon support building would not increase the number of trucks delivering water to the control center area because they would already be delivering water to the site. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not result in a significant impact on water resources.

Cumulative Impacts

The Proposed Action would not result in significant cumulative impacts to any environmental impact category. Further, the Proposed Action would not result in cumulative impacts which would be substantially different from those cumulative impacts analyzed in the 2014 EIS. The 2014 EIS analyzed the environmental impacts of the Proposed Action along with the potential environmental impacts of past, present, and reasonably foreseeable future actions and determined the Proposed Action would not result in significant cumulative impacts to any environmental impact category. As discussed above, no significant impacts are expected from the Proposed Action. Further, impacts

associated with the Proposed Action would not be expected to increase beyond those considered in the 2014 EIS. Accordingly, the data and analyses contained in the 2014 EIS remain substantially valid, and the Proposed Action would not be expected to have a significant cumulative impact.

Conclusion

The 2014 EIS examined the potential for significant environmental impacts and defined the regulatory setting for impacts associated with the FAA issuing launch licenses and/or experimental permits to SpaceX that would allow SpaceX to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a private launch site on privately owned property in Cameron County, Texas. The Proposed Action included constructing a VLA and control center area. The areas evaluated for environmental impacts included air quality; biological resources (fish, wildlife, and plants); climate; coastal resources; Department of Transportation Section 4(f); farmlands; hazardous materials, pollution prevention, and solid waste; historical, architectural, archaeological, and cultural resources; land use; natural resources and energy supply; noise and noise-compatible land use; socioeconomics, environmental justice, and children's environmental health and safety risks; visual effects (including light emissions); water resources (including surface waters, groundwater, wetlands, floodplains, and wild and scenic rivers); and cumulative impacts.

Based on the above review and in conformity with FAA Order 1050.1F, Paragraph 9-2.c, the FAA has concluded that the issuance of launch licenses and/or experimental permits to SpaceX to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles, including construction of the VLA and control center area, conforms to the prior environmental documentation, that the data contained in the 2014 EIS remain substantially valid, that there are no significant environmental changes, and that all pertinent conditions and requirements of the prior approval have been met or will be met in the current action. Therefore, the preparation of a supplemental or new environmental document is not necessary to support the FAA license issuance for this action.

Responsible FAA Official: _____

Location and Date Issued: Washington DC October 5, 2017

References

FAA (Federal Aviation Administration). 2014a. Final Environmental Impact Statement for the SpaceX Texas Launch Site. May.

FAA. 2014b. Written Re-evaluation of the 2014 Final Environmental Impact Statement for the SpaceX Texas Launch Site.

Attachment 1. Agency Comments on Draft Written Re-evaluation

Baker, Nicholas

From: Sara Luduena <Sara.Luduena@thc.texas.gov>
Sent: Thursday, June 15, 2017 1:13 PM
To: Stacey.Zee@faa.gov; Amy_Pallante@nps.gov; Amy_K_Cole@nps.gov; Bill Martin; Bryan_Winton@fws.gov; Christina_Dickinson@nps.gov; Daniel.Czelusniak@faa.gov; Daniel.Murray@faa.gov; David_Hurd@nps.gov; Dawn_Gardiner@fws.gov; Howard.Searight@faa.gov; Jayson.M.Hudson@usace.army.mil; Jeff.Raasch@tpwd.texas.gov; Feldman, Jessica; Justin Kockritz; Katherine.Andrus@faa.gov; Kendal.Keyes@tpwd.texas.gov; Lemuel.Thomas@faa.gov; Leslie.Grey@faa.gov; Mark_E_Meyer@nps.gov; Mark_Spier@nps.gov; Matthew.Thompson@spacex.com; Michael.Strutt@tpwd.texas.gov; Baker, Nicholas; Randy_Stanley@nps.gov; Robert_Jess@fws.gov; Rolando_Garza@nps.gov; Ross.Melinchuk@tpwd.state.tx.us; sstokely@achp.gov; Steve@spacex.com; Tom_Keohan@nps.gov; Casey Hanson
Subject: RE: SpaceX Texas Launch Site - Written Reevaulation

Categories: Green Category

Stacey,

We have reviewed the Written Reevaluation and generally concur with the findings. My only comments are that the solar array, which I understand is still being developed, should be composed of non-highly-reflective materials (to the extent possible) and oriented in such a way to try and limit its potential impact on the Palmito Ranch Battlefield NHL. Also, the document (page 9) mentions two 41 foot tall satellite dishes. Since these are over 30 feet in height, they should be colored or painted a color consistent with the requirements in the MOA, Stipulation I.C.

Please let us know if you have any questions.

Thanks,
Sara

From: Stacey.Zee@faa.gov [mailto:Stacey.Zee@faa.gov]
Sent: Tuesday, May 23, 2017 3:58 AM
To: Amy_Pallante@nps.gov; Amy_K_Cole@nps.gov; Bill Martin <Bill.Martin@thc.texas.gov>; Bryan_Winton@fws.gov; Christina_Dickinson@nps.gov; Daniel.Czelusniak@faa.gov; Daniel.Murray@faa.gov; David_Hurd@nps.gov; Dawn_Gardiner@fws.gov; Howard.Searight@faa.gov; Jayson.M.Hudson@usace.army.mil; Jeff.Raasch@tpwd.texas.gov; Jessica.Feldman@icfi.com; Justin Kockritz <Justin.Kockritz@thc.texas.gov>; Katherine.Andrus@faa.gov; Kendal.Keyes@tpwd.texas.gov; Lemuel.Thomas@faa.gov; Leslie.Grey@faa.gov; Mark_E_Meyer@nps.gov; Mark_Spier@nps.gov; Matthew.Thompson@spacex.com; Michael.Strutt@tpwd.texas.gov; Nicholas.Baker@icfi.com; Randy_Stanley@nps.gov; Robert_Jess@fws.gov; Rolando_Garza@nps.gov; Ross.Melinchuk@tpwd.state.tx.us; Sara Luduena <Sara.Luduena@thc.texas.gov>; sstokely@achp.gov; Stacey.Zee@faa.gov; Steve@spacex.com; Tom_Keohan@nps.gov
Subject: SpaceX Texas Launch Site - Written Reevaulation

Consulting Parties -

Per our annual meeting discussion, we have prepared a Written Reevaluation (WR) for SpaceX's modifications to the control center area site design.

As outlined in the WR, the document provides the determination of whether the contents, analyses, and conditions of approval in the 2014 EIS and ROD remain current and substantially valid. Please review the WR and let me know if you have any comments.

We have been working on action items from the annual meeting and SpaceX is working to update the facility design plan. I will follow up in the next week or two with updates on these items.

Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591
202-267-9305

United States Department of the Interior

NATIONAL PARK SERVICE
INTERMOUNTAIN REGION
12795 West Alameda Parkway
P.O. Box 25287
Denver, Colorado 80225-0287

IN REPLY REFER TO NHL:

JUN 2 3 2017

Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591

RE: Re-Evaluation FAA Order 1050.1F SpaceX Expanded Scope

Dear Ms. Zee:

Thank you for allowing the National Park Service to review and comment on the Written Reevaluation (WR) for the approved 2014 EIS and ROD for the SpaceX development in Brownsville, TX near the Palmito Ranch Battle National Historic Landmark (NHL). In general we have concerns that the WR focused primarily on the expanded construction-related impacts and did not address the related expanded operational impacts to the NHL. In addition the WR did not adequately address the issue of "cumulative effects" that will occur with the proposed expanded project scope. Our specific concerns are:

- We previously expressed concerns about the increased number of buildings and a parallel increase in lighting for the project. There is no re-evaluation of the effects of increased lighting on night sky effecting the NHL.
- Likewise, there is no re-evaluation of the visual impacts other than the stipulation of building colors for structures over 30 feet tall and no mention of operational lighting.
- The evaluation of noise is limited to construction only - not daily operations, in spite of the fact that several new facilities are proposed, which would likely result in more employee activity on site, and more traffic noise, leading to additional indirect effects to the NHL. On page 16 of the WR, visual effects, including light emissions, are discussed only in the context of construction. It is likely that new buildings, an antenna and increased lighting at night will have effects beyond construction.
- There is still ambiguity on the location and size of the solar array; only the portion to be built on Parcel 2 is discussed in the WR. There is also an open-ended question on future development of Parcel 3, including the possibility that more solar panels will be built there. This suggests that the project will continue in a segmented fashion with changes and more additions than what has been presented so far.
- The WR did not address the need for trucking in potable water and water for launches or using wells and ground water (which may not have been finally decided upon but has been discussed with consulting parties). More facilities for this type of use will cause higher water use and impacts to the NHL from increased truck traffic should trucking be the decided-upon option.
- Cumulative Effects/Impacts were not addressed in the WR.

- In reference to Paragraph 9-2.c of FAA Order 1050.1F , the construction of the Stargate Building and the three proposed Liquefied Natural Gas Terminals at the Port of Brownsville that have filed for a FERC permit constitutes significant new circumstances and/or information that is relevant to evaluating the cumulative effects of the expanded SpaceX project.
- In addition, now that the Stargate building has been constructed and one of the 41' antennas is installed, we now have actual structures in place that will help evaluate the visual impacts on the NHL. These structures should also aid in evaluating the accuracy of the visual simulations provided, which we have previously stated do not accurately reflect what a person would see on the ground with the naked eye.
- The addition of two large structures on Parcel 2 of the Control Center increases the structural density of the Control Center compound and consequently increases the impacts to the viewshed and visual integrity of historic setting (character) of NHL.

- Finally, we believe that there are reasonably foreseeable effects which may occur later in time, such as the need to modify or expand the solar array, and other project alterations or additions or increased intensity of use will happen in the future, that have not been taken into account in the WR. We base this assumption on the many changes that have already been proposed since we first began our consultation with you on this project.

In summary, we believe there are increased impacts to the NHL that have not been satisfactory evaluated. Please contact me if you have any question, or need clarification regarding the concerns outlined above. Thank you for considering our comments.

Sincerely,

Amy Cole

Amy Cole
Program Manager
Heritage Partnerships Program

CC: Mark Wolfe, SHPO, Texas Historical Commission, 108 W. 16th Street, Austin, TX 78701
Najah Duvall-Gabriel, Advisory Council on Historic Preservation, 401 F Street NW, Suite 308,Washington, DC 20001-2637

FAA Office of Commercial Space Transportation
2017 Written Re-evaluation of the 2014 Final EIS for the SpaceX Texas Launch Site

Section 106 Consulting Party Comments

Commenter	Comment	FAA Response
THC	We have reviewed the Written Reevaluation and generally concur with the findings. My only comments are that the solar array, which I understand is still being developed, should be composed of non-highly-reflective materials (to the extent possible) and oriented in such a way to try and limit its potential impact on the Palmito Ranch Battlefield NHL.	Thank you for the comments. The solar array will be composed of non-highly-reflective materials and oriented away from the NHL to avoid or minimize any potential visual impact on the NHL. This was added to the WR. The solar arrays will be approximately 5 feet tall and thus not visible to the naked eye from the NHL.
THC	Also, the document (page 9) mentions two 41 foot tall satellite dishes. Since these are over 30 feet in height, they should be colored or painted a color consistent with the requirements in the MOA, Stipulation I.C.	While the ground-tracking antennas are taller than 30 feet, they are not visible to the naked eye from the NHL. This is evident in the photos SpaceX submitted to the Section 106 Consulting Parties on February 27, 2017 (attached). The existing antenna does not create a visual contrast in the landscape when viewed from the NHL. The WR was revised to account for this. Also, SpaceX has informed the FAA there are two primary factors as to why the antennas need to be white. The antennas are painted using a product that is specifically produced to be used on antennas. The product protects the antenna from heat accumulation. Heating of the antenna changes the reflectors focus. The white color minimizes this thermal effect. The paint is formulated to prevent absorption of heat and minimizes light reflection into the feed. The product, Goldstone 500HR6, is only available in white (see attached specification sheet). Therefore, SpaceX is requesting an exception to MOA Stipulation I.C due to this requirement.
NPS	We previously expressed concerns about the increased number of buildings and a parallel increase in lighting for the project. There is no re-evaluation of the effects of increased lighting on night sky effecting the NHL.	The infrastructure that SpaceX is proposing that was not included in the 2014 EIS includes 1) emergency services building, 2) Falcon support building, and 3) two separate solar arrays (one in Parcel 1 and one in Parcel 2). The solar arrays would not have lighting. The FAA

		does not believe the lighting associated with the emergency services building and Falcon support building would substantially increase the amount of lighting at the control center area over the amount of lighting considered in the 2014 EIS, such that the night sky, as viewed from the NHL, would be affected. This is noted in the "Visual Effects" section of the WR. The FAA and SpaceX are working with the Consulting Parties in the development of the Facility Design and Lighting Management Plan (Plan). One of the goals of the Plan is to minimize the amount of nighttime lighting at the launch site, thus minimizing lighting impacts on the night sky. All lighting at the control center area would be directed downward.
NPS	Likewise, there is no re-evaluation of the visual impacts other than the stipulation of building colors for structures over 30 feet tall and no mention of operational lighting.	Re-evaluation of visual impacts are discussed in the "Visual Effects" section of the WR. Given the photos that SpaceX submitted on February 27, 2017, as well as more recent photos (attached), documenting the existing antenna and STARGATE facility are not visible or discernable to the naked eye from the closest point of the NHL, and given the MOA's color stipulation, the FAA does not believe the additional infrastructure will adversely affect views of the area/landscape from the NHL.
NPS	The evaluation of noise is limited to construction only - not daily operations, in spite of the fact that several new facilities are proposed, which would likely result in more employee activity on site, and more traffic noise, leading to additional indirect effects to the NHL. On page 16 of the WR, visual effects, including light emissions, are discussed only in the context of construction. It is likely that new buildings, an antenna and increased lighting at night will have effects beyond construction.	SpaceX is proposing two new facilities that would house employees: the emergency services building and the Falcon support building. The total number of employees associated with these buildings on a normal day would be approximately 40–50 people. This would not substantially add to the overall traffic along SH4 and would not affect daily average sound levels experienced at the NHL. This was added to the WR. Operations-related lighting is now included in the "Visual Effects" section of the WR.
NPS	There is still ambiguity on the location and size of the solar array; only the portion to be built on Parcel 2 is discussed in the WR. There is also an open-ended question on future development of Parcel 3, including	The solar array for Parcel 1 is mentioned under the heading "Control Center Area Parcel 1." The FAA prepared a WR for this solar array in 2014. The solar array will be located within the footprint of Parcel 1. As proposed in 2014, this solar array is expected to be installed on

	the possibility that more solar panels will be built there. This suggests that the project will continue in a segmented fashion with changes and more additions than what has been presented so far.	approximately 2 acres of land. The solar array will be approximately 5 feet tall. All solar arrays at the launch site will be composed of non-highly-reflective materials and oriented away from the NHL to avoid any potential visual impact on the NHL (for example, see Figure 8 in the WR). SpaceX has not informed the FAA of any plans to construct in Parcel 3. If SpaceX were to propose installing additional solar arrays in Parcel 3, they would provide the details to the FAA. The FAA would conduct an environmental review, including ensuring compliance with the existing documents in place (e.g., USFWS Biological Opinion, Section 106 PA and MOA) as well as FAA Order 1050.1F. The FAA would coordinate with the Section 106 Consulting Parties as necessary. Any additional solar arrays would likely be made of the same materials as those currently proposed (non-highly-reflective) and oriented away from the NHL, and thus not visible to the naked eye from the NHL.
NPS	The WR did not address the need for trucking in potable water and water for launches or using wells and ground water (which may not have been finally decided upon but has been discussed with consulting parties). More facilities for this type of use will cause higher water use and impacts to the NHL from increased truck traffic should trucking be the decided-upon option.	The two additional proposed facilities would provide a source of potable water for employees as well as water for daily operations at these facilities. At this time, SpaceX is planning to provide water to the control center by transporting water to the site. Appendix K of the 2014 EIS discussed transporting water to the launch site by truck, including a maximum of 112 truck deliveries of potable water per year. Adding the emergency services building and Falcon support building would not increase the number of trucks delivering water to the control center area because they would already be delivering water to the site. This was added to the WR.
NPS	Cumulative Effects/Impacts were not addressed in the WR.	Cumulative impacts are discussed under the “Cumulative Impacts” section of the WR.
NPS	In reference to Paragraph 9-2.c of FAA Order 1050.1F, the construction of the Stargate Building and the three proposed Liquefied Natural Gas Terminals at the Port of Brownsville that have filed for a FERC permit constitutes significant new circumstances and/or information that is relevant to evaluating the cumulative effects of the expanded SpaceX project.	The FAA disagrees with the NPS. The Stargate building and Port of Brownsville LNG facility were analyzed in the cumulative impacts chapter of the 2014 EIS. The additional infrastructure SpaceX is proposing to construct in largely the same footprint that was analyzed in the EIS does not substantially change the cumulative impacts analysis in the EIS.

		Regarding the Stargate building, the FAA contacted the U.S. Economic Development Administration (EDA). The EDA provided the following: The University of Texas-Rio Grande Valley is constructing a research facility (the Stargate Technology Center Building) which is located on a lot (less than 1 acre) near State Highway 4/Boca Chica Boulevard. The building is a pre-fabricated building of two floors (10,000 square feet each), which will be an extension of the University's research and outreach program for their astrophysics program. The EDA funds provided to the University support the pre-fabricated building construction and buildout of the internal sections of the structure (i.e., classrooms, offices, labs, business incubation spaces, electrical/mechanical, etc.). There will be no protruding antennas or luminous objects attached to or above the building, other than decorative objects, such as a building logo and artistic features. A small parking lot (approximately 15 stalls) will be constructed adjacent to the building. The EDA consulted the State Historic Preservation Office (Texas Historical Commission) regarding the building construction in February 2015 and received concurrence on no effects to historic properties on February 10, 2015 (Track #: 2015015334). Also, the EDA consulted the U.S. Fish and Wildlife Service Texas Coastal Ecological Services office in April 2016, with active coordination during construction through post construction.
NPS	In addition, now that the Stargate building has been constructed and one of the 41' antennas is installed, we now have actual structures in place that will help evaluate the visual impacts on the NHL. These structures should also aid in evaluating the accuracy of the visual simulations provided, which we have previously stated do not accurately reflect what a person would see on the ground with the naked eye.	Regarding the visual impact of the antenna and STARGATE facility on the NHL, refer to the attached photos. The antenna and STARGATE facility are not visible or discernable to the naked eye from the closest point of the NHL. Based on these photos, as well as the MOA's color stipulation, the FAA does not believe the addition of the emergency services building and Falcon support building will substantially change the landscape as viewed from the NHL in a way that was not previously considered in the 2014 EIS.

		SpaceX is currently updating the visual simulations in the Facility Design and Lighting Plan. SpaceX hired a consultant to prepare the simulations. The consultant has lots of experience creating visual simulations. Both day and nighttime stills and animated drive-throughs are being developed.
NPS	The addition of two large structures on Parcel 2 of the Control Center increases the structural density of the Control Center compound and consequently increases the impacts to the viewshed and visual integrity of historic setting (character) of NHL.	Given the distance to the NHL and the MOA's color stipulation, the FAA disagrees the additional structures would create a noticeable impact on the viewshed and visual integrity of the NHL. Please refer to the attached photos.
NPS	Finally, we believe that there are reasonably foreseeable effects which may occur later in time, such as the need to modify or expand the solar array, and other project alterations or additions or increased intensity of use will happen in the future, that have not been taken into account in the WR. We base this assumption on the many changes that have already been proposed since we first began our consultation with you on this project.	The FAA appreciates the input. However, at this time, SpaceX has not informed the FAA with any additional modifications to the launch site design.

Attachment 2. Correspondence with U.S. Fish and Wildlife Service

Baker, Nicholas

From: Stacey.Zee@faa.gov
Sent: Monday, May 01, 2017 11:39 AM
To: mary_orms@fws.gov
Cc: Matthew.Thompson@spacex.com; Steve@spacex.com; Baker, Nicholas
Subject: RE: Proposed Expansion of Security fencing and road CONSULTATION NO. 02ETCC00-2012-F-0186
Attachments: 20170501 FAA Reiniation of Section 7 Consultation for SpaceX Texas Launch Site.pdf

Mary –

The signed and dated letter.

From: Zee, Stacey (FAA)
Sent: Thursday, April 27, 2017 4:49 PM
To: Mary Orms
Subject: RE: Proposed Expansion of Security fencing and road CONSULTATION NO. 02ETCC00-2012-F-0186

Mary,

Thank you for the comments on our section 7 re-initiation letter. The attached response addresses your comment regarding piping plover critical habitat and expands the consultation to include SpaceX's proposed changes to the control center area, as noted in SpaceX's draft Facility Design and Lighting Management Plan. Here is the letter. I will get a signed version to you on Monday.

Please let me know if you have any follow-up questions.

Stacey

Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591
202-267-9305

From: Orms, Mary [mailto:mary_orms@fws.gov]
Sent: Monday, March 20, 2017 4:47 PM
To: Zee, Stacey (FAA)
Subject: Proposed Expansion of Security fencing and road CONSULTATION NO. 02ETCC00-2012-F-0186

Stacey,

This responds to your letter requesting concurrence on a "may affect, but is not likely to adversely affect" the piping plover (including its critical habitat), ocelot and Gulf Coast jaguarundi from the proposed expansion of Space X's security fencing and associated road.

I have a few comments:

Your letter states that the FAA believes SpaceX's proposal to expand the security fencing and associated road would not increase the amount of take specified in the BO because the Service had issued take in the form of harassment to an unspecified number of piping plovers.

Comment: The BO also issued incidental take for piping plover habitat, which is also critical habitat. The BO states: "The direct and indirect loss of 6.18 acres from construction and the conversion of 8.66 acres of occupied piping plover critical habitat in Critical Habitat Unit TX-1, for a total take of 14.84 acres of piping plover critical habitat.

Attachment 1 states the proposed project includes the construction of 1400 feet of security fence and approximately 800 feet of associated security road adjacent to the fence. It also states the total wetland impact associated with the construction of the fence would be approximately 0.0002 acres then it states the total wetland impact associated with the installation of the security fence is therefore approximately 0.082 acres (approximately 199 feet long by 18 feet wide). Later it mentions the security road will include a series of culverts and that the total project impact for both the fence and the security road is therefore approximately 0.082 acres .

Comment: The acreage is difficult to follow. If the fence is 1,400 feet and 800 feet of associated security road, what portion is being discussed as approximately 199 feet long by 18 feet wide? And if the total wetland security fence impacts 0.082 acres then there are no road impacts?

Comment: The Service agrees there are impacts to piping plover critical habitat with the construction of the fence in the lower southern crossing portion as seen in Attachment A. It is uncertain as to whether the five culverts on the road would cause a change in hydrology that may flow toward the habitat in the south. It may depend on the type of event. We recommend overlaying Attachment A fence and road alignment over Figure 16 of the BO and assess how much acreage of piping plover habitat will be disturbed. Therefore, the Service can provide incidental take for that habitat loss. We also recommend that 500 on each side of the fence inside piping plover habitat be monitored for vegetative changes that may result in the conversion of the habitat as we did in the BO.

Comment: The Service does not anticipate that take beyond that specified in the BO for the ocelot, Gulf Coast jaguarundi, northern aplomado falcon or sea turtles is expected.

If you have any questions please call me at (361) 994-9005 ext 246 or via email.

--

Mary Orms
U.S. Fish and Wildlife Service
Ecological Services Field Office
P.O. Box 81468
Corpus Christi, TX 78468-1468
4444 Corona Dr., Suite 215
Corpus Christi, Texas 78411-4300
Phone: (361) 994-9005 EXT: 246
Fax: (361) 994-8262

Baker, Nicholas

From: Stacey.Zee@faa.gov
Sent: Friday, June 30, 2017 1:21 PM
To: Baker, Nicholas
Subject: FW: Further Comments on Security Fence Expansion

FYI

From: Orms, Mary [mailto:mary_orms@fws.gov]
Sent: Friday, June 30, 2017 12:31 PM
To: Zee, Stacey (FAA) <Stacey.Zee@faa.gov>
Subject: Re: Further Comments on Security Fence Expansion

Thank Stacey. I will have to talk to Dawn and Pat and make sure all comments have been addressed and then we will probably prefer to amend the BO. The person I work with on GIS is out this week and I will need his help to get me a figure showing the total acreage of loss and what will be monitored. I also need to see how we handle any comments we sent to the Corps of Engineers and if we need to incorporate that in this amendment to capture all concerns and changes.

On Fri, Jun 30, 2017 at 10:58 AM, <Stacey.Zee@faa.gov> wrote:

> Hi Mary,
>
> Sorry for the overlook. I understand your concern regarding project changes and piecemealing. SpaceX has agreed to monitor the piping plover habitat as you requested in your June 7 submittal. That is, SpaceX will monitor all piping plover habitat within 500 feet to the west and south of the fence.
>
> Hopefully this addresses all of your comments. Will you be submitting a revised BO (with an updated figure and take statement) to the FAA? We will ensure SpaceX captures this additional monitoring in their (to-be-prepared) post-construction biological monitoring plan.
>
> Thanks.
>
> -Stacey
>
> **From:** Orms, Mary [mailto:mary_orms@fws.gov]
> **Sent:** Monday, June 26, 2017 1:13 PM
> **To:** Zee, Stacey (FAA) <Stacey.Zee@faa.gov>
> **Subject:** Re: FW: Further Comments on Security Fence Expansion

Hi Stacey,

Sorry for late response but I left on annual leave on July 8th and returned last week but was catching up on work. Thank you for forwarding Steve's response to some of my questions.

However, the major question regarding the need for additional monitoring for potential conversion of piping plover habitat once the fence is in place was not addressed. Pat Clements had provided comments on June 13th to the Department of Army's Public Notice SWG-2012-0038, and addressed similar concerns regarding the security fence. A good recommendation she made was replacing the fence with bollards and cables which may potentially eliminate the need for additional monitoring.

Another concern is that once SpaceX builds the proposed fence section the company will later find it necessary to build the southern side of the fence extending it further into piping plover habitat and increasing the impacts.

It is difficult to assess all the impacts if project plans keep changing and being piecemealed through the process.

On Thu, Jun 8, 2017 at 11:25 AM, <Stacey.Zee@faa.gov> wrote:

> Mary –

Attached are responses from Steve Davis. Do you need updates made directly to the file? Or does this suffice?

From: Steve Davis [mailto:Steve@spacex.com]
Sent: Thursday, June 08, 2017 12:14 PM
To: Zee, Stacey (FAA) <Stacey.Zee@faa.gov>; Matthew Thompson <Matthew.Thompson@spacex.com>
Cc: Nicholas.Baker@icf.com
Subject: RE: Further Comments on Security Fence Expansion

Answers:

1. How will contractors access the southern wetland to install the fence? Vehicles? On foot? Equipment to be used? We will offload materials by truck and then install all fencing on foot to minimize impact.

2. What will the height of the fence be? 8'

3. What will the fence be made of? Metal Chain Link

4. I assume that this is an error and really meant to state security road? Correct

---

From: Stacey.Zee@faa.gov [mailto:Stacey.Zee@faa.gov]
Sent: Wednesday, June 07, 2017 2:28 PM
To: Matthew Thompson; Steve Davis
Cc: Nicholas.Baker@icf.com
Subject: FW: Further Comments on Security Fence Expansion

FYI

From: Orms, Mary [mailto:mary_orms@fws.gov]
Sent: Wednesday, June 07, 2017 1:30 PM
To: Zee, Stacey (FAA) <Stacey.Zee@faa.gov>
Cc: Pat Clements <pat_clements@fws.gov>
Subject: Further Comments on Security Fence Expansion

Stacey,

Thank you for your letter of May 1, 2017. We reviewed the additional proposed changes to Space X's launch site in Cameron County and we would like to provide a concurrence letter, however, it did not completely address our fence comments provided on March 20, 2017.

I have attached the Figure provided earlier in regards to the fence and Figure 16 of the BO which was referenced in the March 20th email. Please see those figures for our comments.

Once we receive further information we look forward to providing FAA a response in regards to your request for concurrence for a "may affect, but is not likely to adversely affect" determination for the northern aplomado falcon, piping plover, ocelot and jaguarundi and amend the BO to include any additional loss of piping plover habitat that was not addressed in the 2013 Biological Opinion.

Pat Clements will be providing additional comments on the Public Notice SWG-2012-00381, published April 27, 2016 for amendment.

--

Mary Orms

U.S. Fish and Wildlife Service

Ecological Services Field Office

P.O. Box 81468
Corpus Christi, TX 78468-1468
4444 Corona Dr., Suite 215
Corpus Christi, Texas 78411-4300

Phone: (361) 994-9005 EXT: 246

Cell: 361-537-7618

Fax: (361) 994-8262

--

Mary Orms

U.S. Fish and Wildlife Service

Ecological Services Field Office

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--
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Phone: (361) 994-9005 EXT: 246
Cell: 361-537-7618
Fax: (361) 994-8262

Attachment 3. Correspondence with Section 106 Consulting Parties

Baker, Nicholas

From: Stacey.Zee@faa.gov
Sent: Friday, June 30, 2017 11:56 AM
To: Amy_Pallante@nps.gov; Bill.Martin@thc.state.tx.us; Bryan_Winton@fws.gov; Daniel.Czelusniak@faa.gov; Daniel.Murray@faa.gov; Dawn_Gardiner@fws.gov; Howard.Searight@faa.gov; Jayson.M.Hudson@usace.army.mil; Jeff.Raasch@tpwd.texas.gov; Feldman, Jessica; Justin.Kockritz@thc.state.tx.us; Katherine.Andrus@faa.gov; Kendal.Keyes@tpwd.texas.gov; Lemuel.Thomas@faa.gov; Leslie.Grey@faa.gov; Mark_Spier@nps.gov; Matthew.Thompson@spacex.com; Michael.Strutt@tpwd.texas.gov; ngabriel@achp.gov; Baker, Nicholas; Randy_Stanley@nps.gov; Robert_Jess@fws.gov; Rolando_Garza@nps.gov; Ross.Melinchuk@tpwd.state.tx.us; Sara.Luduena@thc.state.tx.us; Steve@spacex.com; Tom_Keohan@nps.gov; Anna.Cushman@faa.gov; Justin.Kockritz@thc.texas.gov; Bill.Martin@thc.texas.gov; Baker, Nicholas; Feldman, Jessica; Ross.Melinchuk@tpwd.texas.gov; Sara.Luduena@thc.texas.gov; Matt.Donoho@spacex.com; mark_e_meyer@nps.gov; cvaughn@achp.gov; Woods, Hova; Alma.Walzer@spacex.com
Subject: SpaceX Texas Launch Site - Change to Undertaking
Attachments: 20170501 SpaceX Texas Launch Site_Change to Undertaking_Control Center.pdf

Dear Consulting Parties,

On May 1, 2017, I sent you the attached letter in accordance with Stipulation VIII of the Programmatic Agreement (PA). The comment deadline was June 1, 2017. I didn't receive any comments by June. I followed up with everyone on June 22, 2017. I have not received any comments regarding the attached letter. Therefore, the FAA concludes SpaceX's proposed changes to the launch site do not require a change to the PA.

On a separate topic, the FAA has received comments from the Texas Historical Commission (THC) and National Park Service (NPS) on the FAA's draft Written Re-evaluation (WR). We are reviewing the comments and revising the WR as needed. We will provide responses to THC and NPS once completed. I will distribute a copy of the final WR to everyone once it is signed.

I hope you all have a wonderful holiday.

Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591
202-267-9305

From: Stacey.Zee@faa.gov [mailto:Stacey.Zee@faa.gov]
Sent: Thursday, June 22, 2017 3:42 PM
To: Amy_Pallante@nps.gov; Bill.Martin@thc.state.tx.us; Bryan_Winton@fws.gov; Daniel.Czelusniak@faa.gov;

Daniel.Murray@faa.gov; Dawn_Gardiner@fws.gov; Howard.Searight@faa.gov; Jayson.M.Hudson@usace.army.mil; Jeff.Raasch@tpwd.texas.gov; Feldman, Jessica <Jessica.Feldman@icf.com>; Justin.Kockritz@thc.state.tx.us; Katherine.Andrus@faa.gov; Kendal.Keyes@tpwd.texas.gov; Lemuel.Thomas@faa.gov; Leslie.Grey@faa.gov; Mark_Spier@nps.gov; Matthew.Thompson@spacex.com; Michael.Strutt@tpwd.texas.gov; ngabriel@achp.gov; Baker, Nicholas <Nicholas.Baker@icf.com>; Randy_Stanley@nps.gov; Robert_Jess@fws.gov; Rolando_Garza@nps.gov; Ross.Melinchuk@tpwd.state.tx.us; Sara.Luduena@thc.state.tx.us; Steve@spacex.com; Tom_Keohan@nps.gov; Anna.Cushman@faa.gov; Justin.Kockritz@thc.texas.gov; Bill.Martin@thc.texas.gov; Baker, Nicholas <Nicholas.Baker@icf.com>; Feldman, Jessica <Jessica.Feldman@icf.com>; Ross.Melinchuk@tpwd.texas.gov; Sara.Luduena@thc.texas.gov; Matt.Donoho@spacex.com; mark_e_meyer@nps.gov; cvaughn@achp.gov; Woods, Hova <Hova.Woods@icf.com>; Alma.Walzer@spacex.com
Subject: FW: SpaceX Texas Launch Site - Change to Undertaking

Just a reminder on this –
Responses were due on June 1st. Please let me know if you plan to submit anything.

From: Stacey.Zee@faa.gov [mailto:Stacey.Zee@faa.gov]
Sent: Monday, May 01, 2017 10:46 AM
To: Amy_Pallante@nps.gov; Bill.Martin@thc.state.tx.us; Bryan_Winton@fws.gov; Daniel.Czelusniak@faa.gov; Daniel.Murray@faa.gov; Dawn_Gardiner@fws.gov; Howard.Searight@faa.gov; Jayson.M.Hudson@usace.army.mil; Jeff.Raasch@tpwd.texas.gov; Feldman, Jessica <Jessica.Feldman@icf.com>; Justin.Kockritz@thc.state.tx.us; Katherine.Andrus@faa.gov; Kendal.Keyes@tpwd.texas.gov; Lemuel.Thomas@faa.gov; Leslie.Grey@faa.gov; Mark_Spier@nps.gov; Matthew.Thompson@spacex.com; Michael.Strutt@tpwd.texas.gov; ngabriel@achp.gov; Baker, Nicholas <Nicholas.Baker@icf.com>; Randy_Stanley@nps.gov; Robert_Jess@fws.gov; Rolando_Garza@nps.gov; Ross.Melinchuk@tpwd.state.tx.us; Sara.Luduena@thc.state.tx.us; Steve@spacex.com; Tom_Keohan@nps.gov; Anna.Cushman@faa.gov; Justin.Kockritz@thc.texas.gov; Bill.Martin@thc.texas.gov; Baker, Nicholas <Nicholas.Baker@icf.com>; Feldman, Jessica <Jessica.Feldman@icf.com>; Ross.Melinchuk@tpwd.texas.gov; Sara.Luduena@thc.texas.gov; Matt.Donoho@spacex.com; mark_e_meyer@nps.gov; cvaughn@achp.gov; Woods, Hova <Hova.Woods@icf.com>; Alma.Walzer@spacex.com
Subject: SpaceX Texas Launch Site - Change to Undertaking

Dear Consulting Parties,

Thank you again for participating in the annual meeting for Section 106 compliance for SpaceX's Texas launch site. I have not received any changes to the meeting notes that were distributed on April 3, 2017. Please let me know if you have any edits. Please review the action items identified in the notes (listed at the end of the notes) and please copy me all on correspondence with SpaceX as action items are completed.

As discussed during the annual meeting (and noted as action item #4), I am sending you a letter outlining the latest change to the undertaking—namely the modifications to the control center area, as noted in SpaceX's draft Facility Design & Lighting Management Plan. Please submit comments by June 1, 2017.

Also, as mentioned during the annual meeting and documented as an action item, the FAA is preparing a written re-evaluation (WR) in compliance with the FAA's NEPA-implementing policies and procedures (i.e., FAA Order 1050.1F; attached—refer to paragraphs 9-2 and 9-3) to determine if supplemental NEPA analysis (e.g., EA or EIS) is necessary. I will send the draft WR to you for review once it is ready. Like the 2014 EIS, the WR will address all of the FAA's "environmental impact categories" (aka resource areas) analyzed in the EIS.

Please let me know if you have any questions.

Stacey M. Zee
Office of Commercial Space Transportation

Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591
202-267-9305

Preserving America's Heritage

June 30, 2017

Ms. Stacey Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591

Ref: *Change to the Undertaking for the SpaceX Texas Launch Site Undertaking Cameron County, Texas*

Dear Ms. Zee:

Thank you for providing the Advisory Council on Historic Preservation (ACHP) with the documentation regarding the changes to the referenced undertaking in accordance with Stipulation VIII of the *Programmatic Agreement Among the Federal Aviation Administration, the Texas State Historic Preservation Officer, the National Park Service, the Advisory Council on Historic Preservation, Space Exploration Technologies Corp., United States Fish and Wildlife Service, and the Texas Parks and Wildlife Department, Regarding the Construction and Operation of SpaceX Texas Launch Site, Cameron County, Texas* (PA). The PA for this undertaking was executed on May 16, 2014. We are providing FAA with our comments on the changes submitted for our review on May 1, 2017.

We understand that the proposed changes to the undertaking pertain to developing infrastructure in the control center area parcels, which are located in the current Area of Potential Effect (APE). The majority of development will occur within previously analyzed parcels. However, FAA will ensure that the applicant, Space Exploration Technologies Corp., conducts a survey for archaeological resources in all areas that have not been previously surveyed, and submit a report to the Texas SHPO for review. Based on the maps provided and FAA's commitment to have the applicant conduct additional surveys, the ACHP concurs with the FAA's determination that the proposed changes to the undertaking do not require revisions to the PA.

We appreciate FAA's commitment to following the procedures outlined in the PA as changes to the undertaking and implementation of the PA occur. If you have any questions, please contact Sarah Stokely at (202) 517-0224 or via e-mail at sstokely@achp.gov.

Sincerely,

Charlene Dwin Vaughn

Charlene Dwin Vaughn, AICP
Assistant Director
Office of Federal Agency Programs
Federal Permitting, Licensing and Assistance Section

Casey Hanson

From: Bill Martin
Sent: Wednesday, July 05, 2017 9:43 AM
To: Casey Hanson
Subject: FW: SpaceX Texas Launch Site - Cultural Survey
Attachments: 20170601 Metal Detection Survey for Parcel 2 Expansion.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Have you seen this? Keller might have sent it in directly.

From: Stacey.Zee@faa.gov [mailto:Stacey.Zee@faa.gov]
Sent: Friday, June 30, 2017 11:14 AM
To: Bill Martin <Bill.Martin@thc.texas.gov>
Cc: Nicholas.Baker@icf.com; Matthew.Thompson@spacex.com; Steve@spacex.com
Subject: SpaceX Texas Launch Site - Cultural Survey

Bill,

On May 19, 2017, Southern Archeological Consultants conducted a metal detector survey of the expanded area of Parcel 2 associated with SpaceX's control center area. The report is attached for your review. Based on the report, which documents no presence of historic properties, the FAA makes a "no historic properties affected" finding for construction in this area of the parcel. The FAA requests your concurrence. Please respond in writing by July 30, 2017. Also, please let me know if I need to submit this request in hardcopy format.

Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591
202-267-9305

CONCUR
by _____
for Mark Wolfe
State Historic Preservation Officer
Date 7/26/17
Track# _____

Baker, Nicholas

From: Stacey.Zee@faa.gov
Sent: Friday, June 30, 2017 12:14 PM
To: Bill.Martin@thc.state.tx.us
Cc: Baker, Nicholas; Matthew.Thompson@spacex.com; Steve@spacex.com
Subject: SpaceX Texas Launch Site - Cultural Survey
Attachments: 20170601 Metal Detection Survey for Parcel 2 Expansion.pdf

Bill,

On May 19, 2017, Southern Archeological Consultants conducted a metal detector survey of the expanded area of Parcel 2 associated with SpaceX's control center area. The report is attached for your review. Based on the report, which documents no presence of historic properties, the FAA makes a "no historic properties affected" finding for construction in this area of the parcel. The FAA requests your concurrence. Please respond in writing by July 30, 2017. Also, please let me know if I need to submit this request in hardcopy format.

Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591
202-267-9305

Addendum to Additional Metal Detecting at the SpaceX Control Facility

Boca Chica, Cameron County, Texas

John E. Keller
Principal Investigator

Southern Archaeological Consultants, Inc.
Report of Investigations
6/1/2017

Second Addendum

This Addendum to the original report presents the results of the metal detection and some additional shovel testing at two additional lots acquired by SpaceX in 2016. These lots total 1.1 acres and are situated to the east of the original SpaceX landholding and south of the community of Kopernik Shores or Boca Chica Village.

The Survey took place May 19, 2017.

Area Description

The survey area is located in an area of large well vegetated sand dunes. These dunes are over 3 meters (ca.10 feet) deep and are very well bioturbated by

Figure 1: Detail of exposed surface. Note the holes of burrowing crabs.

natural agents. In addition to the roots of grasses, trees and forbs the most active of these agents are crabs.Vegetation is cord grass, cactus, Spanish Dagger, Forbes, and grasses that is pretty thick. There is some Australian Pine and tepaguape that are probably overlap form Kopernik Shores. Limited mesquite in this area but there are some mesquite trees adjacent .

Crabs are definitely a major bioturbative factor and they seem to move a lot of material. There are over 50 crab holes per square meter in some locations and the holes are dug down into the water table at approximately 65 centimeters below the surface. This is a deep dune area and there would be little chance of reaching the clay base without a backhoe. There was a coring operation in the vicinity for Stargate. TerraCon is the contractor of record but FUGRO (Houston based did the actual coring. The coring logs suggest depth of sand is, as noted, over 3 meters.

The project utilized a standard 3 meter grid system so that the metal detector operators could walk the area carefully. A sub metric GPS was available to record any materials that were not immediately recognized as being of modern derivation.The survey utilized very low frequency or VLF instruments. With these instruments the transmitter coil generates a magnetic field and transmits it into the ground. Any conductive objects generate a weak magnetic field in response to the field transmitted by the unit which can be picked up by the receiver coil. The operator identifies targets by audible tones and visual signals on the instrument. The field generated by these instruments is spherical and its diameter is roughly that of the transmitting coil. As result, a coil approximately 12 inches in diameter can typically detect items at depth of 6 to 7 inches. The instruments used in this survey were Garret AT Pro models with minimum coil diameter of 12 inches.

Several areas of trash disposal were noted.. These were found to contain roofing nails and some modern fence wire but otherwise metal detection found no evidence of cultural resources. Previous efforts had found that materials tended to be found close to Highway 4 so this result was not unexpected. The metal detector once again found the route of the discontinued electrical service that had been discovered during the previous investigation.

Figure 2: Trash pile of construction debris

In addition, the large brick sign support for Boca Chica Village is located south of the survey area and between it and Highway 4. Some of the material from this structure has migrated into the survey area(Figure 2)

As an additional aid to understanding the stratigraphic situation a series of five (5) strategically placed shovel tests were placed across the area. Given the depth of deposit these units were probably superfluous but they did provide a somewhat better idea of the nature of this overgrown dune field. The shovel tests were monotonous and failed to reveal any trace of cultural materials.
A typical shovel test can be described as follows:

0-60 centimeters below the surface 10YR6/2 fine sand. Well bioturbated with roots, rootlets, small bulbs, and crab burrows. Some small marine shell fragments but no *Rabadotus.*

60-105 centimeters below surface10YR4/2 fine sorted sand with some silt admixture (i.e. 5 %) and still very bioturbated. Somewhat moister then the stratum above which probably accounts for the difference in coloration. Crab burrows continue into and some cases below 95 cms. Many roots, and rootlets are still present.

Results

No historic objects were detected by this survey. The modern materials were discarded in the field once they had been examined. These included 10 roofing nails, fence wire, electrical conduit and wire, and aluminum cans. The metal detectors also located a discontinued electric service line.

No significant cultural resources were discovered or recorded during this survey. A number of factors may be involved in the absence of historic archaeological materials but disturbance and natural dune migration are probably major factors.

Baker, Nicholas

From: Stacey.Zee@faa.gov
Sent: Tuesday, February 07, 2017 9:22 AM
To: Amy_Pallante@nps.gov; Bill.Martin@thc.state.tx.us; Bryan_Winton@fws.gov; Daniel.Czelusniak@faa.gov; Daniel.Murray@faa.gov; Dawn_Gardiner@fws.gov; Howard.Searight@faa.gov; Jayson.M.Hudson@usace.army.mil; Jeff.Raasch@tpwd.texas.gov; Feldman, Jessica; Justin.Kockritz@thc.state.tx.us; Katherine.Andrus@faa.gov; Kendal.Keyes@tpwd.texas.gov; Lemuel.Thomas@faa.gov; Leslie.Grey@faa.gov; Mark_Spier@nps.gov; Matthew.Thompson@spacex.com; Michael.Strutt@tpwd.texas.gov; ngabriel@achp.gov; Baker, Nicholas; Randy_Stanley@nps.gov; Robert_Jess@fws.gov; Rolando_Garza@nps.gov; Ross.Melinchuk@tpwd.state.tx.us; Sara.Luduena@thc.state.tx.us; Stacey.Zee@faa.gov; Steve@spacex.com; Tom_Keohan@nps.gov; Anna.Cushman@faa.gov
Subject: SpaceX Texas Launch Site - Change to Undertaking_PA
Attachments: 20170206 SpaceX Texas Launch Site_Change to Undertaking.pdf; Attachment 1_and Attach A SpaceX Cover Letter.pdf

Categories: Green Category

All –

Attached is a letter that outlines a proposed change to the Undertaking per the SpaceX Texas Launch Site Programmatic Agreement. We are asking for comments back by March 10th. Please let me know if you have any questions.

-Stacey Zee

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

FEB 0 6 2017

Dear Consulting Parties:

In November 2016, the U.S. Army Corps of Engineers (Corps) informed the Federal Aviation Administration (FAA) that SpaceX proposed to modify its existing Clean Water Act, Section 404 permit. Specifically, the Corps is reviewing SpaceX's proposal to expand security fencing and an associated road at the vertical launch area of SpaceX's launch site. In accordance with Stipulation VIII of the *Programmatic Agreement Among the Federal Aviation Administration, the Texas State Historic Preservation Officer, National Park Service, the Advisory Council on Historic Preservation, Space Exploration Technologies Corp., United States Fish and Wildlife Service, and Texas Parks and Wildlife Department, Regarding the Construction and Operation of a SpaceX Texas Launch Site, Cameron County, Texas* (the PA, May 2014), the FAA is notifying the Signatories and Invited Signatories of the proposed change to the Undertaking prior to making and implementing the change.

Attachment 1 (SpaceX's letter to the Corps[1]) contains the details of the proposal. The proposed change includes the construction of approximately 1,400 feet of security fence and approximately 800 feet of associated security road adjacent to the fence. Based on the nature of the proposed change to the Undertaking, the FAA has determined that the proposal does not require a change to the PA.

As SpaceX did for its previous solar array proposal, SpaceX will conduct a survey for archaeological resources in the expanded footprint and will submit a report to the State Historic Preservation Officer for review. The FAA also re-initiated Endangered Species Act section 7 consultation with the U.S. Fish and Wildlife Service on January 26, 2017.

In accordance with Stipulation VIII of the PA, the FAA is providing the Signatories and Invited Signatories a 30-day review and comment period to concur with the FAA's. Please submit comments to Stacey Zee at Stacey.Zee@faa.gov by March 10, 2017.

Sincerely,

Daniel Murray
Manager, Space Transportation Development Division

CONCUR
by _____
for Mark Wolfe
State Historic Preservation Officer
Date 2-8-17
Track# _____

Attachment: SpaceX August 29, 2016 Letter to the Corps

[1] Note that we did not include the attachments referenced in SpaceX's letter to the Corps because they are specific to wetlands and threatened and endangered species.

Preserving America's Heritage

March 7, 2017

Ms. Stacey M. Zee
Environmental Specialist
Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20591

Ref: *Change to the Area of Potential Effect for the SpaceX Texas Launch Site Undertaking Cameron County, Texas*

Dear Ms. Zee:

Thank you for providing the Advisory Council on Historic Preservation (ACHP) with the draft plans as required by Stipulation VIII of the *Programmatic Agreement Among the Federal Aviation Administration, the Texas State Historic Preservation Officer, the National Park Service, the Advisory Council on Historic Preservation, Space Exploration Technologies Corp., United States Fish and Wildlife Service, and the Texas Parks and Wildlife Department, Regarding the Construction and Operation of SpaceX Texas Launch Site, Cameron County, Texas* (PA) for the Federal Aviation Administration's (FAA's) referenced undertaking. We are providing FAA with our comments on the change of the undertaking area of potential effect submitted for review on February 7, 2017. These comments have been informed by the comments of the Texas State Historic Preservation Officer (TX SHPO).

We understand that the proposed change includes the construction of approximately 1,400 feet of security fence and approximately 800 feet of associated security road adjacent to the fence. Further, we understand that FAA will ensure that the applicant, Space Exploration Technologies Corp. will conduct a survey for archaeological resources in the expanded footprint and will submit a report to the TX SHPO for review. Based upon this information, the ACHP concurs with the FAA's determination that the proposed change to the undertaking does not require revisions be made to the PA.

We appreciate the FAA's commitment to following the procedures outlined in the PA as changes to the undertaking may occur. If you have any questions, please contact Najah Duvall-Gabriel at (202) 517-0210 or via email at ngabriel@achp.gov.

Sincerely,

Charlene Dwin Vaughn, AICP
Assistant Director
Office of Federal Agency Programs
Federal Permitting, Licensing and Assistance Section

Attachment 4. Photos

Two photos taken from eastern edge of NHL looking towards antenna. SpaceX submitted to Section 106 Consulting Parties on February 27, 2017.

Two photos taken from eastern edge of NHL looking towards antenna. Arrow pointing towards the antenna. SpaceX submitted to Section 106 Consulting Parties on February 27, 2017.

Photo taken from the Historical Marker approximately 7 miles away from the launch control center area. The control center is not visible from this location.

Photo taken on July 11, 2017 from eastern edge of NHL looking towards STARGATE facility and antenna.

Photo taken on July 11, 2017 from eastern edge of NHL looking towards STARGATE facility and antenna. Arrow pointing to STARGATE facility.