

Appendix E.  
**Department of Transportation Act Section 4(f)**  
**Consultation**

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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

July 15, 2021

Manuel “Sonny” Perez III  
Acting Complex Refuge Manager  
U.S. Fish and Wildlife Service  
South Texas Refuge Complex  
Lower Rio Grande Valley National Wildlife Refuge  
3325 Green Jay Road  
Alamo, TX 78516  
Submitted to: [sonny\\_perez@fws.gov](mailto:sonny_perez@fws.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Perez:

The purpose of this letter is to notify you of the Federal Aviation Administration’s (FAA) initiation of the Section 4(f) consultation addressing the eligible properties in the study area under consideration for Space Exploration Technologies Corporation’s (SpaceX) proposed Starship/Super Heavy launch operations. These eligible properties include the Lower Rio Grande Valley National Wildlife Refuge (NWR) and the Palmito Ranch Battlefield National Historic Landmark (NHL), which is largely contained within the NWR (see Attachment 1). These two properties are highlighted because they would be closed during launch-related activities.

**Summary of Section 4(f) Issues for Discussion**

1. **Construction** – The FAA is considering whether the proposed utility installation within the State Highway 4 (SH 4) right-of-way (ROW) would result in a *temporary occupancy* but have a *de minimis* impact under Section 4(f) if the U.S. Fish and Wildlife Service (USFWS) owns this portion of the ROW. The FAA would ensure that SpaceX mitigates the effects of the installation by returning the ROW to a condition that is at least as good as the condition prior to installation.
2. **Nominal Launch Operations**
  - a. The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f). SpaceX has requested 500 hours per year of closure hours from Cameron County.<sup>1</sup> The FAA is considering whether the number of closure hours would substantially impair the activities, features, or attributes of the NWR and NHL. The FAA is

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<sup>1</sup> SpaceX and Cameron County are renegotiating an existing agreement to increase the closure hours to 500 hours per year.

also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). Any limitation or maximum number of annual closure hours per year would be included in the analysis.

- b. The FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the NWR and NHL because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches.

### 3. Anomalies

- a. An anomaly (e.g., explosion) may result in parts of the launch vehicle landing in the NWR, which would require SpaceX to enter the NWR to retrieve debris or for other associated activities. Therefore, the FAA has considered failure-related activities and extended closure hours associated with failures as a potential *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. The FAA is considering whether Condition #3 could be satisfied, as extended closures may result in temporary interference with the activities of the NWR. Therefore, the FAA is considering whether the temporary occupancy of the NWR resulting from anomaly-related activities constitutes a *use* under Section 4(f).
- b. Occupancy of the NWR would be short term (not more than 300 additional hours per year), and there would be no permanent or residual effects to the NWR lasting beyond the occupancy. Therefore, the FAA is considering whether the failure-response activities (e.g., debris removal) would adversely affect the activities, features, or attributes that make the NWR eligible for Section 4(f) protection and seeks input from the USFWS on the impacts on the NWR resulting from *temporary occupancy*.
- c. The FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the NWR and therefore constitutes a *constructive use* under Section 4(f).

The following sections of this letter include pertinent regulatory background, a summary of the Proposed Action, and further information about the Section 4(f) issues.

### **Background**

SpaceX is proposing to operate Starship/Super Heavy launch vehicles at its Boca Chica Launch Site in Cameron County, Texas. SpaceX must obtain an experimental permit or launch license from the FAA Office of Commercial Space Transportation to operate Starship/Super Heavy at the Boca Chica Launch Site. Issuing an experimental permit or launch license is considered a major federal action under the National Environmental Policy Act (NEPA) of 1969 and requires an environmental review. The FAA is in the process of preparing a draft Programmatic Environmental Assessment (PEA) to assess the potential environmental impacts of Starship/Super Heavy operations from the Boca Chica Launch Site. The USFWS is a cooperating agency in the preparation of the draft PEA.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation may approve any transportation project that requires the *use* of any Section 4(f) resource<sup>2</sup> only if there is no feasible and prudent alternative to the *use* of such land and the transportation project includes all possible planning to minimize harm resulting from the *use*.

### **Proposed Action**

SpaceX's proposed launch operations include suborbital and orbital launches. The Proposed Action also includes launch-related activities at the Boca Chica Launch Site, such as tank tests, static fire engine tests, expansion of the VLA and solar farm, and construction of additional infrastructure. A complete project description is provided in Chapter 2 of the administrative draft PEA.

### **Regulatory Background**

The FAA's procedural requirements for complying with Section 4(f) are set forth in DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*. The FAA also considers Federal Highway Administration (FHWA) regulations (23 CFR part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for *use* of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

A *use* under Section 4(f) can occur when 1) land from a Section 4(f) property is permanently incorporated into a transportation project, 2) there is a *temporary occupancy* of a Section 4(f) property, or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of use is identified as *constructive use*.

#### *Physical Use*

A permanent incorporation would involve an actual physical taking of Section 4(f) property (such as a ROW acquisition being proposed by SpaceX) as part of a transportation project either as a purchase of land or a permanent easement.

*Temporary occupancy* occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;

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<sup>2</sup> Section 4(f) resources include publicly owned and publicly accessible land from a park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance

4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A physical *use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act *finding of no adverse effect* or *no historic properties affected*.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the NEPA process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to make a *de minimis* impact determination. The officials with jurisdiction must concur in a *finding of no adverse effect* or *no historic properties affected*. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.<sup>3</sup>

### *Constructive Use*

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,<sup>4</sup> "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,<sup>5</sup> which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a *constructive use* determination to be made.

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<sup>3</sup> The FAA will consult with USFWS to determine the potential impacts of the Proposed Action to historic properties under its jurisdiction, in compliance with Section 106. The consultations will lead to the development of an amended Programmatic Agreement which will govern the implementation of an updated program for the continued assessment of effects on historic properties and the resolution of adverse effects on historic properties resulting from the Proposed Action. The FAA will use information from its Section 106 process to help inform its determinations regarding Section 4(f) and to define mitigation measures which will be enforceable on SpaceX as a term and condition of its FAA-issued permit(s) or license(s).

<sup>4</sup> Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>

<sup>5</sup> Available online at: [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_n\\_policy\\_guidance/policy/faq\\_nepa\\_order/desk\\_ref/](https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_n_policy_guidance/policy/faq_nepa_order/desk_ref/)

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

#### **Section 4(f) Determination Issues**

The FAA is in the process of evaluating the potential impacts of the proposed construction and operations on the NWR and NHL to determine if the Proposed Action would result in a *use* of either property through permanent incorporation, *temporary occupancy*, or *constructive use*. A brief summary of the FAA's initial understanding of the Proposed Action's Section 4(f) impacts is presented in the following sections; the FAA invites USFWS to provide further information to help the FAA make a final determination.

#### ***Construction***

Construction of the proposed launch-related facilities at the VLA and expansion of the solar farm would not involve a permanent incorporation of the NWR or NHL, because the activity would occur on SpaceX property. Construction would not result in *temporary occupancy* of the NHL, because the project does not involve any temporary construction activities in the NHL. SpaceX owns all land where facility construction activities would occur. Access to portions of the NWR and NHL may be slowed or delayed several times a day when construction vehicles are traveling to and from the Boca Chica Launch Site. Construction would not result in permanent, long-term access restrictions to these Section 4(f) properties. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of either Section 4(f) property such that the value would be substantially impaired. Given these conditions, the FAA is considering whether these construction activities would constitute a *constructive use*.

Additionally, SpaceX is proposing to install underground utilities within the SH 4 ROW between the VLA and Launch and Landing Control Center using trench methods, similar to what SpaceX proposed in the 2014 Environmental Impact Statement (EIS) for the launch site. During preparation of the 2014 EIS, the USFWS disputed the Texas Department of Transportation's claim of ownership of the ROW within the boundary of the NWR. The FAA determined in the 2014 EIS that if USFWS has ownership of this portion of the SH 4 ROW, the installation and upgrade of utilities would result in a *de minimis* impact on the NWR. This determination was based in part because the utilities would be installed underground, thereby minimizing harm to the property resulting from its use. In all places where the ROW would be disturbed, the FAA would ensure that SpaceX returns the ROW to a condition which is at least as good as that which existed prior to the installation. The USFWS concurred with this determination in a letter dated January 10, 2014.

If USFWS owns this portion of the ROW, the FAA would ensure that SpaceX mitigates the effects of the installation by returning the ROW to a condition which is at least as good as that which existed prior to the installation.

#### ***Nominal Operations***

Some operations at the Boca Chica Launch Site (i.e., tank tests, wet dress rehearsals, static fire engine tests, and launches) would require restricting public access in the vicinity of the VLA and securing land and water areas as part of public safety requirements (see Attachment 2). A closure for a tank test, wet dress

rehearsal, or static fire engine test would be shorter than a closure for a launch. For the purposes of the FAA's environmental review, the FAA defines a closure as follows:

A closure begins when local law enforcement, under the direction of an order from the Cameron County Commissioners Court, shuts down SH 4 and Boca Chica Beach for a tank test, wet dress rehearsal, static fire engine test, or launch. A closure ends when the operation is completed and local law enforcement open SH 4 and Boca Chica Beach.

Based on this definition, the FAA has learned from SpaceX that SpaceX estimates the total number of closure hours for tank tests, wet dress rehearsals, static fire engine tests, and launches to be 500 hours per year. SpaceX therefore expects to renegotiate an agreement with the Cameron County Commissioners Court to increase the closure hours to 500 hours per year. Assuming normal availability of the Section 4(f) property, the proposed closure hours would result in the Section 4(f) property being closed to the public up to 11.4 percent of the year.<sup>6</sup> The FAA would ensure that SpaceX continues to notify the USFWS in advance of a planned closure so the USFWS can plan accordingly and avoid conflicts for special events or programs. SpaceX is not allowed to close Boca Chica Beach on major summer holidays or summer weekends between Memorial Day and Labor Day without the prior approval of the Texas General Land Office, in accordance with Texas House Bill 2623. Finally, closures would occur according to SpaceX's Security Plan (see Attachment 3).

The FAA is considering whether 500 closure hours would substantially impair the activities, features, or attributes of the NWR and NHL. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f).

In addition to closures, the FAA reviewed modeled noise levels for the Proposed Action to determine whether there would be significant noise increases such that the value of the Section 4(f) property, in terms of its activities, features, or attributes, would be substantially impaired, thus constituting a *constructive use*. Static fire engine tests and launches (including landings) would produce short-term, high levels of noise. When these operations are not occurring, the normal daily sound levels in the NWR and NHL would persist. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the NWR and NHL because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches. Therefore, the FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*.

### **Anomalies**

A Starship/Super Heavy test operation or launch could fail (referred to as an anomaly), which could result in an explosion on the launch pad and spread debris. This area is labeled "No Personnel" on the closure area figure (Attachment 2). SpaceX anticipates the need for not more than 300 hours per year of closures, in addition to 500 hours for nominal operations, due to anomalies in the vicinity of the VLA. This would allow SpaceX to ensure public safety and coordinate with land-managing agencies for debris retrieval. The

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<sup>6</sup> This assumes that the property is typically open to and accessible by the public up to 12 hours per day, 365 days per year.



anomaly response closure would start immediately at the time the test operation or launch ends and last until the area is deemed safe for the public.

In the event of an anomaly, a limited number of SpaceX staff would enter the debris field and conduct an initial evaluation, as outlined in SpaceX's Anomaly Response Plan. Following the initial evaluation of the area, the FAA would ensure SpaceX coordinates with the USFWS (and Texas Parks and Wildlife Department [TPWD] and Texas General Land Office [TGLO]) prior to any attempt of cleanup, in order to minimize damage to the NWR and sensitive historic, biological, and geological resources. The method of debris cleanup would be assessed on a case-by-case basis and would be approved by USFWS, TPWD, and TGLO. Finally, the FAA would ensure that SpaceX's entry into the NWR would be done on foot as much as possible, and the use of vehicles on public land would be coordinated with the USFWS to minimize impacts. Conditions that would be assessed by SpaceX include, but are not limited to, location of the debris, weather, condition of the soil, and number of support staff. Debris cleanup on SH 4 would be the first priority, followed by public lands, and then SpaceX property.

Because an anomaly may result in parts of the launch vehicle in the NWR, therefore requiring entry into the NWR for anomaly related activities (e.g., debris removal), the FAA has considered the anomaly-related activities and extended closure hours associated with anomalies for potential *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. The FAA is considering whether Condition #3 could be satisfied, as extended closures may be considered to result in temporary interference with the activities of the NWR. Therefore, the FAA is considering whether the temporary occupancy of the NWR resulting from anomaly-related activities constitutes a *use* under Section 4(f).

Occupancy of the NWR would be short term (not more than 300 additional hours per year), and there would be no permanent or residual effects to the NWR lasting beyond the occupancy. Therefore, the FAA is considering whether the debris and response activities would adversely affect the activities, features, or attributes that make the NWR eligible for Section 4(f) protection such that the activities would be considered a Section 4(f) *use*.

Finally, the FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the NWR and therefore constitute a *constructive use* under Section 4(f).



Please provide input on the issues discussed above by August 4, 2021 to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov). If you have questions or concerns, please contact Ms. Zee at 202.267.9305 or via email.

Sincerely,

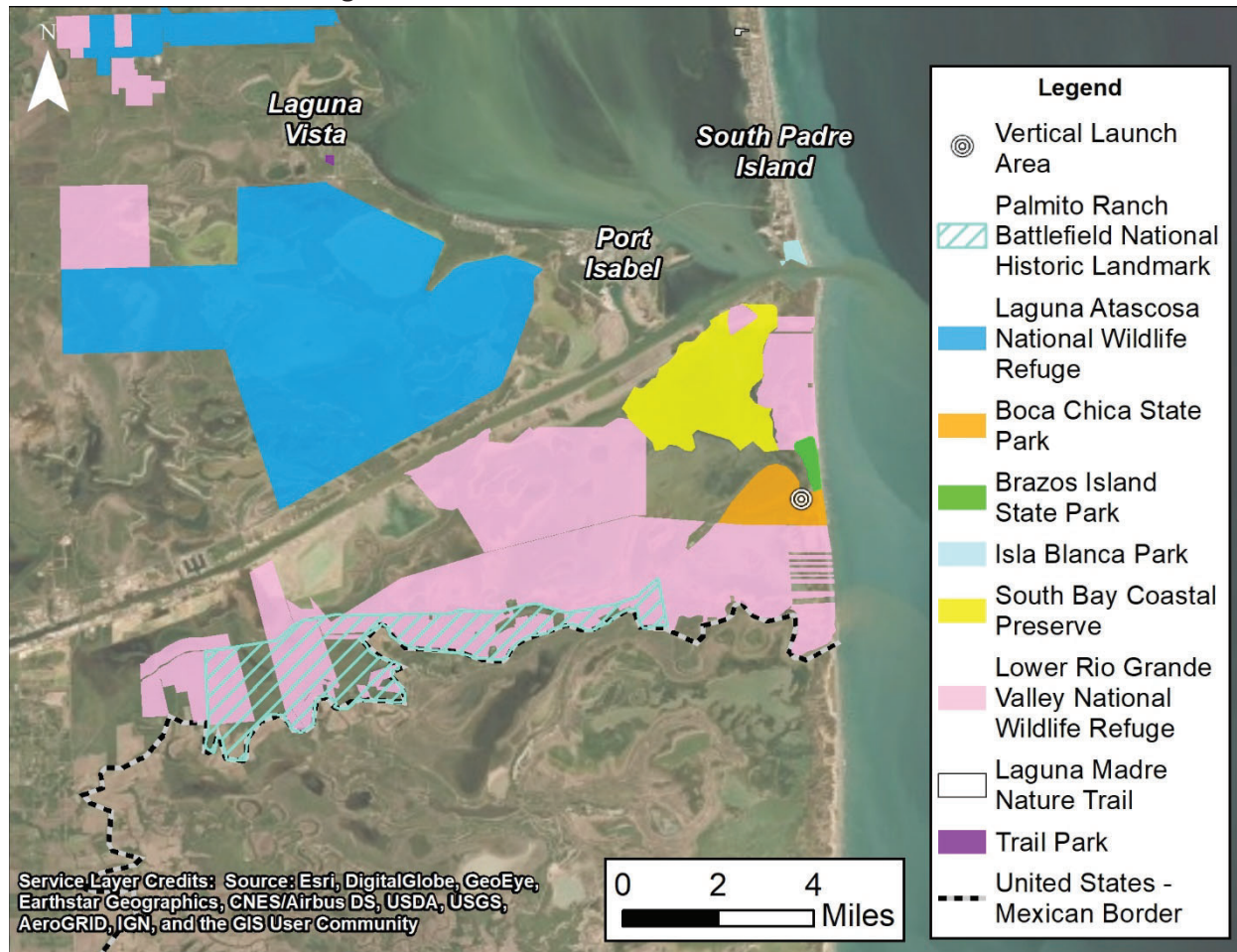
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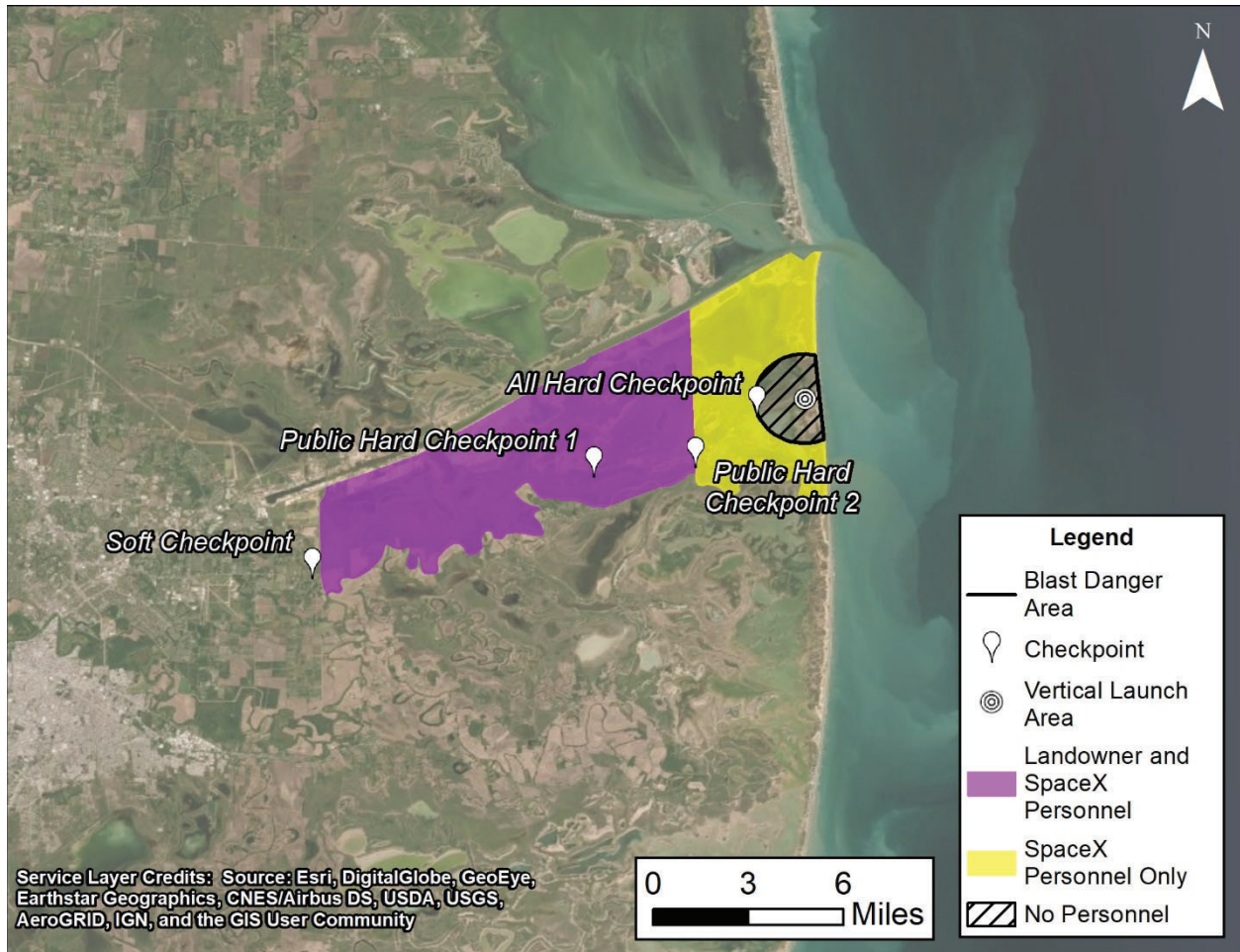
Randy Repcheck  
Manager, Safety Authorization Division

Attachments: Attachment 1. Section 4(f) Properties Under USFWS Jurisdiction  
Attachment 2. Closure Area  
Attachment 3. Security Plan

**Attachment 1. Section 4(f) Properties Under USFWS Jurisdiction – Lower Rio Grande Valley National Wildlife Refuge and Palmito Ranch Battlefield National Historic Landmark**



## Attachment 2. Closure Area



### **Attachment 3. SpaceX Security Plan**



## **Boca Chica Launch Site Security Plan**

**Date:** May 13, 2021  
**Version:** 4.5 - EA

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**Proprietary Notice:** This document and the data contained herein constitute Proprietary Information of Space Exploration Technologies Corp. (SpaceX). They are provided in confidence under existing laws, regulations and/or agreements covering the release of commercial, competition-sensitive and/or proprietary information, and shall be handled accordingly.

**U.S. Export Controlled.** This document contains technical data covered by the U.S. Munitions List (USML). Pursuant to the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120-130, the approval of the Directorate of Defense Trade Controls, U.S. Department of State, must be obtained prior to: (i) sending or taking these data out of the United States in any manner, except by mere travel outside of the United States by a person whose personal knowledge includes these data; (ii) disclosing (including oral or visual disclosure) or transferring in the United States these data to an embassy, any agency or subdivision of a foreign government; or (iii) disclosing (including oral or visual disclosure) or transferring these data to a foreign person, whether in the United States or abroad.

## Introduction

The SpaceX Security Team provides security to the Boca Chica launch site during routine operations and in support of Starship operations. The Boca Chica facility is a dynamic environment that incorporates multiple layers of security with a significant emphasis on interagency coordination and cooperation. SpaceX will follow this plan to ensure that there are not any unauthorized persons, vessels, trains, aircraft, or other vehicles within the safety clear zones. The plan includes conducting “safety sweeps” by security personnel as needed for each launch, as well as roadblocks, surveillance activities, and other security checkpoints as appropriate. Safety sweeps will utilize various methods, as appropriate that may include, but are not limited to: video surveillance; motion detection; and human patrol assets.

## Stakeholders

Below is a list of primary SpaceX stakeholders and external agencies that may be engaged during Boca Chica launch activities.

1. SpaceX
  - a. Flight Control
  - b. Security
  - c. Environmental Health & Safety (EHS)
  - d. Operations Support Coordinator (OSC)
  - e. Red Team
2. Federal Aviation Administration (FAA)
3. Cameron County Sheriff's Office (CCSO)
4. U.S. Customs and Border Protection (CBP)
5. U.S. Coast Guard
6. U.S. Fish & Wildlife
7. Texas Department of Transportation
8. Texas Department of Public Safety
9. Texas Parks and Wildlife
10. Brownsville Navigation District

## Clearing Operations

Safety clear zones will be established for each launch and test, when necessary, to contain the adverse effects of launch and test operations involving a hazard. The purpose of these zones is to protect public health and safety and the safety of property. The zones are sized to prevent a launch anomaly from harming those outside the safety clear zones, and they typically extend downrange along the flight trajectory for a certain distance.

This closure and clearing plan describes the procedures for land and water closure areas that will limit public access on the day of launch operations along State Highway 4, on Boca Chica Beach, and offshore.



## **Pad**

As necessary, SpaceX's Flight Control, EHS lead, and Security lead will conduct pad clearing operations. This team will clear the pad and its supporting structures to ensure that there are no personnel on site. Once the pad is clear, the gate will be locked.

## **Maritime**

A marine channel to the north of the launch site separates the area from Port Isabel and South Padre Island. The channel is approximately 7 km north of the launch site. This is not a populated area; there are no permanent residences or commercial structures in the area between the launch site and the channel. The Rio Grande River is located about 4 km to the south of the launch site. As necessary, to inform the maritime public of potential hazards associated with testing and launches on the waterways, the U.S. Coast Guard (USCG) will issue any of the following: a Local Notice to Mariners, a Broadcast Notice to Mariners, and/or Marine Safety Information Bulletins. SpaceX will provide information to the USCG for either of the Notice to Mariners (NOTMAR) and/or the Marine Safety Information Bulletins. Additionally, for flight operations, Cameron County Sheriff's Office (CCSO) will control access to the South Bay.

## **Boca Chica Park Beach**

As necessary, CCSO will close Boca Chica Park Beach and assist SpaceX Security in clearing the beach from Highway 4 south to the Rio Grande river and north to the marine channel. CCSO will also close the beach access points. U.S. Customs and Border Protection (CBP) may assist the county in clearing the beach and communicating the results to the SpaceX OSC.

## **Boca Chica Village**

Boca Chica Village (the Village) is the nearest population center to the launch site, just over 2 km west of the launch location.

### Overpressure Mitigation

As necessary, to mitigate the risk of injury to the Village residents due to overpressure, Cameron County will exercise its authority to protect the public and direct residents to go outside their properties. Cameron County will provide warnings to residents by distributing a written notice to residents in the Village and will alert residents when the launch operation giving rise to the overpressure risk is imminent.

### Evacuating Boca Chica Village

As necessary, CCSO will aid in evacuation of the Village to the fullest extent of their authority in accordance with the applicable law. That operation should take place approximately T-6 hours prior to the planned space flight activity, and in coordination with other clearing procedures. Activity in the Village will be monitored until the clear has been verified, and then continually throughout the duration of the window.

## **Checkpoint Operations**

As necessary, SpaceX will operate Hard and Soft Checkpoints to limit access to the launch site and ensure the integrity of permissioned access. CCSO and SpaceX Security will establish these checkpoints. CCSO will exercise its authority to limit access. CBP may participate in these operations at its discretion. When the Soft Checkpoint is in effect for flight, access will be restricted to SpaceX essential personnel, landowners who reside past the checkpoint and outside of the flight caution area, and CCSO Hard



Checkpoint support. SpaceX will provide credentials for persons who will pass through the Soft Checkpoint. No members of the public will enter the safety clear zone during launch operations.

### **Hard Checkpoint**

When the Hard Checkpoint is in effect, no one will be allowed to pass it or otherwise enter the safety clear zone. The Hard Checkpoint will be established at pad clear as dictated by the planned operation.

### **Soft Checkpoint**

The Soft Checkpoint is located west of the Border Patrol checkpoint on Highway 4 to facilitate vehicle U-turns and avoid interference with the Border Patrol's checkpoints. When the Soft Checkpoint is in effect, vehicle and pedestrian access will be restricted to SpaceX personnel, SpaceX guests, landowners, necessary County/Law enforcement/emergency personnel, and other relevant agencies. The Soft Checkpoint will be established as early as T-1 hour of pad clear, as dictated by the planned operation.

## **Range Coordination**

As necessary, SpaceX will establish a safety clear zone during pre-flight, launch and post-flight operations to protect public health and safety and the safety of property during Starship operations. SpaceX will ensure the integrity of the safety clear zone with Hard and Soft Checkpoints as defined in this plan.

The Range team will consist of SpaceX Security and other local, state, and federal partners with responsibility to clear areas for public safety. Range stakeholders will report clear activities, concerns, and incident response to the OSC. Range coordination activities will begin when the Soft Checkpoint is established and conclude when all checkpoint operations close.

### **Emergency Response Support**

In the event of a Launch Incident, Launch Accident, or Mishap, SpaceX security, in close coordination with CCSO, will maintain all checkpoints until deemed safe to return inside the safety clear areas. As necessary, SpaceX may request first responders be available to help mitigate brush fires outside of the clear areas or respond to medical emergencies. In general, first responders will remain outside of the debris field until trained SpaceX personnel sweep the debris field to safe the area.



# United States Department of the Interior

FISH AND WILDLIFE SERVICE

## South Texas Refuge Complex

Lower Rio Grande Valley National Wildlife Refuge

3325 Green Jay Road

Alamo, Texas 78516

(956) 784-7500



August 23, 2021

Mr. James R. Repchek  
Federal Aviation Administration (FAA)  
800 Independence Ave., SW  
Washington, D.C. 20591

Dear Mr. Repchek:

This responds to your letter dated July 15, 2021, requesting U.S. Fish and Wildlife Service (FWS) input on FAA's initiation of a Section 4(f) consultation of eligible properties that include the Boca Chica Tract of the Lower Rio Grande Valley National Wildlife Refuge (Refuge) for the SpaceX Starship/Super Heavy Launch project at Boca Chica, Texas. FWS input to FAA also extends to the Palmito Ranch Battlefield National Historic Landmark (NHL) as a significant portion of the NHL is within the Refuge. Section 4(f) of the Department of Transportation Act of 1966 protects publicly owned parks, recreation areas, and wildlife and waterfowl refuges of national, state, or local significance and historic sites of national state, or local significance from "use" by transportation-related projects. The FAA is seeking input on several Section 4(f) issues including: 1) if a proposed utility installation would result in a temporary occupancy but have a "*de minimus*" impact under FWS fee-owned land; 2) if an increase to 500 hours would constitute a "*constructive use*" as defined under Section 4(f); 3) if the noise from the proposed action would constitute a constructive use; 4) if anomaly-related activities constitute a constructive use; 5) if an additional 300 closure hours would result in permanent or residual effects to a temporary occupancy; and 6) if the need for closures in the event of an anomaly constitute a constructive use.

The Refuge, and the National Wildlife Refuge System in general, maintains the biological integrity, diversity and environmental health of its natural resources for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act of 1997, *16 U.S.C. 668dd-668ee*). The Refuge was established in 1979, as a long-term program of acquiring lands to protect and restore the unique biodiversity of the Lower Rio Grande Valley of Texas. The Refuge ensures the conservation of unique South Texas fish, wildlife and plant populations and their habitat, which is necessary for the scientific study of wildlife, conservation biology and ecosystem management. In addition to its primary task of conserving wildlife, the Refuge also provides six wildlife-dependent recreational uses, which include: hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Prior to SpaceX-associated closures that impede access to the Refuge, an estimated 110,000 visitors accessed the Refuge annually. Sixty three percent of visitors to the Boca Chica tract were going to surf fish or beachcomb. The majority of visitors are from Brownsville, which has one of the

country's highest poverty rates with 26 percent of the population below the federal poverty line and 23 percent of families earning less than \$25,000.

Section 4(f) provides that a "*constructive use*" occurs when there is "*a temporary occupancy of land that is adverse in terms of the statute's preservation purpose*" or when "*a project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired.*" The level, nature, and extent to which an area is constructively used is subject to the expertise and determination of the agency responsible for management and administration of the 4(f) lands impacted by the constructive use, in this case, the FWS.

At the outset, the FWS advises the FAA that ongoing activities (i.e., the SpaceX Starship/Super Heavy Project) previously permitted already result in a constructive use, as defined under Section 4(f). SpaceX activities already exceed the 300 road closure hours of FAA-permitted operations. Closures of the beach affect a population with limited income and few options to recreate. Boca Chica is the only beach that is free to the nearby and largely Hispanic communities. Current activities, such as large explosions and falling debris from SpaceX flight test activities, the appearance of significantly increased highway traffic 24 hours per day all week, and extensive construction, have not been adequately analyzed nor addressed. The effect of both existing and anticipated noise levels on wildlife, such as nesting sea turtles or birds, resulting from these tests has not been adequately analyzed and there has been no demonstration that the noise levels pose no harmful effect. In addition, debris that has fallen onto the Refuge has damaged sensitive wind tidal flats. The vehicles or machinery used to retrieve debris have created rutting and damage that interrupts tidal water sheet flow across these flats. These hazardous activities have prompted concerns including re-evaluating FAA's current EIS, as well as the potential need to reinitiate consultation with the FWS on the Biological Opinion analyzing SpaceX operations pursuant to 50 C.F.R., part 402.16.

Over the past six years, closures of the road to Boca Chica Beach have become increasingly frequent and may occur for one or more days due to delays or problems occurring during testing. The FAA/SpaceX closure reporting computation remains in question, as the extended closures occurring for hazardous explosion- and debris-related events or delays are deterrents for public access to the Boca Chica tract and its beaches for the duration of all published closure timeframes. In 2019, the FWS conservatively quantified more than 1,000 closure hours and noted a significant disparity in accounting between SpaceX's reported total of 158 hours and the conservative total being tracked by FWS staff. Frequent closures caused by SpaceX activities are already substantially impairing both the Refuge's ability to adequately manage the Refuge and the public's enjoyment of the Boca Chica Beach area for wildlife-dependent recreation.

There are both "*adverse*" and "*severe*" impacts to Refuge public use, management, wildlife, and habitat from SpaceX activities. Increasing the number of "official" closure hours will only exacerbate the levels of impairment of Refuge properties. The protected activities of the Refuge that are being substantially impaired include fishing, wildlife observation, photography, environmental education, and interpretation. When closures occur, all of these wildlife-dependent recreational uses are substantially impaired because they are not available to the public. Additional features and attributes of the Refuge that have already been substantially impaired include the sensitive tidal flats, salt prairies, wildlife, and sensitive bird nesting and wintering sites. Based on bird monitoring reports, Snowy and Wilson's plovers have not been documented nesting in close proximity to the SpaceX launching site as they had in years prior to

the project. Finally, none of the damage to the sensitive tidal flats from debris pickup and motorized equipment and human access has been adequately addressed. These features and attributes will likely continue to be substantially impaired because explosions, debris, traffic, building construction, and invasive plant species will continue to threaten the health and diversity of the Refuge's habitats and wildlife.

Section 4(f) regulations "*require rigorous exploration and objective evaluation of alternative actions that would avoid all use of Section 4(f) properties...that would avoid some or all adverse effects*" (OEPC Section 4(f) Handbook, after 23 CFR § 774). 23 U.S.C. § 138 precludes the Secretary of Transportation from approving a program or project unless "*such program includes all possible planning to minimize harm*" to wildlife refuges.

Therefore, to assist in the FAA's consultation and to include all possible planning to minimize harm to wildlife refuges, the FWS recommends the following measures be evaluated as alternative actions that may help to avoid or deter constructive use:

- SpaceX be limited to use of the Boca Chica Site for launches only as originally proposed and not as a testing facility, in order to reduce closure hours and decrease the number of anomaly incidents.
- Explosions result in emergency consultation process with FWS.
- SpaceX contract environmental cleanup using only specialized personnel and equipment designed to protect and restore the sensitive habitat types found in the area.
- Space X not be allowed to prohibit FWS staff, TPWD staff, NPS staff, or other agency representatives and their researchers to enter to collect biological and cultural resource data even during closures, and ensure SpaceX contract or fund collection of data on impacts to sensitive habitat types and wildlife species impacted by anomalies.
- Restoration of impacted habitats, if possible, should be required. If restoration is not possible impacted habitats should be protected through land exchanges or land purchases.
- SpaceX provide an environmental cleanup fund that agencies can utilize to pay for environmental damage caused by SpaceX activities.
- SpaceX use land exchange as a mitigative option to compensate for habitat loss.
- SpaceX engage in land exchanges, land purchases or recreation use improvements (enhancements) for recreational use loss, for example, providing improved facilities for the public (interpretive signage, fishing access, maintained trails, educational programs, etc., as improvements).
- SpaceX coordinate directly with FWS regarding protective and restorative measures for habitat, cultural resources, and public use opportunities regarding FWS owned or managed land.
- SpaceX integrate traffic control measures to minimize traffic to their site
  - For example, SpaceX establish a "park and ride" in town and shuttle staff/crews as opposed to individual 24/7 high traffic volumes on State Highway 4.
- SpaceX assist the TXDOT to install several protected wildlife crossings to prevent refuge fragmentation and address listed species and general wildlife concerns along State Highway 4.
- SpaceX be required to utilize predictive scheduling with a minimum of two-week advance notice for road closures.
- SpaceX comply with a specific road closure window.

- For example, set days and hours during the week, excluding weekends and holidays.
- SpaceX closure authorization should be limited to a single day rather than a proposed date with two coinciding backup days.
- Any and all SpaceX future plans for expansion of facilities and operations be fully disclosed and adequately analyzed in the FAA's upcoming NEPA documentation.
- Noise levels be measured at various points such as on the beachfront and at points inland to determine potential effects to further inform appropriate measures for protection of natural resources and Historic Properties like NHL.
- SpaceX and/or any utility contractors coordinate with the Refuge to address the placement of utilities within FWS fee-owned lands beneath portions of State Highway 4.

We appreciate your consideration of the above issues and FWS recommendations and look forward to discussing these or other concerns as pertains to the SpaceX Boca Chica site. You may contact me via email at [sonny\\_perez@fws.gov](mailto:sonny_perez@fws.gov).

Sincerely,

**Manuel  
Perez III**  Digitally signed by  
Manuel Perez III  
Date: 2021.08.23  
14:29:25 -05'00'

Manuel "Sonny" Perez III  
South Texas Refuge Complex Manager

cc:

Stacey Zee, Federal Aviation Administration, Washington, DC.  
Bryan R. Winton, Refuge Manager, Lower Rio Grande Valley NWR  
Kelly McDowell, Refuge Supervisor, OK/TX Refuges  
Dawn Gardiner, Assistant Field Supervisor, Texas Coastal ES Field Office



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

September 16, 2021

Manuel “Sonny” Perez III  
Acting Complex Refuge Manager  
U.S. Fish and Wildlife Service  
South Texas Refuge Complex  
Lower Rio Grande Valley National Wildlife Refuge  
3325 Green Jay Road  
Alamo, TX 78516  
Submitted to: [sonny\\_perez@fws.gov](mailto:sonny_perez@fws.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Perez:

The Federal Aviation Administration (FAA) has received and reviewed your letter dated August 23, 2021, which responded to the FAA’s July 15, 2021, initiation of consultation under Section 4(f) of the Department of Transportation Act. The U.S. Fish and Wildlife Service (USFWS) raised several concerns regarding the FAA’s evaluation of the potential for Space Exploration Technologies Corporation’s (SpaceX) proposed Starship/Super Heavy launch operations to result in a Section 4(f) *use* of the Boca Chica Tract of the Lower Rio Grande Valley National Wildlife Refuge (NWR). The FAA appreciates the detailed information and comments you included in the letter. The FAA is providing this letter to continue Section 4(f) consultation with the USFWS to respond to and address the issues and concerns raised in your letter. For a detailed evaluation of potential Section 4(f) impacts, please refer to the FAA’s *Draft Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas* (PEA), which the FAA will be publishing on September 17, 2021.<sup>1</sup> The FAA will notify you as soon as the Draft PEA is published. For a summary of the Section 4(f) issues for discussion, project background information, a summary of the proposed action, and a description of the regulatory background, please refer to FAA’s July 15, 2021, letter.

**Temporary Occupancy and Constructive Use**

As described in Section 3.8 of the Draft PEA, the FAA is evaluating the potential for the Proposed Action to result in a *use* of properties eligible for protection under Section 4(f). This includes consideration of potential physical use, which may include permanent incorporation or temporary occupancy, or potential *constructive use*. Page 2 of your letter indicated that one circumstance under which *constructive use* may occur is if there is a temporary occupancy of land that is adverse in terms of the land’s preservation

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<sup>1</sup> See: [https://www.faa.gov/space/stakeholder\\_engagement/spacex\\_starship/](https://www.faa.gov/space/stakeholder_engagement/spacex_starship/).



purpose. The FAA would like to clarify that *temporary occupancy* is a different category of Section 4(f) *use* than *constructive use*, and FAA's evaluation considered each type of *use* separately.

### **Observed Closure Hours**

Your letter stated that there have already been over 300 hours of closures due to SpaceX activities. According to SpaceX calculations recently provided to the FAA, just under 249 hours of closures have been recorded this year through August 24, 2021. SpaceX arrived at this estimate by using a closure start time that begins when Cameron County law enforcement starts enforcing roadblocks along State Highway 4 and a stop time when law enforcement re-opens access. This is consistent with the FAA's definition of a closure provided in our July 15, 2021, letter.

### **Impacts from Closures**

Your letter stated that closures related to the Proposed Action would substantially impair wildlife-dependent recreational uses in the NWR. The FAA understands that these are important and meaningful uses of the NWR; however, the Section 4(f) regulations at 23 CFR 774.15(e)(3) indicate that access restrictions that substantially diminish the utility of a significant publicly owned park, recreation area, or historic site, results in a *constructive use*. Accordingly, restrictions in public access to wildlife and waterfowl refuges do not need to be evaluated for the potential to result in *constructive use* under the Section 4(f) provisions.

Your letter also expressed concern about the potential for launch closures to affect the ability of USFWS to manage the NWR effectively. As described in Section 3.8.3.2 of the Draft PEA, SpaceX has developed and would implement a Closure Notification Plan which requires providing a forecast of upcoming closures one to two weeks in advance and sending final closure notifications to USFWS and other agencies 24–48 hours in advance to allow USFWS to plan around closures and avoid conflicts with special events and programs. Furthermore, SpaceX would also maintain a roster and badge system to identify staff, contractors, partners, and guests of USFWS and other agencies. This would allow identified USFWS personnel to have access to the NWR at all times except for a reasonable period associated with ignition events or pressure failure tests that could pose a safety risk or when conditions may be otherwise unsafe. The FAA understands that SpaceX has also funded a USFWS Wildlife Refuge Specialist position who will be dedicated to work on the NWR and coordinating with SpaceX activities.

### **Impacts from Noise, Debris, and Traffic**

Your letter raised concerns regarding the adequacy of the evaluation of impacts on NWR wildlife and habitats that would result from operational noise, traffic, falling debris, and other elements of the proposed construction and operations associated with the FAA's Proposed Action. Please see Section 3.8.3 of the Draft PEA, which includes an evaluation of the potential for construction and operations to result in a Section 4(f) *use* of the NWR. This section includes a detailed evaluation of the potential for use from launch noise, daily operations (including sound levels and traffic), and potential launch anomalies that result in the spread of debris. As noted in the Draft PEA, debris and debris-removal impacts are expected to be limited to Boca Chica State Park and Brazos Island State Park and would not extend to the NWR. Regarding impacts to wildlife resources in these areas, SpaceX is working with the Texas Parks and Wildlife Department (TPWD) to develop a Memorandum of Agreement that would



provide numerous measures related to anomaly response and debris removal in a manner that restores all affected areas to pre-anomaly conditions and minimizes the impacts of closures.

If you have additional questions or concerns regarding the items discussed above, please provide your input to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov) or at 202-267-9305. We look forward to continued consultation on this project.

Sincerely,

**JAMES R  
REPCHECK** Digitally signed by  
JAMES R REPCHECK  
Date: 2021.09.16  
15:46:01 -04'00'

Randy Repcheck  
Manager, Safety Authorization Division



# United States Department of the Interior

FISH AND WILDLIFE SERVICE

## South Texas Refuge Complex

Lower Rio Grande Valley National Wildlife Refuge

3325 Green Jay Road

Alamo, Texas 78516

(956) 784-7500



May 13, 2022

Michelle S. Murray  
Federal Aviation Administration (FAA)  
800 Independence Ave.,  
SW Washington, D.C. 20591

Dear Ms. Murray:

This responds to your letter dated April 12, 2022, regarding the FAA's "*de minimis*" finding associated with the "temporary occupancy" of the utility installation, specifically, the underground installation of the power and data lines between the SpaceX launch and landing control center (LLCC) and vertical launch area (VLA) within the State Highway (SH) 4 Right-Of-Way. We have reviewed the conditions associated with the utility placement and agree that this project was of a temporary duration and that the land within the previously disturbed highway right-of-way was to be restored to pre-project conditions for this utility placement.

Therefore, to the extent SpaceX has sought and acquired the appropriate permits, such as special use permits, prior to engaging in installation of utilities in the SH 4 right-of-way between the LLCC and VLA, the U.S. Fish & Wildlife Service concurs with this finding for such utility line installations only. We appreciate the opportunity to provide input on this particular project. If you have any questions or need further assistance, you may contact me via email at [joseph\\_barnett@fws.gov](mailto:joseph_barnett@fws.gov).

Sincerely,

Joseph R. Barnett  
Deputy Refuge Manager

cc:

Amy Hanson, Federal Aviation Administration, Washington, DC.

Stacey Zee, Federal Aviation Administration, Washington, DC.

Bryan R. Winton, Acting Project Leader, South Texas Refuges Complex

Sonny Perez, Refuge Supervisor, OK/TX Refuges

Dawn Gardiner, Assistant Field Supervisor, Texas Coastal ES Field Office



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

### South Texas Refuge Complex

#### Lower Rio Grande Valley National Wildlife Refuge

3325 Green Jay Road

Alamo, Texas 78516

(956) 784-7500

June 2, 2022



Michelle S. Murray  
Federal Aviation Administration (FAA)  
800 Independence Ave.,  
SW Washington, D.C. 20591

Dear Ms. Murray:

This responds to your letter dated April 27, 2022, regarding the FAA's finding that the SpaceX proposed Starship/Super Heavy launch operations project will not result in a constructive use of the Lower Rio Grande Valley National Wildlife Refuge (Refuge) and finding *de minimis* temporary physical occupancies of the Refuge under Section 4(f) of the U.S. Department of Transportation Act of 1966.

The U.S. Fish and Wildlife Service concurs in the FAA's Section 4(f) findings provided that mitigation measures already incorporated in the Programmatic Environmental Analysis, along with the measures described below, and the terms of the Texas Parks and Wildlife Department's conditioned concurrence and Memorandum of Agreement with SpaceX, dated September 2, 2021, are included in project plans, final environmental documents, and terms of SpaceX's permits and licenses.

Measures that must be incorporated include predictive scheduling that accommodates weekend and holiday public use of the Refuge and SpaceX compliance with Fish and Wildlife Service regulations, including acquisition of requisite permits for any activities on Refuge lands.

Specifically, in order to ensure public access to the Refuge, project activities must comply with the following:

1. No SH4 road closures on the following holidays: Memorial Day, Labor Day, July 4th, MLK Day, Presidents' Day, Texas Independence Day, Cesar Chavez Day, Emancipation Day in Texas (also referred to as Juneteenth), Veteran's Day, Good Friday, Easter, Father's Day, Mother's Day, Thanksgiving Day, Christmas Day, New Year's Day ("Holidays").
  - a. Where any of the Holidays falls annually on a Monday or Friday, no Weekend Closures, as defined in paragraph 4, shall be permitted.
  - b. Where any of the Holidays does not fall annually on a Monday or Friday, but falls on a Monday or Friday in a particular year, no Weekend Closures, as defined in paragraph 4, shall be permitted for that year.
  - c. For Thanksgiving, no closures shall be permitted from Thanksgiving Day through the Sunday immediately following Thanksgiving.
2. Except as provided in paragraph 4, from Memorial Day to Labor Day (the times of greatest visitor beach uses and enjoyment), no Weekend Closures from Friday at 6:00

a.m. through Sunday. Road closures for any SpaceX activities would occur from Monday through Friday at 6:00 a.m. This predictive schedule ensures the public access to all open areas of the Refuge (e.g., Boca Chica Beach) from Friday at 6:00 a.m. through Sunday from Memorial Day through Labor Day.

3. Except as provided in paragraph 4, from the day after Labor Day to the day before Memorial Day (throughout the winter months), no Weekend Closures on Saturday or Sunday.
4. When a SpaceX activity requires at least one road closure between Fridays at 6:00 a.m. and Sundays from Memorial Day to Labor Day, or on weekends from the day after Labor Day to the day before Memorial Day, it is considered a "Weekend Closure."
  - a. SpaceX may request a Weekend Closure up to five times per calendar year.
5. For any SH4 road closure, SpaceX will request, at least 48 hours prior to the start of the closure period, that the Cameron County Commissioners Court implement the closure. This notice requirement is intended to give the public a minimum 48-hour notice to reduce impacts to the recreational users. Any requested Weekend Closure shall count toward the total five annual Weekend Closures unless cancellation of the Weekend Closure is publicized more than 24 hours prior to the start of the requested closure period.
6. Exception to the above is for activities deemed to be anomalies per FAA regulations.

Our concurrence is also based on the understanding that, according to the FAA's Programmatic Environmental Assessment, anomalies "will become increasingly unlikely as the Starship/Super Heavy program develops" and "the probability of debris spreading outside of the launch pad boundary... is low and not anticipated." In the event any anomalies result in continued debris on Refuge lands, further coordination with FAA may be necessary regarding this concurrence. SpaceX must obtain a Special Use Permit from the U.S. Fish and Wildlife Service, as applicable, prior to cleanup activities for any anomaly on Refuge fee-owned or managed lands.

We appreciate the opportunity to provide input on this particular project. If you have any questions or need further assistance, you may contact me via email at [joseph\\_barnett@fws.gov](mailto:joseph_barnett@fws.gov).

Sincerely,



Joseph R. Barnett  
Deputy Refuge Manager

cc:

Amy Hanson, Federal Aviation Administration, Washington, DC.  
Stacey Zee, Federal Aviation Administration, Washington, DC.  
Bryan R. Winton, Acting Project Leader, South Texas Refuges Complex  
Sonny Perez, Refuge Supervisor, OK/TX Refuges  
Dawn Gardiner, Assistant Field Supervisor, Texas Coastal ES Field Office



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

July 28, 2021

Jesse Solis  
Federal Consistency Coordinator  
Texas General Land Office  
602 N. Staples Street  
Corpus Christi, TX 78401  
Submitted to: [Jesse.Solis@GLO.TEXAS.GOV](mailto:Jesse.Solis@GLO.TEXAS.GOV)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Solis:

The purpose of this letter is to notify you of the Federal Aviation Administration's (FAA) initiation of the Section 4(f) consultation addressing the eligible property in the study area under consideration for Space Exploration Technologies Corporation's (SpaceX) proposed Starship/Super Heavy launch operations. The eligible property is the South Bay Coastal Preserve (Preserve), which the FAA understands is managed by the Texas Government Land Office (TGLO) and Texas Parks and Wildlife Department (TPWD) (see Attachment 1).

**Summary of Section 4(f) Issues for Discussion**

1. **Construction** – The FAA is considering whether SpaceX's proposed launch-related construction would involve a permanent incorporation or temporary occupancy of the Preserve.
2. **Nominal Launch Operations**
  - a. The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f). SpaceX has requested 500 hours per year of closure hours from Cameron County.<sup>1</sup> The FAA is considering whether the number of closure hours would substantially impair the activities, features, or attributes of the Preserve. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). Any limitation or maximum number of annual closure hours per year would be included in the analysis.
  - b. The FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the

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<sup>1</sup> SpaceX and Cameron County are renegotiating an existing agreement to increase the closure hours to 500 hours per year.

Preserve because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches.

### 3. Anomalies

- a. An anomaly (e.g., explosion) may result in parts of the launch vehicle landing in the Preserve which would require SpaceX to enter the property to retrieve debris or for other associated activities. Therefore, the FAA has considered failure-related activities and extended closure hours associated with failures as a potential *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. The FAA is considering whether Condition #3 could be satisfied, as extended closures may result in temporary interference with the activities of the Preserve. Therefore, the FAA is considering whether the temporary occupancy of the Preserve resulting from anomaly-related activities constitutes a *use* under Section 4(f).
- b. Occupancy of the Preserve would be short term (not more than 300 additional hours per year), and there would be no permanent or residual effects to the Preserve lasting beyond the occupancy. Therefore, the FAA is considering whether the failure-response activities (e.g., debris removal) would adversely affect the activities, features, or attributes that make the Preserve eligible for Section 4(f) protection and seeks input from TGLO on the impacts on the property resulting from *temporary occupancy*.
- c. The FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the Preserve and therefore constitutes a *constructive use* under Section 4(f).

The following sections of this letter include pertinent regulatory background, a summary of the Proposed Action, and further information about the Section 4(f) issues.

### Background

SpaceX is proposing to operate Starship/Super Heavy launch vehicles at its Boca Chica Launch Site in Cameron County, Texas. SpaceX must obtain an experimental permit or launch license from the FAA Office of Commercial Space Transportation to operate Starship/Super Heavy at the Boca Chica Launch Site. Issuing an experimental permit or launch license is considered a major federal action under the National Environmental Policy Act (NEPA) of 1969 and requires an environmental review. The FAA is in the process of preparing a draft Programmatic Environmental Assessment (PEA) to assess the potential environmental impacts of Starship/Super Heavy operations from the Boca Chica Launch Site. The TGLO is a participating agency in the preparation of the draft PEA.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation may approve any transportation project that requires the *use* of any Section 4(f) resource<sup>2</sup> only if there is no feasible and prudent alternative to the *use* of such land and the transportation project includes all possible planning to minimize harm resulting from the *use*.

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<sup>2</sup> Section 4(f) resources include publicly owned and publicly accessible land from a park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance



## **Proposed Action**

SpaceX's proposed launch operations include suborbital and orbital launches. The Proposed Action also includes launch-related activities at the Boca Chica Launch Site, such as tank tests, static fire engine tests, expansion of the vertical launch area (VLA) and solar farm, and construction of additional infrastructure. A complete project description is provided in Chapter 2 of the administrative draft PEA.

## **Regulatory Background**

The FAA's procedural requirements for complying with Section 4(f) are set forth in DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*. The FAA also considers Federal Highway Administration (FHWA) regulations (23 CFR part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for use of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

A *use* under Section 4(f) can occur when 1) land from a Section 4(f) property is permanently incorporated into a transportation project, 2) there is a *temporary occupancy* of a Section 4(f) property, or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of use is identified as *constructive use*.

### *Physical Use*

A permanent incorporation would involve an actual physical taking of Section 4(f) property as part of a transportation project either as a purchase of land or a permanent easement.

*Temporary occupancy* occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A *physical use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or



waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act *finding of no adverse effect* or *no historic properties affected*.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the NEPA process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to make a *de minimis* impact determination. The officials with jurisdiction must concur in a *finding of no adverse effect* or *no historic properties affected*. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.

#### *Constructive Use*

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,<sup>3</sup> "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,<sup>4</sup> which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a *constructive use* determination to be made.

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

#### **Section 4(f) Determination Issues**

The FAA is in the process of evaluating the potential impacts of the proposed construction and operations on the Preserve to determine if the Proposed Action would result in a *use* of the Preserve through permanent incorporation, *temporary occupancy*, or *constructive use*. A brief summary of the FAA's initial understanding of the Proposed Action's Section 4(f) impacts is presented in the following sections; the FAA invites TGLO to provide further information to help the FAA make a final determination.

#### ***Construction***

Construction of the proposed launch-related facilities at the VLA and expansion of the solar farm would not involve a permanent incorporation of the Preserve, because the activity would occur on SpaceX

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<sup>3</sup> Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>

<sup>4</sup> Available online at: [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_n\\_policy\\_guidance/policy/faq\\_nepa\\_order/desk\\_ref/](https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_n_policy_guidance/policy/faq_nepa_order/desk_ref/)

property. Construction would not result in *temporary occupancy* of the Preserve, because the project does not involve any temporary construction activities in the Preserve. SpaceX owns all land where facility construction activities would occur. Access to portions of the Preserve may be slowed or delayed several times a day when construction vehicles are traveling to and from the Boca Chica Launch Site. Construction would not result in permanent, long-term access restrictions to the Preserve. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of the Preserve such that the value would be substantially impaired. Given these conditions, the FAA is considering whether these construction activities would constitute a *constructive use*.

### ***Nominal Operations***

Some operations at the Boca Chica Launch Site (i.e., tank tests, wet dress rehearsals, static fire engine tests, and launches) would require restricting public access in the vicinity of the VLA and securing land and water areas as part of public safety requirements (see Attachment 2). A closure for a tank test, wet dress rehearsal, or static fire engine test would be shorter than a closure for a launch. For the purposes of the FAA's environmental review, the FAA defines a closure as follows:

A closure begins when local law enforcement, under the direction of an order from the Cameron County Commissioners Court, shuts down State Highway 4 (SH 4) and Boca Chica Beach for a tank test, wet dress rehearsal, static fire engine test, or launch. A closure ends when the operation is completed and local law enforcement open SH 4 and Boca Chica Beach.

Based on this definition, the FAA has learned from SpaceX that SpaceX estimates the total number of closure hours for tank tests, wet dress rehearsals, static fire engine tests, and launches to be 500 hours per year. SpaceX therefore expects to renegotiate an agreement with the Cameron County Commissioners Court to increase the closure hours to 500 hours per year. Assuming normal availability of the Preserve, the proposed closure hours would result in the Preserve being closed to the public up to 11.4 percent of the year.<sup>5</sup> The FAA would ensure that SpaceX continues to notify TGLO in advance of a planned closure so TGLO can plan accordingly and avoid conflicts for special events or programs. SpaceX is not allowed to close Boca Chica Beach on major summer holidays or summer weekends between Memorial Day and Labor Day without the prior approval of TGLO, in accordance with Texas House Bill 2623. Finally, closures would occur according to SpaceX's Security Plan (see Attachment 3).

The FAA is considering whether 500 closure hours would substantially impair the activities, features, or attributes of the Preserve. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f).

In addition to closures, the FAA reviewed modeled noise levels for the Proposed Action to determine whether there would be significant noise increases such that the value of the Preserve, in terms of its activities, features, or attributes, would be substantially impaired, thus constituting a *constructive use*. Static fire engine tests and launches (including landings) would produce short-term, high levels of noise.

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<sup>5</sup> This assumes that the property is typically open to and accessible by the public up to 12 hours per day, 365 days per year.

When these operations are not occurring, the normal daily sound levels in the Preserve would persist. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the Preserve because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches. Therefore, the FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*.

### **Anomalies**

A Starship/Super Heavy test operation or launch could fail (referred to as an anomaly), which could result in an explosion on the launch pad and spread debris. This area is labeled “No Personnel” on the closure area figure (Attachment 2). SpaceX anticipates the need for not more than 300 hours per year of closures, in addition to 500 hours for nominal operations, due to anomalies in the vicinity of the VLA. This would allow SpaceX to ensure public safety and coordinate with land-managing agencies for debris retrieval. The anomaly response closure would start immediately at the time the test operation or launch ends and last until the area is deemed safe for the public.

In the event of an anomaly, a limited number of SpaceX staff would enter the debris field and conduct an initial evaluation, as outlined in SpaceX’s Anomaly Response Plan. Following the initial evaluation of the area, the FAA would ensure SpaceX coordinates with TGLO (and the U.S. Fish and Wildlife Service [USFWS] and TPWD) prior to any attempt of cleanup, in order to minimize damage to the Preserve and sensitive historic, biological, and geological resources. The method of debris cleanup would be assessed on a case-by-case basis and would be approved by TPWD, USFWS, and TGLO. Finally, the FAA would ensure that SpaceX’s entry into the Preserve would be done on foot as much as possible, and the use of vehicles on public land would be coordinated with TGLO and TPWD to minimize impacts. Conditions that would be assessed by SpaceX include, but are not limited to, location of the debris, weather, condition of the soil, and number of support staff. Debris cleanup on SH 4 would be the first priority, followed by public lands, and then SpaceX property.

Because an anomaly may result in parts of the launch vehicle in the Preserve, therefore requiring entry into the property for anomaly related activities (e.g., debris removal), the FAA has considered the anomaly-related activities and extended closure hours associated with anomalies for potential *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. The FAA is considering whether Condition #3 could be satisfied, as extended closures may be considered to result in temporary interference with the activities of the Preserve. Therefore, the FAA is considering whether the temporary occupancy of the Preserve resulting from anomaly-related activities constitutes a *use* under Section 4(f).

Occupancy of the Preserve would be short term (not more than 300 additional hours per year), and there would be no permanent or residual effects to the Preserve lasting beyond the occupancy. Therefore, the FAA is considering whether the debris and response activities would adversely affect the activities, features, or attributes that make the Preserve eligible for Section 4(f) protection such that the activities would be considered a Section 4(f) *use*.

Finally, the FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the Preserve and therefore constitute a *constructive use* under Section 4(f).

Please provide input on the issues discussed above by August 11, 2021, to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov). If you have questions or concerns, please contact Ms. Zee at 202.267.9305 or via email.

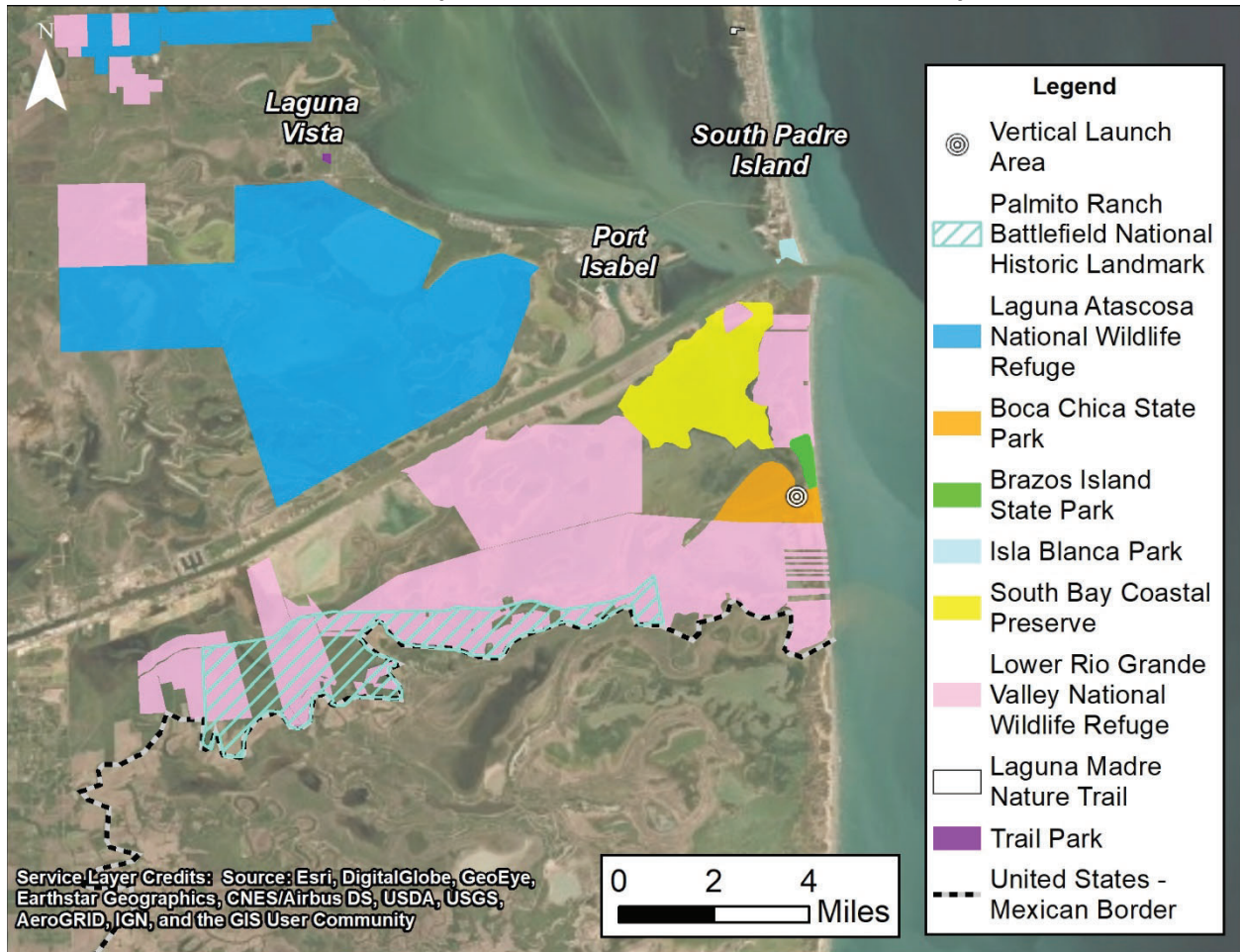
Sincerely,

**JAMES R  
REPCHECK** Digitally signed by  
JAMES R REPCHECK  
Date: 2021.08.02  
14:15:52 -04'00'

Randy Repcheck  
Manager, Safety Authorization Division

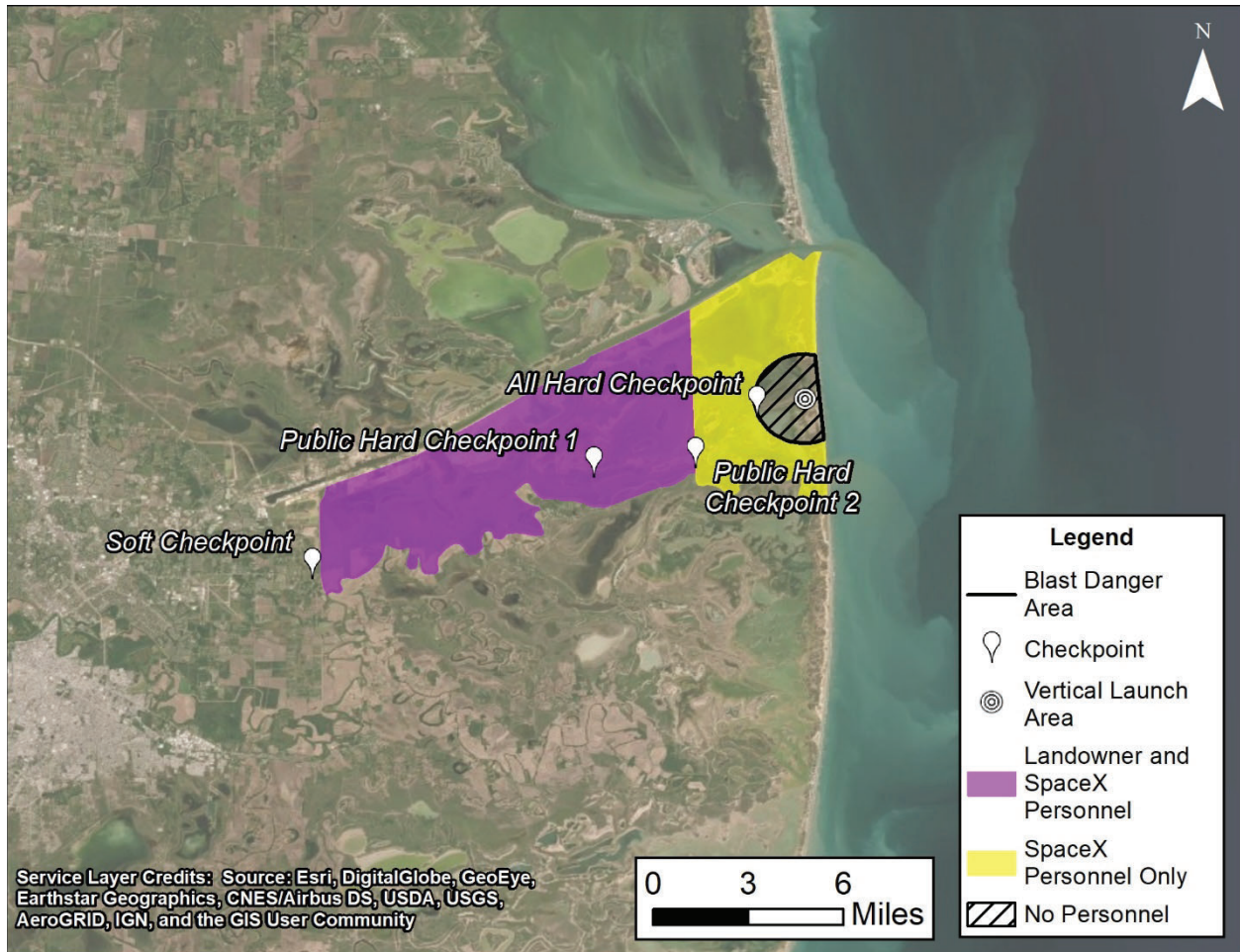
Attachments: Attachment 1. Section 4(f) Properties Under TGLO Jurisdiction  
Attachment 2. Closure Area  
Attachment 3. Security Plan

Attachment 1. Section 4(f) Properties Under TGLO Jurisdiction – South Bay Coastal Preserve





## Attachment 2. Closure Area



### **Attachment 3. SpaceX Security Plan**





## **Boca Chica Launch Site Security Plan**

**Date:** May 13, 2021  
**Version:** 4.5 - EA

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**Proprietary Notice:** This document and the data contained herein constitute Proprietary Information of Space Exploration Technologies Corp. (SpaceX). They are provided in confidence under existing laws, regulations and/or agreements covering the release of commercial, competition-sensitive and/or proprietary information, and shall be handled accordingly.

**U.S. Export Controlled.** This document contains technical data covered by the U.S. Munitions List (USML). Pursuant to the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120-130, the approval of the Directorate of Defense Trade Controls, U.S. Department of State, must be obtained prior to: (i) sending or taking these data out of the United States in any manner, except by mere travel outside of the United States by a person whose personal knowledge includes these data; (ii) disclosing (including oral or visual disclosure) or transferring in the United States these data to an embassy, any agency or subdivision of a foreign government; or (iii) disclosing (including oral or visual disclosure) or transferring these data to a foreign person, whether in the United States or abroad.

## Introduction

The SpaceX Security Team provides security to the Boca Chica launch site during routine operations and in support of Starship operations. The Boca Chica facility is a dynamic environment that incorporates multiple layers of security with a significant emphasis on interagency coordination and cooperation. SpaceX will follow this plan to ensure that there are not any unauthorized persons, vessels, trains, aircraft, or other vehicles within the safety clear zones. The plan includes conducting “safety sweeps” by security personnel as needed for each launch, as well as roadblocks, surveillance activities, and other security checkpoints as appropriate. Safety sweeps will utilize various methods, as appropriate that may include, but are not limited to: video surveillance; motion detection; and human patrol assets.

## Stakeholders

Below is a list of primary SpaceX stakeholders and external agencies that may be engaged during Boca Chica launch activities.

1. SpaceX
  - a. Flight Control
  - b. Security
  - c. Environmental Health & Safety (EHS)
  - d. Operations Support Coordinator (OSC)
  - e. Red Team
2. Federal Aviation Administration (FAA)
3. Cameron County Sheriff's Office (CCSO)
4. U.S. Customs and Border Protection (CBP)
5. U.S. Coast Guard
6. U.S. Fish & Wildlife
7. Texas Department of Transportation
8. Texas Department of Public Safety
9. Texas Parks and Wildlife
10. Brownsville Navigation District

## Clearing Operations

Safety clear zones will be established for each launch and test, when necessary, to contain the adverse effects of launch and test operations involving a hazard. The purpose of these zones is to protect public health and safety and the safety of property. The zones are sized to prevent a launch anomaly from harming those outside the safety clear zones, and they typically extend downrange along the flight trajectory for a certain distance.

This closure and clearing plan describes the procedures for land and water closure areas that will limit public access on the day of launch operations along State Highway 4, on Boca Chica Beach, and offshore.

## **Pad**

As necessary, SpaceX's Flight Control, EHS lead, and Security lead will conduct pad clearing operations. This team will clear the pad and its supporting structures to ensure that there are no personnel on site. Once the pad is clear, the gate will be locked.

## **Maritime**

A marine channel to the north of the launch site separates the area from Port Isabel and South Padre Island. The channel is approximately 7 km north of the launch site. This is not a populated area; there are no permanent residences or commercial structures in the area between the launch site and the channel. The Rio Grande River is located about 4 km to the south of the launch site. As necessary, to inform the maritime public of potential hazards associated with testing and launches on the waterways, the U.S. Coast Guard (USCG) will issue any of the following: a Local Notice to Mariners, a Broadcast Notice to Mariners, and/or Marine Safety Information Bulletins. SpaceX will provide information to the USCG for either of the Notice to Mariners (NOTMAR) and/or the Marine Safety Information Bulletins. Additionally, for flight operations, Cameron County Sheriff's Office (CCSO) will control access to the South Bay.

## **Boca Chica Park Beach**

As necessary, CCSO will close Boca Chica Park Beach and assist SpaceX Security in clearing the beach from Highway 4 south to the Rio Grande river and north to the marine channel. CCSO will also close the beach access points. U.S. Customs and Border Protection (CBP) may assist the county in clearing the beach and communicating the results to the SpaceX OSC.

## **Boca Chica Village**

Boca Chica Village (the Village) is the nearest population center to the launch site, just over 2 km west of the launch location.

### Overpressure Mitigation

As necessary, to mitigate the risk of injury to the Village residents due to overpressure, Cameron County will exercise its authority to protect the public and direct residents to go outside their properties. Cameron County will provide warnings to residents by distributing a written notice to residents in the Village and will alert residents when the launch operation giving rise to the overpressure risk is imminent.

### Evacuating Boca Chica Village

As necessary, CCSO will aid in evacuation of the Village to the fullest extent of their authority in accordance with the applicable law. That operation should take place approximately T-6 hours prior to the planned space flight activity, and in coordination with other clearing procedures. Activity in the Village will be monitored until the clear has been verified, and then continually throughout the duration of the window.

## **Checkpoint Operations**

As necessary, SpaceX will operate Hard and Soft Checkpoints to limit access to the launch site and ensure the integrity of permissioned access. CCSO and SpaceX Security will establish these checkpoints. CCSO will exercise its authority to limit access. CBP may participate in these operations at its discretion. When the Soft Checkpoint is in effect for flight, access will be restricted to SpaceX essential personnel, landowners who reside past the checkpoint and outside of the flight caution area, and CCSO Hard

Checkpoint support. SpaceX will provide credentials for persons who will pass through the Soft Checkpoint. No members of the public will enter the safety clear zone during launch operations.

### **Hard Checkpoint**

When the Hard Checkpoint is in effect, no one will be allowed to pass it or otherwise enter the safety clear zone. The Hard Checkpoint will be established at pad clear as dictated by the planned operation.

### **Soft Checkpoint**

The Soft Checkpoint is located west of the Border Patrol checkpoint on Highway 4 to facilitate vehicle U-turns and avoid interference with the Border Patrol's checkpoints. When the Soft Checkpoint is in effect, vehicle and pedestrian access will be restricted to SpaceX personnel, SpaceX guests, landowners, necessary County/Law enforcement/emergency personnel, and other relevant agencies. The Soft Checkpoint will be established as early as T-1 hour of pad clear, as dictated by the planned operation.

## **Range Coordination**

As necessary, SpaceX will establish a safety clear zone during pre-flight, launch and post-flight operations to protect public health and safety and the safety of property during Starship operations. SpaceX will ensure the integrity of the safety clear zone with Hard and Soft Checkpoints as defined in this plan.

The Range team will consist of SpaceX Security and other local, state, and federal partners with responsibility to clear areas for public safety. Range stakeholders will report clear activities, concerns, and incident response to the OSC. Range coordination activities will begin when the Soft Checkpoint is established and conclude when all checkpoint operations close.

### **Emergency Response Support**

In the event of a Launch Incident, Launch Accident, or Mishap, SpaceX security, in close coordination with CCSO, will maintain all checkpoints until deemed safe to return inside the safety clear areas. As necessary, SpaceX may request first responders be available to help mitigate brush fires outside of the clear areas or respond to medical emergencies. In general, first responders will remain outside of the debris field until trained SpaceX personnel sweep the debris field to safe the area.



TEXAS GENERAL LAND OFFICE  
GEORGE P. BUSH, COMMISSIONER

September 9, 2021

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

**Re: Response to FAA Consultation Initiation Letter Regarding Section 4(f) of the  
Department of Transportation Act of 1966, SpaceX Starship/Super Heavy Launch  
Operations, Boca Chica**

Dear Ms. Zee:

On August 2<sup>nd</sup>, the General Land Office (GLO) received your letter requesting GLO to provide input on Federal Aviation Administration's (FAA) Section 4(f) consultation for eligible properties under consideration as part of Space Exploration Technologies Corporation (SpaceX) proposed Starship/Super Heavy launch operations in Boca Chica, Texas. More specifically, you requested GLO provide input on impact and occupation from SpaceX's construction, normal launch operations, and anomalies to GLO state-owned submerged lands known as South Bay Coastal Preserve.

The GLO is responsible for managing state-owned submerged land dedicated to the Permanent School Fund. The Coastal Public Lands Management Act, TNRC Section 33.001, charges the GLO to preserve the natural resources of the surface estate in the coastal public land, including the natural aesthetic values of those areas and the value of the areas in their natural state for the protection and nurture of all types of marine life and wildlife. To further recognize these areas, in 1984, the GLO and Texas Parks and Wildlife Department created a Coastal Preserve System, which includes the South Bay Coastal Preserve, to recognize the invaluable role of the Texas coastal region in providing a broad array of natural resources that benefit local, state, national and international communities.

The GLO would like to provide the following specific comments regarding information presented on anomalies. Following an anomaly, immediate notification of impacts to the Preserve should be reported the GLO as soon as identified. Coordination and approval by GLO will be required to move forward with clean-up and restoration of this highly sensitive and critical habitat. Furthermore, per 31 Texas Administrative Code §155.3(g)(3) Easements: Mitigation and Compensation, unavoidable impacts or damages to coastal public land will require mitigation and/or a resource impact fee as set forth in §155.15(b)(3).

To the extent any anomalies cause impacts or damage to coastal public lands and restoration or mitigation is needed, the restoration or mitigation would be required to be located on coastal public land. A Lease authorized by the Commissioner under §51.291 of the Natural Resources Code with commercial rates may be required for the restoration or mitigation on coastal public land. This applies to not only the South Bay Coastal Preserve, but all Coastal Public Land that may be impacted by these events.

GLO has also offered comments on matters of similar nature, including a letter on January 22, 2021 regarding the scope of issues for the Programmatic Environmental Assessment that raised concerns pertaining to: (1) the evaluation of impacts to state-owned land; (2) evaluation of impacts to critical dunes; (3) evaluation of significant unavoidable adverse impacts and measures to avoid, minimize, and mitigate effects of the proposal; (4) evaluation of and alternatives to extensive closures of the public beach and state-owned land; (5) access by resource agencies and research organizations; (6) and protection of coastal natural resource areas.

If you have any questions or concerns, please contact me at (361) 886-1630 or at [federal.consistency@glo.texas.gov](mailto:federal.consistency@glo.texas.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jesse Solis Jr.', with a stylized flourish at the end.

Jesse Solis Jr.  
Coastal Resources - Federal Consistency  
Texas General Land Office





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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

September 16, 2021

Jesse Solis  
Federal Consistency Coordinator  
Texas General Land Office  
602 N. Staples Street  
Corpus Christi, TX 78401  
Submitted to: [Jesse.Solis@GLO.TEXAS.GOV](mailto:Jesse.Solis@GLO.TEXAS.GOV)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Solis:

The Federal Aviation Administration (FAA) has received and reviewed your letter dated September 9, 2021, which responded to the FAA's July 28, 2021, initiation of consultation under Section 4(f) of the Department of Transportation Act. The Texas General Land Office (TGLO) provided comments specific to potential launch anomalies as a result of Space Exploration Technologies Corporation's (SpaceX) operation of Starship/Super Heavy launch vehicles and potential impacts on the South Bay Coastal Preserve (Preserve). Specifically, the TGLO requested that, following an anomaly, any impacts to the Preserve be immediately reported to the TGLO as soon as the impacts are identified. Your letter noted that coordination and approval by the TGLO will be required to move forward with clean-up and restoration of the Preserve, if any impacts occurred. Per 31 Texas Administrative Code §155.3(g)(3) Easements: Mitigation and Compensation, unavoidable impacts or damages to coastal public land will require mitigation and/or a resource impact fee as set forth in §155.15(b)(3).

SpaceX has added the TGLO to the list of stakeholders contained in SpaceX's Anomaly Response Plan, which was shared with the TGLO on July 23, 2021. If an anomaly affected the Preserve, SpaceX would be responsible for contacting the TGLO (as well as the Texas Parks and Wildlife Department) immediately to discuss debris clean-up and any required mitigation. SpaceX has indicated it is committed to working with the TGLO to consider a restoration or mitigation plan for any such damages resulting from an anomaly. SpaceX would be responsible for complying the state requirements noted in your letter if a launch anomaly resulted in damages to the Preserve.

For a detailed evaluation of potential Section 4(f) impacts, please refer to the FAA's *Draft Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX*

*Boca Chica Launch Site in Cameron County, Texas* (PEA), which the FAA will be publishing on September 17, 2021.<sup>1</sup> The FAA will notify you as soon as the Draft PEA is published.

If you have additional questions or concerns, please provide your input to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov) or at 202-267-9305. We look forward to continued consultation on this project.

Sincerely,

**JAMES R  
REPCHECK**  
Digitally signed  
by JAMES R  
REPCHECK  
Date: 2021.09.16  
15:43:51 -04'00'

Randy Repcheck  
Manager, Safety Authorization Division

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<sup>1</sup> See: [https://www.faa.gov/space/stakeholder\\_engagement/spacex\\_starship/](https://www.faa.gov/space/stakeholder_engagement/spacex_starship/).



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

July 28, 2021

Ted Hollingsworth  
Land Conservation Branch Manager  
Texas Parks and Wildlife  
4200 Smith School Rd  
Austin, TX 78744  
Submitted to: [ted.hollingsworth@tpwd.texas.gov](mailto:ted.hollingsworth@tpwd.texas.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Hollingsworth:

The purpose of this letter is to notify you of the Federal Aviation Administration's (FAA) initiation of the Section 4(f) consultation addressing the eligible properties in the study area under consideration for Space Exploration Technologies Corporation's (SpaceX) proposed Starship/Super Heavy launch operations. These eligible properties include Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve (see Attachment 1).

**Summary of Section 4(f) Issues for Discussion**

1. **Construction** – The FAA is considering whether SpaceX's proposed launch-related construction would involve a permanent incorporation or temporary occupancy of the three Section 4(f) properties.
2. **Nominal Launch Operations**
  - a. The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f). SpaceX has requested 500 hours per year of closure hours from Cameron County.<sup>1</sup> The FAA is considering whether the number of closure hours would substantially impair the activities, features, or attributes of the three Section 4(f) properties. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). Any limitation or maximum number of annual closure hours per year would be included in the analysis.
  - b. The FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*. The FAA is considering whether the Proposed Action would

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<sup>1</sup> SpaceX and Cameron County are renegotiating an existing agreement to increase the closure hours to 500 hours per year.

substantially diminish the attributes that contribute to the enjoyment or quality of the three properties because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches.

### 3. Anomalies

- a. An anomaly (e.g., explosion) may result in parts of the launch vehicle landing in any of the three properties which would require SpaceX to enter the properties to retrieve debris or for other associated activities. Therefore, the FAA has considered failure-related activities and extended closure hours associated with failures as a potential *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. The FAA is considering whether Condition #3 could be satisfied, as extended closures may result in temporary interference with the activities of the three properties. Therefore, the FAA is considering whether the temporary occupancy of any of the properties resulting from anomaly-related activities constitutes a *use* under Section 4(f).
- b. Occupancy of any of the properties would be short term (not more than 300 additional hours per year), and there would be no permanent or residual effects to the properties lasting beyond the occupancy. Therefore, the FAA is considering whether the failure-response activities (e.g., debris removal) would adversely affect the activities, features, or attributes that make the properties eligible for Section 4(f) protection and seeks input from the Texas Parks and Wildlife Department (TPWD) on the impacts on the properties resulting from *temporary occupancy*.
- c. The FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the properties and therefore constitutes a *constructive use* under Section 4(f).

The following sections of this letter include pertinent regulatory background, a summary of the Proposed Action, and further information about the Section 4(f) issues.

### Background

SpaceX is proposing to operate Starship/Super Heavy launch vehicles at its Boca Chica Launch Site in Cameron County, Texas. SpaceX must obtain an experimental permit or launch license from the FAA Office of Commercial Space Transportation to operate Starship/Super Heavy at the Boca Chica Launch Site. Issuing an experimental permit or launch license is considered a major federal action under the National Environmental Policy Act (NEPA) of 1969 and requires an environmental review. The FAA is in the process of preparing a draft Programmatic Environmental Assessment (PEA) to assess the potential environmental impacts of Starship/Super Heavy operations from the Boca Chica Launch Site. The TPWD is a participating agency in the preparation of the draft PEA.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation may approve any transportation project that requires the *use* of any Section 4(f) resource<sup>2</sup> only if there is no

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<sup>2</sup> Section 4(f) resources include publicly owned and publicly accessible land from a park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance

feasible and prudent alternative to the *use* of such land and the transportation project includes all possible planning to minimize harm resulting from the *use*.

### **Proposed Action**

SpaceX's proposed launch operations include suborbital and orbital launches. The Proposed Action also includes launch-related activities at the Boca Chica Launch Site, such as tank tests, static fire engine tests, expansion of the vertical launch area (VLA) and solar farm, and construction of additional infrastructure. A complete project description is provided in Chapter 2 of the administrative draft PEA.

### **Regulatory Background**

The FAA's procedural requirements for complying with Section 4(f) are set forth in DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*. The FAA also considers Federal Highway Administration (FHWA) regulations (23 CFR part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for *use* of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

A *use* under Section 4(f) can occur when 1) land from a Section 4(f) property is permanently incorporated into a transportation project, 2) there is a *temporary occupancy* of a Section 4(f) property, or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of use is identified as *constructive use*.

#### *Physical Use*

A permanent incorporation would involve an actual physical taking of Section 4(f) property as part of a transportation project either as a purchase of land or a permanent easement.

*Temporary occupancy* occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A physical *use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either 1) a determination that the project would not

adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act *finding of no adverse effect* or *no historic properties affected*.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the NEPA process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to make a *de minimis* impact determination. The officials with jurisdiction must concur in a *finding of no adverse effect* or *no historic properties affected*. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.<sup>3</sup>

#### *Constructive Use*

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,<sup>4</sup> "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,<sup>5</sup> which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a *constructive use* determination to be made.

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

#### **Section 4(f) Determination Issues**

The FAA is in the process of evaluating the potential impacts of the proposed construction and operations on Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve to determine if the

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<sup>3</sup> The FAA will consult with TPWD to determine the potential impacts of the Proposed Action to historic properties under its jurisdiction, in compliance with Section 106. The consultations will lead to the development of an amended Programmatic Agreement which will govern the implementation of an updated program for the continued assessment of effects on historic properties and the resolution of adverse effects on historic properties resulting from the Proposed Action. The FAA will use information from its Section 106 process to help inform its determinations regarding Section 4(f) and to define mitigation measures which will be enforceable on SpaceX as a term and condition of its FAA-issued permit(s) or license(s).

<sup>4</sup> Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>

<sup>5</sup> Available online at: [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_n\\_policy\\_guidance/policy/faq\\_nepa\\_order/desk\\_ref/](https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_n_policy_guidance/policy/faq_nepa_order/desk_ref/)



Proposed Action would result in a *use* of any of these properties through permanent incorporation, *temporary occupancy*, or *constructive use*. A brief summary of the FAA's initial understanding of the Proposed Action's Section 4(f) impacts is presented in the following sections; the FAA invites TPWD to provide further information to help the FAA make a final determination.

### ***Construction***

Construction of the proposed launch-related facilities at the VLA and expansion of the solar farm would not involve a permanent incorporation of Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve, because the activity would occur on SpaceX property. Construction would not result in *temporary occupancy* of any of the three properties, because the project does not involve any temporary construction activities in the properties. SpaceX owns all land where facility construction activities would occur. Access to portions of the three properties may be slowed or delayed several times a day when construction vehicles are traveling to and from the Boca Chica Launch Site. Construction would not result in permanent, long-term access restrictions to these Section 4(f) properties. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of any of the three properties such that the value would be substantially impaired. Given these conditions, the FAA is considering whether these construction activities would constitute a *constructive use*.

### ***Nominal Operations***

Some operations at the Boca Chica Launch Site (i.e., tank tests, wet dress rehearsals, static fire engine tests, and launches) would require restricting public access in the vicinity of the VLA and securing land and water areas as part of public safety requirements (see Attachment 2). A closure for a tank test, wet dress rehearsal, or static fire engine test would be shorter than a closure for a launch. For the purposes of the FAA's environmental review, the FAA defines a closure as follows:

A closure begins when local law enforcement, under the direction of an order from the Cameron County Commissioners Court, shuts down State Highway 4 (SH 4) and Boca Chica Beach for a tank test, wet dress rehearsal, static fire engine test, or launch. A closure ends when the operation is completed and local law enforcement open SH 4 and Boca Chica Beach.

Based on this definition, the FAA has learned from SpaceX that SpaceX estimates the total number of closure hours for tank tests, wet dress rehearsals, static fire engine tests, and launches to be 500 hours per year. SpaceX therefore expects to renegotiate an agreement with the Cameron County Commissioners Court to increase the closure hours to 500 hours per year. Assuming normal availability of the Section 4(f) properties, the proposed closure hours would result in the Section 4(f) properties being closed to the public up to 11.4 percent of the year.<sup>6</sup> The FAA would ensure that SpaceX continues to notify TPWD in advance of a planned closure so TPWD can plan accordingly and avoid conflicts for special events or programs. SpaceX is not allowed to close Boca Chica Beach on major summer holidays or summer weekends between Memorial Day and Labor Day without the prior approval of the Texas General Land

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<sup>6</sup> This assumes that the property is typically open to and accessible by the public up to 12 hours per day, 365 days per year.

Office, in accordance with Texas House Bill 2623. Finally, closures would occur according to SpaceX's Security Plan (see Attachment 3).

The FAA is considering whether 500 closure hours would substantially impair the activities, features, or attributes of the three properties. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f).

In addition to closures, the FAA reviewed modeled noise levels for the Proposed Action to determine whether there would be significant noise increases such that the value of the Section 4(f) properties, in terms of their activities, features, or attributes, would be substantially impaired, thus constituting a *constructive use*. Static fire engine tests and launches (including landings) would produce short-term, high levels of noise. When these operations are not occurring, the normal daily sound levels in the properties would persist. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the properties because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches. Therefore, the FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*.

### ***Anomalies***

A Starship/Super Heavy test operation or launch could fail (referred to as an anomaly), which could result in an explosion on the launch pad and spread debris. This area is labeled "No Personnel" on the closure area figure (Attachment 2). SpaceX anticipates the need for not more than 300 hours per year of closures, in addition to 500 hours for nominal operations, due to anomalies in the vicinity of the VLA. This would allow SpaceX to ensure public safety and coordinate with land-managing agencies for debris retrieval. The anomaly response closure would start immediately at the time the test operation or launch ends and last until the area is deemed safe for the public.

In the event of an anomaly, a limited number of SpaceX staff would enter the debris field and conduct an initial evaluation, as outlined in SpaceX's Anomaly Response Plan. Following the initial evaluation of the area, the FAA would ensure SpaceX coordinates with TPWD (and the U.S. Fish and Wildlife Service [USFWS] and Texas General Land Office [TGLO]) prior to any attempt of cleanup, in order to minimize damage to any of the three properties and sensitive historic, biological, and geological resources. The method of debris cleanup would be assessed on a case-by-case basis and would be approved by TPWD, USFWS, and TGLO. Finally, the FAA would ensure that SpaceX's entry into any of three properties would be done on foot as much as possible, and the use of vehicles on public land would be coordinated with TPWD to minimize impacts. Conditions that would be assessed by SpaceX include, but are not limited to, location of the debris, weather, condition of the soil, and number of support staff. Debris cleanup on SH 4 would be the first priority, followed by public lands, and then SpaceX property.

Because an anomaly may result in parts of the launch vehicle in one or more of the properties, therefore requiring entry into the property for anomaly related activities (e.g., debris removal), the FAA has considered the anomaly-related activities and extended closure hours associated with anomalies for potential *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. The FAA is considering whether Condition #3 could be satisfied, as extended closures may be considered to result in

temporary interference with the activities of the three properties. Therefore, the FAA is considering whether the temporary occupancy of the properties resulting from anomaly-related activities constitutes a *use* under Section 4(f).

Occupancy of any of the properties would be short term (not more than 300 additional hours per year), and there would be no permanent or residual effects to the properties lasting beyond the occupancy. Therefore, the FAA is considering whether the debris and response activities would adversely affect the activities, features, or attributes that make the properties eligible for Section 4(f) protection such that the activities would be considered a Section 4(f) *use*.

Finally, the FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the properties and therefore constitute a *constructive use* under Section 4(f).

Please provide input on the issues discussed above by August 11, 2021, to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov). If you have questions or concerns, please contact Ms. Zee at 202.267.9305 or via email.

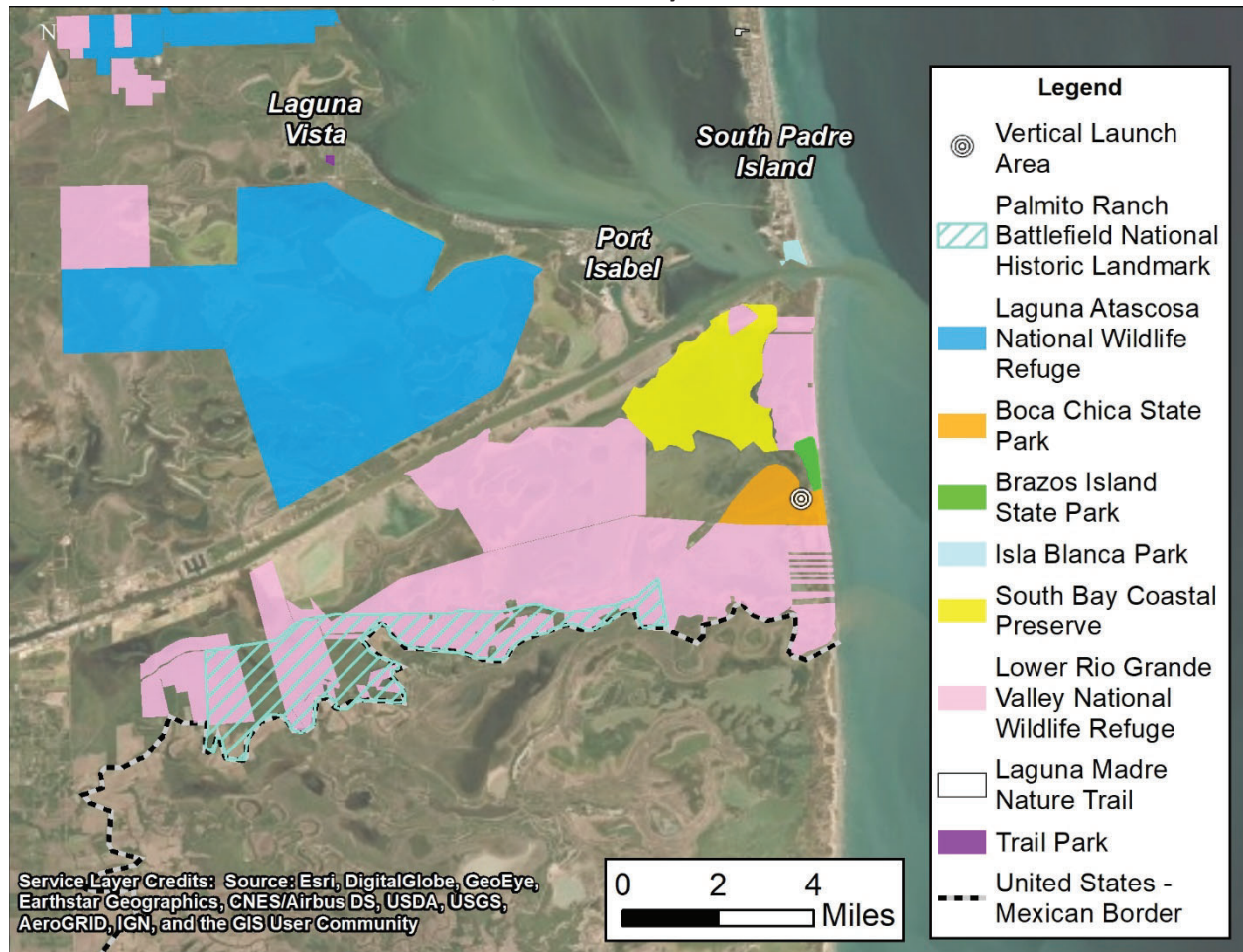
Sincerely,

**JAMES R  
REPCHECK** Digitally signed by  
JAMES R REPCHECK  
Date: 2021.08.02  
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Randy Repcheck  
Manager, Safety Authorization Division

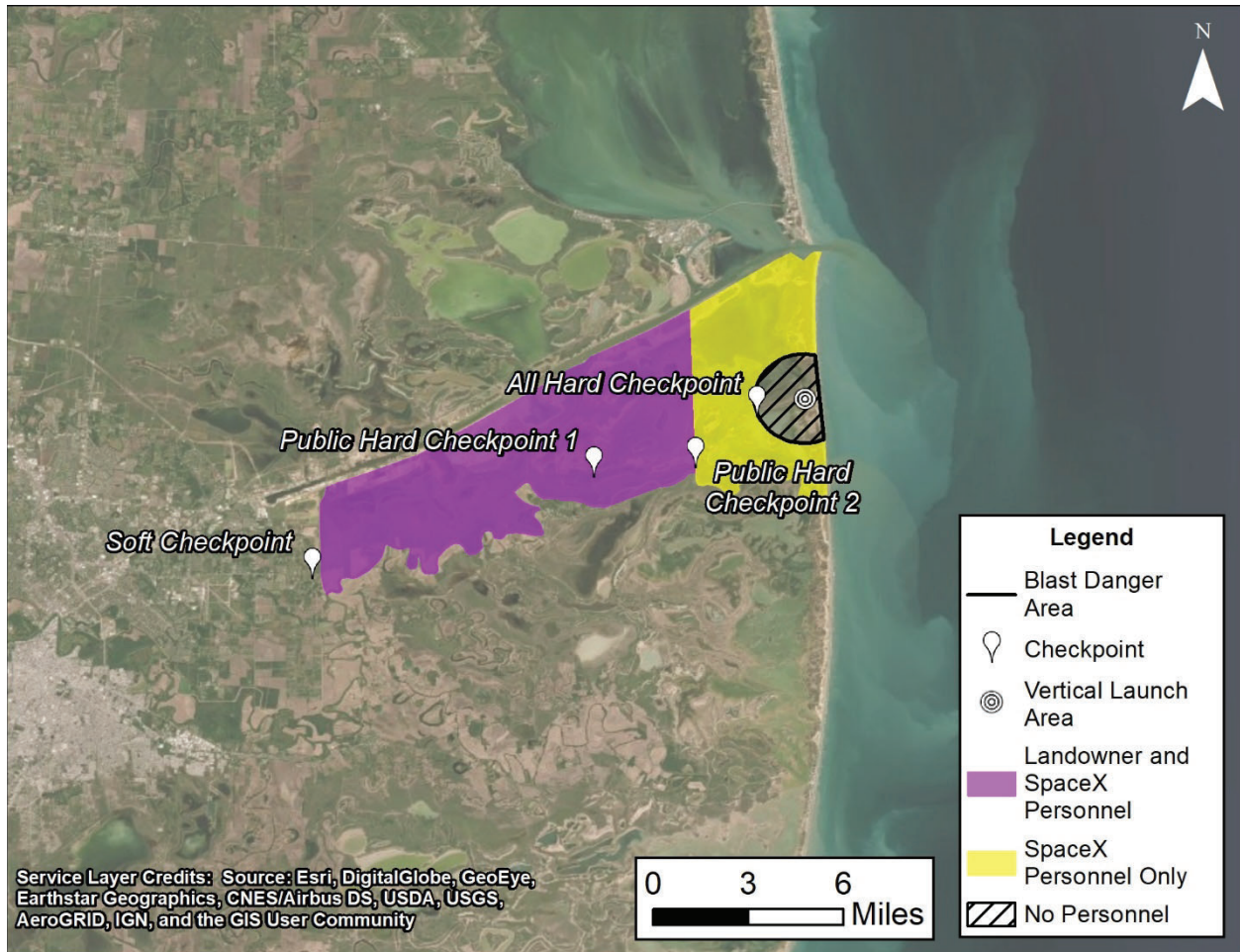
Attachments: Attachment 1. Section 4(f) Properties Under TPWD Jurisdiction  
Attachment 2. Closure Area  
Attachment 3. Security Plan

**Attachment 1. Section 4(f) Properties Under TPWD Jurisdiction – Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve**





## Attachment 2. Closure Area



### **Attachment 3. SpaceX Security Plan**





## **Boca Chica Launch Site Security Plan**

**Date:** May 13, 2021  
**Version:** 4.5 - EA

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**Proprietary Notice:** This document and the data contained herein constitute Proprietary Information of Space Exploration Technologies Corp. (SpaceX). They are provided in confidence under existing laws, regulations and/or agreements covering the release of commercial, competition-sensitive and/or proprietary information, and shall be handled accordingly.

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## Introduction

The SpaceX Security Team provides security to the Boca Chica launch site during routine operations and in support of Starship operations. The Boca Chica facility is a dynamic environment that incorporates multiple layers of security with a significant emphasis on interagency coordination and cooperation. SpaceX will follow this plan to ensure that there are not any unauthorized persons, vessels, trains, aircraft, or other vehicles within the safety clear zones. The plan includes conducting “safety sweeps” by security personnel as needed for each launch, as well as roadblocks, surveillance activities, and other security checkpoints as appropriate. Safety sweeps will utilize various methods, as appropriate that may include, but are not limited to: video surveillance; motion detection; and human patrol assets.

## Stakeholders

Below is a list of primary SpaceX stakeholders and external agencies that may be engaged during Boca Chica launch activities.

1. SpaceX
  - a. Flight Control
  - b. Security
  - c. Environmental Health & Safety (EHS)
  - d. Operations Support Coordinator (OSC)
  - e. Red Team
2. Federal Aviation Administration (FAA)
3. Cameron County Sheriff's Office (CCSO)
4. U.S. Customs and Border Protection (CBP)
5. U.S. Coast Guard
6. U.S. Fish & Wildlife
7. Texas Department of Transportation
8. Texas Department of Public Safety
9. Texas Parks and Wildlife
10. Brownsville Navigation District

## Clearing Operations

Safety clear zones will be established for each launch and test, when necessary, to contain the adverse effects of launch and test operations involving a hazard. The purpose of these zones is to protect public health and safety and the safety of property. The zones are sized to prevent a launch anomaly from harming those outside the safety clear zones, and they typically extend downrange along the flight trajectory for a certain distance.

This closure and clearing plan describes the procedures for land and water closure areas that will limit public access on the day of launch operations along State Highway 4, on Boca Chica Beach, and offshore.

## **Pad**

As necessary, SpaceX's Flight Control, EHS lead, and Security lead will conduct pad clearing operations. This team will clear the pad and its supporting structures to ensure that there are no personnel on site. Once the pad is clear, the gate will be locked.

## **Maritime**

A marine channel to the north of the launch site separates the area from Port Isabel and South Padre Island. The channel is approximately 7 km north of the launch site. This is not a populated area; there are no permanent residences or commercial structures in the area between the launch site and the channel. The Rio Grande River is located about 4 km to the south of the launch site. As necessary, to inform the maritime public of potential hazards associated with testing and launches on the waterways, the U.S. Coast Guard (USCG) will issue any of the following: a Local Notice to Mariners, a Broadcast Notice to Mariners, and/or Marine Safety Information Bulletins. SpaceX will provide information to the USCG for either of the Notice to Mariners (NOTMAR) and/or the Marine Safety Information Bulletins. Additionally, for flight operations, Cameron County Sheriff's Office (CCSO) will control access to the South Bay.

## **Boca Chica Park Beach**

As necessary, CCSO will close Boca Chica Park Beach and assist SpaceX Security in clearing the beach from Highway 4 south to the Rio Grande river and north to the marine channel. CCSO will also close the beach access points. U.S. Customs and Border Protection (CBP) may assist the county in clearing the beach and communicating the results to the SpaceX OSC.

## **Boca Chica Village**

Boca Chica Village (the Village) is the nearest population center to the launch site, just over 2 km west of the launch location.

### Overpressure Mitigation

As necessary, to mitigate the risk of injury to the Village residents due to overpressure, Cameron County will exercise its authority to protect the public and direct residents to go outside their properties. Cameron County will provide warnings to residents by distributing a written notice to residents in the Village and will alert residents when the launch operation giving rise to the overpressure risk is imminent.

### Evacuating Boca Chica Village

As necessary, CCSO will aid in evacuation of the Village to the fullest extent of their authority in accordance with the applicable law. That operation should take place approximately T-6 hours prior to the planned space flight activity, and in coordination with other clearing procedures. Activity in the Village will be monitored until the clear has been verified, and then continually throughout the duration of the window.

## **Checkpoint Operations**

As necessary, SpaceX will operate Hard and Soft Checkpoints to limit access to the launch site and ensure the integrity of permissioned access. CCSO and SpaceX Security will establish these checkpoints. CCSO will exercise its authority to limit access. CBP may participate in these operations at its discretion. When the Soft Checkpoint is in effect for flight, access will be restricted to SpaceX essential personnel, landowners who reside past the checkpoint and outside of the flight caution area, and CCSO Hard

Checkpoint support. SpaceX will provide credentials for persons who will pass through the Soft Checkpoint. No members of the public will enter the safety clear zone during launch operations.

### **Hard Checkpoint**

When the Hard Checkpoint is in effect, no one will be allowed to pass it or otherwise enter the safety clear zone. The Hard Checkpoint will be established at pad clear as dictated by the planned operation.

### **Soft Checkpoint**

The Soft Checkpoint is located west of the Border Patrol checkpoint on Highway 4 to facilitate vehicle U-turns and avoid interference with the Border Patrol's checkpoints. When the Soft Checkpoint is in effect, vehicle and pedestrian access will be restricted to SpaceX personnel, SpaceX guests, landowners, necessary County/Law enforcement/emergency personnel, and other relevant agencies. The Soft Checkpoint will be established as early as T-1 hour of pad clear, as dictated by the planned operation.

## **Range Coordination**

As necessary, SpaceX will establish a safety clear zone during pre-flight, launch and post-flight operations to protect public health and safety and the safety of property during Starship operations. SpaceX will ensure the integrity of the safety clear zone with Hard and Soft Checkpoints as defined in this plan.

The Range team will consist of SpaceX Security and other local, state, and federal partners with responsibility to clear areas for public safety. Range stakeholders will report clear activities, concerns, and incident response to the OSC. Range coordination activities will begin when the Soft Checkpoint is established and conclude when all checkpoint operations close.

### **Emergency Response Support**

In the event of a Launch Incident, Launch Accident, or Mishap, SpaceX security, in close coordination with CCSO, will maintain all checkpoints until deemed safe to return inside the safety clear areas. As necessary, SpaceX may request first responders be available to help mitigate brush fires outside of the clear areas or respond to medical emergencies. In general, first responders will remain outside of the debris field until trained SpaceX personnel sweep the debris field to safe the area.



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August 11, 2021

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

Re: Response to FAA Consultation Initiation Letter Regarding Section 4(f) of the Department of Transportation Act of 1966, SpaceX Starship/Super Heavy Launch Operations, Boca Chica

Dear Ms. Zee:

On August 2<sup>nd</sup>, we received your letter inviting Texas Parks and Wildlife Department (TPWD) to provide input on Federal Aviation Administration's (FAA) Section 4(f) consultation for eligible properties under consideration as part of Space Exploration Technologies Corporation (SpaceX) proposed Starship/Super Heavy launch operations in Boca Chica, Texas. More specifically, you requested that by August 11<sup>th</sup>, TPWD provide input on relative degrees of impact and occupation from SpaceX's construction, normal launch operations, and anomalies to TPWD lands known as Boca Chica State Park, Brazos Island State Park, and the South Bay Coastal Preserve. With such a short turn around requested by FAA, TPWD is simply unable to meet your requested deadline for comment. That said, when requested in the past by FAA, TPWD has offered extensive comments on matters of a similar nature, including our most recent letter of 30 September 2020, all of which I trust you still have at your disposal.

Please do be advised that TPWD and SpaceX executives are now communicating regularly on issues of interest to both parties, including how we better define measures that can attenuate impacts to both the stewardship, and outdoor recreational use, of surrounding properties. Our focus is on how our respective entities can better function and operate as neighboring property owners. We are hopeful that such measures can be worked through by the parties and formalized in an agreement between TPWD and SpaceX. Assuming such an agreement is realized, we will share details with FAA, at which point we presume you may consider them for your ongoing monitoring and analyses of SpaceX operations in south Texas.

If you should you have any questions at all, please do not hesitate to contact me by email at [clayton.wolf@tpwd.texas.gov](mailto:clayton.wolf@tpwd.texas.gov) or by phone at (512) 389-8558. Thank you.

Sincerely,



Clayton Wolf  
Chief Operating Officer

CW:dh

cc: Mr. Carter Smith  
Mr. Ted Hollingsworth  
Mr. Reagan Faught  
Ms. Laura Zebehazy



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

September 16, 2021

Ted Hollingsworth  
Land Conservation Branch Manager  
Texas Parks and Wildlife  
4200 Smith School Rd  
Austin, TX 78744  
Submitted to: [ted.hollingsworth@tpwd.texas.gov](mailto:ted.hollingsworth@tpwd.texas.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Hollingsworth:

The Federal Aviation Administration (FAA) has received and reviewed your letter dated August 11, 2021, which responded to the FAA's July 28, 2021, initiation of consultation under Section 4(f) of the Department of Transportation Act. In your letter, you noted that the Texas Parks and Wildlife Department (TPWD) was not able to meet the FAA's timeline for providing input and referred the FAA to TPWD's September 30, 2020, letter, which contained comments pertaining to Section 4(f) and potential impacts on Section 4(f) properties under TPWD jurisdiction (Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve [Preserve]). You noted that TPWD and SpaceX were communicating regularly on issues of interest to both parties, including developing measures to attenuate impacts to both the stewardship and outdoor recreational use of TPWD properties surrounding the Boca Chica Launch Site. You noted that such measures may be documented in an agreement between TPWD and SpaceX and you would share the agreement with the FAA.

The FAA received the *Memorandum of Agreement between Texas Parks and Wildlife Department and Space Exploration Technologies Corporation* (Agreement) on September 3, 2021. The FAA recognizes the purpose of the Agreement is to serve as guidance to TPWD and SpaceX for developing protocols to respond to events that result in impacts to Boca Chica State Park and/or necessitate entry to the state park for any reason, including but not limited to fire suppression, reconnaissance, rocket debris retrieval, post-response site restoration, and impact mitigation. The Agreement also includes measures related to closing public access to the state parks and Preserve, including SpaceX's compliance with its Closure Notification Plan. The FAA hopes this Agreement resolves some, if not all, of TPWD's concerns regarding the impacts of SpaceX's operations on the state parks and Preserve.

For a detailed evaluation of potential Section 4(f) impacts on the state parks and Preserve, please refer to the FAA's *Draft Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch*



*Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas* (PEA), which the FAA will be publishing on September 17, 2021.<sup>1</sup> The FAA will notify you as soon as the Draft PEA is published.

If you have additional questions or concerns, please provide your input to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov) or at 202-267-9305. We look forward to continued consultation on this project.

Sincerely,

**JAMES R  
REPCHECK**  
Digitally signed by  
JAMES R  
REPCHECK  
Date: 2021.09.16  
16:49:44 -04'00'

Randy Repcheck  
Manager, Safety Authorization Division

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<sup>1</sup> See: [https://www.faa.gov/space/stakeholder\\_engagement/spacex\\_starship/](https://www.faa.gov/space/stakeholder_engagement/spacex_starship/).



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Chairman-Emeritus  
Houston

---

Carter P. Smith  
Executive Director

May 11, 2022

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

Re: Section 4(f) of the Department of Transportation Act Consultation,  
SpaceX Starship/Super Heavy Launch Operations, Boca Chica, TX

Dear Ms. Zee:

The Texas Parks and Wildlife Department (TPWD) is in receipt of your letter addressed to Mr. Ted Hollingsworth and dated April 27, 2022. The letter requests concurrence with the determination of the Federal Aviation Administration (FAA) that if, as a result of the FAA's proposed action of issuing future permits or licenses to SpaceX for Starship/Super Heavy launch operations, an anomaly occurs that involves debris and debris-response activities within TPWD-owned lands, such an event would result in a *temporary occupancy* of the park, but the impacts would be *de minimis*.

As of the date of this letter, staff from both TPWD and Texas A&M University-Corpus Christi are working together on a research study as called for in the Memorandum of Agreement (MOA) between TPWD and SpaceX, in order to fulfill the requirement for mitigation of impacts to TPWD-owned lands that have occurred under FAA permits and licenses to-date. SpaceX has been kept apprised of progress on the scoping of this project. In the context of this MOA, TPWD concurs with the specific *de minimis* determination predicated on inclusion of the following special conditions in any permit or license involving testing or launching of rockets that might potentially result in debris and/or response activities impacting TPWD-owned lands.

1. Strict compliance with all terms and conditions of the Memorandum of Agreement executed September 2, 2021, between TPWD and SpaceX.
2. Completion and maintenance of bollard-and-cable traffic control fencing along State Highway 4 demarcating the boundaries of TPWD lands. SpaceX at its sole cost will survey the Highway 4 boundary and will leave two or three gaps in the western portion of the fence only as necessary to provide reasonable access to privately owned inholdings at access points recorded in the real property records of Cameron County. Signage will be placed at each gap with contact information for legitimate landowners to gain access to their property.

3. SpaceX will take all necessary measures to make TPWD-owned lands at Boca Chica accessible to researchers and all TPWD and/or United States Fish and Wildlife Service (USFWS)-authorized personnel at all times except during ignition events.
4. SpaceX will cover the cost of a contract with TPWD and/or Texas A&M-Corpus Christi/Texas A&M system to develop specific protocols for test restoration of impacts to tidal/algal flats at Boca Chica resulting from the SN11 anomaly within 30 days of presentation of such a contract. The scope of the contract will include the cost of a principal investigator, one or two graduate students and all related equipment, materials, overhead, administrative, and publication costs.
5. In the event Texas A&M University is unable to provide the services outlined herein, TPWD staff will work in good faith to identify another academic institution or similarly qualified third party to undertake the proposed project and will keep SpaceX staff apprised of its progress.
6. During the first "restoration season" as recommended by and following the study referenced in the preceding paragraphs, SpaceX, at its sole expense, will hire a qualified environmental firm to undertake a test restoration per the recommendations of the study, covering a minimum of five (5) net acres of tidal/algal flats affected by the impacts of debris and debris retrieval following the SN11 anomaly. SpaceX will work cooperatively with TPWD to designate the specific footprint of the test restoration.
7. SpaceX, at its sole cost, will pay for monitoring the success of the test restoration relative to success criteria described in the protocols developed in the study. If no such protocols have been developed, success of the test restoration will be monitored relative to success criteria developed by the implementing environmental firm and agreed to by TPWD. A report on the progress of the restoration will be submitted to TPWD not less than 22 nor more than 26 months after implementation.
8. If the test restoration is determined to be successful, SpaceX, at its sole cost, will arrange the restoration of an additional 15 acres to be determined in consultation with TPWD and implemented no later than the restoration season following submission of the report referenced in paragraph # 7 above.
9. If the test restoration is determined to be unsuccessful, SpaceX, at its sole cost, will consult with the investigators and/or authors of the report referenced in paragraph #4 and #5 above and based on that input will repeat the measures in paragraphs #6, #7 and #8 above. These steps will be repeated until successful restoration of 20 acres is achieved. TPWD may waive this condition if it advises FAA in writing that all reasonable attempts to restore habitat result in more harm than good.
10. Once a successful restoration protocol is established, SpaceX will take steps to implement restoration of any new impacts that occur pursuant to activities permitted or licensed by the FAA immediately upon request by TPWD.

Ms. Stacey M. Zee

Page 3 of 3

May 11, 2022

Thank you for soliciting the input of TPWD regarding measures to help protect natural resources and site operations on TPWD-owned land at Boca Chica. If you have any questions regarding these measures, please do not hesitate to contact Mr. Ted Hollingsworth at by email at [ted.hollingsworth@tpwd.texas.gov](mailto:ted.hollingsworth@tpwd.texas.gov) or by phone at (512) 870-7939.

Sincerely,



Clayton Wolf  
Chief Operating Officer

CW:dh

cc: Mr. Carter Smith  
Mr. James Murphy  
Ms. Andrea Lofye  
Mr. John Silovsky  
Mr. Rodney Franklin  
Mr. Ted Hollingsworth  
Ms. Laura Zebehazy



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

August 5, 2021

Eric J. Brunnemann  
Superintendent, Padre Island National Seashore  
National Park Service  
600 E. Harrison Street  
Room 1006  
Brownsville, TX 78520  
Submitted to: [eric\\_brunnemann@nps.gov](mailto:eric_brunnemann@nps.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Brunnemann:

The purpose of this letter is to notify you of the Federal Aviation Administration's (FAA) initiation of the Section 4(f) consultation addressing the eligible property in the study area under consideration for Space Exploration Technologies Corporation's (SpaceX) proposed Starship/Super Heavy launch operations. The eligible property is the Palmito Ranch Battlefield National Historic Landmark (NHL). The NHL is managed by the U.S. Fish and Wildlife Service (USFWS) because it is largely contained within the Lower Rio Grande Valley National Wildlife Refuge (see Attachment 1). The NHL is highlighted because it would be closed during launch-related activities. The FAA is also conducting Section 4(f) consultation with the USFWS.

**Summary of Section 4(f) Issues for Discussion**

1. **Construction** – The FAA is considering whether SpaceX's proposed launch-related construction would involve a permanent incorporation or temporary occupancy of the NHL.
2. **Nominal Launch Operations**
  - a. The FAA seeks input as to whether 500 closure hours per year would constitute a use under Section 4(f). SpaceX has requested 500 hours per year of closure hours from Cameron County.<sup>1</sup> The FAA is considering whether the number of closure hours would substantially impair the activities, features, or attributes of the NHL. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). Any limitation or maximum number of annual closure hours per year would be included in the analysis.

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<sup>1</sup> SpaceX and Cameron County are renegotiating an existing agreement to increase the closure hours to 500 hours per year.

- b. The FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the NHL because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches.

### **3. Anomalies**

- a. The FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the NHL and therefore constitutes a *constructive use* under Section 4(f).

The following sections of this letter include pertinent regulatory background, a summary of the Proposed Action, and further information about the Section 4(f) issues.

### **Background**

SpaceX is proposing to operate Starship/Super Heavy launch vehicles at its Boca Chica Launch Site in Cameron County, Texas. SpaceX must obtain an experimental permit or launch license from the FAA Office of Commercial Space Transportation to operate Starship/Super Heavy at the Boca Chica Launch Site. Issuing an experimental permit or launch license is considered a major federal action under the National Environmental Policy Act (NEPA) of 1969 and requires an environmental review. The FAA is in the process of preparing a draft Programmatic Environmental Assessment (PEA) to assess the potential environmental impacts of Starship/Super Heavy operations from the Boca Chica Launch Site. The NPS is a cooperating agency in the preparation of the draft PEA.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation may approve any transportation project that requires the *use* of any Section 4(f) resource<sup>2</sup> only if there is no feasible and prudent alternative to the *use* of such land and the transportation project includes all possible planning to minimize harm resulting from the *use*.

### **Proposed Action**

SpaceX's proposed launch operations include suborbital and orbital launches. The Proposed Action also includes launch-related activities at the Boca Chica Launch Site, such as tank tests, static fire engine tests, expansion of the vertical launch area (VLA) and solar farm, and construction of additional infrastructure. A complete project description is provided in Chapter 2 of the administrative draft PEA.

### **Regulatory Background**

The FAA's procedural requirements for complying with Section 4(f) are set forth in DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*. The FAA also considers Federal Highway Administration (FHWA) regulations (23 CFR part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for *use* of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

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<sup>2</sup> Section 4(f) resources include publicly owned and publicly accessible land from a park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance

A *use* under Section 4(f) can occur when 1) land from a Section 4(f) property is permanently incorporated into a transportation project, 2) there is a *temporary occupancy* of a Section 4(f) property, or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of use is identified as *constructive use*.

#### *Physical Use*

A permanent incorporation would involve an actual physical taking of Section 4(f) property as part of a transportation project either as a purchase of land or a permanent easement.

*Temporary occupancy* occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A *physical use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act *finding of no adverse effect* or *no historic properties affected*.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the NEPA process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to make a *de minimis* impact determination. The officials with jurisdiction must concur in a *finding of no adverse effect* or *no*



*historic properties affected*. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.

### *Constructive Use*

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,<sup>3</sup> "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,<sup>4</sup> which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a *constructive use* determination to be made.

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

### **Section 4(f) Determination Issues**

The FAA is in the process of evaluating the potential impacts of the proposed construction and operations on the NHL to determine if the Proposed Action would result in a *use* of the NHL through permanent incorporation, *temporary occupancy*, or *constructive use*. A brief summary of the FAA's initial understanding of the Proposed Action's Section 4(f) impacts is presented in the following sections; the FAA invites NPS to provide further information to help the FAA make a final determination.

### ***Construction***

Construction of the proposed launch-related facilities at the VLA and expansion of the solar farm would not involve a permanent incorporation of the NHL, because the activity would occur on SpaceX property. Construction would not result in *temporary occupancy* of the NHL, because the project does not involve any temporary construction activities in the NHL. SpaceX owns all land where facility construction activities would occur. Access to portions of the NHL may be slowed or delayed several times a day when construction vehicles are traveling to and from the Boca Chica Launch Site. Construction would not result in permanent, long-term access restrictions to the NHL. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of the NHL such that the value would be substantially impaired. Given these conditions, the FAA is considering whether these construction activities would constitute a *constructive use*.

### ***Nominal Operations***

Some operations at the Boca Chica Launch Site (i.e., tank tests, wet dress rehearsals, static fire engine tests, and launches) would require restricting public access in the vicinity of the VLA and securing land and water areas as part of public safety requirements (see Attachment 2). A closure for a tank test, wet dress

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<sup>3</sup> Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>

<sup>4</sup> Available online at: [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_nepa\\_order/desk\\_ref/](https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_nepa_order/desk_ref/)

rehearsal, or static fire engine test would be shorter than a closure for a launch. For the purposes of the FAA's environmental review, the FAA defines a closure as follows:

A closure begins when local law enforcement, under the direction of an order from the Cameron County Commissioners Court, shuts down State Highway 4 (SH 4) and Boca Chica Beach for a tank test, wet dress rehearsal, static fire engine test, or launch. A closure ends when the operation is completed and local law enforcement open SH 4 and Boca Chica Beach.

Based on this definition, the FAA has learned from SpaceX that SpaceX estimates the total number of closure hours for tank tests, wet dress rehearsals, static fire engine tests, and launches to be 500 hours per year. SpaceX therefore expects to renegotiate an agreement with the Cameron County Commissioners Court to increase the closure hours to 500 hours per year. Assuming normal availability of the NHL, the proposed closure hours would result in the NHL being closed to the public up to 11.4 percent of the year.<sup>5</sup> The FAA would ensure that SpaceX continues to notify NPS in advance of a planned closure so NPS can plan accordingly and avoid conflicts for special events or programs. SpaceX is not allowed to close Boca Chica Beach on major summer holidays or summer weekends between Memorial Day and Labor Day without the prior approval of Texas General Land Office, in accordance with Texas House Bill 2623. Finally, closures would occur according to SpaceX's Security Plan (see Attachment 3).

The FAA is considering whether 500 closure hours would substantially impair the activities, features, or attributes of the NHL. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f).

In addition to closures, the FAA reviewed modeled noise levels for the Proposed Action to determine whether there would be significant noise increases such that the value of the NHL, in terms of its activities, features, or attributes, would be substantially impaired, thus constituting a *constructive use*. Static fire engine tests and launches (including landings) would produce short-term, high levels of noise. When these operations are not occurring, the normal daily sound levels in the NHL would persist. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the NHL because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches. Therefore, the FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*.

### **Anomalies**

A Starship/Super Heavy test operation or launch could fail (referred to as an anomaly), which could result in an explosion on the launch pad and spread debris. The area is labeled "No Personnel" on the closure area figure (Attachment 2). No debris is expected to land in the NHL if an anomaly occurred, because the launch trajectory is to the east.

SpaceX anticipates the need for not more than 300 hours per year of closures, in addition to 500 hours for normal operations, due to anomalies in the vicinity of the VLA. This would allow SpaceX to ensure public safety and coordinate with land-managing agencies for debris retrieval. The anomaly-response

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<sup>5</sup> This assumes that the property is typically open to and accessible by the public up to 12 hours per day, 365 days per year.

closure would start immediately at the time the launch ends and last until the area is deemed safe for the public.

Additional closure required in the event of an anomaly is not anticipated to affect the NHL due to the distance of the NHL from the VLA. If an anomaly occurs at the VLA, after securing the area, SpaceX would reduce the size of the closure area based on the debris field and open State Highway 4 by the NHL. The public would be able to access the NHL while SpaceX conducts debris removal efforts in areas closer to the VLA.

The FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the NHL and therefore constitute a *constructive use* under Section 4(f).

Please provide input on the issues discussed above by August 19, 2021, to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov). If you have questions or concerns, please contact Ms. Zee at 202.267.9305 or via email.

Sincerely,

JAMES R  
REPCHECK

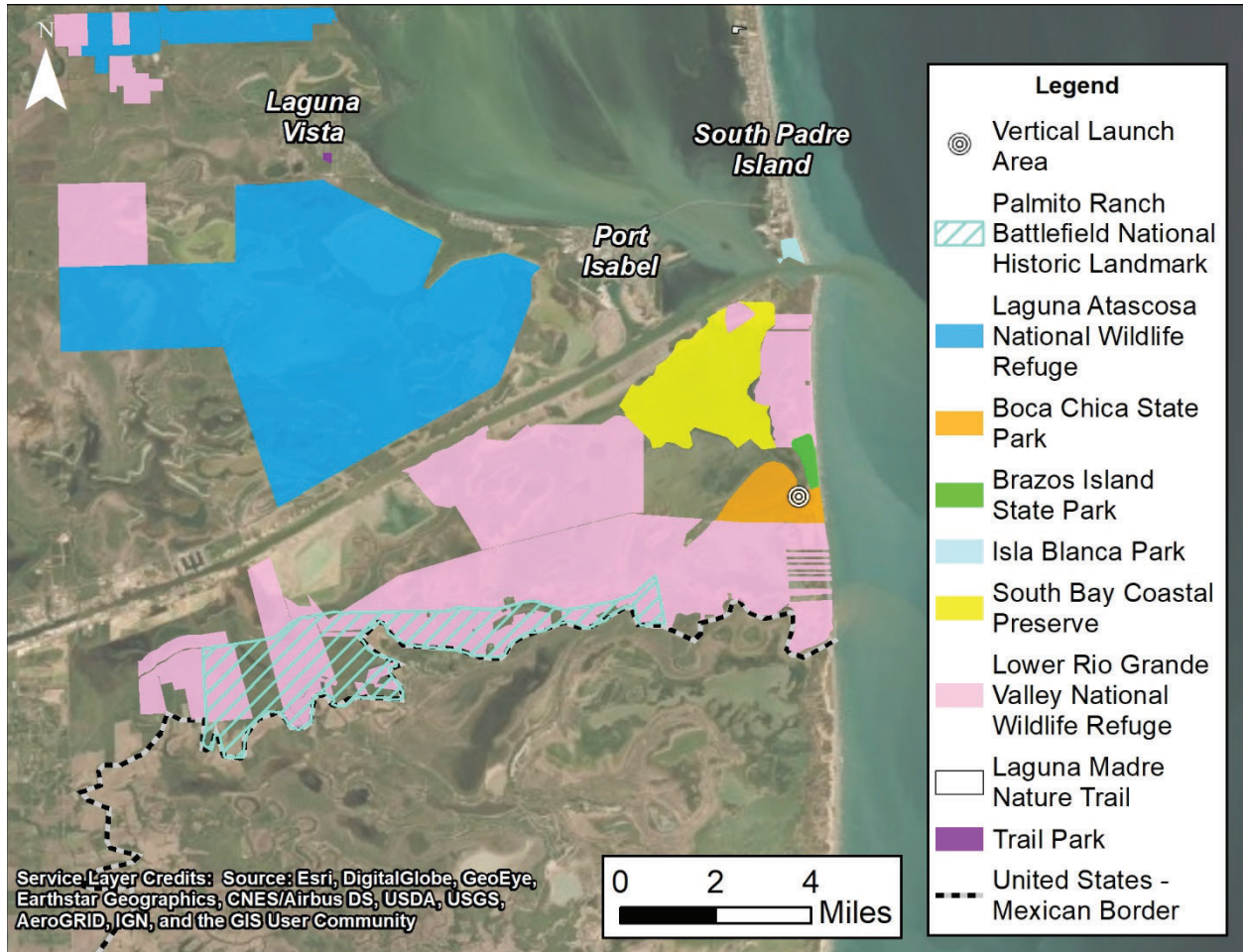


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Randy Repcheck  
Manager, Safety Authorization Division

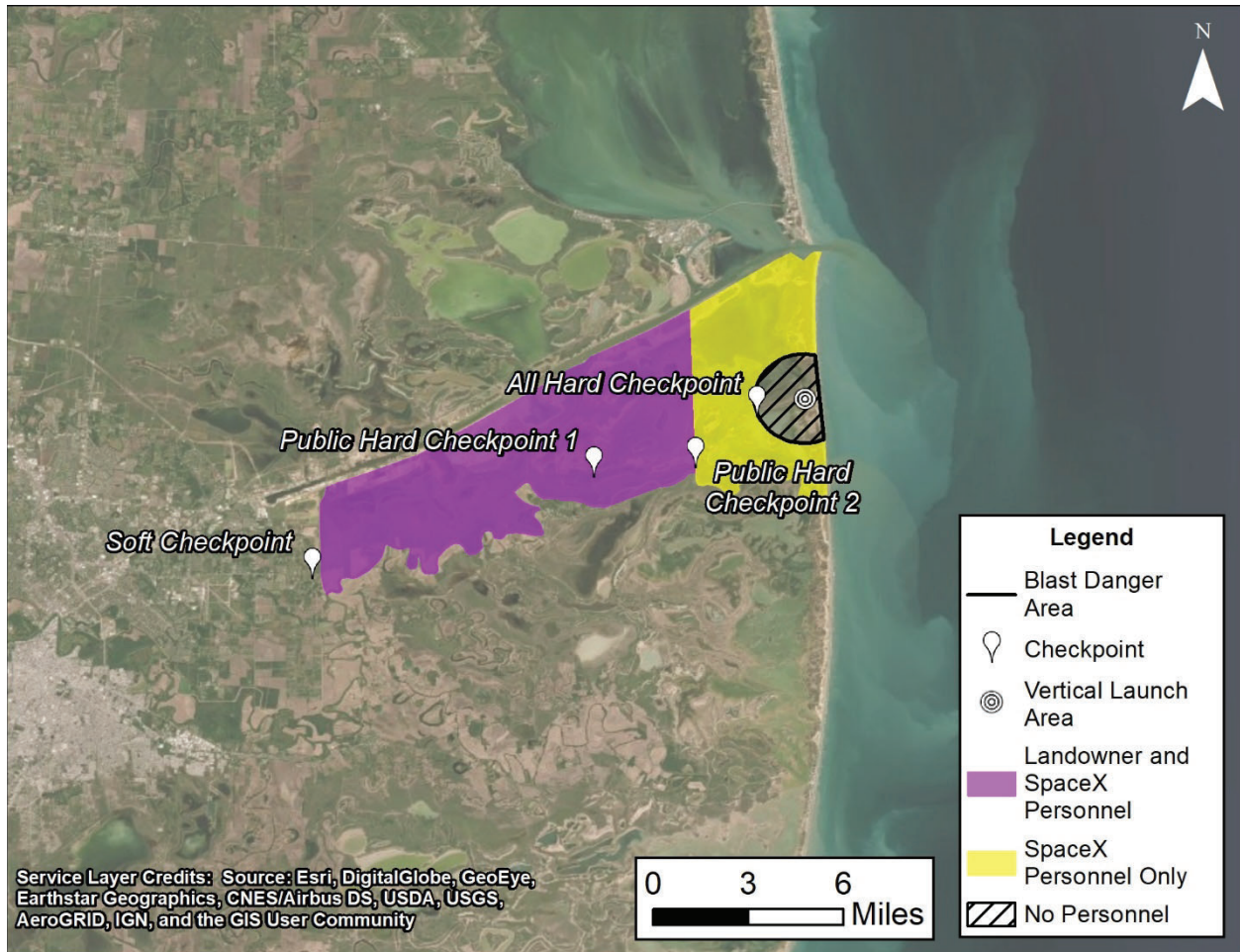
Attachments: Attachment 1. Section 4(f) Properties Under NPS Jurisdiction  
Attachment 2. Closure Area  
Attachment 3. Security Plan

**Attachment 1. Section 4(f) Property Under NPS Jurisdiction – Palmito Ranch Battlefield National Historic Landmark**





## Attachment 2. Closure Area



### **Attachment 3. SpaceX Security Plan**





## **Boca Chica Launch Site Security Plan**

**Date:** May 13, 2021  
**Version:** 4.5 - EA

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**Proprietary Notice:** This document and the data contained herein constitute Proprietary Information of Space Exploration Technologies Corp. (SpaceX). They are provided in confidence under existing laws, regulations and/or agreements covering the release of commercial, competition-sensitive and/or proprietary information, and shall be handled accordingly.

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## Introduction

The SpaceX Security Team provides security to the Boca Chica launch site during routine operations and in support of Starship operations. The Boca Chica facility is a dynamic environment that incorporates multiple layers of security with a significant emphasis on interagency coordination and cooperation. SpaceX will follow this plan to ensure that there are not any unauthorized persons, vessels, trains, aircraft, or other vehicles within the safety clear zones. The plan includes conducting “safety sweeps” by security personnel as needed for each launch, as well as roadblocks, surveillance activities, and other security checkpoints as appropriate. Safety sweeps will utilize various methods, as appropriate that may include, but are not limited to: video surveillance; motion detection; and human patrol assets.

## Stakeholders

Below is a list of primary SpaceX stakeholders and external agencies that may be engaged during Boca Chica launch activities.

1. SpaceX
  - a. Flight Control
  - b. Security
  - c. Environmental Health & Safety (EHS)
  - d. Operations Support Coordinator (OSC)
  - e. Red Team
2. Federal Aviation Administration (FAA)
3. Cameron County Sheriff's Office (CCSO)
4. U.S. Customs and Border Protection (CBP)
5. U.S. Coast Guard
6. U.S. Fish & Wildlife
7. Texas Department of Transportation
8. Texas Department of Public Safety
9. Texas Parks and Wildlife
10. Brownsville Navigation District

## Clearing Operations

Safety clear zones will be established for each launch and test, when necessary, to contain the adverse effects of launch and test operations involving a hazard. The purpose of these zones is to protect public health and safety and the safety of property. The zones are sized to prevent a launch anomaly from harming those outside the safety clear zones, and they typically extend downrange along the flight trajectory for a certain distance.

This closure and clearing plan describes the procedures for land and water closure areas that will limit public access on the day of launch operations along State Highway 4, on Boca Chica Beach, and offshore.

## **Pad**

As necessary, SpaceX's Flight Control, EHS lead, and Security lead will conduct pad clearing operations. This team will clear the pad and its supporting structures to ensure that there are no personnel on site. Once the pad is clear, the gate will be locked.

## **Maritime**

A marine channel to the north of the launch site separates the area from Port Isabel and South Padre Island. The channel is approximately 7 km north of the launch site. This is not a populated area; there are no permanent residences or commercial structures in the area between the launch site and the channel. The Rio Grande River is located about 4 km to the south of the launch site. As necessary, to inform the maritime public of potential hazards associated with testing and launches on the waterways, the U.S. Coast Guard (USCG) will issue any of the following: a Local Notice to Mariners, a Broadcast Notice to Mariners, and/or Marine Safety Information Bulletins. SpaceX will provide information to the USCG for either of the Notice to Mariners (NOTMAR) and/or the Marine Safety Information Bulletins. Additionally, for flight operations, Cameron County Sheriff's Office (CCSO) will control access to the South Bay.

## **Boca Chica Park Beach**

As necessary, CCSO will close Boca Chica Park Beach and assist SpaceX Security in clearing the beach from Highway 4 south to the Rio Grande river and north to the marine channel. CCSO will also close the beach access points. U.S. Customs and Border Protection (CBP) may assist the county in clearing the beach and communicating the results to the SpaceX OSC.

## **Boca Chica Village**

Boca Chica Village (the Village) is the nearest population center to the launch site, just over 2 km west of the launch location.

### Overpressure Mitigation

As necessary, to mitigate the risk of injury to the Village residents due to overpressure, Cameron County will exercise its authority to protect the public and direct residents to go outside their properties. Cameron County will provide warnings to residents by distributing a written notice to residents in the Village and will alert residents when the launch operation giving rise to the overpressure risk is imminent.

### Evacuating Boca Chica Village

As necessary, CCSO will aid in evacuation of the Village to the fullest extent of their authority in accordance with the applicable law. That operation should take place approximately T-6 hours prior to the planned space flight activity, and in coordination with other clearing procedures. Activity in the Village will be monitored until the clear has been verified, and then continually throughout the duration of the window.

## **Checkpoint Operations**

As necessary, SpaceX will operate Hard and Soft Checkpoints to limit access to the launch site and ensure the integrity of permissioned access. CCSO and SpaceX Security will establish these checkpoints. CCSO will exercise its authority to limit access. CBP may participate in these operations at its discretion. When the Soft Checkpoint is in effect for flight, access will be restricted to SpaceX essential personnel, landowners who reside past the checkpoint and outside of the flight caution area, and CCSO Hard

Checkpoint support. SpaceX will provide credentials for persons who will pass through the Soft Checkpoint. No members of the public will enter the safety clear zone during launch operations.

### **Hard Checkpoint**

When the Hard Checkpoint is in effect, no one will be allowed to pass it or otherwise enter the safety clear zone. The Hard Checkpoint will be established at pad clear as dictated by the planned operation.

### **Soft Checkpoint**

The Soft Checkpoint is located west of the Border Patrol checkpoint on Highway 4 to facilitate vehicle U-turns and avoid interference with the Border Patrol's checkpoints. When the Soft Checkpoint is in effect, vehicle and pedestrian access will be restricted to SpaceX personnel, SpaceX guests, landowners, necessary County/Law enforcement/emergency personnel, and other relevant agencies. The Soft Checkpoint will be established as early as T-1 hour of pad clear, as dictated by the planned operation.

## **Range Coordination**

As necessary, SpaceX will establish a safety clear zone during pre-flight, launch and post-flight operations to protect public health and safety and the safety of property during Starship operations. SpaceX will ensure the integrity of the safety clear zone with Hard and Soft Checkpoints as defined in this plan.

The Range team will consist of SpaceX Security and other local, state, and federal partners with responsibility to clear areas for public safety. Range stakeholders will report clear activities, concerns, and incident response to the OSC. Range coordination activities will begin when the Soft Checkpoint is established and conclude when all checkpoint operations close.

### **Emergency Response Support**

In the event of a Launch Incident, Launch Accident, or Mishap, SpaceX security, in close coordination with CCSO, will maintain all checkpoints until deemed safe to return inside the safety clear areas. As necessary, SpaceX may request first responders be available to help mitigate brush fires outside of the clear areas or respond to medical emergencies. In general, first responders will remain outside of the debris field until trained SpaceX personnel sweep the debris field to safe the area.



## United States Department of the Interior



### NATIONAL PARK SERVICE

#### INTERIOR REGION 6

Padre Island National Seashore

P.O. Box 181300

20301 Park Road 22

Corpus Christi, Texas 78418

IN REPLY REFER TO: PAIS (L7617)

August 20, 2021

Stacey M. Zee, Office of Commercial Space Transportation  
Federal Aviation Administration (FAA)  
800 Independence Avenue,  
SW Washington, D.C. 20591

Re: FAA Starship/Super Heavy Section 4(f) Evaluation

The National Park Service (NPS) appreciates the opportunity to consult with the Federal Aviation Administration (FAA) on the 4(f) Evaluation for the proposed Starship/Super Heavy Programmatic Environmental Assessment (PEA). In a letter dated August 5, 2021, the FAA outlined Section 4(f) Determination issues pertaining to the use of State Highway 4 (SH4), the Lower Rio Grande Wildlife Refuge, and Palmito Ranch Battlefield National Historic Landmark (NHL). Because the NPS has special expertise in management of NHL properties under Section 110(f) of the National Historic Preservation Act (NHPA), NPS agrees that the issues addressed in the consultation letter, including time and duration of closures of SH4 and the use of Boca Chica Beach for Construction, Nominal Launch Operations, and Anomalies related to the project proposal, must be rigorously analyzed as FAA assesses the 4(f) issues to make a Determination.

Palmito Ranch Battlefield NHL is managed and protected under Section 110(f) of the NHPA, which states that Federal Agencies must exercise a higher standard of care when considering undertakings that may directly and adversely affect NHLs, and that federal agencies must, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmarks. If no feasible and prudent alternatives exist to avoid an adverse effect to an NHL, a Memorandum of Agreement (MOA) is required to outline mitigations to reconcile any adverse effects to historic properties [Sec. 110(a)(2)(B) and Sec. 110(f)]. Because the Record of Decision (ROD) for the 2014 SpaceX Texas Launch Site Environmental Impact Statement (EIS) (2014 EIS and ROD) included a Memorandum of Agreement (MOA) to resolve Adverse Effects to Historic Properties (Palmito Ranch Battlefield NHL), FAA addressed mitigations requested by NPS to include full closure of the NHL during launches to promote visitor safety. In the 4(f) Determination letter in 2014, FAA/SpaceX committed to notifying the NPS in advance of launches so that the agency could plan for closures and avoid conflicts with special events or programs.

For the 2021 proposed PEA, NPS has new concerns regarding impacts to Palmito Ranch Battlefield NHL. Section 4(f) protects publicly owned parks, recreation areas, wildlife refuges, and historic sites of national, state, or local significance from use by transportation projects.

Upon reviewing the materials, the NPS forecasts that the proposed scope of activities (including sonic booms) and duration of testing closures lasting 11.4% of the year (not including closures required in the event of an anomaly) will result in a Constructive Use of Palmito Ranch Battlefield NHL due to the temporary occupancy of land that is adverse in terms of the statute's preservation purpose, and because the project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired (23 CFR 774.17). The quantity and duration of closures will substantially impair visitor access to and use of Palmito Ranch Battlefield NHL.

Since 2014, closure hours related to permit operations have increased. In December 2020, FAA issued a Written Reevaluation (WR) supplementing the 2014 EIS and ROD to analyze an increase in closure limit from 180 hours to 300 hours per year. Similarly, the 4(f) Determination for the proposed Starship/Super Heavy PEA analyzes an increase to 500 hours of closures and use per year. FAA stated that under the proposal the closure hours will prohibit access to Palmito Ranch Battlefield NHL 11.4% of the year, impeding use of this specific NHL. The unpredictability of closures and their duration impacts visitor use and access to Palmito Ranch Battlefield NHL. This causes inconvenience to visitors and creates a barrier to local community members who have a cultural or familial connection with the NHL. To date, NPS has not received adequate advance notice for closures. To mitigate impacts to Palmito Ranch Battlefield NHL and its users, the NPS requests that FAA/SpaceX provide agency and public notice 24-48 hours in advance of any planned closure to ensure predictable access for local, state, and national visitors. Similarly, NPS requests FAA/SpaceX provide notice to the public immediately upon the event of a closure due to an anomaly. Through use of a direct method of communication (such as the website agreed-upon in the 2014 MOA) FAA/SpaceX should provide updated closure hours and ensure notifications reach public visitors and federal agencies who are impacted by the substantial increase in SH4 closures.

As outlined in an FAA Section 4(f) Response Letter dated March 21, 2013, FAA performed noise analyses to assess potential impacts of noise on Palmito Ranch Battlefield NHL for the 2014 EIS and ROD. In December 2020, FAA released a new Noise Assessment Report to analyze the new scope of activities proposed in the PEA. The NPS response to the internal draft PEA in June 2021 identified that the evaluation methods in the Noise Assessment Report by KBR are not consistent with the 2014 EIS and ROD Noise Assessment Report, and KBR did not use proper measurements for inland water areas. The NPS requests that FAA update the Noise Assessment Report to properly measure inland water areas to accurately capture the level of impact posed by the proposal. Until the Noise Assessment Report is updated, NPS has concerns that the increase in sonic booms related to this PEA and impacts to natural sounds will substantially impair the protected features and attributes of Palmito Ranch Battlefield NHL, resulting in a Constructive Use of the Historic Property.

The NPS was pleased to see that FAA considered expansion of the Area of Potential Effect (APE) and updated its Archaeological Resource Survey to receive concurrence from the Texas State Historic Preservation Officer (SHPO). The NPS continues to have concerns about the size and scope of the launch activities that are proposed to be permitted through the PEA and hopes that FAA continues to accommodate Cooperating Agency resource concerns by promoting flexibility in the impacted area of debris. As stated in the NPS response to the internal draft PEA (June 2021), NPS would appreciate a report from FAA identifying the locations, sizes, and durations of anomalies that have already occurred through SpaceX Launch Operations and would request similar information for any future anomalies that may occur.



We appreciate your inclusion of the NPS in Section 4(f) consultation efforts, and we look forward to continuing discussion as a Cooperating Agency under NEPA to further refine the analysis of potential effects and to develop measures to protect visitor use at Palmito Ranch Battlefield NHL. If you have any questions, please contact me at (361) 949-8173 x 222 or [Eric\\_Brunnemann@nps.gov](mailto:Eric_Brunnemann@nps.gov).

Sincerely,

**ERIC  
BRUNNEMANN**

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Eric J. Brunnemann  
Superintendent

cc:

Lisa Carrico, Deputy Regional Director, Protection, Partnerships & Interpretation, DOI Region 6, 7, & 8

Karen Skaar, Regional External Review Coordinator, DOI Region 6, 7, & 8

Michael Reynolds, Regional Director, DOI Region 6, 7, & 8



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

September 16, 2021

Eric J. Brunnemann  
Superintendent, Padre Island National Seashore  
National Park Service  
600 E. Harrison Street  
Room 1006  
Brownsville, TX 78520  
Submitted to: [eric\\_brunnemann@nps.gov](mailto:eric_brunnemann@nps.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Brunnemann:

The Federal Aviation Administration (FAA) has received your letter dated August 20, 2021, which responded to the FAA's August 5, 2021, initiation of consultation under Section 4(f) of the Department of Transportation Act. The National Park Service (NPS) raised several concerns regarding the FAA's evaluation of the potential for Space Exploration Technologies Corporation's (SpaceX) proposed Starship/Super Heavy launch operations to result in a Section 4(f) *use* of the Palmito Ranch Battlefield National Historic Landmark (NHL). The FAA appreciates the detailed information and comments you included in the letter. The FAA is providing this letter to continue Section 4(f) consultation with the NPS and to respond to and address the issues and concerns raised in your letter. For a detailed evaluation of potential Section 4(f) impacts, please refer to the FAA's *Draft Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas* (PEA), which the FAA will be publishing on September 17, 2021.<sup>1</sup> The FAA will notify you as soon as the Draft PEA is published. For a summary of the Section 4(f) issues for discussion, project background information, a summary of the proposed action, and a description of the regulatory background, please refer to FAA's August 5, 2021, letter.

**Temporary Occupancy and Constructive Use**

As described in Section 3.8 of the Draft PEA, the FAA is evaluating the potential for the Proposed Action to result in a *use* of properties eligible for protection under Section 4(f). This includes consideration of potential physical *use*, which may include permanent incorporation or temporary occupancy, or potential *constructive use*. Page 2 of your letter stated that "temporary occupancy of land that is adverse in terms of the statute's preservation purpose" was one circumstance under which *constructive* use may occur.

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<sup>1</sup> See: [https://www.faa.gov/space/stakeholder\\_engagement/spacex\\_starship/](https://www.faa.gov/space/stakeholder_engagement/spacex_starship/).

The FAA would like to clarify that *temporary occupancy* is a different category of Section 4(f) *use* than *constructive use*, and FAA's evaluation considered each type of *use* separately.

### **Impacts from Closures**

Your letter expressed concern regarding the unpredictability of closures and the adequacy of advanced notice leading to closures of the NHL. The NPS recommended mitigation to address the impacts of closures; this included providing 24–48 hours advance notice before any planned closures and providing immediate notice of closures due to an anomaly through a direct communication method.

As described in Section 3.8.3.2 of the Draft PEA, SpaceX has developed and would implement a Closure Notification Plan, which requires that SpaceX provide a forecast of upcoming closures one to two weeks in advance on Cameron County's website and provide final closure notifications to NPS and other agencies 24–48 hours in advance of the closure. As part of this plan, SpaceX would also develop a text messaging service to provide closure status and updates in real-time to subscribers.

Your letter also expressed concern that anomalies would require extended closures affecting visitors to the NHL. SpaceX has indicated that, following an anomaly, the closure areas west of the "All Hard Checkpoint" would be released to allow visitors to continue to access the NHL while anomaly response actions are taken.

### **Impacts from Noise**

Your letter raised concerns that the December 2020 Noise Assessment Report, which analyzes the scope of activities in the PEA, used methods inconsistent with the 2014 Environmental Impact Statement and Record of Decision Noise Assessment Report. Specifically, you stated that the 2020 report did not use proper measurements for inland water areas. Both the 2020 noise report by KBR and the 2012 noise report by Blue Ridge Research and Consulting use very similar methods and both analytic models (RNOISE and RUMBLE) have been approved by the FAA's Office of Environment and Energy as acceptable models to use to predict launch vehicle engine sound levels. With respect to modeling inland water areas, both reports acknowledge that launch noise levels can be slightly higher over bodies of water depending on various factors including the particular geometry of the direct and reflected sound waves. Please see Section 3.8.3 of the Draft PEA, which includes an evaluation of the potential for construction and operations to result in a Section 4(f) use of the NHL, and includes a detailed evaluation of the potential for use from launch noise.

### **Impacts from Anomalies**

Your letter expressed concerns regarding the area impacted by debris as a result of a launch anomaly. To date, anomalies have not resulted in debris landing in the NHL. As noted in the Draft PEA, debris and debris-removal impacts are expected to be limited to Boca Chica State Park and Brazos Island State Park (i.e., the land immediately adjacent to the launch site) and would not extend to the NHL.

### **Preliminary Section 4(f) Determination**

The FAA has completed an initial evaluation of the potential for the Proposed Action to result in a *use* of the NHL under Section 4(f). This includes consideration of potential physical *use* and *constructive use* from construction, nominal operations, and anomalies. Based on the reasons explained above and as discussed

in Section 3.8.3 of the Draft PEA, the FAA has made the preliminary determination that the Proposed Action would not result in a Section 4(f) *use* of the NHL.

If you have additional questions or concerns regarding the items discussed above, please provide your input to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov) or at 202-267-9305. We look forward to continued consultation on this project.

Sincerely,

**JAMES R  
REPCHECK** Digitally signed by  
JAMES R REPCHECK  
Date: 2021.09.16  
15:42:38 -04'00'

Randy Repcheck  
Manager, Safety Authorization Division



## United States Department of the Interior



### NATIONAL PARK SERVICE

#### INTERIOR REGION 6

Padre Island National Seashore

P.O. Box 181300

20301 Park Road 22

Corpus Christi, Texas 78418

IN REPLY REFER TO: PAIS (L7617)

April 27, 2022

Stacey M. Zee, Office of Commercial Space Transportation  
Federal Aviation Administration (FAA)  
800 Independence Avenue, SW Washington, D.C. 20591

Re: FAA Starship/Super Heavy Section 4(f) Excerpt of the Administrative Draft of the Final Programmatic Environmental Assessment (AF-PEA) and FAA's Draft Response to Department of Interior's (DOI) Review of the FAA's Draft PEA

The National Park Service (NPS) appreciates the opportunity to consult with the FAA on the U.S. Department of Transportation Act (49 U.S.C. § 303) Section 4(f) Evaluation for the proposed Starship/Super Heavy Programmatic AF-PEA. In a letter dated August 5, 2021, the FAA outlined Section 4(f) determination issues pertaining to the use of State Highway 4 (SH4), the Lower Rio Grande Wildlife Refuge, and Palmito Ranch Battlefield National Historic Landmark (NHL). Because the NPS has special expertise in management of NHL properties under Section 110(f) of the National Historic Preservation Act (NHPA), NPS agreed that the issues addressed in the consultation letter, including time and duration of closures of SH4 and the use of Boca Chica Beach for Construction, Nominal Launch Operations, and Anomalies related to the project proposal, must be rigorously analyzed as FAA assesses the 4(f) issues to make a determination. Additionally, section 5.1.1 of FAA's Order 1050.1F Desk Reference (FAA Desk Reference; FAA 2020) states that NPS is an official with jurisdiction for purposes of Section 4(f) consultation if a Section 4(f) property is an NHL (see also 23 CFR 774.17). NPS agrees that 23 CFR 774 is relevant to the proposed action because of its potential impacts to the Palmito Ranch Battlefield NHL.

NPS provided comments to FAA regarding the 4(f) determination issues in a letter dated August 20, 2021. NPS received FAA's response in a letter dated September 16, 2021, and the FAA released its public draft of the PEA on the following day. In a letter dated November 1, 2021, NPS subsequently responded to FAA's letter and provided additional comments regarding Section 4(f) issues and other topics via DOI in response to the FAA's public draft of the PEA. On March 21, 2022, FAA provided a draft response letter to DOI, dated March 14, 2022, and provided section 3.8 of its AF-PEA regarding Section 4(f) to NPS on April 12, 2022. In an email on April 13, 2022, FAA stated their response letter would remain in draft form, but that a supplemental draft would be provided. NPS looks forward to receipt of the supplemental draft, to include the portions listed as "to be added" in the draft dated March 14th, such as sections regarding the closure of DOI lands and launch site blast area hazards.

Palmito Ranch Battlefield NHL is managed and protected under Section 110(f) of the NHPA, which states that federal agencies must exercise a higher standard of care when considering undertakings that may directly and adversely affect NHLs, and that federal agencies must, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmarks. If no feasible and prudent alternatives exist to avoid an adverse effect to an NHL, a Memorandum of Agreement (MOA) is required to outline mitigations to reconcile any adverse effects to historic properties [Sec. 110(a)(2)(B) and Sec. 110(f)]. The Record of Decision (ROD) for the 2014 Texas Launch Site Environmental Impact Statement (EIS) (2014 EIS and ROD) included an MOA to address Adverse Effects to Historic Properties (Palmito Ranch Battlefield NHL). The existing MOA will be superseded by a new Programmatic Agreement (PA) regarding the Boca Chica Launch Site developed by FAA in consultation with the Texas State Historic Preservation Officer (SHPO), NPS, U.S. Fish and Wildlife Service (FWS), the Advisory Council on Historic Preservation (ACHP), Texas Parks and Wildlife Department (TPWD), and Space Exploration Technologies Corporation (SpaceX).

As detailed in its draft response letter dated March 14, 2022, and in section 3.8.3.1 of its AF-PEA, FAA has determined that the proposed action would result in adverse effects to the NHL but would not substantially diminish or impair the NHL's historic integrity or feeling and setting. FAA stated it determined that the visual effects of the new vertical launch area (VLA) infrastructure that is greater than 100 feet in height would not substantially diminish visual resources on the NHL or the historic integrity of the property because it would be visible to visitors during the day only from parts of the property, but not from the core-battlefield area. NPS does not concur with this reasoning or this determination, which also does not align with the FAA's Order 1050.1F (FAA 2015), which states that "any part of a Section 4(f) property is presumed to be significant unless there is a statement of insignificance relative to the entire property by the Federal, state, or local official having jurisdiction over the property." NPS continues to emphasize the significance of the entirety of the NHL and is unaware of any statement to the contrary by any other official having jurisdiction over the property. NPS respectfully requests the FAA review previous NPS comment regarding the historic integrity and significance of the NHL.

In section 3.8.3.1 of its AF-PEA, FAA also stated it determined that the visual effects of the new vertical launch area (VLA) infrastructure would not result in a change to nighttime viewshed. However, NPS provided a report to FAA on January 20, 2022, which documented impacts from existing SpaceX infrastructure on the night sky. We recommend and request inclusion of the report's findings and images in the final PEA, including that SpaceX now exists in an area that was previously devoid of artificial light. Although it is not the most significant contributor to skyglow in the region, its unshielded and extremely bright blue and white lights provide the most substantial direct impact to the nighttime environment of the Palmito Ranch Battlefield NHL. NPS also requests the FAA review previous NPS comments that remain unresolved regarding best management practices for nighttime lighting, including our recommendation to adhere to the principles and international standards for [sustainable outdoor lighting](#). Additionally, NPS recommends:

- Retrofitting existing lighting to a warmer color temperature and a reduced lumen output. These measures would significantly minimize light pollution impacts on the NHL via direct or reflected scattered light from parking lots and facilities while maintaining appropriate task lighting.



- Considering inclusion of a Lighting Zone Determination in the Facility Design and Lighting Plan. NPS recommends a determination be made for Lighting Zone as defined by the Illuminating Engineering Society (IES) Lighting Practice (LP) 2-20 Lighting for Outdoor Environments, Recommended Practice (RP) 8-18 Design and Maintenance of Roadway and Parking Facility Lighting, RP-43-22 Outdoor Lighting Applications, and IES-International Dark-Sky Association Model Lighting Ordinance. A Lighting Zone determination provides a structure for future lighting design decisions in terms of illuminance and luminance ranges and thresholds.
- Considering a site-wide dimming schedule for parking lots and facilities when site use decreases or ceases after hours. Utilizing control options is emphasized throughout IES recommended practices and specifically supported in IES RP-8-18, LP-2-20, and RP-43-22.

The new, permanent, and visually intrusive VLA infrastructure will involve an impact to the NHL of such magnitude as to effectively act as a permanent incorporation, which would amount to “taking” a portion of the property, a criterion referenced in Section 3.8.1 of FAA’s AF-PEA as necessary for a determination of constructive use. Visual impacts of the VLA infrastructure, including from the height and reflectivity of proposed structures, would substantially diminish the integrity of the NHL’s historic setting and feeling, which would substantially impair the esthetic features or attributes that are important contributing elements to its value. The proposed action would thus result in a constructive use (23 CFR 774.15(e)(2)).

In support of its 4(f) determination that visual effects of the new VLA infrastructure would not result in a constructive use of the NHL, FAA also stated that visual effects will be resolved through mitigation measures identified in the new PA. NPS has provided comment to FAA regarding mitigation measures to minimize adverse effects to the NHL, such as completion of a historic context report and Historic American Landscape Survey documentation. NPS appreciates FAA’s efforts to address adverse effects but notes that adverse visual effects of structures greater than 100 feet tall at the VLA will nonetheless continue to represent a long-term diminishment of the setting and feeling of the NHL.

Additionally, in its draft response letter dated March 14, 2022, and in section 3.8.3.2 of its AF-PEA, FAA determined access restrictions resulting from the proposed action would not result in a constructive use of the NHL. NPS appreciates that FAA has stated closures would be planned to avoid times of high visitation and has incorporated updated closure notification procedures. NPS also understands further information regarding access restrictions will be included in the *Closure of FWS and NPS Lands* section of FAA’s updated draft response letter when it is issued. However, NPS is to date in receipt of only the following reasoning for FAA’s determination: “SpaceX is limiting the access restrictions resulting from SpaceX activities as much as practicable. Access to public land and beaches would be temporary and intermittently limited. At all other times, public land and beaches would remain open.”

NPS does not concur with FAA’s 4(f) determination that access restrictions would not result in a constructive use of the Palmito Ranch Battlefield NHL. The proposed action continues to include up to 500 hours of closures per year, which would prohibit access to the NHL 11.4% of the year, impeding public use of this specific NHL. Relevant implementing regulations for Section 4(f) determinations state that a constructive use occurs when the project results in a restriction of access which substantially diminishes the utility of a significant publicly owned park, recreation

area, or a historic site (23 CFR 774.15(e)(3)). Section 5.3.2 of the FAA Desk Reference similarly states:

Constructive use occurs when the impacts of a project on a Section 4(f) property are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the Section 4(f) property that contribute to its significance or enjoyment are substantially diminished. This means that the value of the Section 4(f) property, in terms of its prior significance and enjoyment, is substantially reduced or lost.

Neither the implementing regulations for Section 4(f) nor the FAA Desk Reference include a definition of “substantial.” However, as an official with jurisdiction and special expertise, NPS believes that access restrictions, including the duration of full closures lasting 11.4% of the year (which does not include closures related to anomalies of up to an additional 6.8% per year), will substantially diminish access, substantially reduce the NHL’s prior public enjoyment, and thus constitute a substantial impairment of the utility of the NHL (visitor use, education, and enjoyment) that will result in a constructive use of Palmito Ranch Battlefield NHL.

In addition to the impacts of access restrictions and adverse visual effects of the proposed action, NPS continues to have concerns that the impacts to natural sounds resulting from the proposed action will substantially impair the protected features and attributes of Palmito Ranch Battlefield NHL, resulting in a constructive use of the property. FAA stated, in section 3.8.3.4 of the AF-PEA, and communicated to NPS in its draft response to DOI dated March 14, 2022, that FAA determined there will be no constructive use of the NHL as a result of adverse noise effects from daily operational noise “because noise increases would be small and temporary and of short duration (i.e., during commuter hour), and any such increases are unlikely to be perceptible in the core battlefield area, which is more than 0.5 mile from SH 4.” As noted above for adverse visual effects, this reasoning does not align with the FAA’s Order 1050.1F, which does not support a distinction between the core battlefield area and any other portion of the full extent of the NHL.

FAA also noted its determination was in accordance with Chapter 5 of its Desk Reference. Section 5.3.2 of that document references 14 CFR part 150 (the part 150 guidelines) for determinations of constructive use with respect to noise, and states:

When assessing use of Section 4(f) properties located in a quiet setting and where the setting is a generally recognized feature or attribute of the site’s significance, the FAA carefully evaluates reliance on the part 150 guidelines. The FAA must weigh additional factors in determining whether to apply the thresholds listed in the part 150 guidelines to determine the significance of noise impacts on noise sensitive areas within Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks, national wildlife and waterfowl refuges, and historic sites including traditional cultural properties). The FAA may use the part 150 land use compatibility table as a guideline to determine the significance of noise impacts on Section 4(f) properties to the extent that the land uses specified bear relevance to the value, significance, and enjoyment of the lands in question. However, the part 150 guidelines may not be sufficient for all historic sites as described above, and the part 150 guidelines do not adequately address the impacts of noise on the expectations and purposes of people visiting areas within a

national park or national wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

NPS respectfully requests that FAA provide information regarding the additional factors it weighed when determining the significance of noise impacts on the noise sensitive area of the NHL and how it determined sufficiency of the part 150 guidelines when making its Section 4(f) determination.

We appreciate your inclusion of the NPS in Section 4(f) consultation efforts, and we look forward to continuing discussion as a Cooperating Agency under NEPA and official with jurisdiction under Section 4(f) to further refine the analysis of potential effects from the proposed project and to identify whether there may be a feasible and prudent avoidance alternative that would not result in a constructive use of the Palmito Ranch Battlefield NHL. If you have any questions, please contact me at (361) 949-8173 x 222 or [Eric\\_Brunnemann@nps.gov](mailto:Eric_Brunnemann@nps.gov).

Sincerely,

Eric J. Brunnemann  
Superintendent

cc:

Carol Braegelmann, Environmental Review Team Leader, DOI Office of Environmental Policy and Compliance

Lisa Carrico, NPS Deputy Regional Director, Protection, Partnerships & Interpretation, DOI Region 6, 7, & 8

Susan King, DOI Regional Environmental Officer, DOI Region 6

Michael Reynolds, NPS Regional Director, DOI Region 6, 7, & 8

Karen Skaar, NPS Regional External Review Coordinator, DOI Region 6, 7, & 8



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

May 26, 2022

Eric J. Brunnemann  
Superintendent, Padre Island National Seashore  
National Park Service  
P.O. Box 181300  
20301 Park Road 22  
Corpus Christi, Texas 78418  
Submitted to: [eric\\_brunnemann@nps.gov](mailto:eric_brunnemann@nps.gov)

**Re: PAIS (L7617); Section 4(f) of the Department of Transportation Act Consultation, SpaceX  
Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Brunnemann:

The Federal Aviation Administration (FAA) received your letter dated April 27, 2022, which included comments on the FAA's administrative final Programmatic Environmental Assessment (PEA). The administrative final PEA includes FAA's responses to the Department of Interior (DOI) comments on the draft PEA, which were sent to the National Park Service (NPS) on March 21, 2022, and FAA's responses on the Department of Transportation (DOT) Act Section 4(f) section of the administrative final PEA, which were sent to NPS on April 12, 2022. The FAA's supplemental draft response to the DOI comment letter was sent to NPS on April 29, 2022.

In regard to the FAA's DOT Act Section 4(f) analysis pertaining to the Palmito Ranch Battlefield National Historic Landmark (NHL), the FAA stands by the analysis presented in the administrative final PEA, including the determination that the Proposed Action would not result in a *constructive use* of the NHL. In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in the Federal Highway Administration's Section 4(f) Tutorial,<sup>1</sup> "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,<sup>2</sup> which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences

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<sup>1</sup> Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>

<sup>2</sup> Available online at: [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_nepa\\_order/desk\\_ref/](https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_nepa_order/desk_ref/)

must amount to “taking” a property or a portion of a property in order for a *constructive use* determination to be made.

The FAA views the entire NHL, and not just the core battlefield area, as a significant property protected by Section 4(f). The PEA considers potential impacts to the entire NHL. The core battlefield area is noted in the analysis because that area is where the interpretive platform is located. Figure I in PEA Appendix F provides the view from the core battlefield viewing platform, a location where the public visiting the battlefield would likely visit. As the figure depicts, vegetation blocks the view of the vertical launch area (VLA) from this location. The FAA also considered visual effects from other locations within the NHL. Figures G and H in Appendix F are just west of the eastern edge of the NHL (approximately five miles from the VLA). The VLA is visible from this location. The VLA has a similar level of visibility at the eastern edge of the NHL (approximately three miles from the VLA).

The FAA respectfully disagrees with the NPS’ assertion that the proposed infrastructure would amount to “taking” a portion of the NHL. At a distance of approximately five miles away from the VLA, the existing tall structures at SpaceX’s manufacturing and production area and the VLA are visible but not very noticeable (see Figure G in PEA Appendix F). The five-mile distance is based on locations along State Highway 4 (SH 4) where the public could safely pull over. Tall structures that are part of the Proposed Action include two integration towers at the VLA and a payload processing facility at the production and manufacturing area. This infrastructure is not expected to substantially change the existing viewshed, which includes all of the existing SpaceX facilities that are visible, within the NHL.

As noted in the NPS’ Night Skies Program report mentioned in your letter, most of the lighting in the Boca Chica area is associated with SpaceX’s production and manufacturing area, which is located on land privately owned by SpaceX (see Figure H in PEA Appendix F for a photo showing nighttime lighting at the production and manufacturing area, as viewed from approximately five miles away along SH 4).

As stated above, the FAA does not have jurisdiction over all of SpaceX’s production and manufacturing facilities. Most of the production and manufacturing area, including associated lighting, is part of the baseline (i.e., no action) that FAA considered when analyzing the impacts of the proposed lighting associated with the Proposed Action. The FAA sent the NPS’ lighting recommendations to SpaceX for inclusion in SpaceX’s Lighting Management Plan to minimize lighting impacts in the project area. As stated in the PEA, SpaceX will be coordinating updates to the Lighting Management Plan with the NPS and other state and federal agencies as needed.

Also, the FAA does not believe that temporary access restrictions to the NHL associated with nominal launch operations constitute substantial impairment. As you note in your letter, the duration of “full closures” would subsume 11.4% of the year. However, “full closures” assumes public access was available 12 hours per day, 365 days per year, and all temporary access restrictions occurred during those open hours and all of the 500 hours for launch operations were used in a year. Please note that public access to the NHL would not be restricted during anomaly-response activities. In the event of an anomaly, once SpaceX and the FAA deem the area safe, the nominal access restriction area would be shrunk to just the blast danger area depicted in PEA Figure 2-4, which does not include any portion of the NHL.

As part of its Access Restriction Notification Plan, SpaceX would provide a forecast of planned access restrictions one to two weeks in advance of the access restrictions on the County’s website and/or through the email distribution list. SpaceX will also notify the state and federal landowners and land-managing

agencies, including NPS, of access restrictions 48 hours in advance of launch operations so the agencies could plan for the access restrictions and avoid conflicts for special events or programs.

Based on the temporary and short duration of the access restrictions, the notification and planning with the applicable land-management agencies, and the avoidance of days of higher public use, the FAA determined that the access restrictions associated with launch operations and anomalies would not substantially impair the activities, features, or attributes that qualify the NHL for protection under Section 4(f). Overall, the access restrictions on the NHL would be intermittent, temporary, short, subject to advance-notice requirements, and planned to avoid times of high visitation.

Finally, the FAA considered whether the noise generated by the Proposed Action would constitute a *constructive use* via substantial impairment of the attributes that contribute to the enjoyment or quality of the NHL. As stated and shown in the PEA, a small portion of the eastern end of NHL is located within the predicted Day Night Average Sound Level 65 A-weighted decibel noise contour (see PEA Figure 3-3). SpaceX's proposal includes less than 30 seconds of static fire engine tests per month, less than ten minutes of peak orbital launch noise per year, and any sonic booms from orbital landings would be 300 milliseconds (there would be no sonic booms from suborbital landings). As such, noise associated with the Proposed Action would be intermittent, of short duration, and temporary. Therefore, the FAA determined that noise from licensed operations would not constitute a *constructive use* of the NHL.

As you are aware, the FAA, Texas State Historic Preservation Officer, NPS, Advisory Council on Historic Preservation, and other parties executed a Programmatic Agreement (PA) as part of National Historic Preservation Act Section 106 consultation. The PA includes mitigation measures to resolve adverse effects to the NHL, including the following:

- Installing utility lines underground
- Preparing a Historical Context Report (i.e., historical narrative) of the historic events and activities of the Mexican War (1846–1848) and the Civil War (1861–1865)
- Production of interpretive signs that describe the history and significance of the historic properties in the Area of Potential Effects, including the NHL
- Educational outreach to the public about the region's cultural heritage
- Historic American Landscapes Survey of the NHL

The FAA and SpaceX look forward to continuing to identify ways to avoid or minimize impacts on the NHL through updates to SpaceX's Lighting Management Plan.

The FAA thanks NPS for its input on the FAA's environmental review.

Sincerely,

Michelle Murray  
Manager, Safety Authorization Division





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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

August 5, 2021

Mark Wolfe  
Executive Director  
State Historic Preservation Officer  
Texas Historical Commission  
108 W 16th Street  
Austin, Texas 78701  
Submitted to: [mark.wolfe@thc.texas.gov](mailto:mark.wolfe@thc.texas.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Wolfe:

The purpose of this letter is to notify you of the Federal Aviation Administration's (FAA) initiation of the Section 4(f) consultation addressing the eligible properties in the study area under consideration for Space Exploration Technologies Corporation's (SpaceX) proposed Starship/Super Heavy launch operations. These eligible properties include Palmito Ranch Battlefield National Historic Landmark (NHL), 1846 Cypress Pilings, 1865 Palmetto Pilings, and Palmetto Pilings Texas Centennial Historical Marker (Marker) (see Attachment 1).

**Summary of Section 4(f) Issues for Discussion**

1. **Construction** – The FAA is considering whether SpaceX's proposed launch-related construction would involve a permanent incorporation or temporary occupancy of the four Section 4(f) properties.
2. **Nominal Launch Operations**
  - a. The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f). SpaceX has requested 500 hours per year of closure hours from Cameron County.<sup>1</sup> The FAA is considering whether the number of closure hours would substantially impair the activities, features, or attributes of the Section 4(f) properties. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). Any limitation or maximum number of annual closure hours per year would be included in the analysis.

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<sup>1</sup> SpaceX and Cameron County are renegotiating an existing agreement to increase the closure hours to 500 hours per year.

- b. The FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*. The FAA is considering whether the Proposed Action would substantially diminish the attributes that contribute to the enjoyment or quality of the four properties because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches.

### **3. Anomalies**

- a. An anomaly (e.g., explosion) may result in parts of the launch vehicle landing on or near the pilings and/or Marker. Therefore, the FAA is considering whether anomalies could result in a *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. Occupancy of the pilings or Marker would be short term. The FAA is considering whether anomalies would adversely affect the activities, features, or attributes that make the properties eligible for Section 4(f) protection and seeks input from the Texas Historical Commission (THC) on the impacts on the properties resulting from *temporary occupancy*.
- b. The FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the NHL and therefore constitutes a *constructive use* under Section 4(f).

The following sections of this letter include pertinent regulatory background, a summary of the Proposed Action, and further information about the Section 4(f) issues.

### **Background**

SpaceX is proposing to operate Starship/Super Heavy launch vehicles at its Boca Chica Launch Site in Cameron County, Texas. SpaceX must obtain an experimental permit or launch license from the FAA Office of Commercial Space Transportation to operate Starship/Super Heavy at the Boca Chica Launch Site. Issuing an experimental permit or launch license is considered a major federal action under the National Environmental Policy Act (NEPA) of 1969 and requires an environmental review. The FAA is in the process of preparing a draft Programmatic Environmental Assessment (PEA) to assess the potential environmental impacts of Starship/Super Heavy operations from the Boca Chica Launch Site. The THC is a participating agency in the preparation of the draft PEA.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation may approve any transportation project that requires the *use* of any Section 4(f) resource<sup>2</sup> only if there is no feasible and prudent alternative to the *use* of such land and the transportation project includes all possible planning to minimize harm resulting from the *use*.

### **Proposed Action**

SpaceX's proposed launch operations include suborbital and orbital launches. The Proposed Action also includes launch-related activities at the Boca Chica Launch Site, such as tank tests, static fire engine tests,

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<sup>2</sup> Section 4(f) resources include publicly owned and publicly accessible land from a park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance

expansion of the VLA and solar farm, and construction of additional infrastructure. A complete project description is provided in Chapter 2 of the administrative draft PEA.

### **Regulatory Background**

The FAA's procedural requirements for complying with Section 4(f) are set forth in DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*. The FAA also considers Federal Highway Administration (FHWA) regulations (23 CFR part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for use of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

A *use* under Section 4(f) can occur when 1) land from a Section 4(f) property is permanently incorporated into a transportation project, 2) there is a *temporary occupancy* of a Section 4(f) property, or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of use is identified as *constructive use*.

#### *Physical Use*

A permanent incorporation would involve an actual physical taking of Section 4(f) property as part of a transportation project either as a purchase of land or a permanent easement.

*Temporary occupancy* occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A *physical use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act *finding of no adverse effect* or *no historic properties affected*.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must

be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the NEPA process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to make a *de minimis* impact determination. The officials with jurisdiction must concur in a *finding of no adverse effect* or *no historic properties affected*. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.<sup>3</sup>

### *Constructive Use*

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,<sup>4</sup> "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,<sup>5</sup> which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a *constructive use* determination to be made.

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

### **Section 4(f) Determination Issues**

The FAA is in the process of evaluating the potential impacts of the proposed construction and operations on the four Section 4(f) properties to determine if the Proposed Action would result in a *use* of any of the properties through permanent incorporation, *temporary occupancy*, or *constructive use*. A brief summary of the FAA's initial understanding of the Proposed Action's Section 4(f) impacts is presented in the following sections; the FAA invites THC to provide further information to help the FAA make a final determination.

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<sup>3</sup> The FAA will consult with THC to determine the potential impacts of the Proposed Action to historic properties under its jurisdiction, in compliance with Section 106. The consultations will lead to the development of an amended Programmatic Agreement which will govern the implementation of an updated program for the continued assessment of effects on historic properties and the resolution of adverse effects on historic properties resulting from the Proposed Action. The FAA will use information from its Section 106 process to help inform its determinations regarding Section 4(f) and to define mitigation measures which will be enforceable on SpaceX as a term and condition of its FAA-issued permit(s) or license(s).

<sup>4</sup> Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>

<sup>5</sup> Available online at: [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_n\\_policy\\_guidance/policy/faq\\_nepa\\_order\\_desk\\_ref/](https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_n_policy_guidance/policy/faq_nepa_order_desk_ref/)

## **Construction**

Construction of the proposed launch-related facilities at the VLA and expansion of the solar farm would not involve a permanent incorporation of any of the four properties, because the activity would occur on SpaceX property. Construction would not result in a *temporary occupancy* of the properties, because the project does not involve any temporary construction activities in these areas. SpaceX owns all land where facility construction activities would occur. Access to both sets of pilings, the Marker, and portions of the NHL may be slowed or delayed several times a day when construction vehicles are traveling to and from the Boca Chica Launch Site. Construction would not result in permanent, long-term access restrictions to these Section 4(f) properties. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of any of the properties such that the value would be substantially impaired. Given these conditions, the FAA is considering whether these construction activities would constitute a *constructive use*.

## **Nominal Operations**

Some operations at the Boca Chica Launch Site (i.e., tank tests, wet dress rehearsals, static fire engine tests, and launches) would require restricting public access in the vicinity of the VLA and securing land and water areas as part of public safety requirements (see Attachment 2). A closure for a tank test, wet dress rehearsal, or static fire engine test would be shorter than a closure for a launch. For the purposes of the FAA's environmental review, the FAA defines a closure as follows:

A closure begins when local law enforcement, under the direction of an order from the Cameron County Commissioners Court, shuts down State Highway 4 (SH 4) and Boca Chica Beach for a tank test, wet dress rehearsal, static fire engine test, or launch. A closure ends when the operation is completed and local law enforcement opens SH 4 and Boca Chica Beach.

Based on this definition, the FAA has learned from SpaceX that SpaceX estimates the total number of closure hours for tank tests, wet dress rehearsals, static fire engine tests, and launches to be 500 hours per year. SpaceX therefore expects to renegotiate an agreement with the Cameron County Commissioners Court to increase the closure hours to 500 hours per year. Assuming normal availability of the Section 4(f) properties, the proposed closure hours would result in the properties being closed to the public up to 11.4 percent of the year.<sup>6</sup> The FAA would ensure that SpaceX continues to notify THC in advance of a planned closure so THC can plan accordingly and avoid conflicts for special events or programs. SpaceX is not allowed to close Boca Chica Beach on major summer holidays or summer weekends between Memorial Day and Labor Day without the prior approval of the Texas General Land Office, in accordance with Texas House Bill 2623. Finally, closures would occur according to SpaceX's Security Plan (see Attachment 3).

The FAA is considering whether 500 closure hours would substantially impair the activities, features, or attributes of the four Section 4(f) properties. The FAA is also considering whether up to 500 closure hours per year resulting from the Proposed Action would constitute a *constructive use* under Section 4(f). The FAA seeks input as to whether 500 closure hours per year would constitute a *use* under Section 4(f).

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<sup>6</sup> This assumes that the property is typically open to and accessible by the public up to 12 hours per day, 365 days per year.

In addition to closures, the FAA reviewed modeled noise levels for the Proposed Action to determine whether there would be significant noise increases such that the value of the Section 4(f) properties, in terms of their activities, features, or attributes, would be substantially impaired, thus constituting a *constructive use*. Static fire engine tests and launches (including landings) would produce short-term, high levels of noise. When these operations are not occurring, the normal daily sound levels in the properties would persist. The FAA is considering whether the Proposed Action would substantially diminish the attributes that make the properties eligible for Section 4(f) protection because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches. Therefore, the FAA seeks input as to whether the noise generated by the Proposed Action would constitute a *constructive use*.

### **Anomalies**

A Starship/Super Heavy test operation or launch could fail (referred to as an anomaly), which could result in an explosion on the launch pad and spread debris. The area is labeled “No Personnel” on the closure area figure (Attachment 2). No debris is expected to land in the NHL if an anomaly occurred, because the launch trajectory is to the east. However, parts of the launch vehicle could land on or near the pilings and/or Marker.

In the event of an anomaly, a limited number of SpaceX staff would enter the debris field and conduct an initial evaluation as outlined in SpaceX’s Anomaly Response Plan. Following the initial evaluation of the area, the FAA would ensure SpaceX coordinates with THC (and the Texas Parks and Wildlife Department, the U.S. Fish and Wildlife Service, and Texas General Land Office, as land-managing agencies) prior to any attempt of cleanup, in order to minimize damage to sensitive cultural, biological, and geological resources. The method of debris cleanup would be assessed on a case-by-case basis and would be approved by THC if debris landed on or near the pilings or Marker. The FAA would ensure that SpaceX’s entry into debris field would be done on foot as much as possible, and the use of vehicles on public land would be coordinated with THC and the land-managing agencies to minimize impacts. Conditions that would be assessed by SpaceX include, but are not limited to, location of the debris, weather, condition of the soil, and number of support staff. Debris cleanup on SH 4 would be the first priority, followed by public lands, and then SpaceX property.

The FAA is considering whether anomalies could result in a *temporary occupancy* under Section 4(f). A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied. Any occupancy of the pilings or Marker would be short term. The FAA is considering whether anomalies would adversely affect the activities, features, or attributes that make the properties eligible for Section 4(f) protection and seeks input from THC on the impacts on the properties resulting from *temporary occupancy*.

SpaceX anticipates the need for not more than 300 hours per year of closures, in addition to 500 hours for normal operations, due to anomalies in the vicinity of the VLA. This would allow SpaceX to ensure public safety and coordinate with land-managing agencies for debris retrieval. The anomaly-response closure would start immediately at the time the launch ends and last until the area is deemed safe for the public. Additional closure required in the event of an anomaly is not anticipated to affect the NHL due to the distance of the NHL from the VLA. If an anomaly occurs, after securing the area, SpaceX would reduce the size of the closure area based on the debris field. The public would be able to access the NHL while SpaceX conducts debris removal efforts.



The FAA is considering whether the need for closures that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the four Section 4(f) properties and therefore constitute a *constructive use* under Section 4(f).

Please provide input on the issues discussed above by August 19, 2021, to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov). If you have questions or concerns, please contact Ms. Zee at 202.267.9305 or via email.

Sincerely,

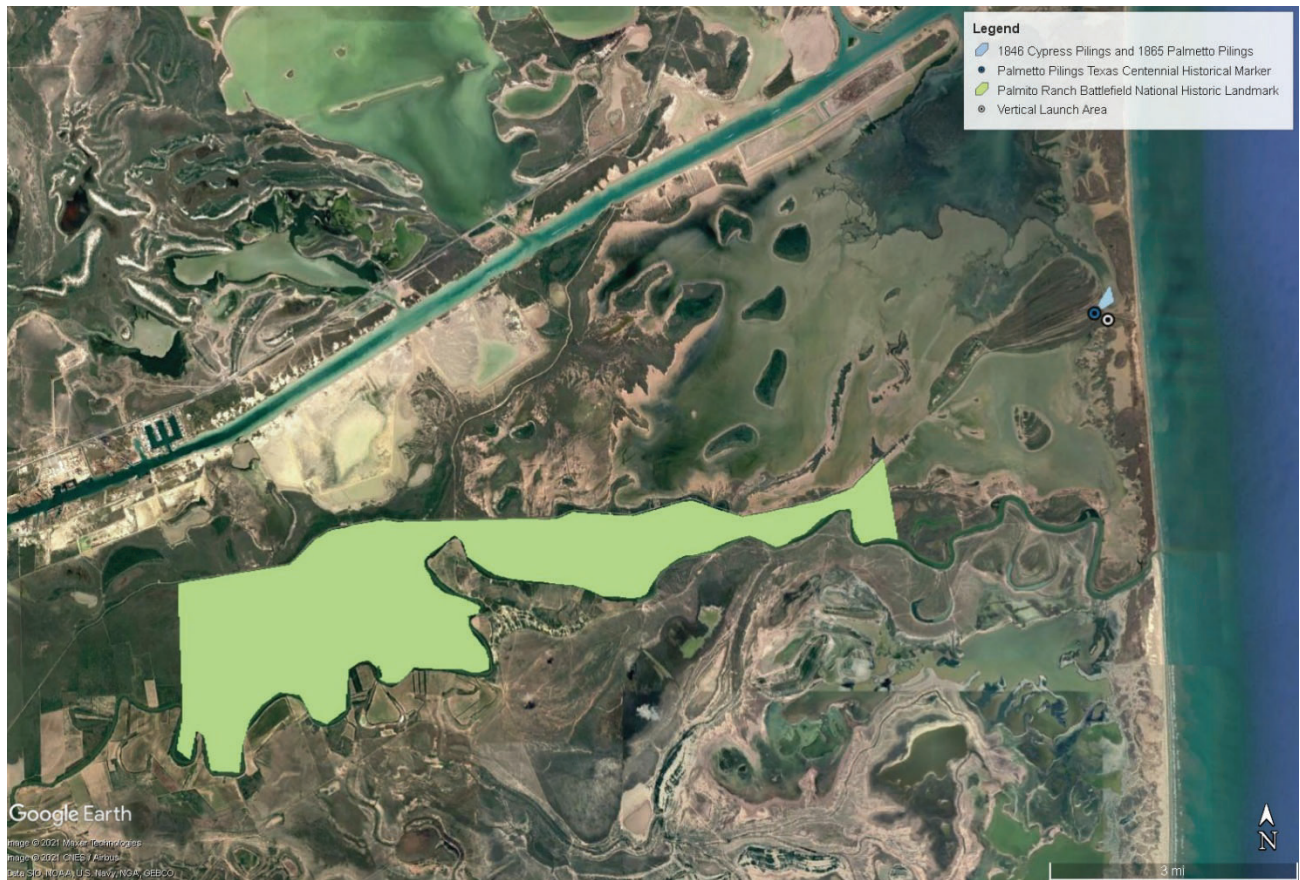
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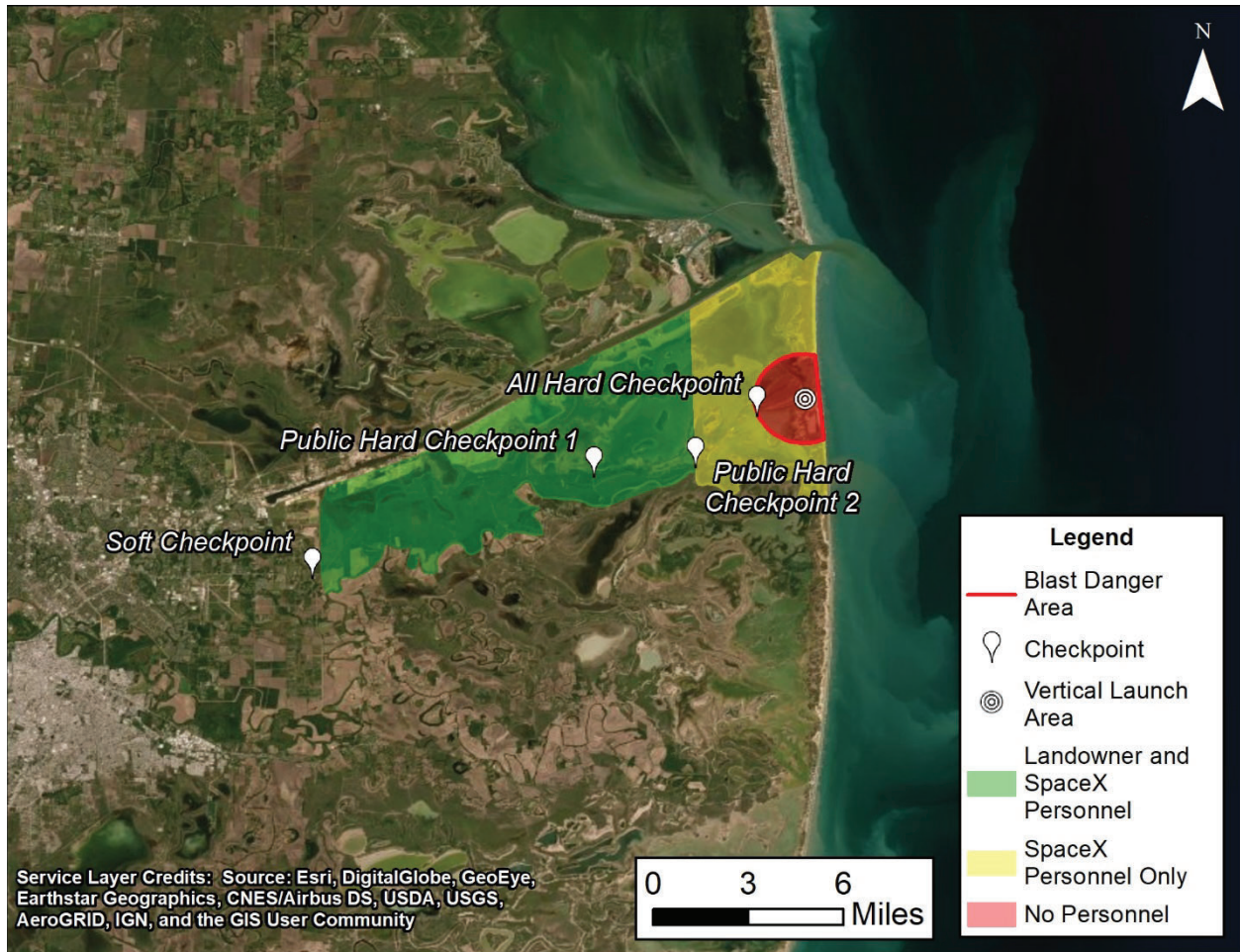
Randy Repcheck  
Manager, Safety Authorization Division

Enclosure:      Attachment 1. Section 4(f) Properties Under THC Jurisdiction  
                     Attachment 2. Closure Area  
                     Attachment 3. Security Plan

## Attachment 1. Section 4(f) Properties Under THC Jurisdiction



## Attachment 2. Closure Area



### **Attachment 3. SpaceX Security Plan**



## **Boca Chica Launch Site Security Plan**

**Date:** May 13, 2021  
**Version:** 4.5 - EA

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## Introduction

The SpaceX Security Team provides security to the Boca Chica launch site during routine operations and in support of Starship operations. The Boca Chica facility is a dynamic environment that incorporates multiple layers of security with a significant emphasis on interagency coordination and cooperation. SpaceX will follow this plan to ensure that there are not any unauthorized persons, vessels, trains, aircraft, or other vehicles within the safety clear zones. The plan includes conducting “safety sweeps” by security personnel as needed for each launch, as well as roadblocks, surveillance activities, and other security checkpoints as appropriate. Safety sweeps will utilize various methods, as appropriate that may include, but are not limited to: video surveillance; motion detection; and human patrol assets.

## Stakeholders

Below is a list of primary SpaceX stakeholders and external agencies that may be engaged during Boca Chica launch activities.

1. SpaceX
  - a. Flight Control
  - b. Security
  - c. Environmental Health & Safety (EHS)
  - d. Operations Support Coordinator (OSC)
  - e. Red Team
2. Federal Aviation Administration (FAA)
3. Cameron County Sheriff's Office (CCSO)
4. U.S. Customs and Border Protection (CBP)
5. U.S. Coast Guard
6. U.S. Fish & Wildlife
7. Texas Department of Transportation
8. Texas Department of Public Safety
9. Texas Parks and Wildlife
10. Brownsville Navigation District

## Clearing Operations

Safety clear zones will be established for each launch and test, when necessary, to contain the adverse effects of launch and test operations involving a hazard. The purpose of these zones is to protect public health and safety and the safety of property. The zones are sized to prevent a launch anomaly from harming those outside the safety clear zones, and they typically extend downrange along the flight trajectory for a certain distance.

This closure and clearing plan describes the procedures for land and water closure areas that will limit public access on the day of launch operations along State Highway 4, on Boca Chica Beach, and offshore.



## **Pad**

As necessary, SpaceX's Flight Control, EHS lead, and Security lead will conduct pad clearing operations. This team will clear the pad and its supporting structures to ensure that there are no personnel on site. Once the pad is clear, the gate will be locked.

## **Maritime**

A marine channel to the north of the launch site separates the area from Port Isabel and South Padre Island. The channel is approximately 7 km north of the launch site. This is not a populated area; there are no permanent residences or commercial structures in the area between the launch site and the channel. The Rio Grande River is located about 4 km to the south of the launch site. As necessary, to inform the maritime public of potential hazards associated with testing and launches on the waterways, the U.S. Coast Guard (USCG) will issue any of the following: a Local Notice to Mariners, a Broadcast Notice to Mariners, and/or Marine Safety Information Bulletins. SpaceX will provide information to the USCG for either of the Notice to Mariners (NOTMAR) and/or the Marine Safety Information Bulletins. Additionally, for flight operations, Cameron County Sheriff's Office (CCSO) will control access to the South Bay.

## **Boca Chica Park Beach**

As necessary, CCSO will close Boca Chica Park Beach and assist SpaceX Security in clearing the beach from Highway 4 south to the Rio Grande river and north to the marine channel. CCSO will also close the beach access points. U.S. Customs and Border Protection (CBP) may assist the county in clearing the beach and communicating the results to the SpaceX OSC.

## **Boca Chica Village**

Boca Chica Village (the Village) is the nearest population center to the launch site, just over 2 km west of the launch location.

### Overpressure Mitigation

As necessary, to mitigate the risk of injury to the Village residents due to overpressure, Cameron County will exercise its authority to protect the public and direct residents to go outside their properties. Cameron County will provide warnings to residents by distributing a written notice to residents in the Village and will alert residents when the launch operation giving rise to the overpressure risk is imminent.

### Evacuating Boca Chica Village

As necessary, CCSO will aid in evacuation of the Village to the fullest extent of their authority in accordance with the applicable law. That operation should take place approximately T-6 hours prior to the planned space flight activity, and in coordination with other clearing procedures. Activity in the Village will be monitored until the clear has been verified, and then continually throughout the duration of the window.

## **Checkpoint Operations**

As necessary, SpaceX will operate Hard and Soft Checkpoints to limit access to the launch site and ensure the integrity of permissioned access. CCSO and SpaceX Security will establish these checkpoints. CCSO will exercise its authority to limit access. CBP may participate in these operations at its discretion. When the Soft Checkpoint is in effect for flight, access will be restricted to SpaceX essential personnel, landowners who reside past the checkpoint and outside of the flight caution area, and CCSO Hard

Checkpoint support. SpaceX will provide credentials for persons who will pass through the Soft Checkpoint. No members of the public will enter the safety clear zone during launch operations.

### **Hard Checkpoint**

When the Hard Checkpoint is in effect, no one will be allowed to pass it or otherwise enter the safety clear zone. The Hard Checkpoint will be established at pad clear as dictated by the planned operation.

### **Soft Checkpoint**

The Soft Checkpoint is located west of the Border Patrol checkpoint on Highway 4 to facilitate vehicle U-turns and avoid interference with the Border Patrol's checkpoints. When the Soft Checkpoint is in effect, vehicle and pedestrian access will be restricted to SpaceX personnel, SpaceX guests, landowners, necessary County/Law enforcement/emergency personnel, and other relevant agencies. The Soft Checkpoint will be established as early as T-1 hour of pad clear, as dictated by the planned operation.

## **Range Coordination**

As necessary, SpaceX will establish a safety clear zone during pre-flight, launch and post-flight operations to protect public health and safety and the safety of property during Starship operations. SpaceX will ensure the integrity of the safety clear zone with Hard and Soft Checkpoints as defined in this plan.

The Range team will consist of SpaceX Security and other local, state, and federal partners with responsibility to clear areas for public safety. Range stakeholders will report clear activities, concerns, and incident response to the OSC. Range coordination activities will begin when the Soft Checkpoint is established and conclude when all checkpoint operations close.

### **Emergency Response Support**

In the event of a Launch Incident, Launch Accident, or Mishap, SpaceX security, in close coordination with CCSO, will maintain all checkpoints until deemed safe to return inside the safety clear areas. As necessary, SpaceX may request first responders be available to help mitigate brush fires outside of the clear areas or respond to medical emergencies. In general, first responders will remain outside of the debris field until trained SpaceX personnel sweep the debris field to safe the area.

September 1, 2021

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

*Re: Project Review under Section 106 of the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, (THC Tracking No. 202114420)*

Dear Ms. Zee:

Thank you for your letter of August 5, 2021, notifying the Texas Historical Commission (THC) that you are initiating consultation under Section 4(f) of the Department of Transportation Act on the above-named project. This response represents the comments of the State Historic Preservation Officer (SHPO), the Executive Director of the THC, pursuant to applicable federal law. Our review was conducted by THC staff led by Emily Dylla, Amy Borgens, Justin Kockritz, and Hansel Hernandez.

In addition to being the SHPO, THC owns and operates Palmito Ranch Battlefield State Historic Site, a portion of the National Historic Landmark located within the original Area of Potential Effect (APE) for this project. We also own and operate (through an agreement with the City of Port Isabel) the Port Isabel Lighthouse State Historic Site located within the recently negotiated revised APE.

In both capacities, as SHPO and as landowner of nationally significant properties within the APE, we have concerns regarding the project and its potential effect on historic properties.

In your letter, you identify five areas for discussion, sorted into three categories:

1. Construction: Whether or not SpaceX's proposed launch-related construction would constitute a "use" of historic properties.
2. Operations: a. Whether or not expanded operations restricting access to historic properties would constitute a "use" of those properties, and b. Whether or not noise generated by these operations would constitute a "constructive use" of those properties.
3. Anomalies: a. Whether or not an anomaly (crash, explosion, etc.) would constitute a "use" of historic properties, and b. Whether or not restricting access to historic properties after an anomaly would constitute a "use" of those properties.

As noted above, the APE for this project was recently expanded. It now includes a ten miles radius with the launch site at its center. Your letter identifies only four historic resources within the original APE. Although these four resources are certainly within the APE, we believe there are others that perhaps have not yet been identified within the expanded APE, including the aforementioned lighthouse. We look forward to reviewing the FAA's historic resources survey reports and determinations of National Register eligibility, and the same 4(f) analysis will apply to all resources determined to be eligible for designation. For each of these resources, it must then be determined whether or not the proposed action "uses" those properties.

We will address each of the discussion areas presented in your letter in the same order in which they were presented.

Construction – In your summary of the issue for discussion on construction on page one of your letter, you suggest the issue is whether or not the proposed construction project “would involve a permanent incorporation or temporary occupancy” of the subject properties. Later, in your discussion on page five, you acknowledge the possibility of a “constructive use”. But we cannot properly assess that possibility without additional information. You describe the project as one that may slow or delay access to historic resources “several times a day”. You also say that the project will not result in “long-term” access restrictions to these properties, and that there will be “some noise” that will be “short-term and temporary”. Without more information it is impossible for us to agree with your statement that “the noise would not substantially limit the use or diminish the quality of any of the properties such that the value would be substantially impaired.” Will the access road be closed at any time for this construction project? How often will access be limited or prevented, and during what time of day? What would be the potential noise levels associated with construction? When would those occur, and for how long? These issues require clarification before we can comment on the potential for the construction project to “use” 4(f) properties.

Operations –

- a. Closures: Regarding the anticipated 500 hours of closure during nominal launch operations, THC again requires more information. How are these hours of closure being determined? What time of day or night might these closures occur? The historic sites mentioned in your letter are only visible/usable during daylight hours, so instead of calculating the number of total hours in a year in comparison to the hours of closure, you should calculate the number of daylight hours in a year in comparison to the number of daylight hours of closure to determine whether or not a constructive use will occur. Although you acknowledge that HB 2623 protects Boca Chica Beach itself from closure during major summer holidays or summer weekends between Memorial Day and Labor Day without prior approval, the same concerns might be expressed regarding public access to Palmito Ranch Battlefield during those same periods. Again, although more information is required before we can comment, we anticipate that we will agree with the National Park Service’s letter of August 20, 2021 in which they state their opinion that restrictions on public access to this important site due to the quantity and duration of closures will constitute a “use” under Section 4(f). We also agree that the unpredictability of closures is problematic.
- b. Noise – Again, THC shares the concerns expressed by NPS in their letter of August 20, 2021. In your letter you state that the FAA reviewed modeled noise levels for the Proposed Action to determine whether there would be significant noise increases such that the value of the Section 4(f) properties, would be substantially impaired, thus constituting a constructive use. These noise model readings should be provided to consulting parties for review. The FAA’s Desk Reference, cited in your letter, specifically notes the importance of using appropriate methods “to determine the noise impact on historic properties where a quiet setting is a generally recognized purpose and attribute”, such as is the case at Palmito Ranch Battlefield State Historic Site (FAA 1050.1F Desk Reference, page 5-7). People travel to such places, where the natural landscape has changed very little in over a century, to get a sense of what it might have been like when historic events were taking place. Battlefields are typically maintained as peaceful places for contemplation, where men offered and gave their lives.

Anomalies –

- a. Regarding the increased numbers of “anomalies” associated with the proposed rocket launches, and given the proposed size of the SpaceX Starship Super Heavy, we are concerned these anomalies will continue to adversely affect archeological and historic resources in the area, as evidenced by the destruction of at least one historic piling following a launch earlier this year. Therefore, the projected anomalies associated with future launches could constitute an occupancy under Section 4(f) and could adversely affect the activities, features, or attributes that make the properties eligible for Section 4(f) protection.
- b. Closures – The need for closures that may be required in the event of an anomaly could substantially impair the activities, features, or attributes of historic resources, particularly the battlefield.

It is the position of the THC that the current proposal has the potential to have "an adverse effect" on the historic sites identified in your letter as well as on other cultural resources in the newly defined APE. The THC feels an impact determination will require analysis of feasible and prudent avoidance alternatives.

Regarding archeological resources, we would like to note the exception to 4(f) stipulated in 23 CFR §774.13(b) for archeological sites listed in or eligible for listing in the National Register of Historic Places is not likely to apply to the pilings sites (41CF117). It is unlikely that data recovery at these sites would yield new information important to history. Their historic value lies their preservation in place.

In addition, the THC has these inquiries and concerns regarding the closure and security plans:

- 1) A sentence on page 6 suggests closures will exceed 500 hours a year, with up to 300 additional hours: "SpaceX anticipates the need for not more than 300 hours per year of closures, in addition to 500 hours for normal operations..." Please clarify why the closure plan only includes 500 and not 800 hours of closures.
- 2) The closure area in Attachment 2 is much larger than the anomaly blast zone delineated in earlier correspondences. As illustrated, this covers the totality of Boca Chica Beach, much of the south Texas coast east of Brownsville, and includes both State Antiquities Landmark (SAL) shipwreck sites 41CF125 and 41CF184 on Boca Chica Beach, among others. There are approximately 40 archeological sites in the closure area, so why does the closure plan only address the specific sites that may be adversely affected by launch anomalies? It seems the FAA closure plan should encompass all sites within the closure area, per the focus of the letter, as opposed to just those that may be physically impacted.
- 3) Shipwreck sites 41CF125 and 41CF184 are on state public land and are regularly monitored by THC staff and volunteers following major storms and hurricanes. The nineteenth-century site of Brazos Santiago Depot (41CF4) has similarly been exposed following hurricanes. Such weather events typically uncover these sites only briefly (days) so the THC review of such exposed sites is conducted on an emergency basis due to the brevity of exposure. THC needs unrestricted access to these sites to continue this work. How can it be assured that SpaceX activities will not impede or halt agency work in the case of emergency site investigation?
- 4) Please add the THC to the list of stakeholders on page 2 of the security plans.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: [hansel.hernandez@thc.texas.gov](mailto:hansel.hernandez@thc.texas.gov), [amy.borgens@thc.texas.gov](mailto:amy.borgens@thc.texas.gov), [emily.dylla@thc.texas.gov](mailto:emily.dylla@thc.texas.gov), and [justin.kockritz@thc.gov](mailto:justin.kockritz@thc.gov).

Sincerely,



For Mark Wolfe, State Historic Preservation Officer  
Executive Director, Texas Historical Commission  
MW/hh



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

Office of Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

September 16, 2021

Mark Wolfe  
Executive Director  
State Historic Preservation Officer  
Texas Historical Commission  
108 W 16th Street  
Austin, Texas 78701  
Submitted to: [mark.wolfe@thc.texas.gov](mailto:mark.wolfe@thc.texas.gov)

**Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship/Super Heavy Launch Operations, Boca Chica TX**

Dear Mr. Wolfe:

The Federal Aviation Administration (FAA) has received and reviewed your letter dated September 1, 2021, which responded to the FAA's August 5, 2021, initiation of consultation under Section 4(f) of the Department of Transportation Act. The Texas Historical Commission (THC) raised several concerns regarding the FAA's evaluation of the potential for Space Exploration Technologies Corporation's (SpaceX) proposed Starship/Super Heavy launch operations to result in a Section 4(f) use of historic properties eligible for protection under Section 4(f). The FAA appreciates the detailed information and comments you included in the letter. The FAA is providing this letter to continue Section 4(f) consultation with the THC to respond to and address the issues and concerns raised in your letter. For a detailed evaluation of potential Section 4(f) impacts, please refer to the FAA's *Draft Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas* (PEA), which the FAA will be publishing on September 17, 2021.<sup>1</sup> The FAA will notify you as soon as the Draft PEA is published. For a summary of the Section 4(f) issues for discussion, project background information, a summary of the proposed action, and a description of the regulatory background, please refer to FAA's August 5, 2021, letter.

**Historic Sites Qualifying for Section 4(f) Protection**

On September 1, 2021, the FAA sent the THC a Section 106 Consulting Letter containing the FAA's determinations of eligibility and adverse effect. Based on these determinations of eligibility, the FAA has determined that 18 historic resources in the Area of Potential Effects (APE) are potentially eligible, eligible, or listed in the National Register of Historic Places (NRHP). As described in Section 3.8.2.2 of the PEA, six of the 18 sites are archaeological sites that are important chiefly for data recovery and do not warrant preservation in place. As such, Section 4(f) does not apply to those sites. Therefore, of the 18 historic sites

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<sup>1</sup> See: [https://www.faa.gov/space/stakeholder\\_engagement/spacex\\_starship/](https://www.faa.gov/space/stakeholder_engagement/spacex_starship/).

being considered under Section 106 of the NHPA, 12 of the historic sites qualify for protection under Section 4(f). These sites are identified in Table 3-9 of the PEA. Section 3.8.3 of the PEA includes a detailed evaluation of the potential for the Proposed Action to result in a *use* of historic properties under Section 4(f).

### **Impacts from Construction**

Your letter expressed a request for additional information to assess the potential for construction of the Proposed Action to result in a *constructive use* under Section 4(f) and included questions specific to road closures and construction noise levels. In order for a proximity-related impact to constitute *constructive use* under Section 4(f), the impact must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FAA's August 5, 2021, letter, indirect impact to the Section 4(f) property must be severe enough to effectively act as a permanent incorporation in order to be considered *constructive use*. Because construction noise and road closures during construction would be temporary, they were dismissed from detailed evaluation for the potential to result in *constructive use*.

As described in Section 3.8.3.1 of the PEA, the FAA has considered the potential for the construction of Starship/Super Heavy launch infrastructure to result in *constructive use* on historic properties from visual impacts. Because adverse effects on historic properties would be addressed and mitigated through 106 consultation, the FAA has made the preliminary determination that proximity related visual impacts from the construction of the Proposed Action would not substantially impair the features or attributes that contribute to the NRHP eligibility of the historic sites and would not result in a *constructive use* of Section 4(f) historic properties.

### **Impacts from Nominal Launch Operations**

Your letter expressed concerns regarding the potential for noise from launch activities to substantially impair historic properties and result in a *constructive use*. The potential for noise impacts to result in a constructive use of Section 4(f) historic properties is evaluated in detail in Section 3.8.3.2 of the PEA. As described therein, noise from launch operations would not substantially diminish any of the attributes that contribute to the significance of the historic Section 4(f) properties because of the short-term and intermittent nature of the noise. Additionally, because adverse effects on historic properties would be addressed and mitigated through 106 consultation, the FAA has made the preliminary determination that proximity related noise impacts from the Proposed Action launch operations would not result in a *constructive use* of Section 4(f) historic properties.

### **Impacts from Closures**

Page 2 of your letter included a request for additional detail in determining how closure hours are determined. FAA defines closures to include the duration that begins when Cameron County law enforcement starts enforcing roadblocks along State Highway 4 and a stop time when law enforcement re-opens access. No launches would be allowed to occur on major summer holidays or summer weekends between Memorial Day and Labor Day without the prior approval of the TGLO, in accordance with Texas House Bill 2623. For more information on nominal operations closures, please see Section 2.1.3.5 of the PEA.



The FAA has considered the potential for closures to result in a *constructive use* on historic sites and other Section 4(f) properties. As described in Section 3.8.3.2 of the PEA, SpaceX has developed and would implement a Closure Notification Plan, which requires providing a forecast of upcoming closures one to two weeks in advance on Cameron County's website and providing final closure notifications to NPS and other agencies 24–48 hours in advance of the closure. As part of this plan, SpaceX would also provide a text messaging service to provide closure status and updates in real-time to subscribers. Based on the temporary and short duration of the closures and the measures included in the Closure Notification Plan to mitigate the impacts of closures, the FAA has made a preliminary determination that the scheduled closures associated with launch operations of the Proposed Action would not result in a *constructive use* of historic resources eligible for protection under Section 4(f).

### **Impacts from Anomalies**

Your letter expressed concern that the debris associated with launch anomaly events may result in a *temporary occupancy* of historic properties. In Section 3.8.3.3 of the PEA, the FAA considered the potential for debris from anomalies to result in a Section 4(f) *use* of historic properties through site damage and looting activities. As noted in the PEA, anomalies at the launch pad could generate debris that may impact historic properties eligible for Section 4(f) protection within the area developed to assess potential effects of debris and debris retrieval, including the Sheridan's Railroad Bridge and Palmetto Pilings Historic Marker, which may result in adverse effects on historic properties.

However, the likelihood of debris from an anomaly resulting in direct damage to either of the historic sites is remote and the potential for impacts from anomaly debris to result in a Section 4(f) *use* cannot be determined at this time. Should an anomaly result in an impact on a historic site, the FAA would engage in Section 4(f) consultation with the SHPO to determine potential Section 4(f) use at that time.

If an anomaly occurs, SpaceX would notify and coordinate with THC prior to retrieving or cleaning up launch vehicle components in accordance with the Anomaly Response Plan. Additionally, SpaceX is committed to working with THC to consider a restoration or mitigation plan for damages in consultation with the THC and other stakeholders.

Your letter also expressed concern that extended closures required in the event of an anomaly may result in a *constructive use* of Section 4(f) historic properties. An additional 300 hours of closure could be used exclusively to address anomalies, such as debris generated from an explosion or a fire on the launch pad. Additional closure required in the event of an anomaly is not anticipated to affect the Palmetto Ranch Battlefield National Historic Landmark (NHL) due to the distance of the NHL from the vertical launch area. If an anomaly occurs, after securing the area, SpaceX would reduce the size of the closure area based on the debris field. The public would be able to access the NHL while SpaceX conducts debris removal efforts. The FAA has made a preliminary determination that the additional hours of closures to address anomalies associated with the Proposed Action would not substantially impair the activities, features, or attributes that qualify the historic resources for protection under Section 4(f) and would not constitute a *constructive use* under Section 4(f).

### **Section 4(f) Alternatives Analysis**

Page 3 of your letter included the recommendation that the FAA should conduct an analysis of "feasible and prudent avoidance alternatives." Pursuant to the Section 4(f) regulations at 23 CFR 774.3, an analysis

of feasible and prudent avoidance alternatives is required only if it is determined that the Proposed Action would result in a Section 4(f) use and the use is not determined to be *de minimis*. Because FAA's preliminary determination is that the Proposed Action would not result in *a use*, the FAA is not required to conduct an analysis of feasible and prudent avoidance alternatives under the Section 4(f) regulations.

### **SpaceX Closure and Security Plans**

Your letter included inquiries and concerns regarding the SpaceX Launch Site Security Plan and Closure Notification Plan. The FAA has shared your questions and concerns with SpaceX. The plans will be revised to address your comments.

If you have additional questions or concerns regarding the items discussed above, please provide your input to Ms. Stacey M. Zee, FAA Environmental Specialist, via email at [Stacey.Zee@faa.gov](mailto:Stacey.Zee@faa.gov) or at 202-267-9305. We look forward to continued consultation on this project.

Sincerely,

**JAMES R  
REPCHECK** Digitally signed by  
JAMES R REPCHECK  
Date: 2021.09.16  
16:18:10 -04'00'

Randy Repcheck  
Manager, Safety Authorization Division

April 25, 2022

Michelle S. Murray  
Federal Aviation Administration  
Office of Commercial Space Transportation  
800 Independence Avenue SW  
Washington, DC 20591

Re: *Project Review Under Section 106 of the National Historic Preservation Act, SpaceX Proposed Starship/ Super Heavy Operations at Boca Chica Launch Site, Section 4(f) Analysis (106/FAA, THC #202209274)*

Ms. Murray:

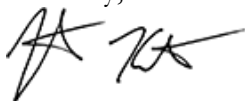
Thank you for your correspondence of April 12, 2022, transmitting the Federal Aviation Administration's (FAA) intended determinations in accordance with Section 4(f) of the Department of Transportation Act. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer and Official with Jurisdiction over historic Section 4(f) resources, the Executive Director of the Texas Historical Commission (THC).

As you know, THC previously concurred with the FAA's determinations of National Register eligibility and the assessment of effects on historic properties, as summarized in your letter and as detailed in the *Phase I Cultural Resources Survey for SpaceX Starship/ Super Heavy Launch Operations*.

THC concurs with the FAA's intended determinations that potential anomalies during a SpaceX operation may constitute a *temporary occupancy* of the historic Palmetto and Cypress Bridge Pilings (41CF117). In the unlikely event that a historic piling is impacted by debris, the piling will be treated in accordance with Unanticipated Discoveries Plan, in a manner that meets the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, and in consultation with the THC, the National Park Service, and the other consulting parties. Therefore, THC also concurs that such impact would be *de minimis*. In the final Section 4(f) analysis section of the Programmatic Environmental Assessment, THC encourages the FAA to match the language used in the "Effects from Launch Anomalies to the Palmetto and Cypress Bridge Pilings" section of the final Programmatic Agreement (Stipulation III.d.i) as closely as possible for consistency.

We look forward to continued consultation with your office and the other consulting parties, and we hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this federal review process and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our comments, or if we can be of further assistance, please contact Justin Kockritz at 512-936-7403 or [justin.kockritz@thc.texas.gov](mailto:justin.kockritz@thc.texas.gov).

Sincerely,



Justin Kockritz, Lead Project Reviewer, Federal Programs  
For: Mark Wolfe, State Historic Preservation Officer

cc: Stacey Zee and Amy Hanson, Federal Aviation Administration  
Rachael Mangum, Advisory Council on Historic Preservation  
Eric Brunnemann, Rolando Garza, Astrid Liverman, and Justin Henderson, National Park Service  
Matthew Thompson, Kelsey Condell, and Katy Groom, SpaceX  
Dawn Gardiner, Sonny Perez, and Bryan Winton, U.S. Fish and Wildlife Service  
Reagan Faught, Ted Hollingsworth, and David Kroskie, Texas Parks and Wildlife Department