ENVIRONMENTAL IMPACT STATEMENT

SPACEX STARSHIP-SUPER HEAVY LAUNCH VEHICLE AT LAUNCH COMPLEX 39A

at the Kennedy Space Center, Merritt Island, Florida

Final, Volume II, Appendix B.1, Part 3

January 2026

Federal Aviation Administration

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TABLE OF CONTENTS

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B.1.3 Verification of Complete Consultation Package

From: Myers, Brendan T
To: Hall, Patrice (KSC-SIE30)
Cc: Putnam, Christopher; Rivera, Jose J; Katy Groom (Katy.Groom@spacex.com); brian.pownall; Brooks, James T. (KSC-SIE30); Long, Eva (FAA); Baker, Nicholas M (FAA); Hanson, Amy (FAA); Akstulewicz, Kevin D. [US-US]; Hiers, Stephanie D. [US-US]; Combs, Rick R. [US-US]; Dankert, Donald J. (KSC-SIE30); Ward, Carmen J. [US-US]
Subject: EXTERNAL: Re: [EXTERNAL] FWS Log No. 2024-0058364 Request to Initiate Formal Consultation Under Endangered Species Act, Section 7 for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC)
Date: Monday, May 12, 2025 3:44:11 PM
Attachments: image001.png
image002.png

Good afternoon Patrice,

The USFWS has reviewed the provided revised BCA and does not have any additional questions or need for additional information. We have deemed a complete consultation package retroactive to May 5, 2025 when the revised consultation package was opened and review by the USFWS began. Below are timelines based on that date and we believe these dates are consistent with the ones provided to us on March 26, 2025. If the below dates are incorrect or additional discussion is needed, please do not hesitate to reach out.

Consultation package received: May 1, 2025
Consultation package review began and date used for a complete consultation package: May 5, 2025
90-day draft delivery: August 3, 2025
135-day final delivery: September 17, 2025

Thanks!

From: Hall, Patrice (KSC-SIE30)
Sent: Thursday, May 01, 2025 13:10
To: Myers, Brendan T
Subject: FW: [EXTERNAL] FWS Log No. 2024-0058364 Request to Initiate Formal Consultation Under Endangered Species Act, Section 7 for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC)

The tracked changes version of the BCA is also provided in Box.
https://nasa-ext.box.com/s/abfuuymvol6igkozkql9n3zyrxdoz4yu

From: Hall, Patrice (KSC-SIE30)
Sent: Thursday, May 1, 2025 12:34 PM
To: Myers, Brendan T <brendan_myers@fws.gov>
Subject: RE: [EXTERNAL] FWS Log No. 2024-0058364 Request to Initiate Formal Consultation Under Endangered Species Act, Section 7 for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC)

Thanks for letting us know. Sorry about the sick kid, hope he or she feels better soon and no one else catches it.

From: Myers, Brendan T <brendan_myers@fws.gov>
Sent: Thursday, May 1, 2025 12:31 PM
To: Hall, Patrice (KSC-SIE30) <laura.p.hall@nasa.gov>; FLESRegs, FW4 <FW4FLESRegs@fws.gov>
Cc: Long, Eva (FAA) <Eva.Long@faa.gov>; Baker, Nicholas M (FAA) <Nicholas.M.Baker@faa.gov>; Gillikin, Michael N <michael_gillikin@fws.gov>; Hiers, Stephanie D. [US-US] <STEPHANIE.D.HIERS@leidos.com>; Hanson, Amy (FAA) <Amy.Hanson@faa.gov>; Akstulewicz, Kevin D. [US-US] <kevin.d.akstulewicz@leidos.com>; Brooks, James T. (KSC-SIE30) <james.t.brooks-1@nasa.gov>; Dankert, Donald J. (KSC-SIE30) <donald.j.dankert@nasa.gov>; Brian Pownall <Brian.Pownall@spacex.com>; WARD, CARMEN J. (KSC-NEMCON)[Herndon Solutions Group] <carmen.j.ward@leidos.com>; Combs, Rick R. [US-US] <RONALD.R.COMBS@leidos.com>
Subject: Re: [EXTERNAL] FWS Log No. 2024-0058364 Request to Initiate Formal Consultation Under Endangered Species Act, Section 7 for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC)

Good afternoon Patrice,

We have received the Revised SS-SH LC 39A BCA. I'm currently without my computer (sick kid; computer at work) and will download the document in the next few days.

Thanks!

Brendan Myers
U.S. Fish and Wildlife Service
Florida Ecological Services Office
Saint Petersburg, FL
Cell: 850-348-6560
Office: 904-402-2456
FLES Main Office: 352-448-9151

From: Hall, Patrice (KSC-SIE30) <laura.p.hall@nasa.gov>
Sent: Thursday, May 1, 2025 12:15:55 PM
To: FLESRegs, FW4 <FW4FLESRegs@fws.gov>; Myers, Brendan T <brendan_myers@fws.gov>
Cc: Long, Eva (FAA) <Eva.Long@faa.gov>; Baker, Nicholas M (FAA) <Nicholas.M.Baker@faa.gov>; Gillikin, Michael N <michael_gillikin@fws.gov>; Hiers, Stephanie D. [US-US] <STEPHANIE.D.HIERS@leidos.com>; Hanson, Amy (FAA) <Amy.Hanson@faa.gov>; Akstulewicz, Kevin D. [US-US] <kevin.d.akstulewicz@leidos.com>; Brooks, James T. (KSC-SIE30) <james.t.brooks-1@nasa.gov>; Dankert, Donald J. (KSC-SIE30) <donald.j.dankert@nasa.gov>; Brian Pownall <Brian.Pownall@spacex.com>; WARD, CARMEN J. (KSC-NEMCON)[Herndon Solutions Group]

<carmen.j.ward@leidos.com>; Combs, Rick R. [US-US] <RONALD.R.COMBS@leidos.com>
Subject: [EXTERNAL] FWS Log No. 2024-0058364 Request to Initiate Formal Consultation Under Endangered Species Act, Section 7 for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC)

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Brendan,

The Revised Final BCA for Starship-Heavy Launch and Landing Operations at LC-39A is too large to send via email and is available in Box at :
https://nasa-ext.box.com/s/xql9whcllb18h4fhn27jfjqk65ov2wpm

The response to the BCA RFAI received on April 11 is attached to this email.

Please contact me with any questions or concerns.

Best Regards,
Patrice

Patrice Hall
Environmental Protection Specialist
Environmental Management Branch
Spaceport Integration and Services
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Kennedy Space Center, FL 32899
Phone: 321.867.8430
Email: laura.p.hall@nasa.gov

From: Myers, Brendan T <brendan_myers@fws.gov>
Sent: Friday, April 11, 2025 10:15 AM
To: Hall, Patrice (KSC-SIE30) <laura.p.hall@nasa.gov>
Cc: Long, Eva (FAA) <Eva.Long@faa.gov>; Baker, Nicholas M (FAA) <Nicholas.M.Baker@faa.gov>; Gillikin, Michael N <michael_gillikin@fws.gov>; Hiers, Stephanie D. [US-US] <STEPHANIE.D.HIERS@leidos.com>; Hanson, Amy (FAA) <Amy.Hanson@faa.gov>; Akstulewicz, Kevin D. [US-US] <kevin.d.akstulewicz@leidos.com>; Brooks, James T. (KSC-SIE30) <james.t.brooks-1@nasa.gov>
Subject: Re: [EXTERNAL] Request to Initiate Formal Consultation Under Endangered Species Act, Section 7 for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC)

Good morning Patrice,

Attached is an RAI for the Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC). We split the RAI into two sections. The first are critical items that need to be addressed and the second are items that are not critical to deeming a complete consultation package, but would assist in our analysis or make the process more efficient. We anticipate continuing conversations and clarification of some items within the BCA after a complete consultation package is received and the BO/CR is drafted.

The FWS Log No. for this project is 2024-0058364.

Please let me know if you have any questions or need to discuss further.

Thanks!

From: Hall, Patrice (KSC-SIE30) <laura.p.hall@nasa.gov>
Sent: Thursday, March 20, 2025 09:59
To: FLESRegs, FW4 <FW4FLESRegs@fws.gov>; Myers, Brendan T <brendan_myers@fws.gov>
Cc: Brooks, James T. (KSC-SIE30) <james.t.brooks-1@nasa.gov>; Baker, Nicholas M (FAA) <Nicholas.M.Baker@faa.gov>; Long, Eva (FAA) <Eva.Long@faa.gov>; Hanson, Amy (FAA) <Amy.Hanson@faa.gov>; KEVIN.D.AKSTULEWICZ@leidos.com <kevin.d.akstulewicz@leidos.com>; Hiers, Stephanie D. [US-US] <STEPHANIE.D.HIERS@leidos.com>
Subject: [EXTERNAL] Request to Initiate Formal Consultation Under Endangered Species Act, Section 7 for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at the Kennedy Space Center (KSC)

Brendan,
The National Aeronautics and Space Administration (NASA) is evaluating the SpaceX proposal for Starship-Super Heavy Launch and Landing Operations at Launch Complex-39A at KSC. NASA and the Federal Aviation Administration (FAA) are evaluating the potential environmental effects of this action in an Environmental Impact Statement prepared pursuant to the National Environmental Policy Act.

In accordance with information required in 50 Code of Federal Regulations §402.14(c)(1), NASA is providing the Biological and Conference Assessment (BCA) which addresses potential effects on threatened and endangered species in the action area. NASA hereby requests initiation of formal consultation, pursuant to Section 7 of the Endangered Species Act (ESA). Effect determinations for the listed species and critical habitat in the action area are summarized in Table 6-1 of the BCA document.

The IPaC reports for the LC-39A Starship Super Heavy Operation BCA are in Appendix A of

the document. Due to IPaC file size limits it was necessary to split up the Atlantic Ocean landings area into North, South, and Contingency, and split up the Pacific Ocean landings area into East, West, North, and South. We did not include IPaC reports for the Indian Ocean and portions of the Pacific Ocean that did not contain any federally listed species under USFWS jurisdiction. Below are project codes for the eight resulting project areas.

Project Code: 2025-0070940
Project Name: KSC LC39A Starship Super Heavy 1 psf/100 dB ASEL

Project Code: 2025-0071217
Project Name: KSC LC39A Starship Super Heavy (Atlantic Landings-North)

Project Code: 2025-0071227
Project Name: KSC LC39A Starship Super Heavy (Atlantic Landings-South)

Project Code: 2025-0071207
Project Name: KSC LC39A Starship Super Heavy (Contingency Landing 1psf)

Project Code: 2025-0071320
Project Name: KSC LC39A Starship Super Heavy (Pacific Landings-West)

Project Code: 2025-0071325
Project Name: KSC LC39A Starship Super Heavy (Pacific Landings-North)

Project Code: 2025-0071330
Project Name: KSC LC39A Starship Super Heavy (Pacific Landings-East)

Project Code: 2025-0071339
Project Name: KSC LC39A Starship Super Heavy (Pacific Landings-South)

The BCA document is too large to transmit by email and is available in Box at:
https://nasa-ext.box.com/s/5bbgftgelcblnbov3siacoqewznmhz1k

Please contact me to discuss any questions or concerns.
Best Regards,
Patrice

Patrice Hall
Environmental Protection Specialist
Environmental Management Branch
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B.1.4 USFWS Concurrence Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Florida Ecological Services Field Office

IN REPLY REFER TO:
2024-0058364

June 6, 2025

Patrice Hall
Environmental Protection Specialist
Environmental Management Branch
Spaceport Integration and Services
Mail Code: SI-E3
Kennedy Space Center, FL 32899

Subject: Section 7 consultation for SpaceX Starship-Super Heavy Construction and Operations at Launch Complex 39A

Dear Ms. Hall:

This letter acknowledges your March 20, 2025, request for initiation of informal consultation and conference, pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (Act), and receipt of your biological and conference assessment (BCA) dated and received the same day. The National Aeronautics and Space Administration (NASA) is evaluating Space Exploration Technologies Corporation's (SpaceX's) proposal for operation of the Starship-Super Heavy at Launch Complex (LC)-39A at the NASA Kennedy Space Center (KSC). NASA is the lead agency for this proposed Action, which includes infrastructure construction, static fire tests, launches, landings, and daily operations at LC-39A; transport of supplies, personnel, and launch vehicles to LC-39A; expenditure of vehicles and components in the Atlantic, Pacific and Indian Oceans; landings on droneships in the Atlantic Ocean; and transport of supplies and vehicles via barge. SpaceX must obtain a vehicle operator license from the FAA for Starship-Super Heavy launch and landing operations at LC-39A. The requested informal consultation concerns the potential effects to the Anastasia Island beach mouse (*Peromyscus polionotus phasma*), Atlantic saltmarsh snake (*Nerodia clarkii taeniata*), Audubon's crested caracara (*Caracara plancus audubonii*), band-rumped storm petrel (*Hydrobates castro*), Bermuda petrel (*Pterodroma cahow*), black-capped petrel (*Pterodroma hasitata*), eastern black rail (*Laterallus jamaicensis ssp. jamaicensis*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Florida bonneted bat (*Eumops floridanus*), Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), Hawaiian petrel (*Pterodroma sandwichensis*), Newell's shearwater (*Puffinus newelli*), piping plover (*Charadrius melodus*), red-cockaded woodpecker (*Dryobates borealis*), roseate tern (*Sterna dougallii dougallii*), rufa red knot (*Calidris canutus rufa*), short-tailed albatross (*Phoebastria (=Diomedea) albatrus*), wood stork (*Mycteria americana*), West Indian manatee (*Trichechus manatus*), and a conference on the monarch butterfly (*Danaus Plexippus*) and tri-colored bat (*Perimyotis subflavus*). NASA has determined the action may affect, but is not likely to adversely affect the above listed species and is not likely to jeopardize the proposed monarch butterfly and tri-colored bat.

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The Service is currently conducting formal consultation on eastern indigo snake (*Drymarchon couperii*), Florida scrub-jay (*Aphelocoma coerulescens*), green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), southeastern beach mouse (*Peromyscus polionotus niveiventris*) and the proposed green sea turtle critical habitat and loggerhead sea turtle critical habitat. The concurrence provided in this letter do not cover these species or critical habitat.

The Action consists of up to 44 annual launches from LC-39A, 44 Super Heavy booster static fire tests, 44 Starship static fire tests, and 44 Starship landings and 44 Super Heavy booster landings in an unknown combination between LC-39A and the Atlantic, Indian and Pacific Oceans.

Enclosed with your request was the BCA for the action. The U.S. Fish and Wildlife Service (Service) has reviewed this BA and provides the following comments pursuant to Section 7(a)(2) of the Act of 1973, as amended.

Action Area as defined in the BCA

The BCA included the following statement regarding the Action Area. "The Action Area includes: (1) LC-39A, (2) area surrounding LC-39A that would be exposed to traffic, launch plumes, noise, and sonic booms (construction, operational, and launch and landing noise), (3) area in the Atlantic Ocean where Super Heavy boosters and Starship vehicles might land or be expended, (4) area in the Pacific Ocean where Starship vehicles might land or be expended, and (5) area in the Indian Ocean where Starship vehicles might be expended." The Action Area will be further defined as the extent to 1 pound per square foot (psf) and the sound exposure level (SEL) to the extent of 100 decibels A-weighted (dBA) during operations. Figure 1 shows the extent of the modeled 100 dBA SEL and 1 psf. These area will encompass areas expected to be affected by construction activities, daily operations, heat and vapor plumes, lighting vehicle traffic, boat/barge traffic, and events with smaller noise and sonic boom footprints. Figure 2 shows the additional Starship contingency area defined in the BCA as the contingency landing area including an additional area from 1 nautical mile (nm) to 5 nm offshore for 50 miles north and south of LC-39A. Contingency landings would occur up to four times/year. The Starship contingency landing area encompasses noise and overpressure effects from Starship contingency landings. Noise and ASEL effects from Super Heavy Atlantic landings are encompassed within the 1 psf/100 dB ASEL contour surrounding LC-39A. The Atlantic landing area and Starship contingency landing area would encompass potential lighting and direct physical impacts associated with Atlantic landings and boat/barge traffic. Figure 3 shows the proposed Starship Landing Areas within the Atlantic, Indian and Pacific Ocean, and the Gulf of America (the Gulf).

Page 3

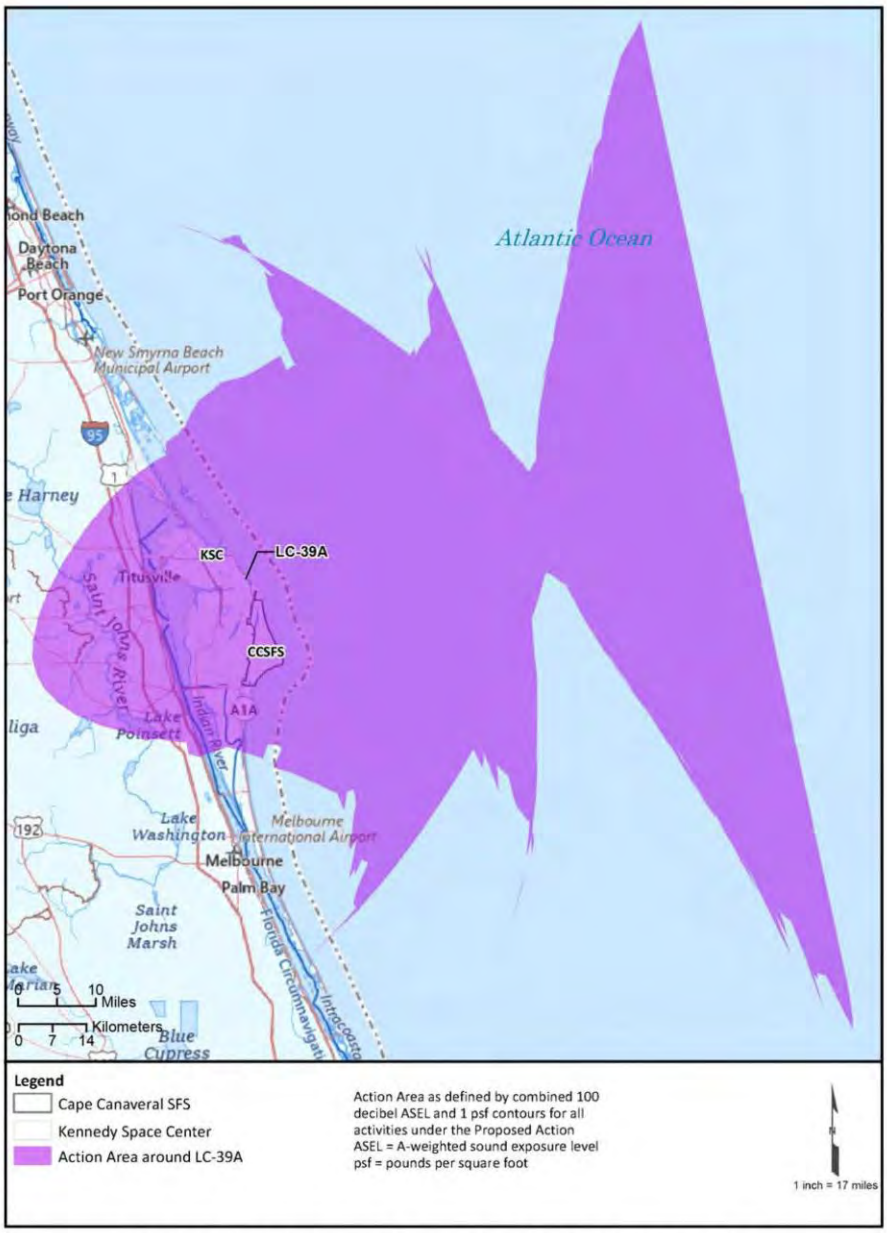

FIGURE 1: Action Area Defined by 100 dB ASEL and 1 PSF

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FIGURE 2: Starship Contingency Landing Area and 1 psf contour

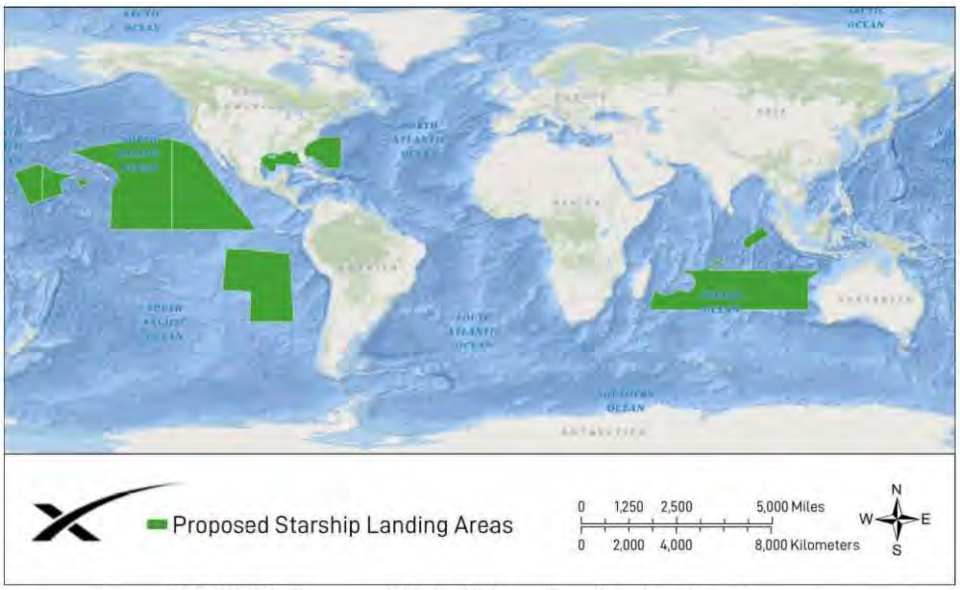

FIGURE 3: Proposed Global Water Starship Landing Areas

The following explains the concurrence for may affect, not likely to adversely affect to all species identified as such in the beginning of this letter.

Anastasia Island beach mouse

The Anastasia Island beach mouse (AIBM) was listed as endangered in 1989 (54 FR 20598). The historic range of the subspecies was from the Matanzas Inlet north to the northern end of the St. Augustine Inlet. The current main population of the subspecies is located on Anastasia Island and occupies the coastal dune system. The subspecies can breed year-round with an average litter size of four pups.

The proposed Action will have no effect on the AIBM from construction, lighting, vessel movement or additional vehicular traffic. The only effect from the proposed Action to AIBM will be exposure within the 1 psf overpressure sonic boom related to the Starship Contingency Landing Area (Figure 2). Though the AIBM might experience a startle response due to the overpressure events from landings in the contingency area, the low number of these events annually are not anticipated to alter breeding, feeding or sheltering for the subspecies. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the Anastasia Island beach mouse.

Atlantic salt marsh snake

The Atlantic salt marsh snake (ASMS) was listed as threatened in 1977 (42 FR 60743). Habitat for this species is confined to coastal salt marshes, mangrove swamps, tidal flats and shallow

tidal creeks and pools. When listed in 1977, it was thought that the range of the ASMS stretched from Volusia County to Indian River County, but recent surveys have resulted in detections only occurring in Volusia County. There are no population or demographic trends available at this time.

The proposed Action will have no effect on the ASMS from construction, lighting, vessel movement or additional vehicular traffic as the species does not occur within the areas that will experience effects from these portions of the Action. The only effect from the Action to ASMS will be exposure within the 1 psf overpressure sonic boom related to the Starship Contingency Landing Area (Figure 2). Though the ASMS might experience a startle response due to the overpressure events from landings in the contingency area, the low number of these events annually are not anticipated to alter breeding, feeding or sheltering for the species. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the Atlantic salt marsh snake.

Audubon's crested caracara

The Audubon's crested caracara (caracara) was listed as threatened in 1987 (52 FR 25229). This diurnal species exists as an isolated population within peninsular Florida and is a distinct population segment within the state. Caracara habitat consists of prairies with marshes and cabbage palm hammocks, but can be found in mixed upland hardwoods, improved pasture, pinelands, agricultural lands and urban areas. They have been documented foraging on carrion along roadways and roadsides. They most commonly nest in cabbage palms within open pastures, grasslands or prairies, but have been documented nesting in other structures. The species has been documented nesting in Brevard County and the Action Area, but no nests have been documented within the boundaries of KSC, MINWR, CANA or CCSFS. The species has been documented within the vicinity of LC-39B and along Phillips Parkway between KSC and CCSFS.

The species will experience affects from multiple pathways associated with the Action including sound, increased lighting and increased vehicular traffic. The species is expected to exhibit a startle response to sound from operations associated with the Action but has shown habituation to extreme and impulsive noise events at other sites. The species is expected to continue utilizing the area for foraging pre- and post-operations as it's main food source (carrion) will remain present and occur within the area. The species is not expected to be present in the heat plume (~0.2 miles from launch site) due to the low amount of foraging and nesting habitat and low numbers of sightings within the area. Additional lighting from the Action during construction and operations is not expected to adversely affect the species due to its high mobility, lack of known nesting sites within the area and low number of sightings. The above effects are expected to be insignificant, and the Service concurs with the NASA determination of may affect, but not likely to adversely affect the Audubon's crested caracara.

Band-rumped Storm-petrel

The band-rumped storm-petrel (BRSP) was listed as endangered in 2016 (81 FR 67786) within the Hawaii distinct population segment (DPS). The BRSP is a small seabird found throughout

the Pacific Ocean basin and nests in the Hawai'ian Islands. The species is long-lived (15 to 20 years), and adults spend the majority of their time foraging on the open ocean for small fish, squid, and crustaceans. Overall population numbers of BRSP are not know at this time, but it is estimated to have less than 300 nesting pairs. The species shows a strong attraction to light sources, including artificial lights.

Terrestrial based activities related to the Action will have no effect on the BRSP as the species is pelagic and does not nest, roost or loaf in the on-land portion of the Action Area. Starship-Super Heavy vehicles and launch debris from the vehicle upon re-entry could fall into the Pacific Ocean. The exact location of where the debris may fall is unknown, however it is unlikely that a booster or debris will strike a BRSP due to the low numbers of this species and vast extent of the Action Area within the Pacific Ocean. Super Heavy boosters are anticipated to land within the Pacific Ocean no more than twice per year. These landings will produce sonic boom overpressures similar to those produced by landings at LC-39A. The potential for adverse effects from landing operations is discountable due to the low concentration of individuals within the potential areas for landing and the ability of the species to move away from the area of impact. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the band-rumped storm-petrel.

Bermuda petrel

The Bermuda petrel (BP) was listed as endangered in 1970 (35 FR 8491) and is one of the rarest birds in the Atlantic Ocean. It is a pelagic seabird that breeds in the northeastern portion of the Bahamian Islands. Breeding pairs have increased from <20 in 1965 to >150 in 2023. They usually inhabit and forage over waters from the east coast of North America to the western European waters.

Terrestrial based activities related to the Action will have no effect on the BP as the species is pelagic and does not nest, roost or loaf in the on-land portion of the Action Area. Starship-Super Heavy vehicles and launch debris from the vehicle upon re-entry could fall into the Atlantic Ocean. The exact location of where the debris may fall is unknown, however it is unlikely that a booster or debris will strike a BP due to the low numbers of this species and vast extent of the Action Area within the Atlantic Ocean. Super Heavy boosters are anticipated to land on droneships within the Atlantic Ocean up to 18 times/year further than 5 nm from shore. These landings will produce sonic boom overpressures similar to those produced by landings at LC-39A. The potential for adverse effects from landing operations is discountable due to the low concentration of individuals within the potential areas for landing and the ability of the species to move away from the area of impact. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the Bermuda petrel.

Black-capped petrel

The black-capped petrel (BCP) was listed as endangered in 2023 (88 FR 89611) and is a pelagic seabird that comes ashore only to breed in the northern Caribbean. Regular, large concentrations of black-capped petrels can occur off the coast between Florida and North

Carolina. They usually inhabit and forage over waters with considerable depth (e.g., 200-2,000 meters), with more frequent shallow water occurrences off the coast of Florida. Black-capped petrel known nesting locations are on Dominica, Cuba, and Hispaniola.

Terrestrial based activities related to the Action will have no effect on the BCP as the species is pelagic and does not nest, roost or loaf in the on-land portion of the Action Area. Starship-Super Heavy vehicles and launch debris from the vehicle upon re-entry could fall into the Atlantic Ocean. The exact location of where the debris may fall is unknown, however it is unlikely that a booster or debris will strike a BCP due to the low numbers of this species and vast extent of the Action Area within the Atlantic Ocean. Super Heavy boosters are anticipated to land on droneships within the Atlantic Ocean up to 18 times/year further than 5 nm from shore. These landings will produce sonic boom overpressures similar to those produced by landings at LC-39A. The potential for adverse effects from landing operations is discountable due to the low concentration of individuals within the potential areas for landing and the ability of the species to move away from the area of impact. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the black-capped petrel.

Eastern black rail

The eastern black rail (EBRA) was listed as threatened in 2020 (85 FR 6374) and is a small, cryptic marsh bird found in salt, brackish and freshwater wetlands of the eastern United States. It is a subspecies of black rail. The Action will have no effect on the EBRA from vessel movement as the species does not occur within the marine environment. Additional vehicle traffic is not anticipated to adversely affect the species as it is not reasonably certain to occur within habitat where vehicular traffic will increase. Lighting effects are anticipated to be minimal during construction and operations due to the lack of habitat within the immediate and adjacent vicinity of LC-39A. Effects from the Action to EBRA will be exposure within the 1 psf overpressure sonic boom related to the Starship and exposure to sound from static fire tests, launches and landings of Starship and the Super Heavy booster (Figure 1). The species is not known to breed within the Action Area and foraging opportunities are anticipated to be limited near LC-39A. Though the EBRA might experience a startle response due to the overpressure events from landings and sound from static test fire, launches and landings, the low number of these events annually are not anticipated to alter breeding, feeding or sheltering for the species. Therefore, the Service concurs with the NASA determination of may affect, not likely to adversely affect the eastern black rail.

Everglade snail kite

The Everglade snail kite (EVSK) was originally listed under the Endangered Species Preservation Act in 1969 with critical habitat finalized in 1977 (42 FR 40685) and is a medium-sized hawk. It is found in freshwater marsh systems from Gainesville to the southern Everglades. The Action will have no effect on the EVSK from construction, lighting, or vessel movement as the species does not occur within the areas that will experience effects from these portions of the Action. Additional vehicle traffic is not anticipated to adversely affect the species as it is not reasonably certain to occur within habitat where vehicular traffic will increase. The only effects

from the Action to EVSK will be exposure within the 1 psf overpressure sonic boom related to the Starship and exposure to sound from static fire tests, launches and landings of Starship and the Super Heavy booster (Figure 1). The species has been observed within Merritt Island National Wildlife Refuge, Kennedy Space Center and Cape Canaveral Space Force Station as recently as 2025. The species is not known to breed within these lands and foraging opportunities are anticipated to be limited near LC-39A. Though the EVSK might experience a startle response due to the overpressure events from landings and sound from static test fire, launches and landings, the low number of these events annually are not anticipated to alter breeding, feeding or sheltering for the species. Therefore, the Service concurs with the NASA determination of may affect, not likely to adversely affect the Everglade snail kite.

Florida bonneted bat

The Florida bonneted bat (FBB) was listed as endangered in 2013 (78 FR 61003) and is a large bat species found in a variety of upland habitats within Central and South Florida. The Action will have no effect on the FBB from construction, lighting, vessel movement or additional vehicular traffic as the species does not occur within the areas that will experience effects from these portions of the Action. The only effect from the Action to FBB will be exposure within the 1 psf overpressure sonic boom related to the Starship (Figure 1). Though the FBB might experience a startle response due to the overpressure events from landings, the low number of these events annually (up to 44 per year) are not anticipated to alter breeding, feeding or sheltering for the species. Therefore, the Service concurs with the NASA determination of may affect, not likely to adversely affect the Florida bonneted bat

Florida grasshopper sparrow

The Florida grasshopper sparrow (FGSP) was listed as endangered in 1986 (51 FR 27492) and is a small grassland sparrow found in limited prairie habitat within central Florida. The Action will have no effect on the FGSP from construction, lighting, vessel movement or additional vehicular traffic as the species does not occur within the areas that will experience effects from these portions of the Action. The only effect from the Action to FGSP will be exposure within the 1 psf overpressure sonic boom related to the Starship (Figure 1). Though the FGSP might experience a startle response due to the overpressure events from landing, the low number of these events annually (up to 44 per year) are not anticipated to alter breeding, feeding or sheltering for the species. Therefore, the Service concurs with the NASA determination of may affect, not likely to adversely affect the Florida grasshopper sparrow.

Hawaiian petrel

The Hawaiian petrel (HP) was added to the endangered species list in 1967 (32 FR 4001). It is a pelagic seabird found in coastal waters along the Pacific Coast of the United States and in the vicinity of the Hawai'ian Islands. Breeding colonies are now found only in remote or high elevation areas on the islands of Hawai'I, Maui, Lana'i, O'ahu and Kuau'i.

Terrestrial based activities related to the Action will have no effect on the HP as the species is pelagic and does not nest, roost or loaf in the on-land portion of the Action Area. Starship-

Super Heavy vehicles and launch debris from the vehicle upon re-entry could fall into the Pacific Ocean. The exact location of where the debris may fall is unknown, however it is unlikely that a booster or debris will strike a HP due to the low numbers of this species and vast extent of the Action Area within the Pacific Ocean. These landings will produce sonic boom overpressures similar to those produced by landings at LC-39A. The potential for adverse effects from landing operations or debris is discountable due to the low concentration of individuals within the potential areas for landing and the ability of the species to move away from the area of impact. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the Hawaiian petrel.

Newell's shearwater

The Newell's shearwater (NS) was listed as endangered in 1975 (40 FR 44149). It is a pelagic seabird that breeds in the Pacific Ocean. Breeding has been constricted to mostly on the island of Hawai'i, Kaua'i and Maui. They forage over waters within the Hawai'ian Islands and further south.

Terrestrial based activities related to the Action will have no effect on the NS as the species is pelagic and does not nest, roost or loaf in the on-land portion of the Action Area. Starship-Super Heavy vehicles and launch debris from the vehicle upon re-entry could fall into the Pacific Ocean. The exact location of where the debris may fall is unknown, however it is unlikely that a booster or debris will strike a NS due to the low numbers of this species and vast extent of the Action Area within the Pacific Ocean. These landings will produce sonic boom overpressures similar to those produced by landings at LC-39A. The potential for adverse effects from landing operations or debris is discountable due to the low concentration of individuals within the potential areas for landing and the ability of the species to move away from the area of impact. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the Newell's shearwater.

Piping plover

The piping plover (PIPL) was listed as threatened within its migratory location of Florida in 1985 (50 FR 50726). This small shorebird does not nest within Florida and forages on sandy beaches, sand flats and areas adjacent to large inlets and passes. The species has been documented along the shoreline of CANA, CCSFS, KSC and MINW. Sightings along the shoreline of CCSFS, KSC and MINWR have been in low numbers, with most sightings being <5 individuals. There is no foraging or roosting habitat within the construction area of LC-39A, but habitat exists within 0.2 miles of the launch and landing pads.

The species will experience affects from multiple pathways associated with the Action including sound and increased lighting. Monitoring efforts of the species at Starbase and Boca Chica, Texas have not recorded dead or injured PIPL after launch or landing events. The species is expected to exhibit a startle response to sound and vibrations from operations and is not expected to be present in the heat plume due to the low amount of foraging and nesting habitat and low numbers of sightings within the area. The species is anticipated to move out of the potential heat plume prior to encountering temperatures above ambient. The species is expected to continue

utilizing foraging and roosting habitat within the Action Area pre- and post-operations. Additional lighting from the Action during construction and operations is not expected to adversely affect the species due the low number of individuals that would experience increased lighting and night-time lighting currently occurs at LC-39A for Falcon 9 and Falcon Heavy operations. The above effects are expected to be insignificant, and the Service concurs with the NASA determination of may affect, but not likely to adversely affect the piping plover.

Red-cockaded woodpecker

The red-cockaded woodpecker (RCW) was listed as endangered in 1970 (35 FR 16047) and reclassified as threatened in 2024 (89 FR 85294). It is a small woodpecker found pine flatwoods throughout the southeast including Florida. The Action will have no effect on the RCW from construction, lighting, vessel movement or additional vehicular traffic as the species does not occur within the areas that will experience effects from these portions of the Action. The only effect from the Action to FGSP will be exposure within the 1 psf overpressure sonic boom related to the Starship (Figure 1). Though the RCW might experience a startle response due to the overpressure events from landing, the low number of these events annually (up to 44 per year) are not anticipated to alter breeding, feeding or sheltering for the species. Therefore, the Service concurs with the NASA determination of may affect, not likely to adversely affect the red-cockaded woodpecker.

Roseate tern

The roseate tern was classified as endangered along the United States eastern seaboard from South Carolina north and threatened in all other locations, including Florida, in 1987 (52 FR 42064). The species may occur within the Atlantic Ocean portion of the Action Area but does not nest within the Action Area.

Terrestrial based activities related to the Action will have no effect on the roseate tern as the species is pelagic and does not nest, roost or loaf in the on-land portion of the Action Area. Starship-Super Heavy vehicles and launch debris from the vehicle upon re-entry could fall into the Atlantic Ocean. The exact location of where the debris may fall is unknown, however it is unlikely that a booster or debris will strike a roseate tern due to the low numbers of this species and vast extent of the Action Area within the Atlantic Ocean. Super Heavy boosters are anticipated to land on droneships within the Atlantic Ocean up to 18 times/year further than 5 nm from shore. These landings will produce sonic boom overpressures similar to those produced by landings at LC-39A. The potential for adverse effects from landing operations is discountable due to the low concentration of individuals within the potential areas for landing and the ability of the species to move away from the area of impact. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the roseate tern.

Rufa red knot

The rufa red knot (REKN) was listed as threatened within its migratory location of Florida in 2014 (79 FR 73705). This small shorebird does not nest within Florida and forages on estuarine

intertidal flats, ocean-front area, sand spits, shoals and sandbars. The species has been documented along the shoreline of CANA, CCSFS, KSC and MINW and the interior impoundments of KSC and MINWR. Sightings have been in low numbers, with most sightings being between 1-10 individuals. There is no foraging or roosting habitat within the construction area of LC-39A, but habitat exists within 0.2 miles of the launch and landing pads.

The species will experience affects from multiple pathways associated with the Action including sound and increased lighting. Monitoring efforts of the species at Starbase and Boca Chica, Texas have not recorded dead or injured REKN after launch or landing events. The species is expected to exhibit a startle response to sound and vibrations from operations and is not expected to be present in the heat plume due to the low amount of foraging and nesting habitat and low numbers of sightings within the area. The species is anticipated to move out of the potential heat plume prior to encountering temperatures above ambient. The species is expected to continue utilizing foraging and roosting habitat within the Action Area pre- and post-operations. Additional lighting from the Action during construction and operations is not expected to adversely affect the species due the low number of individuals that would experience increased lighting and night-time lighting currently occurs at LC-39A for Falcon 9 and Falcon Heavy operations. The above effects are expected to be insignificant, and the Service concurs with the NASA determination of may affect, but not likely to adversely affect the rufa red knot.

Short-tailed albatross

The short-tailed albatross (STAB) was listed as endangered in 2000 (65 FR 54808). It is a pelagic seabird that lives in the Pacific Ocean. Breeding colonies currently exist on Torishima Island, the Senkaku Islands and Ogasawara Islands. Foraging habitat has been identified within the Aleutian Islands.

Terrestrial based activities related to the Action will have no effect on the STAB as the species is pelagic and does not nest, roost or loaf in the on-land portion of the Action Area. Starship-Super Heavy vehicles and launch debris from the vehicle upon re-entry could fall into the Pacific Ocean. The exact location of where the debris may fall is unknown, however it is unlikely that a booster or debris will strike a SNAP due to the low numbers of this species and vast extent of the Action Area within the Pacific Ocean up to twice per year. These landings could produce sonic boom overpressures similar to those produced by landings at LC-39A. The potential for adverse effects from landing operations or debris is discountable due to the low concentration of individuals within the potential areas for landing and the ability of the species to move away from the area of impact. Therefore, the Service concurs with the NASA determination of may affect, but not likely to adversely affect the short-tailed albatross.

Wood stork

The wood stork (WOST) was listed as endangered in 1984 (49 FR 7332), downlisted to threatened in 2014 (79 FR 37077) and proposed for delisting in 2023 (88 FR 9830). The species are colonial breeders within landscapes containing sufficient wetland foraging habitats. Foraging habitats are generally wetlands such as tidal creeks, ephemeral ponds, shallow wetlands and

flood plains. The species has been documented within wetlands and other shallow water systems throughout CANA, CCSFS, KSC and MINWR, though no breeding colonies exist within these properties.

The species will experience affects from multiple pathways associated with the Action including sound, increased lighting and increased vehicular traffic. The species is expected to exhibit a startle response to sound from operations associated with the Action but has shown habituation to extreme and impulsive noise events at other sites. The species is expected to continue utilizing the area for foraging pre- and post-operations as its main food source (aquatic prey in shallow wetlands) will remain present and occur within the area. The species is not expected to be present in the heat plume (~0.2 miles from launch site) due to the low amount of foraging habitat and low numbers of sightings within the immediate area. Additional lighting from the Action during construction and operations is not expected to adversely affect the species due to its high mobility, lack of known nesting sites within the Action Area and low number of sightings. There will be no effect to WOST from vessel operations or landings within the marine environment. The above effects are expected to be insignificant and the Service concurs with the NASA determination of may affect, but not likely to adversely affect the wood stork.

West Indian manatee

The West Indian manatee (WIMA) was reclassified as threatened in 2017 (82 FR 16668). The species is also protected under the Marine Mammal Protection Act. The species has been documented within the marine environment throughout CANA, CCSFS, KSC and MINWR and within the Atlantic Ocean. The species does not occur within the Pacific or Indian Ocean.

The species forages on seagrass and other submerged aquatic vegetation and utilizes thermal refuges during the winter months. Construction activities are anticipated to have no effect on the WIMA as no in-water work is proposed. Increased vessel traffic (barges, drone ships, support vessels) during operations is anticipated to be approximately 188 additional vessel trips through waters inhabited by manatees annually within the Action Area. This increase in vessel traffic is not a significant increase in vessel traffic within Port Canaveral, the Banana River, the KSC Turning Basin, currently established shipping routes or areas where Super Heavy boosters and/or Starships might land transit in the nearshore Atlantic Ocean. Landings within the Contingency Area of the nearshore Atlantic Ocean are anticipated to have an insignificant effect as these events are anticipated to occur no more than four times annually and WIMA are not anticipated to be within the immediate vicinity of the landing. The Action includes conservation, avoidance and minimization measures within Section 1.7 of the Biological and Conference Assessment to further reduce effects to the WIMA.

The Starship-Super Heavy launch and landing pads would be located approximately 0.17 miles and 0.13 miles from manatee habitat and the launch heat plumes extends over 3.2 acres of manatee habitat southeast of LC-39A. Deluge water during launches would be captured and treated onsite, and the associated heat plume would be diverted upwards and is not anticipated to affect water temperatures. Per findings presented in the 2024 *Draft Tiered EA for SpaceX Starship/Super Heavy Vehicle Increased Cadence at the SpaceX Boca Chica Launch Site in Cameron County, Texas* (FAA, 2024), the amount of metal deposition from the launch vapor

plume is expected to be minimal and monitoring would be conducted to ensure levels do not exceed accepted levels.

Sound is primarily transferred from air to water in a narrow cone, and most sound from launch and landings is anticipated to be reflected off the water's surface; therefore, underwater noise would be detectable in only a small area. The species may be exposed to noise and/or overpressure when they surface to breathe or engage in other behaviors such as feeding and resting within the area directly adjacent to the launch and landing mounts. The potential for WIMA to be at the surface at the same time a static fire test, launch, or landing occurred would be low. The species could startle due to the intense sound from launches, landings or static fire tests but adverse affects are not anticipated due to most sound reflecting off the water surface and not transmitting through the water and launch/landing/test noise duration would be brief (seconds to minutes). Vibration from launches and landings may cause the species to briefly leave the area, but it is anticipated they would return after these events and continue foraging and utilizing the area between events.

The above effects are expected to be insignificant and the Service concurs with the NASA determination of may affect, but not likely to adversely affect the West Indian manatee.

The following explains the determinations of not likely to jeopardize for the monarch butterfly and tricolored bat.

Monarch butterfly

The monarch butterfly was proposed as threatened in 2024 (89 FR 100662). The species migrates long distances to overwintering sites in Mexico and California, however non-migratory populations occur in Florida. The species requires milkweed for breeding and larval feeding. The species has been documented within KSC and there is minimal habitat within the heat plume (~0.2 miles from launch site). Operations could temporarily disturb foraging and sheltering within this area of the heat plume, but the species is anticipated to continue utilizing this area before and after operations. Effects from sound are anticipated to be insignificant to caterpillars as they respond to sound between approximately 50 and 900 Hz and will resume foraging and movement post-operations. Adult monarch butterflies lack auditory-sensing structures and effects from sound are anticipated to be insignificant to adults. Based on the above the Service concurs with the NASA determination of not likely to jeopardize the monarch butterfly.

Tri-colored bat

The tricolored bat (TCB) was proposed as endangered for listing in 2022 (87 FR 56381) but has not been finalized at this time. This species is a small bat species found through the central and eastern United States. The species roosts in forested habitats where they roost in trees, primarily among leaves of live or recently dead deciduous hardwood trees, but may also be found in Spanish moss, pine trees, and occasionally human structures. The species has been documented through acoustic surveys within CCSFS, KSC and MINWR. There is no confirmed roosting habitat found within the construction area, but roosting and foraging habitat is found within the Action Area.

The species will experience affects from the Action including sound and increased lighting. Operations could temporarily disturb foraging and sheltering but TCB are anticipated to continue utilizing the Action Area before, during and after operations. The species is not expected to be present in the heat plume (~0.2 miles from launch site) due to the low amount of foraging habitat within this area and is anticipated to move from the area during operations. Additional lighting from the Action during construction and operations is not expected to adversely affect the species due to its high mobility, large amount of foraging and roosting habitat and temporary nature of both construction and operations. There will be no effect to TCB from vessel operations or landings within the marine environment. Based on the above the Service concurs with the NASA determination of not likely to jeopardize the tricolored bat.

The following explains the determinations of no adverse modification or destruction of proposed critical habitat.

Red knot critical habitat (proposed)

Rufa red knot critical habitat was proposed in 2021 (86 FR 37410) but has not been finalized at this time. The proposed physical and biological features essential to the conservation to the REKN do not include features related to sound, vibration or light. No construction or operational activities would occur within the REKN proposed critical habitat. Approximately 13,388 acres of proposed critical habitat will be exposed to effects from sound during launch or landing operations. The southern end of unit FL-2 would experience effects from increased lighting, sound and potentially vibration. Based on the above the Service concurs with the NASA determination of no adverse modification or destruction of proposed rufa red knot critical habitat.

This concludes informal consultation and conference on the Action as proposed. Reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

(1) If the amount or extent of taking specified in the incidental take statement is exceeded;
(2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
(3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or
(4) If a new species is listed or critical habitat designated that may be affected by the identified action.

Sincerely,

JOSE RIVERA Digitally signed by JOSE RIVERA Date: 2025.06.09 10:48:46 -04'00'

Jose Rivera
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