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Re: FWS Biological Consultation Opinion Dated May 12, 2022 Pertaining to SpaceX Boca Chica FAA Draft Programmatic Environmental Assessment (DPEA)

Dear Sirs and Madams,

This letter serves as a supplement to Save RGV's comments to the Draft Programmatic Environmental Assessment (DPEA) submitted on November 1, 2021, concerning impacts of the SpaceX's Launch Facility and launch of the Super Heavy at, and offshore of Boca Chica Beach, Texas. We attest that good cause exists to accept and consider these supplemental comments. First, it has come to our attention that parts of the DPEA were based on sound and thrust modeling data of a smaller version of the booster rocket than the one projected to be used in the actual Starship/Super Heavy testing and launching at Boca Chica. Second, given the delays in FAA's issuance of the final Environmental Assessment (EA), we learned and discovered information, including but not be limited to potential impacts on newly listed endangered species. If our estimation and understanding proves correct, then these sound and thrust impact models need to be recalculated with the correct data models to be used by SpaceX and shared with all consulting agencies and the general public for additional review. We ask that you consider the following supporting information:

NEWLY LISTED SPECIES

Under the proposed test and launch operations it was described in the PEA as: (1) Starship landing at the Vertical Launch Area (VLA), on a floating platform in the Gulf of Mexico or the Pacific Ocean, or expended in the Gulf of Mexico or Pacific Ocean, and (2) Super Heavy landing at the VLA, on a floating platform in the Gulf of Mexico, or expended in the Gulf of Mexico. No consideration was given to the impacts of the Space X's Super Heavy operations on the recently listed endangered species under the Endangered Species Act (ESA). Specifically, the Rice's whale, (formerly designated as the Gulf of Mexico population of the Bryde's whale), and the threatened oceanic Whitetip shark, were recently listed as endangered under the ESA. Newly classified endangered species constitutes changed circumstances that would warrant new evaluation of Space X's Super Heavy operations and their impact upon these newly listed species. Focus should be on the construction of offshore platforms for launches, landings, and possible anomalies over the Gulf of Mexico. Rice's whale has been recognized as a distinct species with only an estimated 51 living individuals, making it one of the most endangered whales on earth. The species cannot afford to lose one whale approximately every 15 years because of human activity. Because of the "precarious status" [of the species], NMFS has stated, "Any effects that are expected to reduce the fitness of individuals or result in mortality are of great concern."

The oceanic Whitetip Shark is in the family Carcharhinus Longimanus and is a large, pelagic requiem shark that inhabits tropical and warm temperate waters. On January 30, 2018, NOAA Fisheries published a final rule to list this species as threatened under the ESA. It is critically endangered and red listed worldwide. According to a

January 2021 study in *NATURE*, which studied 31 species of sharks and rays, the number of these species found in open oceans had dropped by 71% in the last 50 years. The oceanic Whitetip Shark was included in this study.

NMFS has previously stated that noise can harm whales by “hindering their ability to use sound, causing a disruption of their ability to communicate, choose mates, find food, avoid predators, and navigate.” The effects of sonic booms from offshore landings, and any other noise effects in the Gulf of Mexico upon these newly listed endangered species, has not yet been addressed per the PEA, as to what effects sonic booms from Super Heavy landings can have on these newly listed endangered species, as well as disturbances from construction of proposed platforms, and therefore must now be evaluated.

Likewise, FAA must also consider those same impacts from Space X’s Super Heavy activities in the Gulf of Mexico upon the Whitetip shark. This species was never analyzed by FAA and NMFS and neither have explained its exclusion.

Further, page 16 of FWS’ biological and conference opinion (BCO) states:

A Starship/Super Heavy test operation or launch could fail (referred to as an anomaly). If an anomaly occurs on the launch pad, the result could be fire or the spread of debris. SpaceX expects the debris would be contained within a 700-acre area developed to assess potential effects of debris and debris retrieval within the FAA-approved hazard area, which would be contained within the “all hard checkpoint” area shown in Figure 5 (black dashed area represented as “no personnel”). SpaceX’s SN11 anomaly created the largest debris filed [sic] of all launch anomalies to-date and although debris spread outside the launch pad, it was contained to the 700-acre area. Reports of debris further from the VLA are unconfirmed as pieces of SpaceX launch vehicles from SN11. If the debris is from a SpaceX launch vehicle, it is also possible that the debris was carried away in the water and ended up at a further location from the 700-acre debris study area.

Save RGV contends that the increased size, thrust, and trajectory of the Starship/Super Heavy, as opposed to the DPEA’s modeled less powerful rocket, may have even greater significant impact on the Gulf of Mexico marine life not previously addressed.

Also, page 25 of the BCO states:

For a Super Heavy booster landing in the Gulf of Mexico, predicted overpressure levels range from 0.2 psf to approximately 12 psf. The modeled sonic boom footprint for this scenario is entirely over water. People, located offshore within about 20 miles of the Gulf of Mexico landing site, such as oil rig workers, may hear the sonic boom.

People working in the vicinity of a floating platform during a landing can be notified to expect a sonic boom during a landing of the Super Heavy, which would mitigate their surprise. We posit, however, that marine life cannot be “notified” to “expect” the sonic boom. The BCO and DPEA are devoid of addressing the noise impact of sonic booms during the Super Heavy space activities. As such, a full EIS is necessary to analyze these impacts. Also, in the BCO on p. 6 under the “construction” table, the offshore platforms are not included. This is a significant omission in the “opinion.” Offshore platform construction activity must be fully evaluated in light of these newly listed species, in addition to the sound impacts.

SOUND MODELING AND THRUST DATA

Throughout the PEA, as well as in supporting documents such as the draft Biological assessment (BA), the Super Heavy booster is described as having a “lift-off thrust of 74 meganewtons (MN), allowing for a maximum lift-off mass of approximately 5,000 MT.” See Page 12 of the draft PEA and page 7 of the Biological Assessment.) Yet, supporting technical documents used as evidence of impacts are not consistent with this statement.

The 2020 noise study (appendix B of the PEA) describes the modeled Heavy Booster as using “thirty-seven Raptor engines that each provide sea-level thrust of about 375 Klbf.” (Page 1) The combined thrust of such a configuration is only 62 Meganewtons, a value 16 percent lower than the value presented in the PEA and BA. Performing a unit conversion from the impulse and mass flow values in the 2019 plume study (appendix G) implies a 57 MN total thrust for the booster.

The February draft Biological Opinion from US Fish and Wildlife (USFWS) confirms that SpaceX intends to use a 74 MN booster (page 129), per a December 13, 2021 correspondence between FAA and USFWS. The Draft BO and the Final BO in May 2022 indicate that USFWS used the above referenced 2020 sound study to model impacts. Several sound contour graphs included in the DPEA and in the Final BO are dated from September 2019. Further, SpaceX’s 2019 EA with Kennedy Space Center to authorize Super Heavy launches from pad 39-A indicates that at this time the first stage booster was planned to be sized at 62 MN.

It is quite clear that the information in these various documents provided to the public are inconsistent. If data from a significantly smaller booster were used as the basis for impact assessment, the DPEA must be updated to account for this. Additionally, the area inside the crucial time weighted 100 dBA contour could be as much as double as presented in the DPEA and BO. As such, this error, if confirmed, must be corrected by re-initiating the Section 7 consultation under the Endangered Species Act.¹

Therefore, Save RGV submits that in light of this new data, Starship/Super Heavy at Boca Chica might have impacts greater than currently assessed. Of notable concern are the impacts on the South Bay Coastal Preserve which is only 1.2 KM from the launch pad. This is a most fragile eco-system, essential fish habitat, and marine mammal nursery. Has the Texas General Land Office been consulted in this regard? If so, what models were given to it? There is no mention of this ecological preserve, nor any mention of why it is excluded.

CONCLUSION

Save RGV contends that SpaceX submitted outdated models for sound contours, heat plumes and rocket emissions. We further contend and agree that unless there are some documents that have not been produced, or aren’t public record, then the May 12, 2022 FWS BCO is invalid and therefore the Endangered Species Act consultation must be revisited. If the DPEA has been submitted to consulting and lead agencies with erroneous data and models, it must be resubmitted to all consulting agencies with appropriate corrections as to the data and models.

The *extent* of impacts is critical to endangered species. SpaceX, the applicant, must use techniques, based on science and law, to estimate the quantity of endangered species that will be killed, how much habitat will be lost, how many buildings may be damaged due to sonic booms and anomalies, and how many tons of air and water emissions are likely to be generated. FWS and NMFS must reinitiate consultations to determine potential sound impacts on currently listed terrestrial species and newly listed marine species respectively. In light of this additional information, we ask that FAA conduct a full Environmental Impact Statement before this project can be approved.

Thank you for considering our comments, which we ask be admitted into the record and considered for all intents and purposes in your ensuing final Environmental Assessment. Please acknowledge receipt and we look forward to your response.

Sincerely,

Bill Berg, Agent for
Save RGV

¹ **Mr. Eric Roesch, a Houston based chemist and environmental engineer with 15 years of regulatory experience provided Save RVG with this analysis and can provide the FAA with the required data and calculations if needed.**

Cc: Stacy Zee, Environmental Protection Specialist
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