



**National Headquarters**

1130 17th Street, N.W. | Washington, D.C. 20036-4604 | tel 202.682.9400 | fax 202.682.1331  
[www.defenders.org](http://www.defenders.org)

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Ms. Stacey Zee  
SpaceX PEA, c/o ICF  
9300 Lee Highway  
Fairfax, VA 22031

*Transmitted via electronic mail to [SpaceXBocaChica@icf.com](mailto:SpaceXBocaChica@icf.com)*

***RE: Comments on SpaceX Draft Programmatic Environmental Assessment for Starship/Super Heavy Program***

Dear Ms. Zee,

On behalf of the 2,146,000 million members and supporters of Defenders of Wildlife (“Defenders”), including 124,600 members and supporters in the State of Texas, we submit these comments on the Draft Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas (“DPEA”).<sup>1</sup> The National Environmental Policy Act (“NEPA”) is a procedural statute intended to ensure that “unquantified environmental amenities and values may be given appropriate consideration in [federal] decision-making.”<sup>2</sup> The statute is invoked during the planning stages for a federal agency action. Pursuant to NEPA, a federal agency must take a “hard look” at the environmental impacts of its proposed action.<sup>3</sup> NEPA is not designed merely to provide the government with information about the environmental effects of plans. Instead, it is intended to make that information available to the public, as well. We have no opposition to space exploration more generally, but it must be conducted in an environmentally responsible manner and in compliance with existing laws. We therefore have serious concerns about the environmental impacts of SpaceX’s current operations, and these adverse impacts will only be intensified by the addition SpaceX Starship/Super Heavy Launch Vehicle Program (“Proposed Project” or “Project”). Indeed, the Proposed Project will have significant impacts on the affected area, on listed species, on critical habitat, and on other wildlife. It will also result in the violation of multiple laws. These significant impacts necessitate the preparation of an Environmental Impact Statement (“EIS”). We moreover have serious concerns about the adequacy of the DPEA, itself, which failed to account for scores of environmental impacts and did not consider any alternatives other than a “no action” alternative and the Proposed Project. Thus, it would be indefensible for the Federal Aviation Administration (“FAA”) to conclude its NEPA analysis with a Finding of No Significant Impact (“FONSI”), and the FAA must instead develop an EIS to meaningfully evaluate the Proposed Project’s significant impacts.

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<sup>1</sup> Federal Aviation Administration, *Draft Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas* (Sept. 2021) (“DPEA”).

<sup>2</sup> 42 U.S.C. § 4332(B).

<sup>3</sup> *Nat’l Audubon Soc’y v. Dep’t of the Navy*, 422 F.3d 174, 184 (4th Cir. 2005).

## I. Factual Background

The SpaceX launch site in Boca Chica is adjacent to and surrounded by national wildlife refuge land, state park land, tidal flats that host many wading bird species, and beaches used by nesting sea turtles. During the facility's initial planning stages in 2013 and 2014, it was understood that the site ("Vertical Launch Area" or "VLA") would host launch activities. Since that time, however, the company has expanded to engaging in testing activities, which are inherently more dangerous and have caused numerous explosions that have destroyed sensitive habitat. SpaceX now intends to expand its operations with its SpaceX Starship/Super Heavy Launch Vehicle Program, with even larger equipment and even more testing.

### A. Project Location

The SpaceX site is situated near the Lower Rio Grande Valley National Wildlife Refuge ("LRGV NWR"), Boca Chica State Park, Boca Chica Beach, the South Bay Coastal Preserve, Brazos Island State Park, Isla Blanca Park, Las Palomas Wildlife Management Area, and Palmito Ranch Battlefield National Historic Landmark.<sup>4</sup> This is an ecologically diverse area with a remarkable community of wildlife unlike any other place in the United States. The site is located in a hemispheric meeting place of tropical and subtropical species on a unique matrix of terrestrial, coastal, and marine environments, representing one of the greatest diversity of plants and animals found in one place in North America. This area is a unique flyway for western hemisphere avian species, and more than 250 different bird species have been identified in Boca Chica Village and Boca Chica Beach in recent years. The ecological sensitivity and vulnerability of this area cannot be overstated, and activities in this area must be carefully managed to reduce, avoid, and mitigate impacts to resident and migrant wildlife.

LRGV NWR, which abuts the VLA, "is considered one of the most biologically diverse regions in North America."<sup>5</sup> According to the refuge's Comprehensive Conservation Plan, the number one goal of the Lower Rio Grande Valley National Wildlife Refuge Complex is to "restore, enhance and protect the natural diversity of the Lower Rio Grande Valley including threatened and endangered species on and off refuge lands."<sup>6</sup> The Refuge's Boca Chica branch is comprised of "saline flats, mangrove marshes, shallow bays and unique dunes of wind-blown clay known as 'lomas.'"<sup>7</sup> Birders are drawn to the area, where they can observe species such as reddish egrets, American oystercatchers, peregrine falcons, mangrove warblers, piping plovers, and brown pelicans.<sup>8</sup> Other public lands in the area also are of immense ecological value. Laguna Atascosa NWR, too, is a "premier bird-watching destination."<sup>9</sup> Remarkably, more bird species have been recorded in Laguna Atascosa NWR than in any other refuge in the National Wildlife Refuge System.<sup>10</sup> The refuge is also

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<sup>4</sup> DPEA at 76–78, 121.

<sup>5</sup> *Lower Rio Grande Valley, About the Refuge*, U.S. Fish & Wildlife Serv., [https://www.fws.gov/refuge/Lower\\_Rio\\_Grande\\_Valley/about.html](https://www.fws.gov/refuge/Lower_Rio_Grande_Valley/about.html) (last visited Nov. 1, 2021).

<sup>6</sup> U.S. Fish & Wildlife Serv., *Final Lower Rio Grande Valley and Santa Ana National Wildlife Refuges: Comprehensive Conservation Plan* at 6 (Sept. 1997) (Attachment A).

<sup>7</sup> *Lower Rio Grande Valley, Boca Chica Beach*, U.S. Fish & Wildlife Serv., [https://www.fws.gov/refuge/Lower\\_Rio\\_Grande\\_Valley/visit/boca\\_chica\\_beach.html](https://www.fws.gov/refuge/Lower_Rio_Grande_Valley/visit/boca_chica_beach.html) (last visited Nov. 1, 2021).

<sup>8</sup> *Id.*

<sup>9</sup> *Laguna Atascosa, About the Refuge*, U.S. Fish & Wildlife Serv., [https://www.fws.gov/refuge/Laguna\\_Atascosa/about.html](https://www.fws.gov/refuge/Laguna_Atascosa/about.html) (last visited Nov. 1, 2021).

<sup>10</sup> *Id.*

“the center for conservation and recovery efforts” for the endangered ocelot and hosts the only population of the species in the entire United States.<sup>11</sup> Established in 1984 and managed by the Texas Parks and Wildlife Department, the South Bay Coastal Preserve offers habitat that serves as “an integral part of the organic production and fertility of South Bay.”<sup>12</sup> Indeed, “South Bay and its wind-tidal flats, shallow depths, associated vegetation, and unique location provides excellent feeding, resting and wintering habitat for numerous types of migratory bird species, such as the White Pelican, Brown Pelican, cormorants, Gadwall, Green-winged Teal, and Redhead.”<sup>13</sup>

The VLA is also located within both the Rio Grande Valley Wildlife Corridor and South Texas Coastal Corridor. The Rio Grande Valley Wildlife Corridor was created as a part of “a long-standing program aimed at preserving, restoring, and managing habitat for wildlife, including threatened and endangered species.”<sup>14</sup> This corridor is a joint initiative that began in the 1970s and over the years has been supported by the U.S. Fish and Wildlife Service (“Service”), the Texas Parks and Wildlife Department (“TPWD”), Valley Land Fund, The Nature Conservancy, Conservation Fund, and Audubon, among other organizations.<sup>15</sup> According to TPWD, the Boca Chica tract of the Rio Grande Valley Wildlife Corridor is a large anchor tract of the corridor and is “managed to conserve biological material to safeguard gene pools and replenish wildlife populations throughout the corridor.”<sup>16</sup> The South Texas Coastal Corridor has similar aims. The Service has made habitat connectivity for wildlife in the region a priority, investing over \$90 million over the past 40 years to acquire lands that create a wildlife corridor throughout the refuge complex. The collection of protected wildlife lands in the South Texas Coastal Corridor aims to preserve what small amount of native habitat remains in the area and to create a travel corridor for a variety of species, including the endangered ocelot. The ultimate goal of the acquisition of properties and easements within this corridor is to eventually connect the main Laguna Atascosa NWR tracts, the Bahia Grande Unit of the Laguna Atascosa NWR, Lower Rio Grande Valley NWR units, and Boca Chica State Park.

Areas that are—and will continue to be—impacted by SpaceX’s activities in South Texas include habitat that supports at least twelve listed species. Indeed, the FAA identified in an analysis separate from the NEPA analysis at issue that twelve listed species may be affected by the project: the northern aplomado falcon (endangered), the piping plover (threatened) and its critical habitat, the red knot (threatened), the eastern black rail (threatened), the West Indian manatee (threatened), the Gulf Coast jaguarundi (endangered), the ocelot (endangered), the Kemp’s ridley sea turtle (endangered), the loggerhead sea turtle (threatened), the green sea turtle (threatened), the hawksbill sea turtle (endangered), and the leatherback sea turtle (endangered) sea turtles.<sup>17</sup> Proposed red knot critical habitat also appears in the vicinity.<sup>18</sup>

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<sup>11</sup> *Id.*

<sup>12</sup> *Texas GEMS – South Bay Coastal Preserve*, Texas Parks & Wildlife, <https://tpwd.texas.gov/landwater/water/conservation/txgems/southbay/index.phtml> (last visited Nov. 1, 2021).

<sup>13</sup> *Id.*

<sup>14</sup> Texas Parks & Wildlife, Scoping Comments for Draft Environmental Assessment at 4 (Jan. 27, 2021) (Attachment B) (“TPWD Scoping Comments”).

<sup>15</sup> *Id.* at 4.

<sup>16</sup> *Id.* (internal citation omitted).

<sup>17</sup> DPEA at 116.

<sup>18</sup> Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Rufa Red Knot (*Calidris canutus rufa*), 86 Fed. Reg. 37,410, 37,493–94 (July 15, 2021).

## B. Existing SpaceX Activities

SpaceX currently engages in testing and launches of its Falcon launch vehicles at its Boca Chica site, along with continual experimentation related to the Starship/Super Heavy proposal. These operations are accompanied by construction, noise, light, increases in traffic, and area-wide closures. They have also been marked by repeated anomalies, i.e., explosions, which have resulted in habitat destruction due to falling debris, debris retrieval efforts, and wildfires. Problematically, although SpaceX's activities at its Boca Chica site have expanded since the FAA and the Service engaged in environmental analyses of its initial operations, these expansions have never been accompanied by a supplemental or new EIS. Moreover, SpaceX has failed to engage in actions to lessen its environmental impacts, such as ignoring the mitigation efforts it once committed to and rescinding its offer of financial support for new positions at LRGV NWR that are necessary to address challenges that SpaceX has imposed on the refuge.

SpaceX has also caused an increased amount of noise, lighting, and traffic in the area. The company is already supported by existing construction, such as a solar farm, a production and manufacturing area, and a separate processing, production, and manufacturing area. According to Service personnel, “[m]any days of construction and testing have occurred at night.”<sup>19</sup> The Service has also remarked on ongoing “extensive construction” and “the appearance of significantly increased highway traffic 24 hours per day all week.”<sup>20</sup>

SpaceX operations, such as tests and launches, have also spurred forced closures of the surrounding area, which have been poorly implemented and are at times chaotic. In 2019, Service staff “conservatively quantified more than 1,000 closure hours and noted a significant disparity in accounting between SpaceX’s reported total of 158 hours” for that year.<sup>21</sup> According to recent TPWD scoping comments, “[c]losure notifications continue to be provided either the same day or as little as one to four days prior to closures, and notification of closure extensions have occurred after the extension period has begun. Also, revocation of closures occur well into the authorized closure window after landowners and the general public may have abandoned their plans for the day.”<sup>22</sup> At other times, dangerous operations have proceeded without adequate notice of closures, putting the public at risk.

SpaceX’s activities have also resulted in recurring explosions, which agencies at times refer to as “failures” or “anomalies.” Note that “testing, rather than launches, [are] inherently more inclined to result in a failure.”<sup>23</sup> Since 2019, SpaceX operations have caused repeated explosions, including on:

- April 21–22, 2019,
- July 25, 2019,
- August 2019,
- November 18, 2019,
- February 28, 2020,

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<sup>19</sup> Letter from Charles Ardiszone, Field Supervisor, U.S. Fish and Wildlife Service to Stacey M. Zee, Office of Commercial Space Transportation, Federal Aviation Administration at 3 (Mar. 4, 2020) (Attachment C).

<sup>20</sup> Letter from Manuel “Sonny” Perez III, South Texas Refuge Complex Manager, U.S. Fish & Wildlife Serv. to James R. Repchek, Federal Aviation Administration at 2 (Aug. 23, 2021) (Attachment D) (“August 2021 Service Letter”).

<sup>21</sup> *Id.*

<sup>22</sup> TPWD Scoping Comments at 11 (Attachment B).

<sup>23</sup> Email from Bryan Winton (Nov. 29, 2019, 09:32 CST) (Attachment E).

- April 2, 2020,
- May 29, 2020,
- June 23, 2020,
- December 9, 2020, and
- March 30, 2021.<sup>24</sup>

These explosions have resulted in environmental destruction from fallen debris, debris retrieval operations, and wildfires. A Service employee has interpreted the likelihood of debris exploding into LRGV NWR to be a “regular reoccurring risk of their activity.”<sup>25</sup> When explosions occur, the debris field can span for miles, which has happened as recently as this year.<sup>26</sup> Exploded rocket debris, along with its removal operations involving heavy machinery such as high-capacity tow trucks and construction dump trucks, have been known to damage sensitive habitat in the area.<sup>27</sup>

SpaceX’s explosions have also caused wildfires, such as two 2019 incidents that “resulted in wildfires of 130-acres and 10-acres respectively burned through coastal prairie and dune habitats on refuge managed land.”<sup>28</sup> The harms to these areas are compounded by area-wide closures and other barriers to access. For example, the night of a July 25, 2019 SpaceX fire, the “Brownsville Fire Dept. showed up but did not pursue putting out the fire due to its location and lack of access.”<sup>29</sup> Moreover, because Service personnel are barred from the refuge following explosions, they have been unable to assess the full extent to which refuge wildlife are harmed.<sup>30</sup>

Of grave concern is the fact that SpaceX’s ongoing activities have never been appropriately addressed in a NEPA analysis or through consultation pursuant to Section 7 of the Endangered Species Act (“ESA”). When SpaceX first proposed operating in the region, it was widely understood—at least by regulators—that its activities would only include launches, rather than testing, which is inherently more dangerous and increases the likelihood of explosions. Accordingly, federal agencies almost exclusively analyzed the impacts of launch activities when they prepared NEPA and ESA analyses for SpaceX.

Although the FAA has asserted that it revisited the 2014 EIS on multiple occasions and confirmed that SpaceX’s activities continued to fall within the scope of the actions covered by the newest licenses, it is abundantly clear that they do not. The 2014 EIS “addressed only 12 launches per year, not continual experimentation related to the Starship/Super Heavy proposal as is currently being

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<sup>24</sup> Email from Mary Orms (Jan. 21, 2021, 13:07 CST) (Attachment F); Email from Bryan Winton (Jan. 21, 2021, 10:33 CST) (Attachment F); Email from Bryan Winton (Mar. 30, 2021, 21:25 CST) (Attachment G); Tariq Malik, *Boom! SpaceX Pops Huge Starship SN7 Test Tank on Purpose in Pressure Test (videos)*, Space.com (June 23, 2020), <https://www.space.com/spacex-starship-sn7-test-tank-destroyed-videos.html>.

<sup>25</sup> Email from Bryan Winton (Apr. 24, 2020, 12:55 CST) (Attachment H).

<sup>26</sup> Email from Bryan Winton (Mar. 30, 2021, 21:25 CST) (Estimating that a March 2021 explosion resulted in a 2–3-mile debris field) (Attachment G).

<sup>27</sup> See, e.g., Email from Randy Reese (Nov. 23, 2019, 17:09 CST) (Attachment E); see also Email from Bryan Winton (Jan 21, 2021, 10:33 CST) (“April 21,22 -2019 - Space X employee(s) get stuck with 2 vehicles and a forklift in tidal flats. Causes significant damage to tidal flats.”) (Attachment F).

<sup>28</sup> Letter from Manuel “Sonny” Perez III, Complex Refuge Manager, South Texas Refuges Complex, U.S. Fish & Wildlife Serv. & Charles Ardizzone, Project Leader, Texas Coastal Ecological Service Office, U.S. Fish & Wildlife Serv. to Daniel P. Murray, Manager, Safety Division, Federal Aviation Administration at 2 (Jan. 22, 2021) (Attachment I).

<sup>29</sup> Email from Mary Orms, Ecological Services Field Office, U.S. Fish and Wildlife Service (July 26, 2019 15:43 CST) (Attachment J).

<sup>30</sup> Email from Bryan Winton (Jan 21, 2021, 10:33 CST) (Attachment F).

carried out.”<sup>31</sup> According to the Service, “[c]urrent 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.”<sup>32</sup> In the words of one Service employee, “[a]lthough the experimental aspects of their program were ‘causally’ mentioned in the 2014 EIS, that document addressed the impacts of launches, not continual experimentation and construction going on out there.”<sup>33</sup>

Similarly, SpaceX’s ongoing activities exceed the scope of the Section 7 analyses conducted by the Service pursuant to the ESA. Service documents have remarked that the FAA and SpaceX are violating Section 7 of the ESA and that SpaceX is violating Section 9 of the ESA. The Service issued a biological opinion and Incidental Take Statement (“ITS”) covering original SpaceX operations in 2013 and reinitiated consultation after the red knot was listed in 2015. Service records have stated that SpaceX’s current operations exceed the scope of the original consultations and ITS. In one record an employee noted:

I need to say one more time that neither SpaceX nor FAA have take authorization under the Endangered Species Act for the testing activities they are engaging in, whether there is an anomaly or not. It is good to do the best we all can for listed species and SpaceX/FAA needs either a new/amended biological opinion asap or to stop and get an HCP before we find a carcass or get sued by a third party.<sup>34</sup>

SpaceX has also failed to act on several promises that would have decreased the severity of environmental impacts. According to TPWD:

[t]o date, several of the avoidance and minimization measures associated with the 2014 Final EIS and Rod have not been fully implemented, including: mitigating noise impacts by scheduling construction activities to occur between 8 a.m. and 5 p.m.; avoiding lateral light spread and uplighting per the Lighting Management Plan; maintaining cleared shoulders along SH 4; and observing speed limits not to exceed 25 miles per hour between the Control Center Area (CCA) and VLA. Also, to our knowledge, construction of vehicle barriers along SH 4 and monitoring of vegetation changes in piping plover critical habitat has not occurred.<sup>35</sup>

Finally, according to LRGV NWR management, SpaceX committed to make funding available to hire additional refuge staff members to support the increased need for refuge personnel caused by SpaceX.<sup>36</sup> These employees were needed to “maintain integrity of the refuge.”<sup>37</sup> Although disputed

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<sup>31</sup> January 2021 Service Letter at 2 (Attachment I).

<sup>32</sup> August 2021 Service Letter at 2 (Attachment D).

<sup>33</sup> Email from Chris Perez, (Jan. 6, 2021 08:53 CST) (Attachment K).

<sup>34</sup> Email from Dawn Gardiner (Dec. 17, 2020, 13:59 CST) (Attachment L); *see also* Email from Dawn Gardiner (Dec. 10, 2020, 16:23 CST) (“Also I’m having Mary draft a dear SpaceX letter with a copy to you reminding them about section 9 and piping plovers and that they don’t [sic] have coverage for the activities right now that could look like harm and harass.”) (Attachment M).

<sup>35</sup> TPWD Scoping Comments at 2 (Attachment B).

<sup>36</sup> Email from Bryan Winton (Apr. 4, 2019, 13:45pm CST) (Attachment N).

<sup>37</sup> *Id.*

by SpaceX, according to refuge staff “there has been no commitment [from SpaceX] to follow through with arrangements made/agreements made.”<sup>38</sup>

### C. Proposed Project Background

According to the DPEA, SpaceX intends to obtain an experimental permit and/or a vehicle operator license to begin operating new equipment, its Starship/Super Heavy launch vehicles.<sup>39</sup> The project will consist of testing and launches and will almost certainly be accompanied by a number of environmental stressors, including construction, excess noise, unnatural lighting, explosions, and wildfires.

#### 1. Construction

SpaceX’s proposal would require a significant amount of construction in addition to the already-existing construction at its sites. According to the DPEA, expected future construction includes a redundant launch pad, a redundant landing pad, trenching and pull-offs along SH 4, support buildings, a payload processing center, parking lots, a power plant, a liquid natural gas pretreatment system, a liquefier, a cooling tower, a desalination plant, injection wells, tank structural test stands, an expanded solar farm, and two integration towers.<sup>40</sup> The VLA, is expected to be roughly 40 acres in size,<sup>41</sup> the power plant is expected to be 5.4 acres in size,<sup>42</sup> and the solar farm is expected to expand from 2 acres in size to 7 acres.<sup>43</sup> Although the DPEA notes that “all construction related noise impacts would be of short duration,”<sup>44</sup> there are no foreseeable limits on the extent to which construction will occur. Use of the site has continued to expand since the original EIS and the DPEA is programmatic in nature, specifically because future, not-yet-planned activities are nonetheless expected to occur. Although, according to the DPEA, SpaceX intends to engage in most construction during the day, the company is not precluding construction at night.<sup>45</sup>

#### 2. Noise

Noise will result from SpaceX’s proposed Project. Indeed, it will cause an “[i]ncreased frequency of noise from general operations, launches, landings, and static fire tests.”<sup>46</sup> Sonic booms will be generated during landings.<sup>47</sup> The use of heavy equipment during the construction and modification processes will also generate noise,<sup>48</sup> as will traffic to, from and between the sites.<sup>49</sup> Moreover, SpaceX flies drones over the refuge to determine whether any humans are present during testing and launches.<sup>50</sup> Additionally, operations would include the use of a sonic pulse every 15 minutes to

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<sup>38</sup> *Id.*

<sup>39</sup> DPEA at 8.

<sup>40</sup> DPEA at 26, 131; Federal Aviation Administration, *Biological Assessment, SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site* at 19 (June 2021) (“BA”).

<sup>41</sup> DPEA at 26.

<sup>42</sup> *Id.* at 32.

<sup>43</sup> *Id.* at 33.

<sup>44</sup> *Id.* at 50.

<sup>45</sup> *Id.* at 50.

<sup>46</sup> *Id.* at 113.

<sup>47</sup> *Id.*

<sup>48</sup> *Id.* at 50.

<sup>49</sup> *Id.* at 49.

<sup>50</sup> Email from Bryan Winton (Oct. 16, 2019 16:43 CST) (Attachment O).

collect weather data.<sup>51</sup> Noises generated by SpaceX will not be limited to daytime hours. Starship suborbital launches, Super Heavy launches, Starship land landings, and Super Heavy land landings are expected to occur during the day or at night.<sup>52</sup> Although the FAA provides that this is a conservative estimate, the DPEA assumes that “20 percent of annual operations involving engine ignition (i.e., static fire engine tests, suborbital launches, and orbital launches) would occur at night.”<sup>53</sup> Some construction, which generates noise, would also be conducted during nighttime hours.<sup>54</sup> Anomalies would also be accompanied by increased noise levels. For instance, noise would result from explosions, wildfires, and debris plummeting to the ground. Debris reconnaissance, which at times involves the use of all-terrain vehicles (“ATV”) and other times involves SpaceX employees walking through sensitive public lands, would also contribute to noise in the area. Finally, debris removal, which can involve heavy machinery or helicopters, would also generate noise.

### 3. Lights

The Project is also expected to increase the amount of unnatural lighting in the area, much of which would be at night. Launches are accompanied by bright, fiery heat plumes and will also require bright spotlighting for days to illuminate the launch vehicle on the launch pad.<sup>55</sup> “In addition to nighttime launch activity, SpaceX would need to perform ground support operations 24 hours a day, 7 days a week, throughout the year,” which would involve the use of white lighting.<sup>56</sup> The power plant, too, is expected to operate all day, every day and expected to emit light at night.<sup>57</sup> Moreover, construction occurring at nighttime hours would also lighting.<sup>58</sup> Finally, because more employees are expected to travel to, from, and between SpaceX’s two sites throughout the night, the project will be accompanied by additional lighting emitted by the headlights of cars.

### 4. Anomalies

The Project will also result in anomalies. The area surrounding the site has already suffered from repeated explosions. Now, even more testing, such as experimental launches, tank tests, and static fire engine tests, is likely to occur than under current operations. Testing is inherently more likely to result in failure than executing more polished launch operations.<sup>59</sup> In fact, SpaceX intends to conduct approximately 10 tank tests per month and estimates that 10 percent of those tests may result in an explosion and the spread of debris, which could include to areas outside of SpaceX property.<sup>60</sup> In other words, SpaceX estimates there will be one explosion per month resulting from tank testing, alone. Even SpaceX has acknowledged that “[d]ebris from anomalies could impact

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<sup>51</sup> DPEA at 14.

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> *Id.* at 50.

<sup>55</sup> *Id.* at 14.

<sup>56</sup> *Id.*

<sup>57</sup> *Id.* at 32. Note that the DPEA states that lighting at the plant would be “minimal,” it provides no explanation as to why.

<sup>58</sup> *Id.* at 112.

<sup>59</sup> For example, a Service employee cautioned that “[n]ow that the site is for testing . . . it is now apparent that given the changes to Space-X project/activity and constructed infrastructure, there is a likelihood we will have a fire, and maybe more to come, given Space X plans for more engines, bigger rockets, higher hops, etc.” Email from Bryan Winton, Manager, Lower Rio Grande Valley National Wildlife Refuge (July 31, 2020, 15:13 CST) (Attachment P)

<sup>60</sup> DPEA at 15–16.



habitat in the vicinity of the VLA. Debris may cause ruts in the unvegetated salt flats or depressional wetlands upon impact or during recovery.”<sup>61</sup>

## 5. Closures

SpaceX now anticipates even more closures than prior estimates. The surrounding area, including neighboring state and federal lands, would purportedly be closed for 500 hours per year during testing and launches and purportedly up to another 300 hours per year for debris cleanup in the event of certain explosions.<sup>62</sup>

## II. The FAA Must Prepare an EIS Because the Project’s Impacts Will Be Significant

Because the Project’s impacts will be significant, the FAA must prepare an EIS to analyze its environmental impacts. NEPA is intended to ensure that “unquantified environmental amenities and values may be given appropriate consideration in [federal] decision making.”<sup>63</sup> The statute is crucial because, when properly executed, it allows federal agencies and members of the public to weigh the environmental consequences of proposed federal actions before agencies reach a final decision regarding the best path forward. Under NEPA, an agency must prepare a detailed statement, referred to as an EIS, if it plans to undergo a “major Federal action[] significantly affecting the quality of the human environment.”<sup>64</sup> NEPA regulations include guidance for determining the significance of a projects’ impacts, requiring agencies to consider “the potentially affected environment and degree of the effects of the action.”<sup>65</sup> The potentially affected environment includes “the affected area (national, regional, or local) and its resources, such as listed species and designated critical habitat under the Endangered Species Act.”<sup>66</sup> When analyzing the degree of an action’s effect, agencies must consider, among other factors, adverse effects and effects that would violate other laws.<sup>67</sup>

Agencies must also consider connected actions,<sup>68</sup> such as actions that “[c]annot or will not proceed unless other actions are taken previously or simultaneously” or “[a]re interdependent parts of a larger action and depend on the larger action for their justification.”<sup>69</sup> SpaceX’s prior and existing operations at the Project sites are connected actions to the Proposed Project. This is because the Project will rely on previous actions taken at the site. For instance, the Starship/Superheavy project would utilize infrastructure that has already been developed by SpaceX at the site.<sup>70</sup> The Program also relies on testing at the site that is ongoing. SpaceX’s prior operations and the proposed Project are also interdependent parts of SpaceX’s larger action at the site to further commercial space exploration.

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<sup>61</sup> *Id.* at 113.

<sup>62</sup> *Id.* at 9.

<sup>63</sup> 42 U.S.C. § 4332(B).

<sup>64</sup> *Id.* § 4332(C).

<sup>65</sup> 40 C.F.R. § 1501.3(b).

<sup>66</sup> *Id.* § 1501.3(b)(1).

<sup>67</sup> *Id.* § 1501.3(b)(2), (b)(2)(ii), (b)(2)(iv).

<sup>68</sup> *Id.* § 1501.3(b).

<sup>69</sup> 40 C.F.R. § 1501.9(e)(1)(ii)–(iii).

<sup>70</sup> *See, e.g.*, DPEA at 34 (“Starship/Super Heavy test and launch operations conducted during the program development and operational phases must be able to use, to the maximum extent practicable, existing infrastructure at one of SpaceX’s launch sites.”)

Among other harms, SpaceX's activities are likely to adversely affect the surrounding area, at least ten listed species, designated critical habitat, and other wildlife. Moreover, the Project's effects will result in multiple legal violations. Thus, the SpaceX Project is likely to have significant environmental impacts, and the FAA must prepare an EIS before moving forward with any approvals.

## **A. Significant Impacts to the Area**

### **1. Impacts to LRGV NWR**

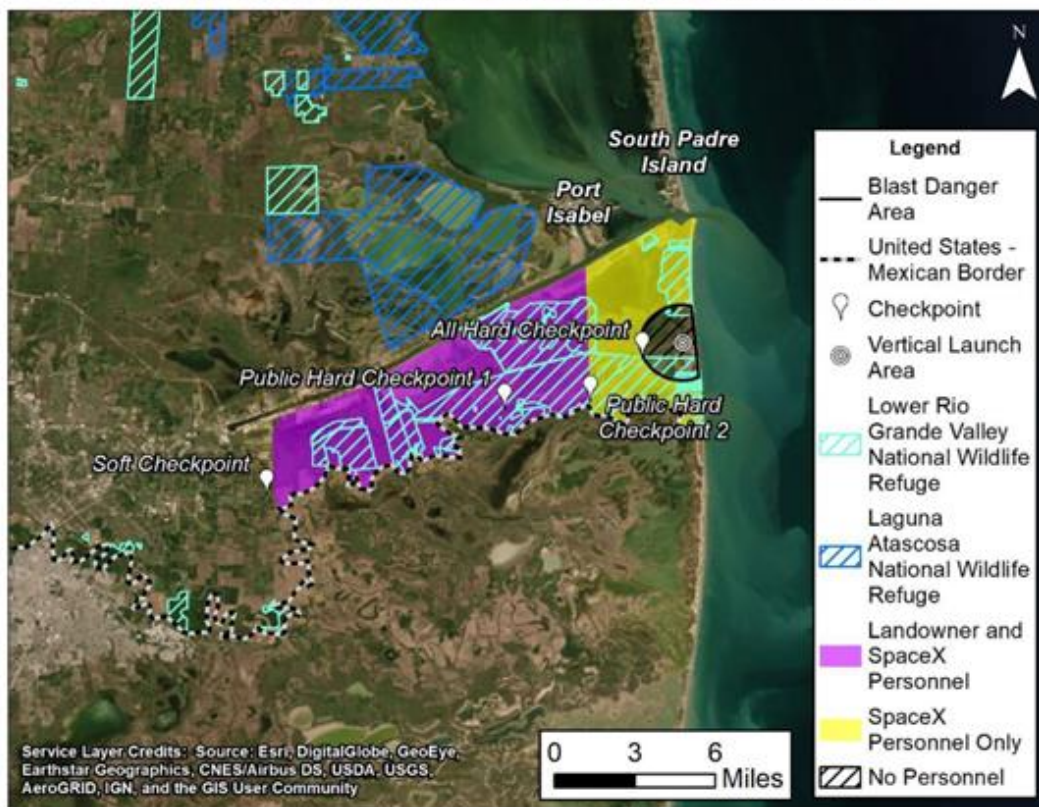
The Project will have significant environmental impacts because it will have numerous adverse impacts on the affected area, including LRGV NWR. The FAA must consider impacts to LRGV NWR because, when determining a project's significance, NEPA regulations require agencies to consider the affected regional and local area.<sup>71</sup> The Project will cause routine, major shutdowns of the refuge, precluding refuge staff and visitor access for more than a month every year. Moreover, recurring explosions resulting from SpaceX's testing activities will likely result in harmful debris pummeling the refuge, causing wildfires and spurring removal operations that will further damage refuge habitat. Finally, the project is likely to cause an increased amount of sound, light, and traffic in the refuge.

LRGV NWR has been repeatedly forced to shut down operations during SpaceX's testing and launch activities, which prevents the Service from adequately managing the refuge and precludes visitors from enjoying these public lands. The newest proposal assessed in the DPEA anticipates 800 hours of annual closures—500 for testing and 300 for debris retrieval. During closure times, LRGV NWR staff are not allowed to access the refuge, but SpaceX personnel would be. Below is a map that was included in the Biological Assessment, which shows the launch site and closure areas:

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<sup>71</sup> 40 C.F.R. § 1501.3(b)(1).

Figure 5-4. Road Closures and Checkpoints in Relation to National Wildlife Refuges



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This map depicts what areas of LRGV NWR (represented by turquoise hashes) will be closed to refuge staff but open to SpaceX staff (represented by yellow). The Service, rightfully, anticipates that SpaceX will exceed its number of requested closure hours, given that in 2019 the closure hours resulting from SpaceX’s activities were more than six times as large as the number of hours reported by SpaceX for that year.<sup>73</sup>

These closures are harmful because they prevent the Service from managing the refuge and they prevent visitors from enjoying it. In fact, the Service has explicitly stated that its

ability to maintain the biological integrity, diversity and environmental health of Refuge resources, as well as our ability to ensure the viability of the six wildlife-dependent recreational uses, has been significantly diminished at the Boca Chica tract [of LRGV NWR]. This occurs by preventing or constraining public access year-round, hampering biological and monitoring studies including sea turtle patrols, sea turtle cold-stunning responses, [and] hampering refuge management and law enforcement patrol . . . .<sup>74</sup>

<sup>72</sup> BA at 56.

<sup>73</sup> August 2021 Service Letter at 2 (Attachment D).

<sup>74</sup> January 2021 Service Letter at 2 (Attachment I).

In the past, closures have impeded other day-to-day activities at the refuge, such as the collection of milkweed and yucca seed.<sup>75</sup> It would be irrational to assume that future closures will not have similar impacts on refuge management activities.

These closures, moreover, will prevent members of the public from exercising their right to enjoy the refuge and its wildlife, a fact that is of deep concern to the Service. According to the Service, “[t]he protected activities of the Refuge that are being substantially impaired include fishing, wildlife observation, photography, environmental education, and interpretation.”<sup>76</sup> The Service attempted to quantify the number of recreational hours that were lost from a “mere” 158 hours of refuge closures by accounting for the number of individuals who would have otherwise visited during that time.<sup>77</sup> The agency determined that 158 closure hours resulted in a loss of 9,900,000 recreational hours.<sup>78</sup> Accordingly, refuge staff have concluded that “the purposes of the refuge are substantially impaired even with the estimation of only one hour of visitation.”<sup>79</sup> This also invokes environmental justice concerns. Indeed, most of the refuge’s visitors are from the surrounding area, and the surrounding area is occupied by a higher rate of individuals who are below the poverty line and a higher rate of individuals who are Hispanic compared to the national average.<sup>80</sup>

LRGV NWR has also been harmed by repeated explosions during testing, which have caused wildfires and resulted in debris removal operations that have damaged habitat. As can be seen in the above map, portions of the refuge appear in the “Blast Danger Area.” According to the Service:

Two SpaceX incidents on July 25, 2019 and again in August 2019 resulted in wildfires of 130-acres and 10-acres respectively burned through coastal prairie and dune habitats on refuge managed land. Anomalies resulting in explosions on November 20, 2019, February 28, 2020, and December 9, 2020 resulted in debris scattered onto refuge managed lands.<sup>81</sup>

There has also been at least one explosion in 2021 that scattered debris on the Refuge.<sup>82</sup> According to the Service, “debris that has fallen onto the Refuge has damaged sensitive wind tidal flats.”<sup>83</sup> Operations to retrieve the debris have further damaged the refuge. SpaceX employees use ATVs, or otherwise walk through LRGV NWR to locate debris that has been scattered throughout the area.<sup>84</sup> In the past, SpaceX has used high-capacity tow trucks and a construction dump truck to drag the

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<sup>75</sup> Email from Bryan Winton, Wildlife Refuge Manager, Lower Rio Grande Valley National Wildlife Refuge, U.S. Fish & Wildlife Serv. (Mar. 25, 2019, 12:17 CST) (Attachment Q).

<sup>76</sup> August 2021 Service Letter at 2 (Attachment D).

<sup>77</sup> January 2021 Service Letter at 3 (Attachment I).

<sup>78</sup> *Id.*

<sup>79</sup> Email from Sonny Perez, Acting Complex Refuge Manager, South Texas Refuges Complex (Dec. 3, 2020, 11:22 CST) (Attachment K).

<sup>80</sup> August 2021 Service Letter at 1–2 (Attachment D).

<sup>81</sup> January 2021 Service Letter at 2 (Attachment I).

<sup>82</sup> *See* Email from Bryan Winton, Refuge Manager, Lower Rio Grande Valley National Wildlife Refuge, U.S. Fish & Wildlife Serv. (Mar. 30, 2021, 21:22 CST) (Attachment G); *see also* Email from Stacey Zee, FAA (Mar. 3, 2021) (debris found and collected from LRGV, which was within the “ground hazard area”) (Attachment R).

<sup>83</sup> August 2021 Service Letter at 2 (Attachment D).

<sup>84</sup> Email from Randy Rees, Environmental Health and Safety Manager, Chief of Emergency Operations, Space Exploration Technologies (SpaceX) (Feb. 29, 2020, 22:10 CST) (Attachment S).

debris through what we understand to be parts of the refuge.<sup>85</sup> Below are photographs of impacts that debris retrieval has had on habitat, which were included in a Service FOIA response:



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Unsurprisingly, “[t]he vehicles or machinery used to retrieve debris have created rutting and damage that interrupts tidal water sheet flow across [the refuge’s sensitive wind tidal] flats.”<sup>87</sup> Service personnel have also noted that botched retrieval efforts have further damaged the refuge.<sup>88</sup> For example, a Service employee noted that in April 2019 “SpaceX employee(s) [got] stuck with 2 vehicles and a forklift in tidal flats. [This] [c]ause[d] significant damage to tidal flats.”<sup>89</sup> Retrieval methods have also damaged refuge cable fencing installed to protect the area from disturbance.<sup>90</sup> In August 2021, the Service asserted that “none of the damage to the sensitive tidal flats from debris pickup and motorized equipment and human access has been adequately addressed.”<sup>91</sup> These harmful impacts are likely to continue when SpaceX implements its newest Project. Although the

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<sup>85</sup> Email from Randy Rees, Environmental Health and Safety Manager, Chief of Emergency Operations, Space Exploration Technologies (SpaceX) (Nov. 23, 2019, 17:09 CST) (Attachment E).

<sup>86</sup> *Id.*

<sup>87</sup> August 2021 Service Letter at 2 (Attachment D).

<sup>88</sup> Email from Bryan Winton (Jan 21, 2021, 10:33 CST) (Attachment F).

<sup>89</sup> *Id.*

<sup>90</sup> January 2021 Service Letter at 2 (Attachment I).

<sup>91</sup> August 2021 Service Letter at 3 (Attachment D).

DPEA asserts that areas can be restored by regrading,<sup>92</sup> it fails to account for the loss of important habitat values in the meantime, it fails to provide any evidence demonstrating that regrading can actually restore habitat, and it fails to demonstrate why and how SpaceX would now follow through with its commitment to restore the area in light of the companies' ongoing, chronic failures to comply with environmental measures that it previously promised.

The refuge is also vulnerable to explosion-induced wildfires. Wildfires resulting from SpaceX activities have already scorched at least 140 acres of refuge-managed land. The DPEA underplays the severity that a future wildfire may have, noting that “[v]egetative land cover in [susceptible nearby areas] is classified as barren or grasslands, both of which would recover quickly post-fire.”<sup>93</sup> However, as noted by a Service employee, “[m]y concern is that this sensitive area does not normally burn (lightning strikes), and by starting to burn an area that usually does not have fire can change the vegetation or cause more damage than good especially with the types of sand and salty soils which will lose protection once vegetation is removed, and change the ecology of the area.”<sup>94</sup> Similar harms are likely to persist if SpaceX implements the Proposed Project.

LRGV NWR has been—and will continue to be—harmed by the impacts of noise, light, traffic, and human presence generated by SpaceX. LRGV NWR is described in the DPEA as being a “noise sensitive area”, which is “an area where noise interferes with normal activities associated with its use.”<sup>95</sup> Debris retrieval and removal operations are also harmful to LRGV NWR because they can disturb refuge wildlife, such as nesting birds,<sup>96</sup> in light of the loud noises and human presence resulting from these efforts. Moreover, SpaceX flies drones over the refuge to determine whether any humans are present during testing and launches.<sup>97</sup> The Service has “biological concerns” regarding the use of drones because birds can be reactive to these during nesting season.<sup>98</sup> There also have been “increased observations of road mortality of wildlife at all hours of daytime and nighttime.”<sup>99</sup> Furthermore, according to the LRGV NWR Refuge Manager, LRGV NWR is “being negatively impacted” because trash discarded by SpaceX employees “is being blown into the refuge due to high winds, and negligence.”<sup>100</sup> He further noted that “[t]he refuge has never experienced this level of trash visible from the road ever. It is readily apparent that the trash is related to Space-X and the motorists driving to-from the site daily.”<sup>101</sup> LRGV NWR would likely face similar or more severe environmental impacts if the Proposed Project is implemented.

Finally, it is our understanding that Service staff, which include law enforcement personnel and biologists, are needed to address at least some of SpaceX's impacts to the refuge.<sup>102</sup> In 2019, the Refuge Manager has stated that three new employees “are needed to oversee the refuge during

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<sup>92</sup> DPEA at 113.

<sup>93</sup> *Id.* at 112.

<sup>94</sup> Email from Ernesto Reyes, Alamo Ecological Service Sub-Office, U.S. Fish & Wildlife Service (Aug. 20, 2019, 08:01 CST) (Attachment T).

<sup>95</sup> DPEA at 49.

<sup>96</sup> Email from Bryan Winton (Mar. 9, 2020, 14:16 CST) (Attachment U).

<sup>97</sup> Email from Bryan Winton (Oct. 16, 2019, 16:43 CST) (Attachment O).

<sup>98</sup> *Id.*

<sup>99</sup> January 2021 Service Letter at 2–3 (Attachment I).

<sup>100</sup> Email from Bryan Winton (Mar. 9, 2020, 14:16 CST) (Attachment U).

<sup>101</sup> *Id.*

<sup>102</sup> Email from Bryan Winton (Apr. 4, 2019, 13:45pm CST) (Attachment O).

Space-X closures, so we can maintain integrity of the refuge when everyone else is closed out of the place except SpaceX.”<sup>103</sup>

Overall, based on what we already know about SpaceX’s existing impacts, the Project and other connected actions will have significant, adverse impacts on LRGV NWR.

## 2. Impacts to Other Nearby Habitat

The Project, both independently and in combination with connected actions, is also likely to have significant, adverse impacts on nearby habitat other than LRGV NWR. First, habitat in the area will be destroyed to accommodate new construction. The project is expected to be accompanied by filling jurisdictional waters, including 10.94 acres of salt flats, 0.28 acres of depressional areas, and 5.94 acres of high marsh areas for 17.16 acres of wetland impact.<sup>104</sup> Because they will be converted to uplands, they “would not retain any of the previous wetland functions or values.”<sup>105</sup> 14.5 acres of uplands are also expected to be destroyed.<sup>106</sup>

According to the Environmental Protection Agency, (“EPA”) SpaceX’s operations have caused “substantial and unacceptable adverse impacts to aquatic resources of national important (ARNI),” due to the impacts to mudflats, estuarine and non-tidal wetlands, which “support benthic invertebrate communities which make them essential foraging habitats for wintering and migrating shorebirds, including the threatened piping plover and red knot.”<sup>107</sup> The wetland complex at issue “was designated by the Western Hemisphere Shorebird Network as a Site of International Importance,” and is “critical to the survival of many species of shorebirds and waterfowl.”<sup>108</sup> The EPA has concerns over the “direct, secondary, and cumulative impacts associated with destruction of the rare and valuable aquatic habitats within the project area,” and questioned “whether adequate compensatory mitigation will be provided for project impacts.”<sup>109</sup>

Areas outside of LRGV NWR that are near the Proposed Project location are similarly vulnerable to the harmful impacts associated with explosions. Debris can cause rutting in nearby salt flats and wetlands,<sup>110</sup> a problem worsened by the fact that the debris field can span for miles.<sup>111</sup> In fact, some of the rocket pieces from at least one explosion were lodged in wetlands near the Project location.<sup>112</sup> Following a different explosion that was onset by engine failure, debris was observed 500-1000 meters into state lands and included small, medium, and large pieces of debris.<sup>113</sup> According to TPWD, at least one explosion has scattered debris onto the Boca Chica Wildlife Management Area.<sup>114</sup> In addition to LRGV NWR, other areas are susceptible to explosion-induced wildfires. The

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<sup>103</sup> *Id.*

<sup>104</sup> DPEA at 95.

<sup>105</sup> *Id.*

<sup>106</sup> *Id.* at 111.

<sup>107</sup> Letter from Maria L. Martinez, EPA, to Joe McMahan, U.S. Army Corps (April 7, 2021).

<sup>108</sup> *Id.*

<sup>109</sup> *Id.*

<sup>110</sup> DPEA at 113.

<sup>111</sup> Email from Bryan Winton (Mar. 30, 2021, 21:25 CST) (estimating that a March 2021 explosion resulted in a 2–3-mile debris field) (Attachment G).

<sup>112</sup> Letter from Charles Ardizzone, Field Supervisor, U.S. Fish and Wildlife Service to Stacey M. Zee, Office of Commercial Space Transportation, Federal Aviation Administration at 1 (Mar. 4, 2020) (Attachment C).

<sup>113</sup> Email from Sonny Perez (Mar. 30, 2021, 10:47 CST) (Attachment V).

<sup>114</sup> Email from Eric Schroeder (Mar. 12, 2021, 11:38am CST) (Attachment W).

DPEA characterizes areas that may receive wildfires as being small,<sup>115</sup> yet 140 acres of TPWD property were burned in July and August 2019 as a result of SpaceX test launches.<sup>116</sup> More than 100 acres from only two fires can hardly be considered small. Moreover, “[n]ighttime activities also hinder efforts to extinguish fires, evacuate people, remove trespassers, and delays debris removals.”<sup>117</sup> Again, although the DPEA downplays the severity of impacts resulting from explosions, stating that rutting can be regraded and vegetative land cover can “recover quickly post-fire,” it fails to demonstrate the viability of restoration, fails to demonstrate that it would follow through on promised mitigation, and fails to account for any lost habitat values in the meantime. For instance, listed species—the threatened piping plover and the threatened red knot—use tidal flats in the area for foraging.<sup>118</sup>

Finally, many of the areas near the launch site that will be impacted by the Proposed Project have been categorized by the FAA as “noise sensitive areas,” including Boca Chica State Park, Brazos Island State Park, and Boca Chica Beach.<sup>119</sup> These areas, therefore, will be adversely impacted by noises resulting from construction, daily operations, traffic, testing, and launches at the SpaceX site.

## **B. Significant Impacts to Listed Species and Critical Habitat**

The Project will have significant impacts to at least ten listed species, including the piping plover, the red knot, the northern aplomado falcon, the Gulf Coast jaguarundi, the ocelot, and the Kemp’s ridley, hawksbill, leatherback, loggerhead sea turtle, and green sea turtle.

### **1. Impacts to Piping Plovers**

As admitted by the FAA in its Biological Assessment (“BA”), this project is likely to adversely affect piping plovers (*Charadrius melodus*), a threatened species of shorebird, along with their critical habitat, which is located on the project site and in surrounding areas. The Service first added piping plovers to the endangered and threatened species lists in 1985, in large part due to the disturbance and destruction of their habitat.<sup>120</sup> Piping plovers can be sensitive to human disturbances.<sup>121</sup> They spend more time alert and less time foraging in areas that are disturbed.<sup>122</sup> This can lead to reduced time spent feeding and increased stress levels, resulting in lower body mass in members of the species.<sup>123</sup> Disturbances to piping plovers from human presence can reduce the overall value of piping plover critical habitat.<sup>124</sup>

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<sup>115</sup> DPEA at 112.

<sup>116</sup> Texas Parks and Wildlife Scoping Letter at 12 (Attachment B).

<sup>117</sup> Letter from Charles Ardizzone, Field Supervisor, U.S. Fish and Wildlife Service to Stacey M. Zee, Office of Commercial Space Transportation, Federal Aviation Administration at 4 (Mar. 4, 2020) (Attachment C).

<sup>118</sup> January 2021 Service Letter at 3 (Attachment I).

<sup>119</sup> DPEA at 49.

<sup>120</sup> Endangered and Threatened Wildlife and Plants; Determination of Endangered and Threatened Status for the Piping Plover, 50 Fed. Reg. 50,726 (Dec. 11, 1985).

<sup>121</sup> U.S. Fish & Wildlife Serv., *Piping Plover (Charadrius melodus): 5-Year Review: Summary and Evaluation* 17 (Mar. 2020), [https://ecos.fws.gov/docs/five\\_year\\_review/doc6378.pdf](https://ecos.fws.gov/docs/five_year_review/doc6378.pdf).

<sup>122</sup> *Id.* at 16.

<sup>123</sup> *Id.*

<sup>124</sup> 66 Fed. Reg. 36,079 Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for Wintering Piping Plovers, 66 Fed. Reg. 36,038, 36,069 (July 10, 2001).



Piping plovers have already felt serious impacts resulting from the SpaceX project, which are likely to continue or intensify. As previously stated, the Service concluded that SpaceX was likely causing such a blatant take of this threatened species that the company was vulnerable to a lawsuit under the ESA.<sup>125</sup> Moreover, research has shown that the piping plover population at Boca Chica has experienced a rapid and significant population decline.<sup>126</sup> The timing of the decline became severe in 2019,<sup>127</sup> right when SpaceX's operations in the area began to ramp up. Indeed, the area is functioning as a population sink due to the piping plover's historic reliance on the area,<sup>128</sup> coupled with the increased harm from SpaceX activities.

Even the FAA has acknowledged some—although not all—of the harms that SpaceX can cause to piping plovers. For instance, the FAA admitted in its BA that piping plovers can be displaced due to noises generated by SpaceX.<sup>129</sup> As previously discussed, some of the noises resulting from SpaceX operations include those resulting from construction, daily operations, traffic, testing, launches, sonic booms, explosions, and increased human activity. SpaceX is expected to generate both noise and light all day, every day. Given the piping plover's sensitivity to disturbances, the Project is likely to cause piping plovers in the area to spend less time foraging, experience increased stress levels, and suffer from reduced body mass. The BA also states piping plovers could be killed if they appeared within the heat plume created by engine ignition during testing and launches, which can run as hot as 212 degrees Fahrenheit within a .3 mile radius of the launch area. The FAA has failed to offer any valid explanation regarding how these impacts could or would be mitigated.

Inevitable explosions, along with resulting debris and wildfires, are also likely to harm piping plover critical habitat. According to the Service, there is “documented evidence that the debris and its removal has impacted and scarred various habitats in the area, including tidal flats which are foraging habitat for the threatened piping plover.”<sup>130</sup> Finally, according to the BA, the facility expansion would fill 11.03 acres of piping plover critical habitat.<sup>131</sup>

Thus, the Proposed Project will seriously harm piping plovers and their designated critical habitat, resulting in significant environmental impacts.

## 2. Impacts to Red Knots

The Proposed Project is also likely to adversely affect threatened red knots (*Calidris canutus rufa*), as admitted by the FAA in its BA, along with proposed red knot critical habitat. The Boca Chica area “contains a high concentration of rufa red knots during the spring and fall migration periods, serving as an important northbound and southbound stopover site on the northern Gulf coast.”<sup>132</sup> The Service listed the red knot as threatened under the ESA in 2015.<sup>133</sup> Red knot populations were

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<sup>125</sup> Email from Dawn Gardiner (Dec. 17, 2020, 13:59 CST) (Attachment L); *see also* Email Dawn Gardiner (Dec. 10, 2020, 16:23 CST) (Attachment M).

<sup>126</sup> D. Newstead and B. Hill, *Piping Plover Population Abundance, Trend and Survival at Boca Chica 2018-2021: Report by Coastal Bend Bays & Estuaries Program* (Oct. 22, 2021) (Attachment X).

<sup>127</sup> *Id.*

<sup>128</sup> *Id.*

<sup>129</sup> BA at 65.

<sup>130</sup> Service January 2021 Letter (Attachment I).

<sup>131</sup> BA at 64.

<sup>132</sup> Red knot CH proposal at 37,493.

<sup>133</sup> Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Rufa Red Knot, 79 Fed. Reg. 73,706 (Dec. 11, 2014).

decimated in the late 1800s and early 1900s by commercial hunting for sport and food.<sup>134</sup> More recently the species' population has declined from threats to its habitat and prey species.

As acknowledged by the FAA in its BA, red knots can be disturbed, displaced, or killed by SpaceX's operations. Red knots can be sensitive to disturbances. Disturbances during the peak migration months of May and August can drive red knots to reject foraging habitats that would have otherwise been preferred.<sup>135</sup> Research shows that human disturbances can cause a decline in shorebirds' food intake and the amount of time spent foraging.<sup>136</sup> Disturbances "negatively affect the birds' energy balances."<sup>137</sup> As summarized by the Service in its red knot "Threats Assessment," which it developed during the species' listing process, one study "found that disturbed shorebird flocks often did not return to the same place or even general location along the beach once they were disturbed, with return rates at one site of only 8 percent for monospecific red knot flocks. Even when flocks returned, not all shorebirds did so, with half or less of the birds returning after a disturbance."<sup>138</sup> Moreover, according to the Threats Assessment, lighting on tall structures is known to cause avian collisions and "birds can become disoriented and entrapped in areas of artificially lighted airspace."<sup>139</sup> In addition to human presence, red knots can also be disturbed by aircraft.<sup>140</sup> Moreover, red knots could be killed if they are located within the heat plume created by engine ignition during testing and launches. Finally, according to the BA, the number of red knots in the area has declined over the years.<sup>141</sup>

The Project will also harm red knot habitat in the area, which will likely soon be designated as critical habitat. In its proposal to designate critical habitat for red knots, including in Boca Chica, the Service stated that one of the identified threats to the species was "habitat modification resulting from space exploration development."<sup>142</sup> Although the BA did not address the Proposed Project's impacts to red knot critical habitat, it did state that the facility expansion would fill 11.03 acres of piping plover critical habitat. It is likely that this same area that will be filled will soon be designated as red knot critical habitat, as well. Moreover, red knots use mud and salt flats surrounding the Project area,<sup>143</sup> portions of which have been destroyed by debris and debris retrieval efforts following rocket explosions.

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<sup>134</sup> Endangered and Threatened Wildlife and Plants; Proposed Threatened Status for the Rufa Red Knot, 78 Fed. Reg. 60,024, 60,028 (Sept. 30, 2013).

<sup>135</sup> 78 Fed. Reg. 60,076–77.

<sup>136</sup> 78 Fed. Reg. 60,078

<sup>137</sup> U.S. Fish and Wildlife Service, *Rufa Red Knot Background Information and Threats Assessment: Supplement to Endangered and Threatened Wildlife and Plants; Final Threatened Status for the Rufa Red Knot (Calidris Canatus Rufa)*: Docket No. FWS-R5-ES-2013-0097; RIN AY17, at 266 (Nov. 2014) (Attachment Y) ("Threats Assessment")

<sup>138</sup> *Id.* at 269-270 (internal citations omitted).

<sup>139</sup> U.S. Fish and Wildlife Service, *Rufa Red Knot Background Information and Threats Assessment: Supplement to Endangered and Threatened Wildlife and Plants; Final Threatened Status for the Rufa Red Knot (Calidris Canatus Rufa)*: Docket No. FWS-R5-ES-2013-0097; RIN AY17, at 297 (Nov. 2014) (citing Kuvlesky, W.P., Jr., L.A. Brennan, M.L. Morrison, K.K. Boydston, B.M. Ballard, and F.C. Bryant. 2007. Wind energy development and wildlife conservation: Challenges and opportunities. *Journal of Wildlife Management* 71(8):2487-2498.).

<sup>140</sup> U.S. Fish and Wildlife Service, *Rufa Red Knot Background Information and Threats Assessment: Supplement to Endangered and Threatened Wildlife and Plants; Final Threatened Status for the Rufa Red Knot (Calidris Canatus Rufa)*: Docket No. FWS-R5-ES-2013-0097; RIN AY17, at 266 (Nov. 2014).

<sup>141</sup> Although the BA makes the conclusory assertion that this decline is "not significant," it fails to provide evidence in support of this assertion.

<sup>142</sup> Red Knot CH proposal at 37,493-94.

<sup>143</sup> Texas Scoping Letter at 5 (internal citation omitted).

Thus, the Project will harm red knots and their proposed critical habitat.

### 3. Impacts to Northern Aplomado Falcons

The FAA also admitted in its BA that endangered northern aplomado falcons (*Falco femoralis septentrionalis*) are likely to be adversely affected by the project. Northern aplomado falcons have been observed foraging and nesting in the action area.<sup>144</sup> Habitat loss and degradation of breeding and wintering grounds of migratory birds, including those in the action area, negatively impacts important avian prey species for aplomado falcons. They also could be attracted to nest and perch on proposed infrastructure, such as towers. As with red knots and piping plovers, northern aplomado falcons could be startled and displaced due to noise impacts from SpaceX's operations. If northern aplomado falcons flush off their nests during disturbances, it would expose their eggs or small young to inclement weather and predators. This can result in the destruction of their eggs and the death of their chicks. Moreover, even the FAA admits in its BA that disturbances may also reduce foraging efficiency and feeding time for the species. Finally, northern aplomado falcons and their eggs could be killed by heat plumes during engine testing and launches. Thus, the Project will likely cause serious adverse effects to endangered northern aplomado falcons.

### 4. Impacts to Ocelots and Gulf Coast Jaguarundis

Endangered ocelots (*Leopardus pardalis*) and endangered Gulf Coast jaguarundis (*Herpailurus yagouaroundi cacomilli*) are also likely to be adversely affected by the project. Laguna Atascosa NWR and adjacent lands support the only known U.S. breeding population of the ocelot.<sup>145</sup> While this refuge is not as close to the danger site as LRGV NWR, portions of it are within the action area. Furthermore, areas of the LRGV NWR within the action area contain lomas covered in Taumalipan thornscrub, ideal habitat for ocelots. An ocelot was observed and trapped traveling along SH 4 in the LRGV NWR within the action area in 1998 and there have been additional reports of ocelot sightings in this portion of the refuge in the past 25 years.<sup>146</sup> The jaguarundi is an endangered cat with a recent documented history in South Texas and an active recovery plan with site-specific management actions in Texas. The last known record of a jaguarundi in the United States was a roadkill along SH 4, the road leading into and through the action area.<sup>147</sup>

The area near the launch site is within a broader corridor of lands encompassing Laguna Atascosa NWR, and LRGV NWR as well as the habitat between them. This coastal corridor on the eastern boundary of the Rio Grande delta supports a matrix of Taumalipan thornscrub (ideal habitat for ocelots and jaguarundis) as well as native rangeland wetlands and upland communities that may be suitable for movement of both cat species.<sup>148</sup> SpaceX employees traveling through the area could expose ocelots and jaguarundis to the increased potential for vehicle collisions. Vehicular collisions are the leading known cause of mortality for ocelots in Texas, and the 2013 Jaguarundi Recovery Plan similarly identified mortality from vehicle collisions as a threat to this species.<sup>149</sup> According to SpaceX there will be an extra 505 vehicles per day through potential travel corridors for the Gulf

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<sup>144</sup> BA at 37.

<sup>145</sup> BA at 42.

<sup>146</sup> *Id.*

<sup>147</sup> *Id.* at 41.

<sup>148</sup> *Id.* at 42.

<sup>149</sup> *Id.* at 41.

Coast jaguarundi and the ocelot: 55 construction vehicles and 450 SpaceX staff vehicles. Moreover, according to TPWD:

several hundred employees and contractors travel to the Boca Chica Launch Site and between the CCA and VLA throughout the day and night, resulting in an increase in traffic along SH 4 TPWD continues to be concerned that the increase in traffic has resulted and will continue to result in an increase in wildlife-vehicle collisions. Roadkill observations have been documented along SH 4 and include state-listed and SGCN species including Texas tortoise, Texas indigo snake, snowy plover, and Harris' hawk.<sup>150</sup>

There have been numerous incidents stemming from SpaceX involving traffic safety. Dump trucks importing dirt to the SpaceX site have been known to violate speed limits in the area, and at least one such truck even crashed in 2016.<sup>151</sup> Although the driver involved in that incident was fired, vehicle crashes involving SpaceX agents and employees have persisted in the area. Unfortunately, a family's vehicle crashed with an eighteen-wheeler commercial trailer that was delivering products to and from the SpaceX facility in the middle of the night, killing one of the family members.<sup>152</sup> According to the victim's family, the eighteen-wheeler had backed up unsafely and stopped in the middle of the dark road.<sup>153</sup> Service staff have expressed concern regarding SpaceX traffic's impacts to "public safety, wildlife mortality increasing due to high speed trucks, and damage to [refuge] property (vegetation and fence) from accidents."<sup>154</sup> Protecting additional north-south travel corridors is essential to offset the impacts of the proposed increase in vehicle traffic, yet SpaceX does not appear to have taken any steps to provide for adequate protections.

Gulf Coast jaguarundis and ocelots may also be impacted by the Proposed Project because it could cause them to avoid lit areas and seek other north-south travel corridors, expending additional energy, pushing them into unfamiliar territory, and increasing the potential for vehicular mortality. Moreover, the rocket heat plume may injure or kill individual cats exposed to the plume. More likely, accidental explosions could start a wildfire and, in the words of the BA, burn "many acres of suitable cat habitat."<sup>155</sup> This could result in the loss of individual cats or directly impact their movement on the landscape and potentially affect species migration corridors.

Moreover, it is our understanding that SpaceX agreed to fund ocelot monitoring in the area and subsequently rescinded its offer. SpaceX's refusal to honor this agreement for funding for ocelot monitoring is particularly impactful at a time when Laguna Atascosa NWR's budget shortages have compelled refuge management to significantly reduce ocelot monitoring on and near the refuge, specifically citing that they were no longer receiving funding for ocelots. Ocelot monitoring in other areas near the refuge is shifting to a third party and the population residing on federal lands is no longer being monitored by remote camera and live trap and release as they have been over the past decade. This raises concerns regarding the Service's knowledge in near-real time of the health of a

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<sup>150</sup> TPWD Scoping Comments at 9 (Attachment B).

<sup>151</sup> Email from Ernesto Reyes (Feb. 25, 2016 07:39 CST) (Attachment Z).<sup>151</sup>

<sup>152</sup> Aristos Georgiou, *Family Sues SpaceX for Negligence After Texas Crash Kills Man, Seeking \$20M*, Newsweek, (Apr. 30, 2021), <https://www.newsweek.com/family-sue-spacex-negligence-texas-crash-1587758>

<sup>153</sup> *Id.*

<sup>154</sup> Email from Ernesto Reyes (Feb. 25, 2016 07:39 CST) (Attachment Z).<sup>154</sup>

<sup>155</sup> BA at 67.

population numbering at only 15 known individuals. This lack of monitoring activity impedes the survival and recovery of the species.

Finally, according to the Service, limiting launch activities to hours between dawn and dusk would minimize impacts to ocelots and jaguarundis,<sup>156</sup> but this recommendation has gone ignored. Thus, by increasing the likelihood of traffic mortalities, likely impeding their movement along migratory corridors, creating a serious risk of habitat destruction from wildfires, and establishing the possibility that cats can die in rockets' heat plumes, the Project will have serious, adverse impacts on endangered ocelots and jaguarundis.

## 5. Impacts to Sea Turtles

Kemp's ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), and leatherback (*Dermochelys coriacea*) sea turtles have all been identified nesting in the area of the SpaceX launch site, and Kemp's ridley sea turtles nest there with regularity. Noise and vibrations generated by rocket testing, launches, and landings could cause turtles to abandon their nesting attempts by frightening them.<sup>157</sup> However, there are no mitigation measures currently available to reduce the chances of noise-induced startle responses.<sup>158</sup> Vibrations from rocket launches could also damage incubating eggs not collected by Sea Turtle Inc., either because they were overlooked during patrols or because they were laid during times when public access is prohibited.<sup>159</sup> As previously discussed, in 2019 SpaceX caused more than 1,000 closure hours and 800 closure hours are now being proposed. Indeed, the Service has expressed concerns with closure activities "hampering biological and monitoring studies including sea turtle patrols [and] sea turtle cold-stunning responses."<sup>160</sup>

Moreover, lighting could be visible from the beach, which could cause females to false crawl and could disorient emerging hatchlings.<sup>161</sup> Hatchlings are known to crawl toward artificial light sources, "following the same instinctive response that leads them seaward."<sup>162</sup> Construction is expected to occur both at day and night and the DPEA assumes that 20% of launches will occur at night. According to the Service, limiting launch activities to hours between dawn and dusk would minimize impacts to sea turtles,<sup>163</sup> but this recommendation has gone ignored. Bright spotlights are expected to illuminate the launch pad, at times for multiple days.<sup>164</sup> Although the BA notes that low pressure sodium lights could be used, "to the extent practicable," during sea turtle nesting season, it qualifies this by saying that brighter, white lights would be necessary "for ground support operations performed 24/7 throughout the year," negating the efficacy of its proposed mitigation measure. Finally, sea turtles and hatchlings present near the site at the time of engine ignition could be injured or killed by the rocket heat plume, and their eggs could be destroyed. Kemp's ridley sea turtles at

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<sup>156</sup> Letter from Charles Ardizzone, Field Supervisor, U.S. Fish and Wildlife Service to Stacey M. Zee, Office of Commercial Space Transportation, Federal Aviation Administration at 1 (Mar. 4, 2020) (Attachment C).

<sup>157</sup> BA at 68.

<sup>158</sup> DPEA at 113-114.

<sup>159</sup> BA at 68.

<sup>160</sup> January 2021 Service Letter at 2 (Attachment I)

<sup>161</sup> BA at 69.

<sup>162</sup> DPEA at 112.

<sup>163</sup> Letter from Charles Ardizzone, Field Supervisor, U.S. Fish and Wildlife Service to Stacey M. Zoo, Office of Commercial Space Transportation, Federal Aviation Administration at 1 (Mar. 4, 2020) (Attachment C).

<sup>164</sup> *Id.*

times nest as part of mass aggregation events, or “arribadas,” in which a mass of turtles suddenly appears. If an arribada occurs shortly before launch events and the eggs are not removed, or the aggregating turtles are caught in the heat plume, the result could be catastrophic.

Overall, this project is likely to cause significant, adverse effects to five different species of listed turtles, threatening disrupt and kill turtles and destroy their eggs. Despite these alarming consequences, no adequate mitigation measures, such as appropriately managing noise and lighting, have been proposed.

The Proposed Project is likely to adversely affect at least 10 listed species, yet includes little to no meaningful mitigation measures to address these effects. It is abundantly clear that the Project will have significant impacts, and the FAA must prepare an EIS.

### **C. Significant Impacts to Other Resources in the Affected Area**

Finally, the Project will adversely affect other wildlife, another resource in the Proposed Project area.<sup>165</sup> According to TPWD,

Areas surrounding the project area are managed or preserved as high-quality wildlife habitat that provide foraging, loafing, and nesting sites for birds. Additionally, the project area occurs in the middle of the Central Flyway Migration Corridor through which millions of birds pass during spring and fall migration. More than 250 bird species have been documented within the Boca Chica Village and Boca Chica Beach areas in recent years. The mud and salt flats surrounding the proposed construction areas are used by numerous shorebirds.<sup>166</sup>

Indeed, some of the birds that use the area include reddish egrets, American oystercatchers, peregrine falcons, red knots, mangrove warblers, piping plovers, and brown pelicans.<sup>167</sup> In fact, 58 of the 88 species of birds that have been identified as Species of Greatest Conservation Need in Texas’s Gulf Coast Marshes and Prairie Ecoregion have been documented in the vicinity of the Project site.<sup>168</sup> Snowy plovers have been documented nesting directly adjacent to the Proposed Project site:

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<sup>165</sup> See *id.* § 1501.3(b)(1) (significance should be assessed based on the effects of the action to the affected area and its resources).

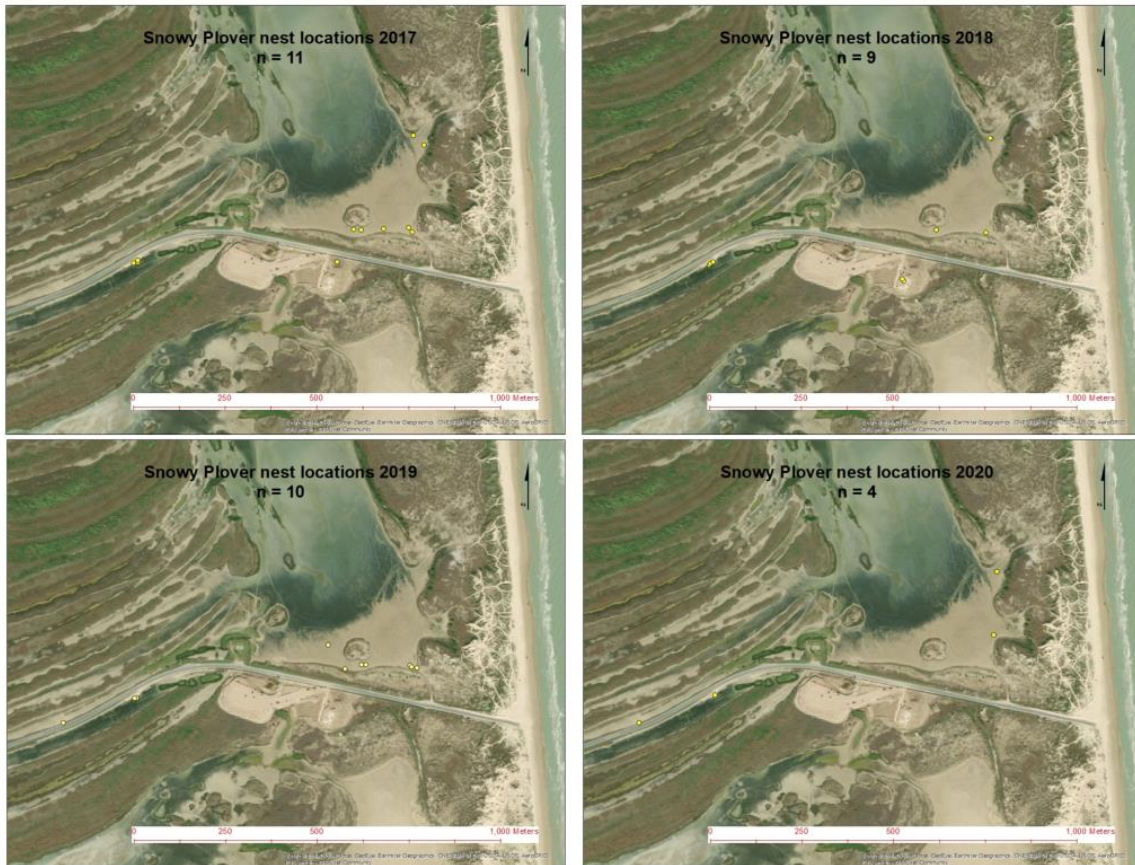
<sup>166</sup> Texas Scoping Letter at 5. (internal citation omitted).

<sup>167</sup> [https://www.fws.gov/refuge/Lower\\_Rio\\_Grande\\_Valley/visit/boca\\_chica\\_beach.html](https://www.fws.gov/refuge/Lower_Rio_Grande_Valley/visit/boca_chica_beach.html)

<sup>168</sup> Letter from Clayton Wolf, Chief Operating Officer, Texas Parks & Wildlife to Stacy M. Zee, Office of Commercial Space Transportation, Federal Aviation Administration at 7 (Jan 27, 2021) (Attachment X – Texas Parks and Wildlife Scoping Letter)

Nest locations of Snowy Plovers in vicinity of SpaceX launch site – Boca Chica, Cameron County, Texas





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As previously discussed, SpaceX will cause serious disturbances to the area resulting from human presence, construction, traffic, lighting, sonic booms, the use of ATVs, and the use of drones. “Disturbance of shorebirds can cause behavioral changes resulting in less time roosting or foraging, shifts in feeding times, decreased food intake, and more time and energy spent in alert postures or fleeing from disturbances.”<sup>170</sup> As the Service has noted:

At two sites on the Atlantic coast of New Jersey, [researchers] found that disturbed shorebird flocks often did not return to the same place or even general location along the beach once they were disturbed, with return rates at one site of only 8 percent for monospecific red knot flocks. Even when flocks returned, not all shorebirds did so, with half or less of the birds returning after a disturbance.<sup>171</sup>

Moreover, according to the Service, researchers:

found the abundance of shorebirds declined with increased [off road vehicle (“ORV”)] frequency, as did the number and size of roosts. [One study] found that disturbance from ORVs decreased shorebird abundance and altered shorebird habitat use. In

<sup>169</sup> Email from David Newstead, (Jan. 8, 2021 11:13 CST) (Attachment AA).

<sup>170</sup> Threats Assessment at 270 (internal citations omitted).

<sup>171</sup> *Id.* at 269-270 (internal citations omitted).



experimental plots, shorebirds decreased their use of the wet sand microhabitat and increased their use of the swash zone in response to vehicle disturbance.”<sup>172</sup>

Disturbances, such as those caused by SpaceX, also impede birds’ ability to successfully reproduce. When disturbed, nesting birds can flush off of their nests, exposing their chicks and eggs. This can result in predators eating the vulnerable chicks and eggs or them overheating in the sun. Startle responses can also “result in broken eggs or cause immature young that are not flight-capable to flee the nest.”<sup>173</sup> Inappropriate light can also cause nesting and roosting birds to abandon areas, as can repeated nest failures.<sup>174</sup>

The Project’s threats to area wildlife are not limited to disturbances. According to the Service, traffic from SpaceX has resulted in the death of migratory birds.<sup>175</sup> As the agency has pointed out, traffic near the site was already killing birds even before it began to “exponentially increase.”<sup>176</sup> Moreover, as the FAA admits, “[t]he presence of newly constructed structures, such as the integration towers and natural gas pretreatment system, could pose a potential collision impact to birds.”<sup>177</sup> Artificial lighting is also dangerous to bird species in the area. Artificial night lighting is a cause of mortality among migratory birds,<sup>178</sup> lighting on tall structures is known to cause avian collisions, and “birds can become disoriented and entrapped in areas of artificially lighted airspace.”<sup>179</sup> SpaceX’s excessive and unpredictable area-wide closures have also interfered with wildlife monitoring efforts that can be used to support species conservation. For example, the closures have placed undue burdens on scientists from the Coastal Bend Bays & Estuaries Program, who are charged with conducting critical surveys of birds in the area, including piping plovers, along with nesting snowy and Wilson’s plovers.<sup>180</sup>

Anomalies also threaten birds in the project area. According to the Service, videos of rocket launch failures “show evidence of different species of birds being impacted by the blast.”<sup>181</sup> Snowy plovers have been documented as nesting near areas where exploded rocket debris landed.<sup>182</sup> Moreover, TPWD has remarked that sand flats are “essential to shorebirds in general and critical to species with relatively short legs and bills, like plovers, that are physically limited to shallow water habitats.”<sup>183</sup> However, debris and debris retrieval operations have been known to damage tidal flats

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<sup>172</sup> *Id.* at 270 (internal citations omitted).

<sup>173</sup> DPEA at 113.

<sup>174</sup> *Id.* at 112-13.

<sup>175</sup> Email from Bryan Winton (Sept. 17, 2020 22:13 CST) (Attachment BB). *See also* Email from Bryan Winton (Sept. 28, 2020 15:32 CST) (Attachment CC) (“We know for sure there is a direct loss of wildlife due to increased traffic serving Space-X.”)

<sup>176</sup> *Id.*

<sup>177</sup> DPEA at 111.

<sup>178</sup> TPWD Scoping Comments at 4 (internal citation omitted) (Attachment B).

<sup>179</sup> U.S. Fish and Wildlife Service, *Rufa Red Knot Background Information and Threats Assessment: Supplement to Endangered and Threatened Wildlife and Plants; Final Threatened Status for the Rufa Red Knot (Calidris Canutus Rufa): Docket No. FWS-R5-ES-2013-0097; RIN AY17*, at 297 (Nov. 2014) (citing Kuvlesky, W.P., Jr., L.A. Brennan, M.L. Morrison, K.K. Boydston, B.M. Ballard, and F.C. Bryant. 2007. Wind energy development and wildlife conservation: Challenges and opportunities. *Journal of Wildlife Management* 71(8):2487-2498.).

<sup>180</sup> Pers. comms. David Newstead (Oct. 31, 2021). Although the Coastal Bend Bays & Estuaries Program monitoring was successfully accomplished, the closures nevertheless placed a strain on scientists’ time and resources.

<sup>181</sup> January 2021 Service Letter (Attachment I).

<sup>182</sup> Letter from Charles Ardizzone, Field Supervisor, U.S. Fish and Wildlife Service to Stacey M. Zoo, Office of Commercial Space Transportation, Federal Aviation Administration at 2 (Mar. 4, 2020) (Attachment C).

<sup>183</sup> TPWD Scoping Comments at 7 (Attachment B).

and will almost certainly continue to do so. Wildfires can also kill and displace birds and destroy nests and eggs. When commenting on a recent wildfire, a Service employee noted that it “could have as easily been devastating to nesting shorebird and resident species during their reproductive period.”<sup>184</sup>

Thus, the Proposed Project will adversely affect wildlife, a resource in the Project Area, causing the Proposed Project to have significant environmental impacts.

#### **D. Resulting Legal Violations**

When analyzing the degree of an action’s significance, agencies must consider effects that would violate other laws.<sup>185</sup> Among other legal violations, the Project will absolutely result in violations of the National Wildlife Refuge System Improvement Act of 1997 (“Refuge Improvement Act”) and will likely result in violations of the Migratory Bird Treaty Act (“MBTA”), as well.

##### **1. Violations of the Refuge Improvement Act**

The National Wildlife Refuge System is managed pursuant to the Refuge Improvement Act, which Congress passed to “help protect species large and small, beautiful and not-so-beautiful, endangered and common alike.”<sup>186</sup> The primary mission of the National Wildlife Refuge System is:

to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.<sup>187</sup>

The Refuge Improvement Act was intended “to establish clearly the conservation mission of the System.”<sup>188</sup> However, SpaceX’s actions are resulting—and will continue to result—in violations of the Refuge Improvement Act, including from (1) SpaceX using the refuge without the Service engaging in a compatibility determination, (2) SpaceX engaging in incompatible uses of the refuge, (3) SpaceX failing to obtain a special use permit for engaging in commercial activities in the refuge, (4) SpaceX’s operations interfering with the Service’s mandate to promote the biological integrity, diversity, and environmental health of the refuge system, (5) SpaceX’s operations interfering with the Service’s mandate to provide for wildlife conservation in the refuge, and (6) SpaceX’s operations interfering with the Service’s mandate ensure that the refuge’s purposes are carried out.

##### **a. Failure to Engage in a Compatibility Determination**

It is our understanding that the Service has never engaged in a compatibility determination of all of SpaceX’s activities in the refuge and has no future plans to do so. To ensure that refuges carry out the System’s mission and their respective purposes, the law creates a presumption against public use

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<sup>184</sup> Email from Bryan Winton (Aug. 19, 2019 22:51 CST) (Attachment T)

<sup>185</sup> *Id.* § 1501.3(b)(2), (b)(2)(ii), (b)(2)(iv).

<sup>186</sup> 143 Cong. Rec. H7646-02, H7647, 1997 WL 586267, 4.

<sup>187</sup> 16 U.S.C. § 668dd(a)(2).

<sup>188</sup> H.R. REP. NO. 105-106, at 3 (1997), reprinted in 1997 U.S.C.A.N. 1798-5.

and access of national wildlife refuges.<sup>189</sup> With extraordinarily limited exceptions, the Refuge Improvement Act provides authorization only to the Secretary of the U.S. Department of the Interior and the Service to administer and authorize uses of refuges.<sup>190</sup> The Service may “permit the use of any area within the System for any purpose . . . whenever [it] determines that such uses are compatible with the major purposes for which such areas were established.”<sup>191</sup> Thus, it must engage in a compatibility determination whenever it “initiate[s] or permit[s] a new use of a refuge or expand[s], renew[s], or extend[s] an existing use of a refuge.”<sup>192</sup>

SpaceX has repeatedly used LRGV NWR when engaging in operations and will continue to do so for the Proposed Project. For example, the refuge has been and will continue to be used as a sacrificial debris field, where explosion debris has landed on multiple occasions and wildfires resulting from explosions have occurred. LRGV NWR would be included in the Project’s “Blast Danger Area”<sup>193</sup> and be subject to further FAA-approval as a part of the hazard area where debris may land,<sup>194</sup> which has occurred in the past. The refuge is and would continue to be subject to SpaceX’s use during debris reconnaissance and removal operations. Based on the information available to us, it is our understanding that these and other uses of the refuge by SpaceX have never been the subject of compatibility determinations and will not be the subject of any compatibility determinations in the future.

### **b. Incompatible Use of a Refuge for SpaceX’s Overall Operations**

SpaceX is also violating and will continue to violate the Refuge Improvement Act by engaging in an incompatible use of a refuge. Refuges can only be used if “such uses are compatible with the purposes for which these areas are established.”<sup>195</sup> For a use to be “compatible” it must be “a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the [Service], will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”<sup>196</sup>

SpaceX’s current and proposed activities are plainly incompatible with the purposes of LRGV NWR. The purpose of the refuge is in part to “develop[], advance[], manage[], conserve[e], and protect[] . . . fish and wildlife resources.”<sup>197</sup> As discussed, SpaceX’s activities cause a multitude of harms to fish and wildlife resources, such as from explosions, wildfires, disturbances, and adverse modification of habitat resulting from debris. Even according to the Service, SpaceX’s operations cause “both ‘adverse’ and ‘severe’ impacts to Refuge public use, management, wildlife, and habitat.”<sup>198</sup>

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<sup>189</sup> 50 C.F.R. § 25.21(a) (Except for refuges in Alaska, “all areas included in the [System] are closed to public access until and unless we open the area for a use . . . in accordance with the [Refuge Act]. . . .”); *see also United States v. Sams*, 45 F. Supp. 3d 524, 525 (E.D.N.C. 2014) (the Refuge Act “closes national wildlife refuges in all states except Alaska to all uses until opened.”).

<sup>190</sup> *See, e.g.* 16 U.S.C. § 668dd(a)(1) (refuges “shall be administered by the Secretary through the United States Fish and Wildlife Service”), (d)(1)(A) (“the Secretary is authorized . . . to permit the use of” refuges).

<sup>191</sup> 16 U.S.C. § 668dd(d)(1)(A).

<sup>192</sup> *Id.* § 668dd(d)(3)(A)(i); *see also* 50 C.F.R. § 26.41(a).

<sup>193</sup> BA at 56.

<sup>194</sup> DPEA at 24-25.

<sup>195</sup> 16 U.S.C. § 668dd(d)(1)(B).

<sup>196</sup> *Id.* § 668ee(1).

<sup>197</sup> LRGV NWR CCP at 42 (citing 16 U.S.C. § 742f(a)(4)) (Attachment A).

<sup>198</sup> August 2021 Service Letter at 2 (emphasis in original) (Attachment D).

Thus, the Project will violate the Refuge Improvement Act’s prohibition on incompatible uses of a refuge.

### **c. Unlawful Use of a Refuge for Economic Purposes**

It is also our understanding that SpaceX has never obtained a special use permit to use the refuge for economic activities, which is required by Refuge Improvement Act regulations.<sup>199</sup> However, even if SpaceX does obtain a special use permit, economic uses of a refuge can only be permitted where the Service “determine[s] that the use *contributes to the achievement* of the national wildlife refuge purposes or the National Wildlife Refuge System mission.”<sup>200</sup> SpaceX’s use of the refuge clearly does not. Thus, the Project will result in an unlawful economic use of LRGV NWR.

### **d. Preventing the Service from Achieving its Affirmative Management Prescriptions**

As is now also the case, the Project will impede the Service’s ability to achieve several affirmative management prescriptions delineated in the Refuge Improvement Act. The Refuge Improvement Act requires the Service to administer the System to “ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans.”<sup>201</sup> However, the Service has explicitly stated: “Due to operations by SpaceX, the FWS’s ability to maintain the biological integrity, diversity and environmental health of Refuge resources... has been significantly diminished at the Boca Chica tract.”<sup>202</sup> Thus, SpaceX is interfering with the Service’s ability to comply with the Refuge Improvement Act’s biological integrity, diversity, and environmental health mandate. The Refuge Improvement Act also requires the Service to “provide for the conservation of fish, wildlife, and plants, and their habitats within the System,”<sup>203</sup> however SpaceX’s activities directly counter such efforts and will continue to do so during the Proposed Project. Finally, the SpaceX project impedes the Service’s ability to “ensure that... the purposes of each refuge are carried out.”<sup>204</sup> As discussed, the purpose of LRGV NWR is in part to “develop[], advance[], manage[], conserve[e], and protect[]... fish and wildlife resources,”<sup>205</sup> and SpaceX is impeding such efforts.

Because SpaceX’s impacts would result in violations of numerous provisions of the Refuge Improvement Act, its impacts will be significant and the FAA must prepare an EIS to address the project.

## **2. The Project Will Likely Result in Violations of the Migratory Bird Treaty Act**

SpaceX’s Project will also likely result in violations of the MBTA by causing a take of migratory birds, their chicks, their nests, and/or their eggs. In 1918, Congress enacted the MBTA to implement a treaty for “the protection of migratory birds” between Great Britain (on behalf of

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<sup>199</sup> *Id.* § 27.97.

<sup>200</sup> 50 C.F.R. § 29.1.

<sup>201</sup> 16 U.S.C. § 668dd(a)(4)(B).

<sup>202</sup> January 2021 Service Letter at 2-3 (Attachment I).

<sup>203</sup> 16 U.S.C. § 668dd(a)(4)(A).

<sup>204</sup> *Id.* § 668dd(a)(4)(D).

<sup>205</sup> LRGV NWR CCP at 42 (citing 16 U.S.C. § 742f(a)(4)) (Attachment A).

Canada) and the United States.<sup>206</sup> The objective of the treaty was to create a “uniform system of protection” to “insur[e] the preservation of such migratory birds” because “a lack of adequate protection” for many migratory birds traveling through the United States left them vulnerable to extinction.<sup>207</sup> Over the years, Congress broadened the scope of the MBTA to implement similar treaties with Mexico in 1936, Japan in 1972, and the former Soviet Union in 1976.<sup>208</sup> The MBTA was a breakthrough in U.S. conservation law. Once on the path to extinction, the MBTA helped restore countless populations of birds, such as sandhill cranes, snowy egrets, and wood ducks.<sup>209</sup> In fact, the Supreme Court has described the purpose of the MBTA as a “national interest of very nearly the first magnitude.”<sup>210</sup>

As a “conservation statute[] designed to prevent the destruction of certain species of birds,”<sup>211</sup> the MBTA protects more than 1,000 species of birds found in the United States.<sup>212</sup> Under this law:

[u]nless and except as permitted by regulations . . . it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, [or] kill . . . any migratory bird [or] any part, nest, or egg of any such bird . . . included in the terms of the conventions . . .<sup>213</sup>

This provision applies to “any person, association, partnership, or corporation who shall violate any provisions of [the Act].”<sup>214</sup> The MBTA applies to both targeted and incidental takes, and the foreseeable incidental take of migratory birds cannot proceed without formal authorization from the Service.<sup>215</sup>

The Project is likely to create impacts that result in a take of migratory birds, their chicks, their eggs and/or their nests. As discussed, many migratory birds use the area, including red knots, piping plovers, snowy plovers, Wilson’s plovers, reddish egrets, American oystercatchers, peregrine falcons, and brown pelicans. Migratory birds and their eggs could be killed or destroyed if they appear in the rocket’s heat plume during launches. Moreover, migratory birds, such as snowy plovers, nest near the Project site. Disturbances can cause birds to flush off of their nests, leaving chicks vulnerable to death from overheating, predators, and fleeing the nest when they are not yet flight-capable. Flushing can also lead to the destruction of eggs, onset by predators and overheating. Lighting on tall structures, moreover, can kill migratory birds by causing avian collisions. Finally, explosion-onset wildfires can kill birds and destroy nests and eggs.

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<sup>206</sup> *Act of July 3, 1918, ch. 128*, 40 Stat. 755.

<sup>207</sup> Convention for the Protection of Migratory Birds, 39 Stat. 1702 (Aug. 16, 1916).

<sup>208</sup> Convention between the United States of America and Mexico for the Protection of Migratory Birds and Game Mammals, 50 Stat. 1311 (Feb. 7, 1936) (Mexico Convention); Convention for the Protection of Migratory Birds and Birds in Danger of Extinction, and Their Environment, art. VI, 25 U.S.T. 3329 (Mar. 4, 1972) (Japan Convention); Convention Concerning the Conservation of Migratory Birds and Their Environment, art. IV, 29 U.S.T. 4647 (Nov. 19, 1976) (Russia Convention).

<sup>209</sup> Nat’l Audubon Soc’y, *The Migratory Bird Treaty Act, Explained*, (Jan. 26, 2018), <https://www.audubon.org/news/the-migratory-bird-treaty-act-explained>.

<sup>210</sup> *Missouri v. Holland*, 252 U.S. 416, 435 (1920).

<sup>211</sup> *Andrus v. Allard*, 444 U.S. 51, 52 (1979).

<sup>212</sup> See 50 C.F.R. § 10.13.

<sup>213</sup> 16 U.S.C. § 703(a).

<sup>214</sup> *Id.* § 707(a).

<sup>215</sup> See 86 Fed. Reg. 54643 (Oct. 4, 2021).

## **E. Conclusion**

At bottom, it would be arbitrary and capricious for the FAA to proceed without preparing an EIS. Indeed, the FAA recognized it was appropriate to prepare an EIS for SpaceX's originally planned activities in the area in 2014, so it would make no sense for the agency to now deem an EIS unnecessary for a connected action with even larger rockets and more infrastructure. The Project will cause significant impacts because it will likely adversely affect nearby public lands, at least ten species listed under the Endangered Species Act, and other wildlife in the area. It moreover will result in numerous violations of the Refuge Improvement Act and is also likely to result in violations of the MBTA. The FAA has also failed to demonstrate that nearly any meaningful mitigation measures will be implemented to counter these significant impacts. As put by one Service employee, "I must state this emphatically here that our response MUST be very clear that an EA is inappropriate to comply with the spirit and intent of NEPA, because we can see no path towards a FONSI!"<sup>216</sup> We agree. To comply with NEPA, the FAA must prepare an EIS.

### **III. The DPEA is Inadequate**

If the FAA incorrectly decides against preparing an EIS, this decision would also be unlawful because it would have been made based on the woefully inadequate DPEA, which fails to comply with NEPA and its regulations. If it is unknown whether an action will be "significant," then an agency may prepare an EA. An EA must provide "sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact."<sup>217</sup> In doing so, the EA must discuss the environmental impacts of and alternatives to the proposed action<sup>218</sup> and must account for connected actions.<sup>219</sup> The DPEA, however, fails to comply with these requirements. Indeed, it fails to adequately consider the environmental impacts of the project and it fails to adequately consider alternatives to the proposed action. Accordingly, the DPEA does not provide sufficient evidence and analysis to support a finding of no significant impact.

#### **A. The DPEA Fails to Adequately Consider Environmental Impacts**

Under NEPA, a federal agency must take a "hard look" at the environmental impacts of its proposed action, yet the DPEA fails to do so for a number of reasons. First, it does not appear to consistently evaluate the environmental impacts of SpaceX's prior and current operations at the site, despite the fact that they are connected actions with respect to the Proposed Project. Second, the DPEA at times places artificial limitations on when actions can be considered significant. Third, the DPEA fails to adequately discuss the Project's impacts to listed species. Finally, it glosses over critical details involving the Project that are either definitely or otherwise likely to result in significant impacts.

The DPEA must account for connected actions, yet it has failed to do so. NEPA regulations require agencies to consider connected actions,<sup>220</sup> such as actions that "[c]annot or will not proceed unless

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<sup>216</sup> Email from Chris Perez (Jan 6, 2021 08:53 CST) (Attachment K).

<sup>217</sup> 40 C.F.R. § 1501.5(c)(1).

<sup>218</sup> *Id.* § 1501.5(c)(2).

<sup>219</sup> *Id.* § 1501.3(b).

<sup>220</sup> *Id.* § 1501.3(b).

other actions are taken previously or simultaneously” or “[a]re interdependent parts of a larger action and depend on the larger action for their justification.”<sup>221</sup> The Proposed Project will rely on previous actions taken at the site, such as SpaceX’s construction of existing infrastructure that, according to the DPEA, “SpaceX must be able to use.”<sup>222</sup> The Project will also rely on information obtained from prior and ongoing testing at the site.<sup>223</sup> Moreover, SpaceX’s prior actions, current operations, and the Proposed Project are also interdependent parts of SpaceX’s larger action at the site to further commercial space exploration, making them connected actions. As stated by a Service employee, “[a]ll SpaceX development is a connected action.”<sup>224</sup> Although impacts resulting from the Proposed Project, alone, are significant enough to warrant an EIS, the DPEA is inherently defective for failing to also consistently consider connected actions.

Even though prior and current operations at the site are connected actions, they at times were ignored in DPEA’s analysis of what can be considered significant. For example, in the DPEA’s analysis of noise impacts, current SpaceX operations were accounted for as existing conditions at the site.<sup>225</sup> According to the DPEA, construction noise impacts would only be significant if they increase the noise by DNL 1.5 dB.<sup>226</sup> However, the Project and current operations are connected actions. The FAA, therefore, cannot judge significance by an increase in the sound level above existing conditions and instead should consider the increased noise level resulting from the connected actions rather than the noise level of the increase.

The DPEA also places several artificial limitations on when an action can be considered significant. First, the assessment makes the concerning assertion that, “[a] significant impact on biological resources would occur if the USFWS or NMFS determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat.”<sup>227</sup> This is incorrect for a number of reasons. First, CEQ regulations do not provide that only listed species and critical habitat should be considered when determining whether an action will have significant impacts to biological resources. According to the regulations, when assessing the significance of an action, agencies should consider “the affected area... and its resources, *such as* listed species and designated critical habitat under the Endangered Species Act.”<sup>228</sup> CEQ regulations’ reference to listed species and critical habitat serves only as an *example* of affected resources is not intended to limit listed species and critical habitat to being the only two metrics for determining the significance of impacts to biological resources.

Moreover, the DPEA’s stated threshold for significance inappropriately uses the same standards as ESA Section 7’s prohibition against jeopardizing a species’ continued existence or adversely modifying its critical habitat.<sup>229</sup> A federal agency’s legal obligations under NEPA and the ESA are entirely separate; compliance with the ESA Section 7 prohibition against jeopardizing a species’

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<sup>221</sup> *Id.* § 1501.9 (e)(1)(ii)-(iii)

<sup>222</sup> *See, e.g.*, DPEA at 34 (“Starship/Super Heavy test and launch operations conducted during the program development and operational phases must be able to use, to the maximum extent practicable, existing infrastructure at one of SpaceX’s launch sites.”)

<sup>223</sup> BA at 8.

<sup>224</sup> Email from Chris Perez (Sept. 10, 2020 08:46 CST) (Attachment DD)

<sup>225</sup> DPEA at 49.

<sup>226</sup> *Id.* at 50.

<sup>227</sup> DPEA at 110.

<sup>228</sup> 40 CFR § 1501.3(b)(1) (emphasis added).

<sup>229</sup> *See* 16 U.S.C. § 1536(a)(2).

continued existence does not simultaneously satisfy NEPA's requirements to analyze significant impacts short of the threat of extinction.<sup>230</sup> As one court stated, "[c]learly, there can be a significant impact on a species even if its existence is not jeopardized."<sup>231</sup>

Another example of an arbitrary limitation on significance is the DPEA's assertion that "[n]oise from the Proposed Action would not be expected to cause a significant impact because the noise events are infrequent and short-term and would not result in impacts at the population level."<sup>232</sup> First, significance should not be limited to population-level impacts, especially because CEQ's regulations for determining significance state that significance can in part be examined based on impacts to resources in a local area.<sup>233</sup> Significance, therefore, should not be limited to population-level impacts. Moreover, setting aside the incorrect substance of the FAA's misguided conclusion that noise events would be infrequent and short-term, noise events that are infrequent and short term can nevertheless have significant impacts. As previously mentioned, research suggests that disturbed shorebird flocks often do not return to the same location after being disturbed, or otherwise return with a diminished flock size.<sup>234</sup>

The DPEA also fails to adequately address impacts to listed species and critical habitat. First, although the BA's (albeit, still inadequate) analysis contains more information about listed species than the DPEA, the FAA cannot rely on the consultation process to satisfy its obligations under NEPA. According to the DPEA, "[t]he FAA's BA includes the full impact analysis on ESA-listed species."<sup>235</sup> However, an agency cannot substitute compliance with NEPA for compliance with the ESA.<sup>236</sup> The FAA also avers that it is engaged in Section 7 consultation under the ESA "to address the potential effects to ESA-listed species."<sup>237</sup> But, a mitigation plan developed to satisfy the ESA does not inherently satisfy NEPA.<sup>238</sup>

Regardless, both the BA and the DPEA fail to adequately assess the impacts of the project on listed species and critical habitat, largely relying on generalized assertions without supporting information or otherwise entirely ignoring certain issues. "[G]eneral statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided."<sup>239</sup> For example, neither document appropriately accounts for the impacts that lighting will have on listed species, as evidenced by the fact that the site design is incomplete and the number of lights that will be used is yet to be finalized.<sup>240</sup> As another example, the DPEA notes that lighting at the power plant would be minimized, but it does not explain what that would mean, such as which species might be impacted and just how bright the power plant would remain. The analyses also do not accurately account for disturbances. At times, the BA is dismissive of them,

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<sup>230</sup> See *Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257, 1275–76 (10th Cir. 2004) (recognizing FWS conclusion that action not likely to cause jeopardy does not necessarily mean impacts are insignificant).

<sup>231</sup> *Makua v. Rumsfeld*, 163 F. Supp. 2d 1202, 1218 (D. Haw. 2001) ("A FONSI . . . must be based on a review of the potential for significant impact, including impact short of extinction).

<sup>232</sup> DPEA at 114.

<sup>233</sup> 40 CFR § 1501.3(b)(1).

<sup>234</sup> Threats Assessment at 269-270 (internal citations omitted) (Attachment Y).

<sup>235</sup> DPEA at 116.

<sup>236</sup> See *Portland Audubon Society v. Lujan*, 795 F. Supp. 1489, 1509 (D. Or. 1992) (rejecting agency's request for the court to "accept that its consultation with [FWS under the ESA] constitutes a substitute for compliance with NEPA.")

<sup>237</sup> DPEA at 116.

<sup>238</sup> *National Wildlife Federation v. Babbitt*, 128 F. Supp. 2d 1274, 1302 (E.D. Cal. 2000) (requiring EIS under NEPA even though mitigation plan satisfied ESA).

<sup>239</sup> *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1213 (9th Cir. 1998).

<sup>240</sup> BA at 9.



implying that disturbances caused by the massive SpaceX project are comparable to disturbances resulting from recreational beach-goers.<sup>241</sup> Moreover, even in places where the documents note that disturbances can cause displacement, they do not elaborate on what the effects of displacement would be. For instance, roughly how many members of the species might be displaced? Where would these species go? Is there sufficient foraging, nesting, and roosting habitat available to them if they do relocate? The BA and DPEA also do not fully consider how site closures will impact listed species. For instance, a Service employee raised the question of whether “closures prevent sea turtle personnel from being able to provide quick assistance for stranded turtles.”<sup>242</sup> In late 2020, for example, more than 20 green sea turtles in the area died, likely in large part from gill nets.<sup>243</sup>

Finally, the DPEA failed to adequately consider the impacts of certain foreseeable, major events. For instance, it barely discusses the impacts of anomalies. More than 10 anomalies have occurred, and the DPEA even briefly notes the possibility of monthly explosions, accompanied by debris, resulting from tank tests. The DPEA notes that anomaly-induced rutting can be regraded, but does not explain what the impact of rutting would be in the meantime, given that flats in the area serve as important foraging habitat to shorebirds. It also does not explain whether regrading habitat would sufficiently restore habitat in the area. The DPEA also makes brief mention of the fact that wildfires can result from explosion, stating that they would occur in “small areas adjacent to the launch mount and landing pad.”<sup>244</sup> History has shown, however, that SpaceX’s wildfires can be anything but “small,” such as when 130 acres of refuge-managed land burned following an explosion in July 2019. Moreover, it is foreseeable that wildfires will not be limited to areas adjacent to the launch mount. Earlier this year, for instance, the debris field resulting from an explosion spanned for miles. While it is possible that some of these events and resulting impacts may be addressed in external documents and response plans, they are not addressed in the DPEA, and the FAA is therefore in violation NEPA.

Finally, the DPEA glosses over, or otherwise entirely overlooks, major Project components or elements that are parts of connected actions. For instance, it only briefly referenced the construction of an entire power plant, failing to specify information such as the timing and extent of noise, how much additional traffic would accompany the construction, and what species and habitats would be impacted. It also failed to address work by Mountain Valley Electric Cooperative to realign and upgrade a powerline from East Brownsville to the Boca Chica Beach area, intended to serve SpaceX.<sup>245</sup> Powerlines increase the likelihood of bird strikes, and there will be added noise and lighting spurred by construction of the line. Moreover, it is our understanding that the Project will require the installation of a pipeline though LRGV NWR, but this is not addressed in the DPEA. Thus, the DPEA failed to adequately consider environmental impacts and cannot be relied upon to support a FONSI.

## **B. The DPEA Fails to Adequately Analyze Alternatives**

Finally, the FAA failed to consider an adequate range of alternatives, instead limiting its analysis to an evaluation of the Project and of a “no action” alternative. CEQ regulations require that

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<sup>241</sup> *Id.* at 66.

<sup>242</sup> Email from Chris Perez (Jan. 4, 2021) (Attachment EE).

<sup>243</sup> Email from Mariana Devlin (Dec. 29, 2020 09:38 CST) (Attachment EE).

<sup>244</sup> EA at 112.

<sup>245</sup> <https://www.fws.gov/nwrs/threecolumn.aspx?id=6442470706>

environmental assessments include alternatives to a proposed action.<sup>246</sup> SpaceX entirely dictated the terms of the alternatives analysis, or in this case, lack thereof. Specifically, it noted that in order to meet the purpose and need for the federal action, it must be able to use existing infrastructure at its own facilities.<sup>247</sup> It then dismissed consideration of its existing launch facilities other than at Boca Chica for reasons that generally boil down to convenience, such as scheduling flexibility, ready access to propellants, and proximity to Starship/Super Heavy manufacturing and production facilities.<sup>248</sup>

“[T]he evaluation of ‘alternatives’ mandated by NEPA is to be an evaluation of alternative means to accomplish the *general* goal of an action; it is not an evaluation of the alternative means by which a particular applicant can reach his goals.”<sup>249</sup> As the Seventh Circuit has asserted:

We have held that blindly adopting the applicant's goals is “a losing proposition” because it does not allow for the full consideration of alternatives required by NEPA. NEPA requires an agency to “exercise a degree of skepticism in dealing with self-serving statements from a prime beneficiary of the project” and to look at the general goal of the project rather than only those alternatives by which a particular applicant can reach its own specific goals.<sup>250</sup>

The FAA cannot and should not winnow down the scope of its alternatives analysis simply to accommodate what is most convenient for SpaceX. This is especially important because when SpaceX began operations at the Boca Chica site, it conveyed to regulators that it would only engage in launch activities, rather than more dangerous testing activities. As previously discussed, the Boca Chica launch site is in an extraordinarily ecologically sensitive area, and even Service personnel have suggested that “now that the area is a test site rather than a strategic launch location, their project should be moved to a far less environmentally sensitive area.”<sup>251</sup> The FAA should consider an alternative site location, regardless of what SpaceX demands.

Moreover, even if Boca Chica were the only viable site for the Project, that would not explain why the FAA only considered two alternatives, instead of considering various project configurations at the Boca Chica site that would decrease the significance of SpaceX’s environmental impacts. For instance, the FAA could have analyzed options that contemplated fewer launches per year, utilized less imposing construction, or caused fewer disturbances. Instead, the FAA chose to evaluate only two options, calling into question the legitimacy of the DPEA’s analysis.

Because the DPEA failed to adequately analyze the Project’s environmental impacts and an appropriate range of alternatives, the DPEA does not meet the requirement that it provide sufficient evidence and analysis for a FONSI. Thus, if the FAA chooses not to prepare an EIS despite the significance of the Project’s environmental impacts, the agency must at a minimum revise the DPEA to adequately address the Proposed Project’s environmental impacts and evaluate an appropriate range of alternatives.

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<sup>246</sup> 40 C.F.R. § 1501.5(c)(2).

<sup>247</sup> DPEA at 34.

<sup>248</sup> *Id.* at 35.

<sup>249</sup> *Van Abbema v. Fornell*, 807 F.2d 633, 638 (7th Cir. 1986).

<sup>250</sup> *Environmental Law & Policy Center v. U.S. Nuclear Regulatory Commission*, 470 F.3d 676, 683 (7th Cir. 2006)

<sup>251</sup> Email from Bryan Winton (Aug. 19, 2019 22:51 CST) (Attachment X – Fire Impacts)

#### IV. Conclusion

The FAA must prepare an EIS to evaluate the environmental impacts of SpaceX's Proposed Project. The action will have significant impacts because it will have adverse effects on the surrounding area, on listed species, on critical habitat, and on other wildlife in the area. Even if the FAA decides that an EIS is not warranted, which would be an arbitrary and capricious decision, the FAA at a minimum must revise the DPEA because it fails to provide sufficient evidence and analysis for a FONSI. Thank you for your time, and we sincerely appreciate this opportunity to submit comments on the Proposed Project.

Sincerely,



Lindsay Dubin  
Staff Attorney  
Defenders of Wildlife  
(202) 772-3234  
ldubin@defenders.org



Sharon Wilcox, Ph.D.  
Senior Texas Representative  
Defenders of Wildlife  
(505) 395-7332  
swilcox@defenders.org