[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation

AGENCY: Federal Aviation Administration (FAA)

ACTIONS: Finding of No Significant Impact (FONSI) and Record of Decision (ROD)

SUMMARY: The U.S. Air Force (USAF) acted as the lead agency, and the FAA was a cooperating agency, in the preparation of the July 2013 *Supplemental Environmental Assessment to the November 2007 Environmental Assessment for the Operation and Launch of the Falcon 1 and Falcon 9 Space Vehicles at Cape Canaveral Air Force Station Florida* (SEA), in accordance with the National Environmental Policy Act of 1969 (NEPA), 42 United States Code (U.S.C.) §§ 4321–4347 (as amended), Council on Environmental Quality NEPA implementing regulations, 40 Code of Federal Regulations (CFR) §§ 1500-1508, and FAA Order 1050.1E, to analyze the potential environmental impacts of Space Exploration Technologies Corp. (SpaceX) operating and launching the Falcon 9 Block 2 launch vehicle, also referred to as the Falcon 9 Version 1.1 (v1.1), from Launch Complex (LC)-40 at Cape Canaveral Air Force Station (CCAFS), Florida. The National Aeronautics and Space Administration (NASA) also participated as a cooperating agency on the SEA. The SEA incorporates by reference the 2007 USAF *Environmental Assessment for the Operation and Launch of the Falcon 1 and Falcon 9 Space Vehicles at Cape Canaveral Air Force Station Florida* (2007 EA). The FAA also participated as a cooperating agency with USAF in the preparation of the 2007 EA. USAF issued a FONSI based on the 2007 EA in December 2007, and the FAA issued its own FONSI in January 2009. The SEA was necessary because the Falcon 9 v1.1 is larger than, and produces a greater total thrust than, the Falcon 9 Block 1 launch vehicle analyzed in the 2007 EA. The SEA evaluated the potential environmental impacts associated with the Proposed Action and the No Action Alternative.

As the Proposed Action would require Federal actions (as defined in 40 CFR § 1508.18) involving both USAF and the FAA, the SEA was prepared to satisfy the NEPA obligations of

both agencies. USAF was the lead agency, and the FAA served as a cooperating agency. The FAA's Federal action in this matter pertains to its role in issuing licenses and/or permits for the operation of commercial launch and reentry vehicles at launch sites. USAF issued a FONSI on September 30, 2013, which stated that the potential environmental impacts associated with the Proposed Action would not individually or cumulatively have a significant impact on the quality of the human environment, and therefore the preparation of an Environmental Impact Statement (EIS) was not required.

SpaceX is required to obtain a launch license from the FAA to conduct commercial launches of the Falcon 9 v1.1 at CCAFS. SpaceX is also required to obtain reentry licenses for commercial vehicles that would reenter the Earth's atmosphere, such as the Dragon Capsule. Based on its independent review and consideration of the SEA, the FAA issues this FONSI/ROD concurring with the analysis of impacts and findings in the SEA and formally adopts the SEA to support the issuance of launch and reentry licenses to SpaceX for Falcon 9 v1.1 and Dragon commercial launch operations at CCAFS that fall within the scope of the SEA. If future proposed SpaceX launch operations would fall outside the scope of the EA, additional environmental analysis will be required prior to the FAA issuing a launch or reentry license.

After reviewing and analyzing available data and information on existing conditions and potential impacts, including the SEA and the 2007 EA, the FAA has determined that issuance of launch and reentry licenses to conduct launches of the Falcon 9 v1.1 with commercial payloads, including the Dragon Capsule, at CCAFS within the scope of the SEA would not significantly affect the quality of the human environment within the meaning of NEPA. Therefore, the preparation of an EIS is not required, and the FAA is issuing this FONSI/ROD. The FAA made this determination in accordance with all applicable environmental laws and FAA regulations. The SEA is incorporated by reference into this FONSI/ROD.

FOR A COPY OF THE ENVIRONMENTAL ASSESSMENT: Visit the following internet address:
http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/ or contact Daniel Czelusniak, Environmental Specialist, Federal Aviation Administration,

800 Independence Ave., SW, Suite 325, Washington, DC 20591; e-mail Daniel.Czelusniak@faa.gov; or phone (202) 267-5924.

PURPOSE AND NEED: The National Space Transportation Policy of 1994 addressed the commercial launch sector, stating that "...the DoD, in cooperation with the civil and commercial sectors, should evolve satellite, payload, and launch vehicle designs to achieve the most cost-effective and affordable integrated satellite, payload, and launch vehicle combination." The purpose of SpaceX's proposal is to fulfill the company's mission to operate and launch the Falcon 9 v1.1 from LC-40 at CCAFS, which would help the United States achieve National Space Policy goals. The need for SpaceX's proposal is to demonstrate delivery and return of cargo to the International Space Station, as it was selected by NASA to do, and the delivery of satellites to orbit. The purpose of FAA's Proposed Action is to fulfill the FAA's responsibilities as authorized by Executive Order 12465, *Commercial Expendable Launch Vehicle Activities* (49 *FR* 7099, 3 CFR, 1984 Comp., p. 163), and the Commercial Space Launch Act (51 U.S.C. Subtitle V, ch. 509, §§ 50901-50923) for oversight of commercial space launch activities, including licensing launch activities. The need for FAA's Proposed Action results from the statutory direction from Congress under the Commercial Space Launch Act to protect the public health and safety, safety of property, and national security and foreign policy interests of the U.S. and to encourage, facilitate, and promote commercial space launch and reentry activities by the private sector in order to strengthen and expand U.S. space transportation infrastructure.

PROPOSED ACTION: The FAA's Proposed Action is to issue launch and reentry licenses to SpaceX for Falcon 9 v1.1 commercial launch operations at CCAFS and reentry vehicles such as the Dragon Capsule for operations within the scope of the SEA. The Proposed Action analyzed in the SEA consists of SpaceX operating and launching the Falcon 9 v1.1 and a variety of payloads, including the Dragon Capsule, from LC-40 at CCAFS, where SpaceX has been launching the Falcon 9 Block 1 since 2010. Most payloads would be commercial; however, some could be NASA or Department of Defense payloads. The Falcon launch vehicle programs are designed for minimal vehicle assembly and processing on the launch pad. The goal is to launch within a few days to several weeks of payload arrival at the launch site.

The Falcon 9 v.1.1 is essentially the same vehicle design as the Falcon 9 Block 1, except it is taller, heavier, and has more propellant and greater thrust, primarily due to a newer model of the Merlin engine. The Falcon 9 v1.1 is a medium-lift launch vehicle, weighing approximately 1,000,000 pounds, with an overall length of approximately 224 feet. The Falcon 9 v1.1 uses liquid oxygen (LOX) and rocket propellant-1 (or refined pretroluem-1; RP-1) as propellants to carry payloads into orbit.

SpaceX plans to use existing facilities, structures, and utility connections. SpaceX anticipates that primary commercial payload processing would occur at the hangar and hangar annex at LC-40 or at an existing processing facility at CCAFS. As described in the SEA, there are no construction-related tasks associated with the Proposed Action. During the operational phase, SpaceX anticipates between eight to twelve Falcon 9 v1.1 launches per year, and the program may extend up to 10 years. Launch campaigns, on a per-mission basis, are expected to last from 2 to 8 weeks.

In addition to standard payloads such as satellites, SpaceX's Dragon Capsule could be carried on the Falcon 9 v1.1. Upon completion of the mission, the Dragon Capsule would reenter the Earth's atmosphere on a pre-planned trajectory, make a soft landing in the Pacific Ocean, and be recovered.

ALTERNATIVES CONSIDERED: Alternatives analyzed as part of this FONSI/ROD include (1) the Proposed Action and (2) No Action Alternative. Under the No Action Alternative, the FAA would not issue launch or reentry licenses to SpaceX for Falcon 9 v1.1 commercial launch operations at CCAFS. The No Action Alternative would not meet the purpose and need for the action. The SEA also considered, but removed from further consideration, alternative locations for the Falcon 9 v1.1 launch site because the 2007 EA had considered these alternative locations, and it was determined that use of the LC-40 site presented the least environmental impact.

ENVIRONMENTAL IMPACTS

The following presents a brief summary of the potential environmental impacts considered in the SEA. This FONSI/ROD incorporates the SEA by reference and is based on the potential impacts discussed in the SEA. The FAA has determined the analysis of impacts presented in the SEA

represents the best available information regarding the potential impacts associated with the FAA's regulatory responsibilities described in this FONSI/ROD. Although not required by FAA Order 1050.1E, this FONSI/ROD includes the following additional impact categories because they are addressed in the SEA by the lead agency, U.S. Air Force: geology and soils, human health and safety, orbital debris, and transportation.

Air Quality

CCAFS and Brevard County are classified as attainment areas with the National Ambient Air Quality Standards and Florida Ambient Air Quality Standards. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related air emissions. During operation of the Falcon 9 v1.1 launch vehicle program, emissions from ground support operations and Falcon 9 v1.1 launches would cause adverse air quality impacts. However, these emissions would represent an extremely small percentage of the Brevard County regional emissions and would not exceed any thresholds established under the Clean Air Act. Though emissions from the Proposed Action would increase the yearly levels of greenhouse gases at CCAFS, they would still be well below the mandatory reporting limit of 25,000 million metric tons of carbon dioxide equivalent. Therefore, the Proposed Action would not be expected to result in significant air quality impacts [SEA 4.5 at 4-12].

Biological Resources (Fish, Wildlife, and Plants)

The Proposed Action has the potential to result in temporary adverse effects to biological resources in the vicinity of LC-40. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related impacts. Falcon 9 v1.1 launches would have minor impacts to vegetation near the launch pad such as vegetation scorching from engine firing during liftoff. Particulate deposition could occur as a result of launch operations; however, based on long-term observations of vegetation near LC-40, particulate deposition does not appear to cause discernible impacts to vegetation.

Wildlife species in the vicinity of LC-40 could be impacted by launch operations, mainly from launch noise. The Falcon 9 v1.1 is estimated to generate noise at a level of approximately 115 A-weighted decibels (dBA) at approximately 1.2 miles from the launch pad, with higher noise levels closer to LC-40. The temporary noise impacts to wildlife are not expected to affect local or regional populations of wildlife, especially since this area is accustomed to launch operations. Sonic booms created by Falcon 9 v.1.1 launches would occur over the ocean and therefore would not affect terrestrial species.

Potential impacts to marine species, including marine mammals protected by the Marine Mammal Protection Act (MMPA), could occur in the event of an early launch abort or a launch failure where the spacecraft and launch vehicle debris would fall into the coastal waters of the Atlantic Ocean. The Dragon Capsule's soft-landing in the Pacific Ocean would be preplanned, and a vessel would be positioned for recovery. Given the relatively low density of species within the surface waters of the Atlantic and Pacific Oceans, it is unlikely that the Dragon Capsule's landing, a launch abort, a launch failure, or debris from launch failures would impact marine species. Debris from launch failures has a small potential to adversely affect managed fish species and their habitats in the vicinity of CCAFS; however, as a result of consultation with the National Marine Fisheries Service (NMFS) for launches of other vehicles, USAF found "no greater than minimal adverse effects" to essential fish habitat under NMFS regulations. Sonic booms created by Falcon 9 v.1.1 launches would impact the ocean's surface. However, due to the infrequency of the sonic booms and the low density of marine species in the surface waters of the ocean, sonic booms would not be expected to adversely affect marine species.

While species protected by the Endangered Species Act (ESA) are located at CCAFS, such as gopher tortoises, southeastern beach mice, Florida scrub jays, and sea turtles, none are known to be present at LC-40. SpaceX currently implements a USAF-approved Light Management Plan for LC-40 operations, which is designed to reduce or eliminate nighttime light impacts to sea turtle nesting and hatchlings. The Proposed Action would not modify any current facility lighting. The USAF determined the Proposed Action "may affect, but is not likely to adversely affect" species protected by the ESA. The USFWS concurred with this determination. Thus, the Proposed Action would not result in significant impacts on biological resources [SEA 4.3 at 4-5].

Geology and Soils

Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, new excavation would not be necessary. Daily operations and launches would not affect geology or soils. Thus, the Proposed Action would not result in significant impacts on geology or soils [SEA 4.9 at 4-16].

Hazardous Materials, Pollution Prevention, and Solid Waste

Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related hazardous materials used and no construction-related pollution or solid waste generated. Falcon 9 v1.1 launch operations would use products containing hazardous materials, including paints, solvents, oils, lubricants, acids, batteries, surface coating, and cleaning compounds. Hazardous materials such as propellants, chemicals, and other hazardous material payload components would be transported to LC-40 in accordance with U.S. Department of Transportation (DOT) regulations. All hazardous materials would be handled, stored, and disposed of per requirements established by U.S. Occupational Safety and Health Administration (OSHA), the Hazardous Materials Contingency Plan developed for the Falcon Launch Vehicle Program, and all other applicable Federal, State, and county rules and regulations. All routine payload spacecraft processing activities would be in compliance with the CCAFS Pollution Prevention Management Plan. Falcon 9 v1.1 launch operations are not expected to result in an increase of solid waste. Thus, the Proposed Action would not be expected to result in significant impacts related to hazardous materials, pollution prevention, or solid waste [SEA 4.7 at 4-13].

Historical, Architectural, Archeological, and Cultural Resources

Activities associated with the Proposed Action would use existing facilities for ground support and launch operations. Since the Proposed Action does not include any construction activities, and since there are no historic properties or known archeological sites at or within the region of influence of LC-40, the Proposed Action would not affect historical, architectural, archeological, or cultural resources [SEA 4.4 at 4-7].

Human Health and Safety

CCAFS range safety regulations ensure that the general public, launch area personnel, and foreign land masses are provided an acceptable level of safety, and that all aspects of pre-launch and launch operations adhere to public laws. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related health and safety concerns. Health and safety impacts to personnel involved in the propellant loading operations in the payload processing facilities would be minimized by adherence to OSHA and USAF Occupational Safety and Health regulations. The operation and launch of the Falcon 9 v1.1 does not represent a change to current operations and does not introduce new or different hazardous materials or operations at LC-40. The only change would be an increase in propellant volume. Additionally, prior to being issued a launch license, SpaceX's proposal must meet all FAA public safety and financial responsibility requirements set forth in 14 CFR Part 400. All current and standard Federal, State, and local health and safety procedures would be followed during operations and launches. Thus, the Proposed Action would not be expected to result in significant impacts related to human health and safety [SEA 4.12 at 4-19].

Land Use (Including Farmlands and Coastal Resources)

The Proposed Action would not change land use or affect land use planning at CCAFS. The Proposed Action would occur primarily at LC-40, which is designated for space launch activities. Operations for launching the Falcon 9 v1.1 would be consistent with the Base General Plan, the USAF mission at CCAFS, and current LC-40 operations. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore the Proposed Action would not convert prime agricultural land to other uses, result in a decrease in the land's productivity, or conflict with existing uses or values of the project area or other base properties. No adverse effects to the coastal zone, as defined by the Coastal Zone Management Act, are anticipated. The Florida Department of Environmental Protection determined the Proposed Action is consistent with the Florida Coastal Management Program. Thus, the Proposed Action would not result in significant impacts related to land use [SEA 4.1 at 4-2].

Light Emissions and Visual Resources

Visual impacts associated with the Proposed Action would be infrequent and temporary. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related light emissions or visual impacts. The Falcon 9 v1.1 launch erector and umbilical tower, at approximately 170 feet tall, would only be present during testing or a launch, and would have a smaller height and profile than that of prior Titan IV launch operations at LC-40. Launch operations would generate light emissions and leave visible contrails, but they would be similar in visual impact to past and current operations at CCAFS. Launch operations would not substantially degrade the existing visual character or quality of the site and its surroundings. Thus, the Proposed Action would not have significant impacts related to light emissions and visual resources [SEA 4.1 at 4-2].

Noise

Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related noise impacts. Noise associated with ground support operations would be intermittent and within the scope of normal and routine activities at CCAFS. Because the approved models identified in FAA Order 1050.1E, Appendix A, Section 14.2b for modeling noise levels of proposed actions are not suitable for predicting rocket launch noise, USAF implemented a non-standard noise methodology to predict noise levels of Falcon 9 v1.1 launches. On October 7, 2013, the FAA Office of Environment and Energy determined the methodology was appropriate for the SEA and provided its approval of the methodology. Falcon 9 v1.1 launches would generate noise levels estimated at 158 dB at 125 feet from the launch pad and approximately 115 dBA at approximately 1.2 miles from the launch pad. Launch noise would occur for only a brief period at liftoff and would not present a significant impact to nearby communities. By comparison, modeled Falcon 9 Block 1 engine noise levels are approximately 156 dB at 125 feet from the launch pad and approximately 113 dBA at approximately 1.2 miles from the launch pad. Falcon 9 v1.1 launch noise would be slightly louder than noise generated by a Falcon 9 Block 1 launch, but less than that of previous Titan IV launches at LC-40, based on noise modeling and thrust

factors. At approximately 1.8 miles from the launch pad, noise from a Titan IV launch was predicted to be 119 dBA.

Based on the existing baseline noise levels at CCAFS from current launches and the modeled launch noise for the Falcon 9 v1.1, it is anticipated that noise levels under the Proposed Action would not exceed the FAA's noise significance threshold; that is, the Proposed Action would not result in an increase in noise of DNL 1.5 dBA or more at or above DNL 65 dBA noise exposure for the closest noise sensitive areas, which are the residential areas of Cape Canaveral. Sonic booms would impact the ocean surface 30 miles offshore and would not be audible on land. Thus, the Proposed Action is not expected to result in significant impacts related to noise [SEA 4.2 at 4-5].

Orbital Debris

The Falcon launch vehicles are designed to not generate debris during flight or orbit operations. Lower stages of the Falcon 9 v1.1 would land in the ocean. Upper stages that achieve Low Earth Orbit would be programmed after spacecraft separation to burn residual propellants to depletion in a vector that would result in reentry in 2 to 3 months and a water landing. Upper stages going to higher orbits would not be subject to controlled reentry and would contribute to orbital debris. Their location would be tracked to permit avoidance with future launch trajectories. Falcon 9 v1.1 flights with NASA payloads would be required to comply with NASA Policy Directive 8710.3, "Policy for Limiting Orbital Debris Generation," and NASA Safety Standard 1740.14, "Guidelines and Assessment Procedures for Limiting Orbital Debris." SpaceX compliance with U.S. Government or appropriate agency orbital debris mitigation standard practices would minimize the potential to contribute to orbital debris. Thus, the Proposed Action would not be expected to result in significant impacts related to orbital debris [SEA 4.6 at 4-13].

Section 4(f) Properties

No designated Section 4(f) properties, including public parks, recreation areas, or wildlife refuges, exist within the boundaries of CCAFS; therefore, no physical use or temporary occupancy of a Section 4(f) property would occur. Several public parks, recreation areas, and wildlife refuges are located outside of CCAFS, including Merritt Island National Wildlife

Refuge and Canaveral National Seashore. Due to their proximity to LC-40, these properties would experience noise from proposed Falcon 9 v1.1 launches. Noise levels at these 4(f) properties would increase temporarily during launches. The increased noise level would only last a few minutes and would occur at most twelve times a year under the Proposed Action.

For decades, the 4(f) properties have been experiencing increased noise levels during launches taking place at CCAFS and adjacent Kennedy Space Center (KSC). Some of the launch vehicles (e.g., Space Shuttle and Titan IV) that have launched from CCAFS and KSC produced more thrust and thus generally louder noise than would occur under the Proposed Action. Due to the long history of these Section 4(f) properties experiencing noise from launches at CCAFS and KSC, and because there would only be a maximum of twelve launches per year, the FAA has determined the Proposed Action would not substantially diminish the protected activities, features, or attributes of any of the Section 4(f) properties identified, and thus, would not result in substantial impairment of the properties. Therefore, the Proposed Action would not be considered a physical or constructive use of these Section 4(f) properties and would not invoke Section 4(f) of the Department of Transportation (DOT) Act [SEA 4.15 at 4-21].

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

The Proposed Action would result in a temporary and minor increase in the number of personnel at CCAFS, but it is not anticipated that this workforce would alter the location or distribution of the local population, cause the population to exceed historic growth rates, or decrease jobs so as to substantially raise the regional unemployment rates or reduce income generation. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related socioeconomic, environmental justice, or children's environmental health and safety impacts. Local SpaceX operations employ approximately 50 full-time employees and 50 contract employees at LC-40 and other locations at CCAFS. During Falcon 9 v1.1 launch work-up periods, approximately 50 additional people would be at CCAFS to support the launch over an average of a 2-week period. The added economic activity from the temporary workers would result in a small but positive impact to the local economy. The local housing markets and vacancy rates would not be substantially affected, and no need for new social services and support facilities would be required. Because

operations would occur within CCAFS boundaries, and because most of the potential environmental impacts would occur at and within the vicinity of LC-40, the Proposed Action would not affect low-income or minority populations within the region. Similarly, the Proposed Action would have no high and disproportionate effects on children. Thus, the Proposed Action would not be expected to result in significant impacts related to socioeconomics, environmental justice, or children's environmental health and safety risks [SEA 4.13 at 4-20; SEA 4.14 at 4-20].

Transportation

Though operations associated with the Proposed Action would result in minor traffic volume increases, traffic would not exceed the capacity of, or impact structural sections of, roadways. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related transportation impacts. Following assembly in Hawthorne, California, the Falcon 9 v1.1 stages would be separately transported via the U.S. highway system to CCAFS. This activity would occur no more than twelve times per year and would therefore not significantly impact traffic. The first stage of the Falcon 9 v1.1 is approximately 50 feet longer than the Falcon 9 Block 1, but a special trailer rig would accommodate the larger size and allow the transportation vehicle to better negotiate turns. Increased traffic from visitors or public observers would cause a less than significant impact on CCAFS traffic patterns. Traffic volume increases for previous Falcon 9 Block 1 launches were less than that of a NASA Space Shuttle launch, and the same is expected for Falcon 9 v1.1 launches. No new access would be required under the Proposed Action, and no unsafe roadways conditions are anticipated. Thus, the Proposed Action would not be expected to result in significant impacts related to transportation [SEA 4.10 at 4-16].

Water Resources (Including Wetlands, Floodplains, Surface Waters, Ground Water, and Wild and Scenic Rivers)

There are no wetlands within the LC-40 boundary. Though wetlands are present at approximately 300 feet beyond the LC-40 boundary, Falcon 9 v1.1 launches would not significantly affect them. Activities associated with the Proposed Action would not require the construction of new facilities or infrastructure; therefore, there would be no construction-related impacts. LC-40 is not located within a 100-year floodplain. There are no wild or scenic rivers

present at or near CCAFS. Thus, the Proposed Action would not result in significant impacts to these resources.

Because the Falcon 9 v1.1 uses only LOX and RP-1 propellants, the exhaust cloud would consist of steam only and would not contain any hazardous materials. As the volume of water expected to condense from the exhaust cloud is expected to be minimal, the exhaust cloud would generate less than significant impacts on surface water quality near LC-40.

Activities associated with launch operations would include the use of hazardous materials and generation of wastewater that could result in an adverse impact to water resources if not properly controlled and managed. Proper management of materials and wastes during project activities would reduce or eliminate the potential for contaminated runoff. As required by the National Pollutant Discharge Elimination System General Permits, Best Management Practices would be implemented to properly manage materials and reduce or eliminate project-associated runoff to further reduce the potential for adverse effects, especially during the rainy season. Continued implementation of the existing Spill Prevention, Control, and Countermeasures Plan would reduce the potential for adverse impacts to water resources.

Water needed for typical ground support operations at the processing facility would be supplied by the existing water distribution systems at CCAFS and would have a negligible impact on system capacity or surface and groundwater resources. Wastewater would continue to be processed through the existing wastewater handling and treatment systems at CCAFS and would have a negligible impact on system capacity or surface and groundwater resources. The Proposed Action fits within the current scope of water discharge permit definitions. Local and regional water resources would not be affected since there would be no substantial increase in use of surface or groundwater supplies.

The first stage of the launch vehicle could expel residual propellant into the Pacific Ocean upon impact. Due to the small volume of this release into the open ocean, impacts on water quality would be less than significant. In summary, the Proposed Action would not be expected to have a significant impact on water resources [SEA 4.8 at 4-14, 4-15].

Secondary (Induced) Impacts

FAA Order 1050.1E requires the FAA to identify any induced impacts to surrounding communities which may result from a Proposed Action. Examples of induced impacts, as defined by the Order, include shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by the Proposed Action. As noted under the socioeconomics summary above, the added economic activity from the temporary workers would result in a small but positive impact to the local economy. Because no significant impacts are expected for any of the impact categories included above, no significant induced impacts would be expected to result from the Proposed Action. Shifts in development patterns, economic activity, and other secondary factors associated with the Proposed Action would be anticipated to be negligible.

CUMULATIVE IMPACTS

This FONSI/ROD incorporates by reference the SEA, which addresses the potential impacts of past, present, and reasonably foreseeable future activities at and within the vicinity of CCAFS that would affect the resources impacted by the Proposed Action. Due to the nature of the Proposed Action and its location on the coast within CCAFS, only launch-related actions occurring at CCAFS would meaningfully interact in time and space with the Proposed Action such that potential cumulative impacts could result. Past launch vehicle activities at CCAFS include those of the Space Shuttle, Delta II, Delta IV, Atlas V, and Falcon 9 Block 1. Future planned launch vehicle activities at CCAFS include Delta IV, Atlas V, Falcon 9 Block 1, Falcon Heavy, and a pad abort test of the SpaceX Crew Dragon Spacecraft from LC-40. This section presents a brief summary of the potential cumulative environmental impacts considered in the SEA, focusing on those resources with the greatest likelihood of experiencing adverse effects: air quality; biological resources; hazardous materials, pollution prevention, and solid waste; land use; light emissions and visual resources; and noise.

Air Quality

The cumulative emissions from the Proposed Action and past, present, and future projects at CCAFS would not exceed any thresholds established under the Clean Air Act. All government

and commercial launches at CCAFS occur individually, i.e., no launch overlaps in time or space with another launch. This avoids the potential for simultaneously combining impacts associated with exhaust plumes from multiple vehicles. USAF's compliance with Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, for activities taking place at CCAFS also helps minimize emissions of greenhouse gases. Additionally, individuals at and around the launch sites are unlikely to be exposed to concentrations of any launch vehicle emission that exceeds the allowable public exposure limits adopted by the range safety organizations. Therefore, no significant cumulative impacts to the region's air quality would be expected to occur [SEA 5.2 at 5-4].

Biological Resources

Potential cumulative impacts on biological resources from the Proposed Action and other past, present, and future projects at CCAFS include those types of direct and indirect impacts discussed above (e.g., launch noise exposure, vegetation scorching). NASA studies have mapped the effects of 14 Delta, 20 Atlas, and 8 Titan vehicle launches on local vegetation at CCAFS; the study found limited scorching to small areas, minimal acid deposition, and slightly more widespread particulate deposition. However, these impacts are considered minor and less than significant. Potential cumulative impacts on biological resources would be minimized with implementation of measures identified during consultation with the USFWS and/or NMFS (as applicable for actions conducted at CCAFS); measures identified in environmental documents completed for other projects; measures to be incorporated in environmental documents currently under development for future actions; and measures identified in the USAF's Integrated Natural Resources Management Plan for CCAFS. Therefore, no significant cumulative impacts to biological resources would be expected to occur [SEA 5.2 at 5-4].

Hazardous Materials, Pollution Prevention, and Solid Waste

Launch operations and other activities conducted at CCAFS use products containing hazardous materials; however, implementation of existing handling and management procedures for hazardous materials, hazardous waste, and solid wastes limits the potential for impacts. Each organization or entity conducting activities at CCAFS is responsible for compliance with applicable regulatory requirements (e.g., Resource Conservation and Recovery Act; Executive

Order 12088, *Federal Compliance with Pollution Control Standards*). Therefore, significant cumulative impacts related to hazardous materials, pollution prevention, and solid waste would not be expected to occur [SEA 5.2 at 5-5].

Land Use

The Proposed Action and other past, present, and future projects are consistent with existing land use, the Base General Plan, and the USAF mission at CCAFS. Additionally, the Proposed Action and other past, present, and future projects are consistent with the Florida Coastal Management Program and would not convert prime agricultural land to other uses. Thus, significant cumulative impacts to land use would not be expected to occur [SEA 5.2 at 5-3].

Light Emissions and Visual Resources

The visual presence of the infrastructure associated with launches and other activities conducted at CCAFS is well established and considered part of the local landscape. Light emissions and impacts related to visual resources from launches conducted at CCAFS include fire created during engine ignition and visual contrails in the sky. These impacts would be short-term and temporary, and would not overlap in time or space. Therefore, significant cumulative impacts related to light emissions and visual resources would not be expected to occur [SEA 5.2 at 5-3].

Noise

When combined with other past, present, and future projects at CCAFS, short-term increases in noise levels in the area surrounding CCAFS from the Proposed Action are not anticipated to be significant. Long-term cumulative noise levels would not be expected to exceed the FAA's noise significance threshold. Sonic booms generated by launches conducted at CCAFS impact the ocean's surface and are not audible on land; therefore, sonic booms would not produce any significant impacts in the surrounding area. Launch frequencies are anticipated to remain fairly constant when comparing past and future launch manifests and incorporating the Proposed Action. All government and commercial launches at CCAFS occur individually. Thus, significant cumulative impacts related to noise would not be expected to occur [SEA 5.2 at 5-3].

AGENCY FINDINGS: In accordance with applicable law, the FAA makes the following finding/determination based on the appropriate information and data contained in the SEA:

- No significant environmental impacts would be incurred as a result of the FAA's Federal action.

DECISION AND ORDER: The FAA is herein adopting the SEA. In so doing, the FAA has independently evaluated the information contained in the SEA and takes full responsibility for the scope and content that addresses FAA actions therein. As a cooperating agency, the FAA participated in the preparation of the SEA. The FAA decision in this FONSI/ROD is based on a comparative examination of environmental impacts for each of the alternatives studied during the environmental review process. The SEA discloses the potential environmental impacts for each of the alternatives and provides a full and fair discussion of those impacts. There would be no significant impacts, including no significant cumulative impacts, to the natural environment or surrounding population as a result of the FAA's Proposed Action.

The FAA believes the selected alternative best fulfills the purpose and need identified in the SEA. In contrast, the No Action Alternative fails to meet the purpose and need identified in the SEA. For reasons summarized earlier in this FONSI/ROD, and supported by disclosures and analysis detailed in the SEA, the FAA has determined that the Proposed Action is a reasonable, feasible, practicable, and prudent alternative for a Federal decision in light of the established goals and objectives. An FAA decision to take the required actions and approvals is consistent with its statutory mission and policies supported by the findings and conclusions reflected in the environmental documentation and this FONSI/ROD.

After reviewing the SEA and all its related materials, I have carefully considered the FAA's goals and objectives in relation to various aspects of the launch activities described in the SEA, including the purpose and need to be met, the alternative means of achieving them, the environmental impacts of these alternatives, the mitigation necessary to preserve and enhance the environment, and the costs and benefits of achieving the stated purpose and need.

After careful and thorough consideration of the facts contained herein, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and

objectives as set forth in Section 101 of NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(c) of NEPA.

This FONSI/ROD represents the FAA's final decision and approvals for the actions identified, including those taken under the provisions of Title 49 of the United States Code, Subtitle VII, Parts A and B. These actions constitute a final order of the Administrator subject to review by the Court of Appeals of the United States in accordance with the provisions of 49 U.S.C. § 46110.

Issued in Washington, DC on: 10/23/13

Dr. George C. Nield
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