

1 DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)  
2 AND  
3 FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)  
4 TRANSIENT AND TRAINING MISSIONS FOR SPACE LAUNCH DELTA 45  
5 PATRICK SPACE FORCE BASE, CAPE CANAVERAL SPACE FORCE STATION, AND  
6 MALABAR TRANSMITTER ANNEX, FLORIDA  
7

8 Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States  
9 Code (U.S.C.) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ)  
10 Regulations, Title 40, Code of Federal Regulations (CFR) Parts 1500-1508 (2022), and the U.S.  
11 Department of the Air Force (DAF) Environmental Impact Analysis Processes (EIAP) (32 C.F.R.  
12 Part 989), the DAF prepared the attached Environmental Assessment (EA) to identify and  
13 evaluate the potential environmental consequences associated with the United States Space  
14 Force (USSF) decision for Space Launch Delta (SLD) 45 to conduct transient and training  
15 missions at Patrick Space Force Base (PSFB), Cape Canaveral Space Force Station (CCSFS),  
16 Malabar Transmitter Annex (MTA), the Banana River, Tosohatchee State Reserve (Tosohatchee  
17 Wildlife Management Area (WMA) / St. John's River Water Management District (SJRWMD)  
18 Conservation Areas), Avon Park Air Force Range (AFR), SJRWMD managed lands, and water  
19 training areas (WTAs) in the Atlantic Ocean. The EA, incorporated by reference into this FONSI,  
20 also provides environmental protection measures to avoid or reduce potential adverse  
21 environmental impacts.

22 Consistent with CEQ regulations at 40 CFR 1502.21, the EA incorporates by reference the *Final*  
23 *Environmental Assessment for the 920<sup>th</sup> Rescue Wing Training Operations* (DAF 2016). This  
24 Proposed Action comprises the continuation of the training presented in the 2016 EA, as well as  
25 training not previously captured in that EA. The EA also incorporates by reference the *Final Avon*  
26 *Park Air Force Range Operations Environmental Assessment* (USAF 2020), which analyzed the  
27 potential effects of air and ground operations at Avon Park AFR, including the increases in use  
28 associated with this Proposed Action.

29 **Purpose and Need**

30 The purpose of the Proposed Action is to ensure SLD 45, along with its tenants and transient  
31 users, have access to training opportunities and continued support of testing and development  
32 for technical capabilities as part of the Major Range and Test Facility Base (MRTFB) requirements.  
33 The MRTFB is considered a national asset and is operated primarily for U.S. Department of  
34 Defense (DoD) test and evaluation support missions, although it is also available to other users  
35 with a valid requirement. The MRTFB constitutes a core set of DoD Test and Evaluation (T&Ev)  
36 infrastructure and associated workforce providing T&Ev capabilities to support the DoD  
37 acquisition system (Directive 3200.11). The MRTFB classification means that SLD 45 takes  
38 liability for safety, making it easier for other DoD agencies to conduct equipment and technology  
39 testing at these installations.

40 The Proposed Action is needed to maintain combat readiness and enable technological  
41 advances. Users must conduct training operations in a true setting to maintain combat ready  
42 status for missions and rely on technology testing and experiments conducted at these  
43 installations to achieve the SLD 45 mission of facilitating safe space launches in the Eastern  
44 Range.

Although many training activities under the Proposed Action are similar to those described in the previously approved 2016 EA, the need for proposed modifications is driven by changes to mission requirements, and a need to provide comprehensive and streamlined NEPA coverage for these activities in the future.

## **DESCRIPTION OF THE PROPOSED ACTION / ALTERNATIVES**

The Proposed Action involves SLD 45 transient and training missions at PSFB, CCSFS, MTA, the Banana River, Tosohatchee State Reserve (Tosohatchee WMA / SJRWMD Conservation Areas), Avon Park AFR, SJRWMD managed lands, and WTAs in the Atlantic Ocean, including existing training presented in the 2016 EA, and the modification and addition of new training not previously captured in that EA. The Proposed Action additionally includes equipment and technology testing by tenant and transient users that occurs at PSFB, CCSFS, and MTA.

Under the Proposed Action, SLD 45 would continue to conduct training activities within designated areas described in the 2016 EA, including WTAs, landing zones (LZs), drop zones (DZs), air refueling (AR) tracks, All Terrain Vehicle (ATV) training areas, live-fire munitions training areas, and tactical training areas. Proposed new training, or modifications to existing training operations, would include helicopter brownout training, use of a new multipurpose training tower at PSFB by the 308<sup>th</sup> Rescue Squadron (RQS), and various expanded wartime readiness trainings.

The EA additionally analyzes current noise abatement procedures for the use of Runway 21 at PSFB and proposes the removal of those procedures. The noise study conducted in support of the Proposed Action may be found in Appendix D of the EA.

### ***Alternatives Eliminated from Further Consideration (EA Section 2.4)***

This EA has considered all reasonable alternatives under the CEQ regulation, 40 CFR 1502.14(a), which states that all reasonable alternatives that have been eliminated must be briefly discussed. Alternatives dismissed from further consideration did not meet the purpose and need for the Proposed Action or established selection criteria. The screening criteria requirement to leverage existing infrastructure and resources resulted in few feasible locations other than those included in the Proposed Action. For example, existing locations of DZs and LZs were determined to be the only suitable areas for these training resources. Additionally, an alternate location for in-water operations training at CCSFS was dismissed due to increases in wildlife encounters.

### ***Description of the No-Action Alternative (EA Section 2.2)***

CEQ regulations (44 CFR 1502.14) require agencies to consider a “no action” alternative in their NEPA analysis to compare the effects of not taking action with the effects of the action alternative(s). Under the No-Action Alternative, the environmental, social, and economic conditions described as the affected environment in the EA would not be affected by activities described under the Proposed Action. Any existing activities or operations would occur in accordance with existing laws and permits. Existing uses would continue at current levels. Individual actions within the Proposed Action may proceed but would have to be evaluated on their own merit under the EIAP guidelines to determine the scope of environmental impacts and the appropriate level of NEPA analysis.

## **SUMMARY OF ENVIRONMENTAL FINDINGS**

Environmental analyses focused on the following areas: Air Quality and Greenhouse Gas/Climate Change, Water Resources, Soil, Cultural Resources, Biological Resources, Noise, Transportation, Hazardous Materials and Waste, Environmental Justice, and Land Use. DAF has concluded that no significant impacts would result to these resources as summarized below.

### ***Air Quality and Greenhouse Gas/Climate Change (EA Section 3.1)***

No significant impacts have been identified. The Proposed Action would result in short-term, negligible to minor, direct, adverse impacts to air quality, primarily due to increased vehicle traffic and related emissions. Air emissions resulting from aircraft operations and use of smoke grenades and similar pyro techniques would be similar to levels evaluated in the 2016 EA and would not cause exceedances of any permit conditions. Particulate matter (dust) emissions from helicopter brownout training would be temporary and localized. Brevard County as well as installations considered in this EA are considered to be unclassifiable or in attainment with the National Ambient Air Quality Standards (NAAQS), and therefore the General Conformity Rules does not apply.

The estimated GHG emissions from the Proposed Action are not anticipated to contribute significantly to climate change, but any emission of GHGs represents an incremental increase in global GHG concentrations. The DAF supports climate change initiatives globally, while preserving military operations, sustainability, and readiness, by working to reduce GHG emissions. Climate change impacts anticipated in the southeast region of the U.S. (extreme weather events, increased temperatures, rising sea levels, etc.) could potentially result in temporary impacts on training activities due to schedule delays and potential damage to infrastructure resulting from extreme weather events.

### ***Water Resources (EA Section 3.2)***

No significant impacts have been identified. The Proposed Action would result in short-term, negligible, direct, adverse impacts to water quality in the Banana River and the Atlantic Ocean in the areas adjacent to PSFB and CCSFS. No impacts to water quality at MTA are anticipated, and no impacts to surface waters or wetlands are expected.

Proposed capsule recovery training could be conducted at the 920<sup>th</sup> Rescue Wing Aquatic Training Center, the Trident Wharf, or the Poseidon Wharf. If either wharf is selected, use of jet skis could result in intermittent effects on water quality that would be considered negligible due to existing recreational use of this area. Continued use of WTAs, DZs, and other in-water activities analyzed in the 2016 EA would likewise result in short-term, negligible impacts on water quality. Variations in water quality in the Atlantic Ocean would be expected to dissipate rapidly due to the dynamic nature of the environment, and variations in water quality in the Banana River would be negligible due to existing recreational use in this area.

While much of PSFB and CCSFS occur within the 100- or 500-year floodplain, proposed training operations would occur within designated training areas currently utilized for this purpose. Although the proposed multipurpose training tower would be sited within the 100-year floodplain, it would not be anticipated that the addition of this structure (base measuring approximately 40 feet by 40 feet) would impede flood waters or result in changes to flooding patterns downstream. Additionally, the stacked shipping containers comprising the multipurpose training tower would not be a permanent facility.

**Soil (EA Section 3.3)**

No significant impacts have been identified. The Proposed Action may result in short-term, minor, direct, adverse impacts on soils during training activities that cause minor disturbance of topsoil, such as helicopter browning training, explosive ordnance disposal improvised explosive device training, and use of ground burst simulators (GBS). The proposed expansion of training events to include temporary increases in personnel and equipment may also lead to increased soil compaction and erosion in localized areas. None of the soils affected are considered to be prime or unique farmland soils and all are locally or regionally common.

**Cultural Resources (EA Section 3.4)**

No significant impacts have been identified. The Proposed Action is not anticipated to impact cultural resources; however, any potential adverse effects identified later would be resolved with their office in accordance with the National Historic Preservation Act and the SLD 45 Integrated Cultural Resources Management Plan. As no extensive ground disturbance is proposed, prehistoric or historic artifacts would not be anticipated to be uncovered during transient and training activities.

**Biological Resources (EA Section 3.5)**

No significant impacts have been identified. The Proposed Action could result in short-term, negligible, direct and indirect, adverse impacts to wildlife due to noise and visual disturbance associated with increased presence of personnel and equipment onsite. No habitat loss, habitat alteration, or vegetation clearing is proposed, although long-term, negligible, direct, adverse impacts to vegetation at MTA may occur due to increased use of the area. Otherwise, transient and training activities would occur intermittently within designated, developed areas in which human presence/activity is common, and along existing roadways. A total of 28 federally listed and 13 state-listed animal species occur within the Region of Interest (ROI), or near enough that they were considered in the effects analysis.

Consultation with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act (consultation pending) is anticipated to result in concurrence that the Proposed Action would not adversely affect federally listed species with the implementation of approved impact avoidance and minimization measures discussed in the EA. It is understood that further consultation may be required should additional impacts be identified following implementation of the Proposed Action. The Proposed Action would also avoid and minimize impacts to biological resources by following the methodologies described in the most recent Integrated Natural Resources Management Plan.

**Noise (EA Section 3.6)**

No significant impacts have been identified. The Proposed Action would result in long-term, minor to moderate, direct, adverse impacts to noise within the ROI due to increased noise levels resulting from quarterly or annual large training events, use of GBS and other pyro techniques, and increased air and road traffic in the vicinity. Transient and training activities would be generally consistent with those analyzed in the 2016 EA and would not be expected to result in noise nuisances to off-base residential communities within the vicinity of PSFB and CCSFS. Personnel on the airfield would be required to wear adequate hearing protection in compliance with Occupational Safety and Health Administration (OSHA) standards for noise exposure.

1 The 2024 noise study (included as Appendix D to the EA) determined that removal of the current  
2 noise abatement procedures for Runway 21 would increase noise levels under the proposed flight  
3 path; however, the estimated levels would be well below 65 dB, the threshold at which a land use  
4 conflict could occur. Pilots would still be required to maneuver aircrafts consistent with safety of  
5 flight and flight manual procedures. PSFB would ensure that new flight maneuvers would be within  
6 the bounds of the existing noise exposure contours and, therefore, negligible minor adverse noise  
7 impacts are expected.

8 MTA is surrounded by residential areas on all sides, and as a result, intermittent noise increases  
9 resulting from transient and training activities would likely be detected by the community. SLD 45  
10 and other users of this area would implement established procedures to limit noise conflicts, as  
11 described in the EA.

### 12 ***Transportation (EA Section 3.7)***

13 No significant impacts have been identified. The Proposed Action could result in long-term, minor  
14 to moderate, direct, adverse impacts to transportation in the region, resulting from increased traffic  
15 volumes, particularly during quarterly or annual large training events. Impacts would be temporary  
16 and intermittent, and in general, roadways within the region have capacity to handle the increased  
17 traffic volumes anticipated under the Proposed Action.

### 18 ***Hazardous Materials and Waste (EA Section 3.8)***

19 No significant impacts have been identified. The Proposed Action would result in short-term,  
20 negligible, direct, adverse impacts associated with hazardous materials/waste and solid waste.  
21 Types and quantities of hazardous materials and waste used and generated under the Proposed  
22 Action would be similar to those analyzed in the 2016 EA, and existing storage protocols would  
23 remain in place. No substantial or long-term increase in the use or generation of hazardous  
24 materials or waste would be associated with transient and training operations. As the Proposed  
25 Action does not include subsurface exposure, users of training areas and facilities would not be  
26 exposed to contaminants, and solid waste produced during transient and training activities would  
27 be disposed of appropriately, in accordance with existing protocols at each installation.

### 28 ***Environmental Justice (EA Section 3.9)***

29 No significant impacts have been identified. The Proposed Action would result in short-term,  
30 minor, direct, adverse impacts to environmental justice populations due to temporary increases in  
31 noise and traffic levels, and potential decreases in air quality during larger training events and use  
32 of GBS and similar pyro techniques. These short-term, minor, direct, adverse impacts are not  
33 considered disproportionately high and adverse.

### 34 ***Land Use (EA Section 3.10)***

35 No significant impacts have been identified. Transient and training activities are consistent with  
36 current and future land uses as determined by DAF and documented in installation planning  
37 documents. No rezoning or conversion of land from one use to another would be required.  
38 Recreational use of waters adjacent to PSFB and CCSFS would continue, as in-water activities  
39 included in the Proposed Action would occur intermittently, a limited number of times per year.  
40 Implementation of the Proposed Action would not be expected to result in impacts to land use.

## **Cumulative Effects (EA Chapter 4)**

Overall, the Proposed Action would result in short- and long-term, negligible to moderate, direct and indirect, adverse impacts that would be below significance thresholds described for each resource area. Impacts of the Proposed Action would be minimized using Best Management Practices (BMPs). As such, the Proposed Action would not significantly contribute to cumulative impacts when considered with other past, present, and reasonably foreseeable future actions occurring within or in the vicinity of the ROI.

As there would be no significant adverse environmental impacts associated with implementation of the Proposed Action, no mitigation measures are necessary. Tenant and transient users of designated training areas included in the Proposed Action would continue to implement protocols and procedures that have been developed in consultation with regulatory agencies and land managers to protect sensitive resources from significant disturbance associated with transient and training activities, as identified in the EA. Avoidance and minimization measures and BMPs that would be incorporated into transient and training activities are summarized in Chapter 3 under the subheading for each analyzed resource area.

## **PUBLIC REVIEW**

In June 2023, letters and emails were sent to federal, state, and local agencies and municipalities potentially affected by the Proposed Action, informing them of the intent to prepare the EA and requesting their input. USSF received responses from six public agencies during this review period. When requested, additional information was provided. Copies of this coordination are included in Appendix A of the EA.

Tribal consultation letters were emailed to federally recognized tribes in June 2023. A response from the Seminole Nation of Florida Tribal Historic Preservation Office was received. Appendix A of the EA includes records of correspondence with the tribes.

40 CFR 1500-1508 and 32 CFR 989 require that the public have an opportunity to review and comment on draft NEPA documents. A Notice of Availability for public review of the Draft EA and Draft FONSI will be published in the *Florida Today* and *The Hometown News (The Beaches and North Brevard Editions)*. The documents will also be made available for review on the internet at [Space Launch Delta 45 > Resources > Environmental \(spaceforce.mil\)](https://spaceforce.mil/Space-Launch-Delta-45-Resources-Environmental).

The public comment period is 30 days. All comments received regarding the Draft EA will be incorporated into the Final EA.

## **FINDING OF NO SIGNIFICANT IMPACT & NO PRACTICABLE ALTERNATIVE**

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR 989, I conclude that the implementation of the Proposed Action would not have a significant environmental impact, either by itself or cumulatively with other known projects, would not involve an element of high risk or uncertainty on the human environment, and its effects on the quality of the human environment are not highly controversial. Pursuant to Executive Order (EO) 11988, *Floodplain Management* and the authority delegated by the Secretary of the Air Force Order 791.1, I find there is no practicable alternative to conducting transient and training operations associated with the Proposed Action within floodplains. Also, pursuant to EO 11990, *Protection of Wetlands*, I find there is no practicable alternative for implementing the Proposed Action that would similarly achieve combat readiness

1 through training in a true setting for rescue and recovery missions. The DAF further finds all  
2 practicable measures have been taken to minimize harm to the floodplain and wetlands, and  
3 proposed measures to minimize impacts are documented in the EA. This finding fulfills both the  
4 requirements of the referenced EOs and 32 CFR 989.14 requirements for a Finding of No  
5 Practicable Alternative. Accordingly, an Environmental Impact Statement is not required. This  
6 analysis fulfills the requirements of NEPA, the President's CEQ 40 CFR 1500-1508, and the Air  
7 Force EIAP regulations 32 CFR 989. The signing of this Finding of No Significant Impact & Finding  
8 of No Practicable Alternative completes the EIAP.

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12 \_\_\_\_\_  
13 PAUL G. FILCEK, Col, USAF  
14 Director, Space Force Mission Sustainment  
15 (Engineering, Logistics, & Force Protection)

\_\_\_\_\_  
Date



# **DRAFT ENVIRONMENTAL ASSESSMENT**

for Transient and Training Missions for  
Space Launch Delta 45

Patrick Space Force Base,  
Cape Canaveral Space Force Station,  
and Malabar Transmitter Annex, Florida

**May 2024**



**PRIVACY ADVISORY**

This [Draft Environmental Assessment (EA)] is provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) NEPA Regulations (40 Code of Federal Regulations [CFR] 1500-1508), and 32 CFR 989, Environmental Impact Analysis Process (EIAP).

The EIAP provides an opportunity for public input on United States Space Force (USSF) decision-making, allows the public to offer input on alternative ways for the USSF to accomplish what it is proposing, and solicits comments on the USSF's analysis of environmental effects.

Public commenting allows the USSF to make better, informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

# Table of Contents

1			
2	Chapter 1	Purpose of and Need for the Proposed Action.....	1-1
3	1.1	Introduction.....	1-1
4	1.2	Project Background and Setting.....	1-1
5	1.2.1	Space Launch Delta 45.....	1-3
6	1.2.2	PSFB .....	1-3
7	1.2.3	CCSFS .....	1-3
8	1.2.4	MTA.....	1-4
9	1.2.5	Banana River .....	1-4
10	1.2.6	Tosohatchee Wildlife Management Area.....	1-5
11	1.2.7	St. Johns River Water Management District Conservation Areas.....	1-5
12	1.2.8	Avon Park AFR.....	1-5
13	1.2.9	WTAs in the Atlantic Ocean .....	1-5
14	1.3	Purpose of and Need for the Proposed Action .....	1-5
15	1.4	Agency Coordination and Public Involvement.....	1-6
16	1.4.1	Lead and Cooperating Agency Roles.....	1-6
17	1.4.2	Government to Government Consultations .....	1-6
18	1.4.3	Interagency Coordination and Consultations.....	1-6
19	1.4.4	Resource Agency Consultations and Review.....	1-6
20	1.4.5	Public Involvement.....	1-7
21	1.5	Decision to be Made .....	1-7
22	Chapter 2	Proposed Action and Alternatives.....	2-1
23	2.1	Proposed Action .....	2-1
24	2.1.1	Current Training Activities .....	2-1
25	2.1.2	Proposed New or Modified Training Activities .....	2-7
26	2.1.2.1	PSFB .....	2-9
27	2.1.2.2	CCSFS .....	2-13
28	2.1.2.3	MTA.....	2-16
29	2.2	No-Action Alternative .....	2-19
30	2.3	Selection Standards for Alternatives .....	2-19
31	2.4	Alternatives Considered but Eliminated from Detailed Analysis .....	2-19
32	Chapter 3	Affected Environment and Environmental Consequences .....	3-1
33	3.1	Air Quality and Greenhouse Gas/Climate Change .....	3-3
34	3.1.1	Definition of the Resource/Regulatory Setting.....	3-3
35	3.1.2	Affected Environment/Existing Conditions.....	3-4
36	3.1.2.1	Ambient Air Quality .....	3-4
37	3.1.2.2	Climate .....	3-5
38	3.1.2.3	Greenhouse Gas Emissions.....	3-5
39	3.1.2.4	Climate Hazard and Severe Weather Assessment.....	3-5
40	3.1.3	Environmental Consequences .....	3-6
41	3.1.3.1	Analysis Approach .....	3-6
42	3.1.3.2	Proposed Action.....	3-6
43	3.1.3.3	No-Action Alternative .....	3-9
44	3.2	Water Resources.....	3-9
45	3.2.1	Definition of the Resource/Regulatory Setting.....	3-9
46	3.2.2	Affected Environment/Existing Conditions.....	3-11

1		3.2.2.1	Surface Waters .....	3-11
2		3.2.2.2	Wetlands.....	3-12
3		3.2.2.3	Floodplains and Sea Level Rise .....	3-13
4		3.2.2.4	Water Quality .....	3-19
5		3.2.2.5	Coastal Zone Management Act Consistency.....	3-19
6	3.2.3		Environmental Consequences .....	3-20
7		3.2.3.1	Analysis Approach .....	3-20
8		3.2.3.2	Proposed Action.....	3-20
9		3.2.3.3	No-Action Alternative .....	3-28
10	3.3		Soil .....	3-28
11		3.3.1	Definition of the Resource/Regulatory Setting.....	3-28
12		3.3.2	Affected Environment/Existing Conditions.....	3-28
13		3.3.2.1	PSFB .....	3-28
14		3.3.2.2	CCSFS .....	3-29
15		3.3.2.3	MTA.....	3-29
16		3.3.3	Environmental Consequences .....	3-29
17		3.3.3.1	Analysis Approach .....	3-29
18		3.3.3.2	Proposed Action.....	3-29
19		3.3.3.3	No-Action Alternative .....	3-30
20	3.4		Cultural Resources .....	3-30
21		3.4.1	Definition of the Resource/Regulatory Setting.....	3-30
22		3.4.2	Affected Environment/Existing Conditions.....	3-31
23		3.4.2.1	Archaeological APE .....	3-31
24		3.4.2.2	Architectural APE.....	3-33
25		3.4.3	Environmental Consequences .....	3-35
26		3.4.3.1	Analysis Approach .....	3-35
27		3.4.3.2	Proposed Action.....	3-36
28		3.4.3.3	PSFB .....	3-36
29		3.4.3.4	CCSFS .....	3-36
30		3.4.3.5	MTA.....	3-37
31		3.4.3.6	No-Action Alternative .....	3-37
32	3.5		Biological Resources .....	3-37
33		3.5.1	Definition of the Resource/Regulatory Setting.....	3-37
34		3.5.2	Affected Environment/Existing Conditions.....	3-40
35		3.5.2.1	Vegetation and Habitat.....	3-40
36		3.5.2.2	Wildlife and Migratory Birds.....	3-43
37		3.5.2.3	Essential Fish Habitat and Habitat Areas of Particular	
38			Concern .....	3-44
39		3.5.2.4	Federally Listed Species .....	3-46
40		3.5.2.5	Critical Habitat.....	3-52
41		3.5.2.6	Other Protected Species or Habitats .....	3-54
42		3.5.3	Environmental Consequences .....	3-61
43		3.5.3.1	Analysis Approach .....	3-61
44		3.5.3.2	Proposed Action.....	3-61
45		3.5.3.3	No-Action Alternative .....	3-70
46	3.6		Noise .....	3-70
47		3.6.1	Definition of the Resource/Regulatory Setting.....	3-70

1	3.6.2	Affected Environment/Existing Conditions.....	3-72
2	3.6.2.1	PSFB .....	3-72
3	3.6.2.2	CCSFS .....	3-76
4	3.6.2.3	MTA.....	3-76
5	3.6.3	Environmental Consequences .....	3-76
6	3.6.3.1	Analysis Approach .....	3-76
7	3.6.3.2	Proposed Action.....	3-77
8	3.6.3.3	No-Action Alternative .....	3-80
9	3.7	Transportation .....	3-80
10	3.7.1	Definition of the Resource/Regulatory Setting.....	3-80
11	3.7.2	Affected Environment/Existing Conditions.....	3-80
12	3.7.2.1	PSFB .....	3-80
13	3.7.2.2	CCSFS .....	3-83
14	3.7.2.3	MTA.....	3-85
15	3.7.3	Environmental Consequences .....	3-87
16	3.7.3.1	Analysis Approach .....	3-87
17	3.7.3.2	Proposed Action.....	3-87
18	3.7.3.3	No-Action Alternative .....	3-90
19	3.8	Hazardous Materials and Waste .....	3-90
20	3.8.1	Definition of the Resource/Regulatory Setting.....	3-90
21	3.8.1.1	Hazardous Materials and Waste .....	3-90
22	3.8.1.2	Solid Waste.....	3-91
23	3.8.1.3	Hazardous Materials and Waste Regulations.....	3-91
24	3.8.2	Affected Environment/Existing Conditions.....	3-92
25	3.8.2.1	Hazardous Materials and Waste .....	3-92
26	3.8.2.2	PFAS .....	3-94
27	3.8.2.3	Asbestos and Lead-based Paint .....	3-94
28	3.8.2.4	Installation Restoration Program Sites .....	3-94
29	3.8.2.5	Solid Waste.....	3-98
30	3.8.3	Environmental Consequences .....	3-98
31	3.8.3.1	Analysis Approach .....	3-98
32	3.8.3.2	Proposed Action.....	3-99
33	3.8.3.3	No-Action Alternative .....	3-100
34	3.9	Environmental Justice.....	3-100
35	3.9.1	Definition of the Resource/Regulatory Setting.....	3-100
36	3.9.2	Affected Environment/Existing Conditions.....	3-102
37	3.9.3	Environmental Consequences .....	3-107
38	3.9.3.1	Analysis Approach .....	3-107
39	3.9.3.2	Proposed Action.....	3-108
40	3.9.3.3	No-Action Alternative .....	3-109
41	3.10	Land Use .....	3-109
42	3.10.1	Definition of the Resource/Regulatory Setting.....	3-109
43	3.10.2	Affected Environment/Existing Conditions.....	3-109
44	3.10.3	Environmental Consequences .....	3-110
45	3.10.3.1	Analysis Approach .....	3-110
46	3.10.3.2	Proposed Action.....	3-111
47	3.10.3.3	No-Action Alternative .....	3-111

1	Chapter 4	Cumulative Effects .....	4-1
2	4.1	Past, Present, and Reasonably Foreseeable Actions .....	4-1
3	4.2	Assessment of Cumulative Impacts by Resource .....	4-5
4	4.2.1	Air Quality and Greenhouse Gas/Climate Change .....	4-5
5	4.2.2	Water Resources .....	4-5
6	4.2.3	Soil .....	4-6
7	4.2.4	Cultural Resources .....	4-6
8	4.2.5	Biological Resources .....	4-6
9	4.2.6	Noise .....	4-6
10	4.2.7	Transportation.....	4-7
11	4.2.8	Hazardous Materials and Waste .....	4-7
12	4.2.9	Environmental Justice .....	4-7
13	4.2.10	Land Use .....	4-7
14	Chapter 5	List of Preparers .....	5-1
15	Chapter 6	References.....	6-1

17 Appendix A - Intergovernmental Coordination, Public and Agency Participation

18 Appendix B - Detailed Air Conformity Applicability Model Report

19 Appendix C - USFWS IPaC Results within the Respective ROI Locations

20 Appendix D - Noise Study

## 21 List of Tables

22	Table 2-1.	Summary Table of Existing 301 <sup>st</sup> RQS Training Operations .....	2-2
23	Table 2-2.	Summary Table of Existing 39 <sup>th</sup> RQS Training Operations .....	2-2
24	Table 2-3.	Summary of Existing 920 <sup>th</sup> RQW Training Operations at the Banana River .....	2-2
25	Table 2-4.	Summary of Existing 920 <sup>th</sup> RQW Training Operations at CCSFS .....	2-2
26	Table 2-5.	Summary of Existing 920 <sup>th</sup> RQW Training Operations at MTA.....	2-3
27	Table 2-6.	Summary of Existing 920 <sup>th</sup> RQW Training Operations at Tosohatchee WMA and	
28		SJRWMD Conservation Areas .....	2-3
29	Table 2-7.	Summary of Existing 920 <sup>th</sup> RQW Training Operations at Avon Park AFR.....	2-3
30	Table 2-8.	Summary of Existing 920 <sup>th</sup> RQW Training Operations in the Atlantic Ocean .....	2-4
31	Table 2.9.	Summary of Existing 920 <sup>th</sup> RQW Air Refueling Tracks .....	2-4
32	Table 2-10.	Minor Modifications to Current 920 <sup>th</sup> RQW Training Since 2016 EA .....	2-7
33	Table 2-11.	Recurring and Transient Users Overview .....	2-7
34	Table 2-12.	Current and Proposed Transient and Training Missions Overview .....	2-8
35	Table 2-13.	Aircraft Types Used within the Project Area .....	2-9
36	Table 2-14.	NEPA Screening Criteria.....	2-19
37	Table 3-1.	Resource Area Level of Analysis.....	3-2
38	Table 3.1-1.	Criteria Air Pollutants.....	3-3
39	Table 3.1-2.	County Baseline Emissions .....	3-5
40	Table 3.1-3.	Criteria Air Pollutant Emissions from Training Activities (tons/year).....	3-6

1	Table 3.1-4. GHG Emissions from Training Activities (tons/year) .....	3-8
2	Table 3.2-1. Water Quality Regulation Requirements.....	3-10
3	Table 3.2-2. Coastal Zone Management Act Consistency Determination .....	3-24
4	Table 3.5-1. Summary of Biological Resource Regulation Requirements.....	3-38
5	Table 3.5-2. Federally Listed Species with Potential to Occur in the ROI .....	3-47
6	Table 3.5-3. State Listed Species with Potential to Occur in the ROI .....	3-55
7	Table 3.5-4. Potential Effects to Federally Listed Species .....	3-65
8	Table 3.5-5. Potential Effects to State Listed Species .....	3-68
9	Table 3.6-1. Sound Levels and Human Response .....	3-70
10	Table 3.6-2. Current and Proposed Noise Levels at Point Locations.....	3-79
11	Table 3.7-1. Annual Average Daily Traffic on Public Roadways Serving PSFB .....	3-81
12	Table 3.7-2. Annual Average Daily Traffic on Key Roadway Segments Serving CCSFS.....	3-83
13	Table 3.7-3. Annual Average Daily Traffic on Key Roadway Segments Serving MTA.....	3-85
14	Table 3.7-4. Percent Increase in Daily Traffic at the PSFB under the Proposed Action .....	3-87
15	Table 3.7-5. Percent Increase in Daily Traffic at the CCSFS under the Proposed Action .....	3-88
16	Table 3.7-6. Percent Increase in Daily Traffic at MTA under the Proposed Action.....	3-89
17	Table 3.8-1. Summary of Hazardous Waste Regulations Requirements .....	3-91
18	Table 3.8-2. Active Solid Waste Management Unit (SWMU) Sites .....	3-95
19	Table 3.8-3. Active Solid Waste Management Units (SWMUs) .....	3-96
20	Table 3.9-1. Minority and Low-Income Populations in the PSFB ROI.....	3-103
21	Table 3.9-2. Children and Elderly Populations in the PSFB ROI .....	3-104
22	Table 3.9-3. Sites within a 1-Mile Radius of the PSFB ROI that Children Likely Frequent ...	3-104
23	Table 3.9-4. Minority and Low-Income Populations in the Cape Canaveral ROI.....	3-104
24	Table 3.9-5. Children and Elderly Populations in the CCSFS ROI.....	3-105
25	Table 3.9-6. Sites within a 1-Mile Radius of the CCSFS ROI that Children Likely Frequent	3-105
26	Table 3.9-7. Minority and Low-Income Populations in the MTA ROI.....	3-106
27	Table 3.9-8. Children and Elderly Populations in the MTA ROI .....	3-107
28	Table 3.9-9. Sites within a 1-Mile Radius of the MTA ROI that Children Likely Frequent.....	3-107
29	Table 4-1. Past, Present, and Reasonably Foreseeable Future Actions.....	4-1

31

32

## List of Figures

33	Figure 1-1. General Site Location .....	1-2
34	Figure 2-1. Water Training Areas .....	2-5
35	Figure 2-2. Drop Zones and Landing Zones.....	2-6
36	Figure 2-3. Patrick Space Force Base.....	2-12
37	Figure 2-4. Patrick Space Force Base Airfield .....	2-13
38	Figure 2-5. Cape Canaveral Space Force Station .....	2-15

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1	Figure 2-6. Malabar Transmitter Annex.....	2-17
2	Figure 3.2-1. PSFB Wetlands Map.....	3-14
3	Figure 3.2-2. CCSFS Wetlands Map.....	3-15
4	Figure 3.2-3. MTA Wetlands Map .....	3-16
5	Figure 3.2-4. PSFB Floodplain Map .....	3-17
6	Figure 3.2-5. CCSFS Floodplain Map .....	3-18
7	Figure 3.2-7. Proposed Location of the Multipurpose Training Tower.....	3-23
8	Figure 3.6-1. Noise-Sensitive Receptors at PSFB.....	3-74
9	Figure 3.6-2. Baseline DNL Contours at PSFB.....	3-75
10	Figure 3.6-3. Current and Proposed Flight Tracks and Point Locations for Noise Analysis ...	3-78
11	Figure 3.7-1. PSFB Transportation Network.....	3-82
12	Figure 3.7-2. CCSFS Transportation Network.....	3-84
13	Figure 3.7-3. MTA Transportation Network .....	3-86
14		

## List of Acronyms and Abbreviations

<b>Acronym</b>	<b>Definition</b>
AADT	annual average daily traffic
ACAM	Air Conformity Applicability Model
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFPD	Air Force Policy Directive
AFR	Air Force Range
AFRL	Air Force Research Laboratory
AGE	Aerospace Ground Equipment
AICUZ	Air Installation Compatible Use Zone
AQCR	Air Quality Control Region
AR	Air Refueling
ATV	All-Terrain Vehicle
BASH	Bird Air Strike Hazard
BO	Biological Opinion
BRNAS	Banana River Naval Air Station
CAA	Clean Air Act
CCAFS	Cape Canaveral Air Force Station
CCSFS	Cape Canaveral Space Force Station
CE	Civil Engineering
CEIE	Civil, Environmental and Infrastructure Engineering
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Civil Engineer Squadron
CESQG	conditionally exempt small quantity generator
CH <sub>4</sub>	methane
CFR	Code of Federal Regulations
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> -eq	carbon dioxide equivalent
CRM	Cultural Resources Manager

<b>Acronym</b>	<b>Definition</b>
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DAF	U.S. Department of Air Force
DAFI	U.S. Department of Air Force Instruction
DARPA	Defense Advanced Research Projects Agency
dB	decibel
dBA	A-weighted decibel
DEOMI	Defense Equal Opportunity Management Institute
Detachment 3	45 <sup>th</sup> Operations Group Detachment 3
DMA	Dynamic Management Area
DME	distance measuring equipment
DoD	Department of Defense
DoS	Department of State
DOT	Department of Transportation
DSZ	Dynamic Speed Zone
DZ	Drop Zone
EA	Environmental Assessment
EFH	essential fish habitat
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EOD	Explosive Ordnance Disposal
ER	Eastern Range
ESA	Endangered Species Act
°F	degrees Fahrenheit
FAC	Florida Administrative Code
FPPA	Farmland Protection Policy Act
FLARNG	Florida Army National Guard
FNAI	Florida Natural Areas Inventory
FONSI	Finding of No Significant Impact
FW	Fighter Wing
FWC	Florida Fish and Wildlife Conservation Commission
GBS	Ground Burst Simulator
GHG	greenhouse gas

<b>Acronym</b>	<b>Definition</b>
GIS	Geographic Information System
HAP	hazardous air pollutant
HAPC	Habitat Areas of Particular Concern
HF	High Frequency
HQ	Headquarters
HUC	Hydrologic Unit Code
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
IED	Improvised Explosive Device
IFR	Instrument Flight Rules
INRMP	Integrated Natural Resource Management Plan
IRP	Installation Restoration Plan
ISWMP	Integrated Solid Waste Management Plan
KSC	Kennedy Space Center
LATN	Low Altitude Tactical Navigation
LC	Launch Complex
LED	light-emitting diode
Lmax	Maximum Sound Level
LTM	long-term monitoring
LUC	Land Use Controls
LZ	Landing Zone
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
MRTFB	Major Range and Test Facility Base
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MTA	Malabar Transmitter Annex
MWD	Military Working Dog
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NASA	National Aeronautics Space Administration
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants

<b>Acronym</b>	<b>Definition</b>
NFA	No Further Action
NM	nautical mile
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO <sub>2</sub>	nitrogen oxides
N <sub>2</sub> O	nitrous oxides
NOAA	National Oceanic and Atmospheric Administration
NOTU	Naval Ordnance Test Unit
NWI	National Wetland Inventory
O <sub>3</sub>	ozone
OSHA	Occupational Health and Safety Act
PAFB	Patrick Air Force Base
PAH	Polynuclear Aromatic Hydrocarbon
Pb	lead
PCB	Polychlorinated biphenyl
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PM <sub>2.5</sub>	Particulate matter size less than or equal to 2.5 micrometers
PM <sub>10</sub>	Particulate matter size less than or equal to 10 micrometers
ppb	parts per billion
PSD	Prevention of Significant Deterioration
PSFB	Patrick Space Force Base
RCRA	Resource Conservation and Recovery Act
RFQC	Rescue Force Qualification Course
RI	Remedial Investigation
ROI	Region of Influence
ROTC	Reserves Officers Training Corps
RQS	Rescue Squadron
RQW	Rescue Wing
SEL	Sound Exposure Level
SFS	Security Forces Squadron
SH	State Highway

<b>Acronym</b>	<b>Definition</b>
SHPO	State Historic Preservation Office
SI	Site Investigation
SJRWMD	St. John's River Water Management District Conservation Areas
SLC	Space Launch Complex
SLD	Space Launch Delta
SMA	Seasonal Management Area
SO <sub>2</sub>	sulfur dioxide
SpOC	Space Operations Command
SR	State Route
SVOC	Semi-Volatile Organic Compounds
SWAT	Special Weapons and Tactics
SWMU	Solid Waste Management Unit
TDS	Transportable Dynasonde System
T&Ev	Test and Evaluation
THPO	Tribal Historic Preservation Officer
TRPH	total recoverable petroleum hydrocarbon
UFC	United Facilities Criteria
µg	microgram
U.S.	United States
USAF	United States Air Force
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USMC	United States Marine Corps
USSF	United States Space Force
VFR	Visual Flight Rule
VHF	Very High Frequency
VOC	Volatile Organic Compounds
WBID	water boundary identification number
WMA	Wildlife Management Area
WOP	Water Operation
WTA	Water Training Area

# Chapter 1 Purpose of and Need for the Proposed Action

## 1.1 Introduction

This Environmental Assessment (EA) evaluates the potential environmental impacts associated with the United States Space Force (USSF) decision for Space Launch Delta (SLD) 45 to conduct transient and training missions at Patrick Space Force Base (PSFB), Cape Canaveral Space Force Station (CCSFS), Malabar Transmitter Annex (MTA), the Banana River, Tosohatchee State Reserve (Tosohatchee Wildlife Management Area (WMA) / St. John's River Water Management District (SJRWMD) Conservation Areas), Avon Park Air Force Range (AFR), SJRWMD managed lands, and water training areas (WTAs) in the Atlantic Ocean (see Figure 1-1).

The National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] § 4321, et seq.); Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 *Code of Federal Regulations* [CFR] Parts 1500-1508); and the United States (U.S.) Department of the Air Force's (DAF's) NEPA regulations (32 CFR Part 989), *Environmental Impact Analysis Process* (EIAP) require lead agencies to evaluate the potential impacts of federal actions on the surrounding environment. The DAF is the lead agency for this Proposed Action and has prepared this EA in compliance with the above regulations.

Consistent with CEQ regulations at 40 CFR 1502.21, this EA incorporates by reference the *Final Environmental Assessment for the 920<sup>th</sup> Rescue Wing Training Operations* (DAF 2016), herein referred to as the 2016 EA. This Proposed Action comprises the continuation of the training presented in the 2016 EA, as well as training not previously captured in that EA. This EA also incorporates by reference the *Final Avon Park Air Force Range Operations Environmental Assessment* (USAF 2020), which analyzed the potential effects of air and ground operations at Avon Park AFR, including the increases in use associated with the Proposed Action, as described in Chapter 2 this EA.

## 1.2 Project Background and Setting

This EA covers training activities conducted by various organizations that utilize the above referenced locations, including the 920<sup>th</sup> Rescue Wing (RQW), the 45<sup>th</sup> Civil Engineer Squadron (CES), the 45<sup>th</sup> Security Forces Squadron (SFS), and the 45<sup>th</sup> Operations Group Detachment 3 (Detachment 3), as well as transient activities conducted by users such as the 482<sup>nd</sup> Fighter Wing (FW), the United States Marine Corps (USMC), the Air Force Research Laboratory (AFRL), and the Florida Institute of Technology Army Reserves Officers Training Corps (ROTC), among others.

The 920<sup>th</sup> RQW is an Air Force Reserve Command combat-search-and-rescue unit, headquartered at PSFB. Local units of the 920<sup>th</sup> RQW include an Operations Group, a Mission Support Group, a Maintenance Group, and an Aeromedical Staging Squadron. The 920<sup>th</sup> Operations Group includes the 301<sup>st</sup> Rescue Squadron (RQS), the 39<sup>th</sup> RQS, the 308<sup>th</sup> RQS, and the 920<sup>th</sup> SFS.

The 45<sup>th</sup> CES, 45<sup>th</sup> SFS, and Detachment 3 are direct report squadrons of SLD 45 and operate out of PSFB and CCSFS. The 45<sup>th</sup> CES and SFS provide mission support to SLD 45, and Detachment 3 provides support for human space flight programs.

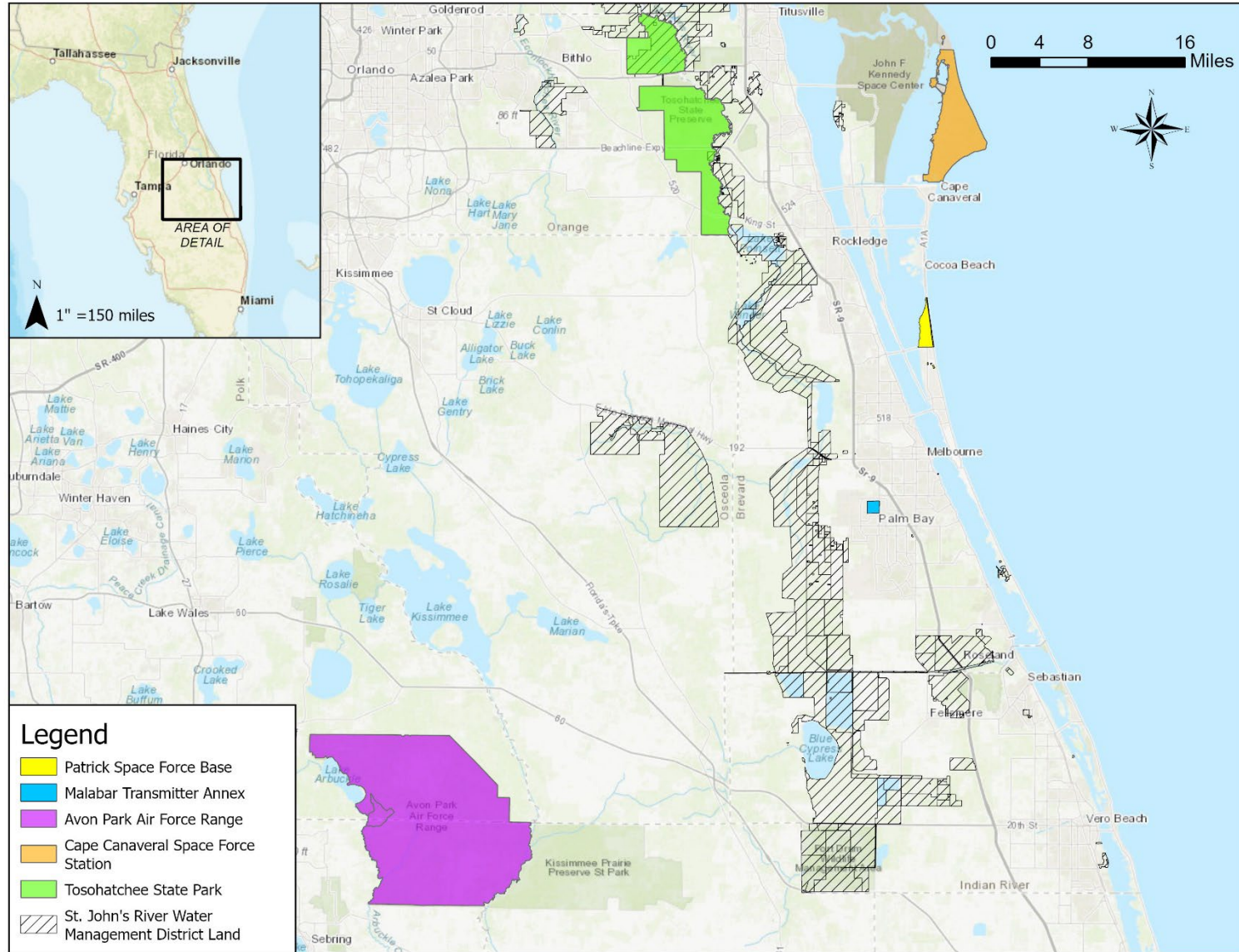


Figure 1-1. General Site Location

**1.2.1 Space Launch Delta 45**

SLD 45 is one of two space launch Deltas for the USSF and is responsible for all launches within the Eastern Range (ER). In addition to the launch facilities, assets include a network of instrumentation stations that together “provide a network of radar, telemetry, and communications instrumentation support to facilitate the safe launch of all Department of Defense (DoD) National Security Space, National Aeronautics Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), commercial, and Naval Ordnance Test Unit’s support to the Navy’s Strategic Systems Programs missions” (PSFB 2021).

**1.2.2 PSFB**

PSFB is located on a barrier island on the central east coast of Florida, south of the City of Cocoa Beach and north of South Patrick Shores and the City of Satellite Beach (see Figure 1-1). The main base covers approximately 2,004 acres and is bounded by the Atlantic Ocean on the east and the Banana River Aquatic Preserve (Banana River) on the west. Small parcels remain as United States Air Force (USAF) property in Pelican Coast (formerly South Housing), approximately 1 mile south of PSFB.

Originally the Banana River Naval Air Station, PSFB was transferred from the U.S. Navy to USAF in 1948, becoming Patrick Air Force Base (PAFB) (PSFB 2021). In 2020, following the creation of USSF, PAFB was renamed PSFB. The installation has hosted a variety of missions and aircraft types throughout its history. It is home to SLD 45 and other tenants, including the 920<sup>th</sup> RQW, the Air Force Technical Applications Center, the Defense Equal Opportunity Management Institute (DEOMI), and the Department of State (DoS). It is a heavily developed installation that supports its many tenants by providing office space, personnel housing, equipment and vehicle storage space.

PSFB is part of the ER, which is managed by SLD 45. The ER also includes CCSFS, MTA, Jonathan Dickinson Missile Tracking Annex, Ascension Auxiliary Airfield, and off-base meteorological instrumentation sites. The primary SLD 45 mission is to manage ER launch operations; therefore, the aircraft traffic at PSFB is primarily associated with tenant and transient operations.

Activities at PSFB consist of typical administrative and technical operations in support of the SLD 45 mission to deliver assured access to space. The installation contains two active runways with hangars and aprons for the maintenance and storage of 920<sup>th</sup> RQW aircraft.

**1.2.3 CCSFS**

Previously Cape Canaveral Air Force Station, CCSFS was renamed following the creation of USSF in 2020. CCSFS serves as the launch center of the ER and encompasses approximately 15,800 acres along the Atlantic Coast of Brevard County, southeast of NASA’s Kennedy Space Center (KSC) on adjacent Merritt Island. CCSFS is approximately 13 nautical miles (NM) north of PSFB (see Figure 1-1).

CCSFS is characterized by open land with slight topographic changes, with areas of development spaced evenly throughout the property. The airfield and runway (known as the Skid Strip) at CCSFS are located in the central portion of the property. The beach along the Atlantic Ocean is accessible via Camera Road A and Camera Road B.

Space Launch Complex (SLC) 31/32, located along Lighthouse Road northwest of the eastern terminus of the Skid Strip, is a former launch site commonly used for wartime simulations. Outdated launch structures resembling beehives are no longer accessible, although their presence on-site adds to the varied landscape of the complex. Mount Conex, a more recent

1 structure built with Conex containers to imitate cities that may have been found during combat in  
2 the Middle East, is utilized by various units to simulate wartime scenarios.

3 At the southernmost point of CCSFS are the Trident Basin and the Poseidon Wharf. The primary  
4 purpose of the Trident Basin is for submarines. The Poseidon Wharf, also known as the Army  
5 Wharf, is used primarily for Navy operations. The Hangar AF Wharf is centrally located along the  
6 western extent of the property, along the Banana River, and is no longer used for training activities  
7 due to natural resource concerns based on increased wildlife encounters.

#### 8 **1.2.4 MTA**

9 MTA is located at 5060 South Minton Road (State Route [SR] 509) in Palm Bay, Florida. The site  
10 is approximately 8 miles southwest of Melbourne and 35 miles southwest of CCSFS. MTA  
11 consists of the entire 25<sup>th</sup> Section of Township 28 South, Range 36 East, in Brevard County. This  
12 square mile section comprises 640 acres of forest, wet flatwoods, grassy fields, abandoned  
13 runways, and several transmitter and support buildings. MTA is one of five SLD 45 mainland  
14 Florida instrumentation sites (see Figure 1-1).

15 The installation was initially built as a naval airfield and training facility during World War II. The  
16 airfield, which consists of four runways, is no longer active. While the limits of the runways are  
17 visible and the runway surface remains, the surfaces are cracked and overgrown with grass. The  
18 remainder of the fenced-in property is vegetated with trees, shrubs, and grasses. Since the  
19 closure of the airfield, MTA's primary use has been supporting launch operations as a remote  
20 transmitter site. It also supports research, trainings, and serves as a hurricane ride-out location.  
21 The Defense Advanced Research Projects Agency (DARPA) conducts testing at this location  
22 under a Memorandum of Agreement (MOA) developed between SLD 45 and the DARPA Defense  
23 Sciences Office.

24 The entrance gate is located along the eastern edge of the property, off Minton Road. Just past  
25 the entrance gate is a cluster of equipment storage structures. A larger cluster of mostly out-of-  
26 use buildings is located in the northwest corner of the property. South of these buildings, adjacent  
27 to the decommissioned runway to the west is the Malabar Civil Engineering (CE) Training Camp.  
28 Farther south, to the east of the runway is a large antenna tower used for tracking purposes.

#### 29 **1.2.5 Banana River**

30 The Banana River is a 31-mile-long lagoon that is located between mainland Florida and Cape  
31 Canaveral and Merritt islands. The Banana River is part of the Indian River Lagoon Estuary and  
32 is designated as an Aquatic Preserve (FAC 62-302.700) and categorized as Florida Outstanding  
33 Waters. The portion of the Banana River in which the Proposed Action would occur is listed on  
34 the Florida Department of Environmental Protection's (FDEP's) Statewide Comprehensive Study  
35 List, which is provided to the United States Environmental Protection Agency (USEPA) as an  
36 update to the state's Clean Water Act (CWA) Section 303(d) list of impaired waterbodies. This  
37 designation is discussed further in Section 3.2, Water Resources. The benthic habitat of the  
38 Banana River is characterized by soft sediments, primarily composed of silts, clays, and organic  
39 material such as detritus as well as benthic invertebrates including polychaete worms, bivalves,  
40 and crustaceans.

41 Drop Zone (DZ) Judy is located in the Banana River approximately 1.5 NM northwest of PSFB  
42 with a radius of approximately 3,000 feet. DZ Judy is utilized when weather concerns or climatic  
43 conditions make use of the oceanic DZs unsafe or unsuitable. Use of DZ Judy requires a closure  
44 of the PSFB airfield. Water depths at DZ Judy are approximately 9 to 11.5 feet (3 to 3.5 meters),  
45 and no coral, oyster, or seagrass habitat are known to occur at this location.

### 1.2.6 Tosohatchee Wildlife Management Area

Tosohatchee WMA encompasses approximately 34,000 acres and is located in eastern Orange County, Florida, approximately 23 NM northwest of PSFB. It is bounded between the St. John's River, State Road 50, and State Road 520. The State of Florida purchased the land in 1977 as environmentally sensitive land. Natural community types include marshes, swamps, pine flatwoods, and hardwood hammocks.

### 1.2.7 St. Johns River Water Management District Conservation Areas

SJRWMD owns or manages nearly 700,000 acres of land, acquired for the purposes of water management, water supply, and the conservation and protection of water resources. These lands largely consist of wetlands or historically wet areas. Lands and related resources are often managed in partnerships with other agencies or organizations and are used by the public and private interests, including recreational activities, for utility easements, for monitoring equipment, and for agricultural purposes.

### 1.2.8 Avon Park AFR

Avon Park AFR is a 106,000-acre bombing and gunnery range located in Polk and Highland counties, Florida, approximately 50 NM west of PSFB. It provides a variety of air-to-ground targets in support of air and ground operations. The site is home to a Deployed Unit Complex of the 23<sup>rd</sup> Wing located in Moody AFB in Georgia.

### 1.2.9 WTAs in the Atlantic Ocean

Water operations (WOPs) conducted by tenant and transient units occur in the WTAs summarized below (also see Figure 2-1).

- NH20 – located in the Atlantic Ocean approximately 5 NM east of PSFB. Referred to as WP-44/DZ Kathy in the 2016 EA.
- SH20 – located in the Atlantic Ocean, approximately 5 NM southeast of PSFB. Referred to as WP-45 in the 2016 EA.
- Rick Smith – located in the Atlantic Ocean approximately 20 NM east of PSFB.
- Bill Sutton – located in the Atlantic Ocean approximately 14 NM east/southeast of Port Canaveral.
- Ronnie Cavallo – located in the Atlantic Ocean approximately 40 NM east of PSFB, with a diameter of approximately 10 NM. This WTA is used for long distance navigation training and deconfliction of airspace when areas closer to shore are in use. Due to the isolated location of Ronnie Cavallo, surface support watercraft and personnel are not present during training operations at this location. Water depths are over 150 feet (> 45 m).

## 1.3 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to ensure SLD 45, along with its tenants and transient users, have access to training opportunities and continued support of testing and development for technical capabilities as part of the Major Range and Test Facility Base (MRTFB) requirements. The MRTFB is considered a national asset and is operated primarily for DoD Test and Evaluation (T&Ev) support missions, although it is also available to other users with a valid requirement. The MRTFB constitutes a core set of DoD T&Ev infrastructure and associated workforce providing T&Ev capabilities to support the DoD acquisition system (DoD Directive 3200.11). The MRTFB classification means that SLD 45 takes liability for safety, making it easier for other DoD agencies to conduct equipment and technology testing at these installations.

1 The Proposed Action is needed to maintain combat readiness and enable technological  
2 advances. Users must conduct training operations in a true setting to maintain combat ready  
3 status for missions and rely on technology testing and experiments conducted at these  
4 installations to achieve the SLD 45 mission of facilitating safe space launches in the ER.

5 Although many training activities under the Proposed Action are similar to those described in the  
6 previously approved 2016 EA, the need for proposed modifications is driven by changes to  
7 mission requirements, and a need to provide comprehensive and streamlined NEPA coverage for  
8 these activities in the future.

## 9 **1.4 Agency Coordination and Public Involvement**

### 10 **1.4.1 Lead and Cooperating Agency Roles**

11 The DAF is the lead agency for the preparation and coordination of the EA. As the lead federal  
12 agency, DAF is responsible for analyzing the potential environmental impacts of the Proposed  
13 Action. There are no cooperating agencies in the preparation of this EA.

### 14 **1.4.2 Government to Government Consultations**

15 Consistent with National Historic Preservation Act (NHPA) of 1966 implementing regulations (36  
16 CFR Part 800); DoD Instruction 4710.02, *Interactions with Federally Recognized Tribes*;  
17 Department of Air Force Instruction (DAFI) 90-2002, *Air Force Interaction with Federally*  
18 *Recognized Tribes*; and Air Force Manual (AFMAN) 32-7003, *Environmental Conservation*,  
19 federally recognized tribes that are historically affiliated with the geographic region of the  
20 Proposed Action were invited to consult regarding the potential of the Proposed Action to affect  
21 properties of cultural, historical, or religious significance to the tribes. The tribal consultation  
22 process is distinct from NEPA consultation or the interagency coordination process, and it  
23 requires separate notification to all relevant tribes. The timelines for tribal consultation are also  
24 distinct from those of other consultations.

25 The DAF solicited early comment from the following Native American Tribal governments that  
26 may be impacted or have an interest in the Proposed Action: Miccosukee Tribe of Indians of  
27 Florida, the Seminole Nation of Oklahoma, and the Seminole Tribe of Florida. Correspondence  
28 with the Native American tribal governments regarding the Proposed Action is included in  
29 Appendix A.

### 30 **1.4.3 Interagency Coordination and Consultations**

31 Per the requirements of Executive Order (EO) 12372, *Intergovernmental Review of Federal*  
32 *Programs*, state and local governments that could be directly affected by the Proposed Action  
33 were notified during the development of this EA. Likewise, federal, state, and local agencies with  
34 jurisdiction that could be affected by the Proposed Action were notified of the development of this  
35 EA and the completion of draft NEPA documents. The agencies contacted during this analysis  
36 are listed in Appendix A. Copies of agency correspondence are included in Appendix A.

### 37 **1.4.4 Resource Agency Consultations and Review**

38 The DAF coordinated with other federal, state, and local agencies with regulatory authority over  
39 the Proposed Action and Alternatives to inform the range of issues to be addressed in the EA.  
40 Agencies consulted include the U.S. Fish and Wildlife Service (USFWS), the Florida Division of  
41 Historical Resources, and the National Oceanic and Atmospheric Administration National Marine  
42 Fisheries Service (NMFS). Coordination letters, and responses received, are consolidated in  
43 Appendix A and discussed in Chapter 3, Affected Environment and Environmental  
44 Consequences, as appropriate.

1 **1.4.5 Public Involvement**

2 Upon completion of the Draft EA, a Notice of Availability will be published in local newspapers to  
3 announce the availability of the NEPA documents for public review. The public will be invited to  
4 review and comment during a 30-day review period. The Notice of Availability and all comments  
5 received will be included in Appendix A of the Final EA.

6 **1.5 Decision to be Made**

7 This EA details the purpose and need for the Proposed Action, the alternatives that were  
8 considered, the potential impacts of the Proposed Action, and all proposed avoidance,  
9 minimization, and/or mitigation measures with the potential to lessen anticipated impacts. This  
10 EA, in combination with comments received from the public and reviewing agencies, will provide  
11 the DAF with the necessary information to determine whether the Proposed Action would result  
12 in a significant impact to the environment, thus requiring the preparation of an Environmental  
13 Impact Statement, or whether no significant impacts would occur, resulting in the issuance of a  
14 Finding of No Significant Impact (FONSI).

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## Chapter 2 Proposed Action and Alternatives

This chapter discusses the selection criteria for alternatives and describes the Proposed Action and Alternatives, including the No-Action Alternative, selected by the USSF to be evaluated in this EA.

### 2.1 Proposed Action

The Proposed Action involves SLD 45 transient and training missions at PSFB, CCSFS, MTA, the Banana River, Tosohatchee State Reserve (Tosohatchee WMA / SJRWMD Conservation Areas), Avon Park AFR, SJRWMD managed lands, and WTAs in the Atlantic Ocean, as presented in the 2016 EA (and corresponding FONSI/Finding of No Practicable Alternative [FONPA]), as well as the modification and addition of new transient and training activities not previously captured in that EA. Activity additions and modifications are proposed primarily at PSFB, CCSFS, and MTA, although minor modifications to ongoing activities within the Atlantic Ocean are also analyzed (see Table 2.1). Proposed increases in activity at Avon Park AFR are analyzed in the *Final Avon Park Air Force Range Operations Environmental Assessment* (USAF 2020), incorporated by reference; therefore, while activities included in the Proposed Action at Avon Park AFR are identified in Chapter 2, they are not analyzed in Chapter 3. The Proposed Action additionally includes equipment and technology testing by tenant and transient users that occurs at PSFB, CCSFS, and MTA.

Under the Proposed Action, SLD 45 would continue to conduct training activities within designated areas described in the 2016 EA, including WTAs, landing zones (LZs), DZs, air refueling (AR) tracks, All Terrain Vehicle (ATV) training areas, live-fire munitions training areas, and tactical training areas (refer to Figures 2-1, 2-2, 2-3, 2-4, 2-5, and 2-6). Use of DZ Nicholas McCaskill, which was analyzed in the 2016 EA and is shown on Figure 2-1 for reference, has been discontinued.

Proposed new training, or modifications to existing training operations, would include helicopter brownout training, use of a new multipurpose training tower at PSFB by the 308<sup>th</sup> RQS, acquisition of a Permanent Site Certification for Forward Area Refueling Point (FARP), and various expanded wartime readiness trainings, as discussed in more detail below.

This EA additionally analyzes current noise abatement procedures for the use of Runway 21 at PSFB and proposes the removal of those procedures. The noise study conducted in support of the Proposed Action may be found in Appendix D. Findings within this study and information regarding the existing noise environment are incorporated into Section 3.6, Noise.

#### 2.1.1 Current Training Activities

Current training operations performed by the 920<sup>th</sup> RQW were analyzed previously in the 2016 EA. Proposed training activities conducted by SLD 45 and other transient users that were not analyzed in the 2016 EA are discussed in Section 2.1.2. The EA also considers training activities that are currently individually documented as categorical exclusions to NEPA. This EA would provide comprehensive and streamlined NEPA coverage for these activities in the future. This EA will analyze any potential environmental effects that could result from the continuation of current 920<sup>th</sup> RQW training activities within previously designated areas, as summarized in Tables 2-1 through 2-9, and presented in more detail in the 2016 EA.

**Table 2-1. Summary Table of Existing 301st RQS Training Operations**

Training/Event	Location	Altitude (feet above ground level)	Airspeed (knots)	Duration (hours)	Frequency of use (sorties/month)
Contact / Emergency Patterns	PSFB	0-1,000	0-100	1	10
Low Level Flight	PSFB LATN Area	0-500	0-130	3	64
Remote / Tactical LZ Patterns	Tosohatchee WMA / SJRWMD Conservation Area LZs, Avon Park AFR	0-300	0-100	1	64
Chaff and Flare	Avon Park AFR	Chaff 0-500 Flare 1,000+	0-130	1	2
WOPs	DZ Judy, NH20, SH20, and WTAs Rick Smith, Bill Sutton, Ronnie Cavallo	0-150	0-100	1	16

AFR = Air Force Range; DZ = drop zone; LATN = Low Altitude Technical Navigation; LZ = landing zone; PSFB = Patrick Space Force Base; SJRWMD = St. John's River Water Management District Conservation Areas; WMA = Wildlife Management Area; WOP = water operation

**Table 2-2. Summary Table of Existing 39<sup>th</sup> RQS Training Operations**

Training/Event	Altitude (feet above ground level)	Airspeed (knots)	Duration (hours)	Frequency of use (sorties/month)
Low Level Flight at PSFB LATN Area	300-2,500	200-250	3	30
Airdrop at DZ Judy	1,500-2,500	130	1	5
Airdrop at DZ Ferreira	300-13,000	130	1	5
Airdrop at DZ Hardluck	300-25,000	130	1	5
Airdrop at DZ Bill Sutton	150-1,000	130	1	1

DZ = drop zone; LATN = Low Altitude Technical Navigation; PSFB = Patrick Space Force Base

**Table 2-3. Summary of Existing 920<sup>th</sup> RQW Training Operations at the Banana River**

Training / Event	Location	Frequency of Use	Duration (hours)
Air Drop / WOP	DZ Judy	7 sorties / month	1
WOP / Personal Distress Signals	DZ Judy	4 times / year	0.5
Amphibious vehicle training	PSFB near 920 <sup>th</sup> RQW boat ramp	2 times / year	1
Use of 920 <sup>th</sup> RQW boat ramp	PSFB 920 <sup>th</sup> RQW boat ramp	7 times / year	1

DZ = drop zone; RQW = Rescue Wing; WOP = water operation

**Table 2-4. Summary of Existing 920<sup>th</sup> RQW Training Operations at CCSFS**

Training / Event	Location	Frequency of Use	Duration (hours)
Air Drop	DZ Ferreira	5 times / month	1
ATV Training	ATV Training Area	2 times / year	2
Munitions Training	SWAT Range and EOD Range	4 times / year	2
Urban Terrain Training	SLC 31/32	2 times / year	2
Over the Beach Training	Beaches north of Port Canaveral Jetty	2 times / year	2

ATV = all-terrain vehicle; DZ = drop zone; EOD = explosive ordnance disposal; SLC = space launch complex; SWAT = special weapons and tactics

**Table 2-5. Summary of Existing 920<sup>th</sup> RQW Training Operations at MTA**

Training / Event	Location	Frequency of Use	Duration (hours)
Deployment / Anti-terrorism / Survival Exercises (may include smoke grenades, flares, blanks, and / or survivalist fires)	MTA	3-7 times / year	16-34

MTA = Malabar Training Annex

**Table 2-6. Summary of Existing 920<sup>th</sup> RQW Training Operations at Tosohatchee WMA and SJRWMD Conservation Areas**

Training / Event	Location	Frequency of Use	Duration (hours)
LZ	Cowpie	4 times / month	0.5
LZ	Golden Gate	6 times / month	0.5
LZ	Site 11	2 times / month	0.5
LZ	Reno	6 times / month	0.5
LZ	Picnic Bridge	8 times / month	0.5

LZ = landing zone

**Table 2-7. Summary of Existing 920<sup>th</sup> RQW Training Operations at Avon Park AFR**

Training / Event	Location	Frequency of Use	Duration (hours)
LZ	LZ Brenda	1 time / 6 month	0.5
LZ	LZ Duey	1 time / 6 month	0.5
LZ	LZ Fort Kissimmee	1 time / month	0.5
LZ	LZ Huey	1 time / 6 month	0.5
LZ	LZ Louie	1 time / 6 month	0.5
LZ	LZ Mary	1 time / 6 month	0.5
LZ	LZ Molly	1 time / 6 month	0.5
LZ	LZ Oscar	1 time / 6 month	0.5
LZ	LZ Peanut	1 time / 6 month	0.5
LZ	LZ Recon	1 time / 6 month	0.5
LZ	LZ Riviera	6 times / month	0.5
LZ	LZ Zen	1 time / 6 month	0.5
LZ	LZ 19 <sup>th</sup> Hole	1 time / 6 month	0.5
LZ	LZ Echo Range	6 times / month	1
LZ	LZ Fox Range	6 times / month	1
Amphibious vehicle training	Avon Park AFR	2 times / year	1
Smoke grenades and flares	Avon Park AFR	3-7 times / year	3
Simunitions / munitions	Avon Park AFR	3-7 times / year	1-2
Survivalist fires	Avon Park AFR	3-7 times / year	2-3
Land navigation	Avon Park AFR	3-7 times / year	3-8
Extraction	Avon Park AFR	3-7 times / year	1-2

AFR = Air Force Range; LZ = landing zone

**Table 2-8. Summary of Existing 920<sup>th</sup> RQW Training Operations in the Atlantic Ocean**

Training / Event	Location	Frequency of Use (Sorties / month)	Duration (hours)
Air Drop / WOP	DZ Rick Smith	5	1
Air Drop / WOP	DZ Bill Sutton	5	1
Air Drop / WOP	DZ Ronnie Cavallo	5	1
WOP	NH20	16	1
WOP	SH20	16	1

DZ = drop zone; LZ = landing zone; WOP = water operation

**Table 2.9. Summary of Existing 920<sup>th</sup> RQW Air Refueling Tracks**

Training / Event	Location	Altitude (feet)	Airspeed (knots)	Duration (hours)	Frequency of Use (Sorties / month)
Air Refueling	AR Track 15 Victor	500-4,000	115	1	8
Air Refueling	AR Track Marian	500-4,000	115	1	8

AR = air refueling

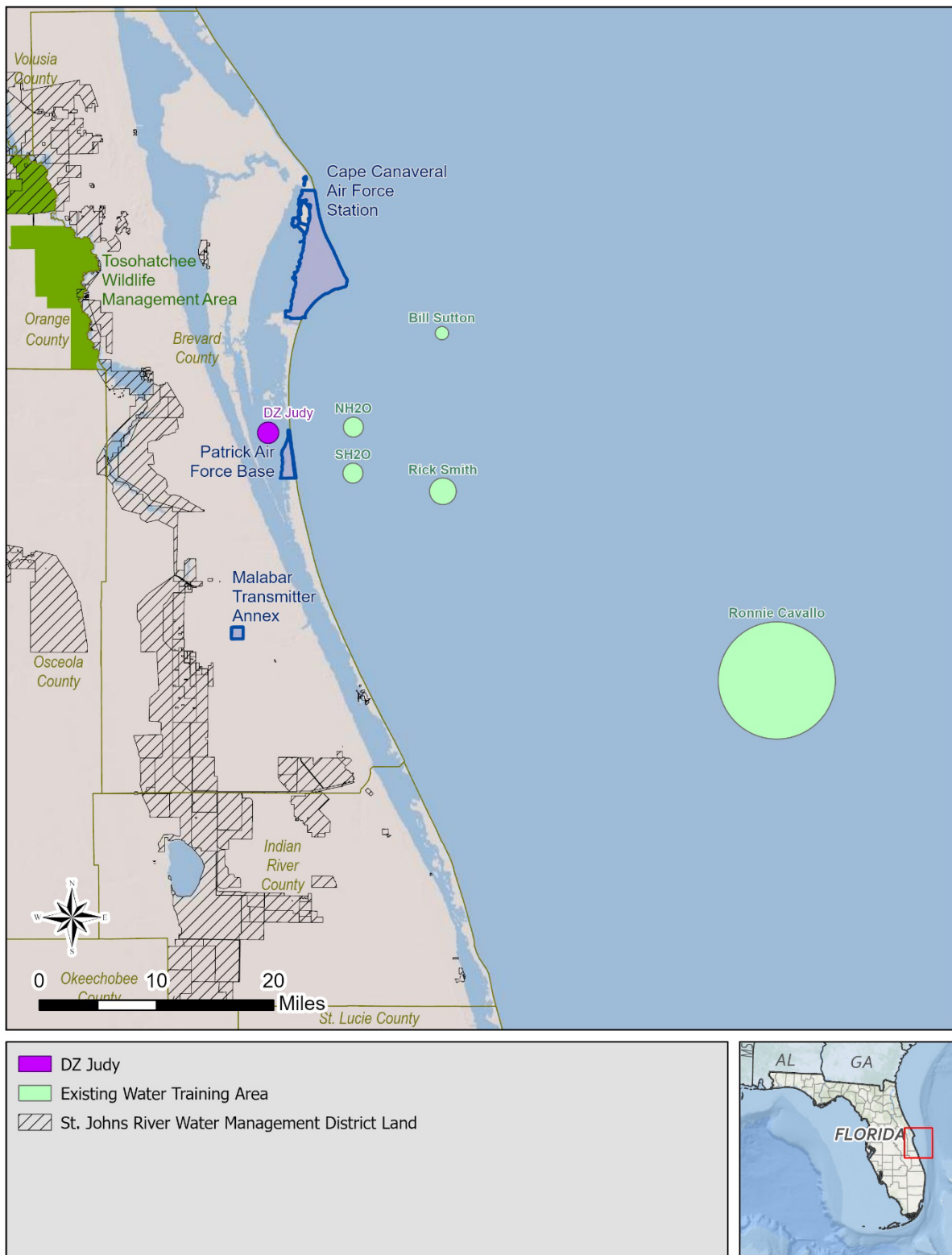


Figure 2-1. Water Training Areas

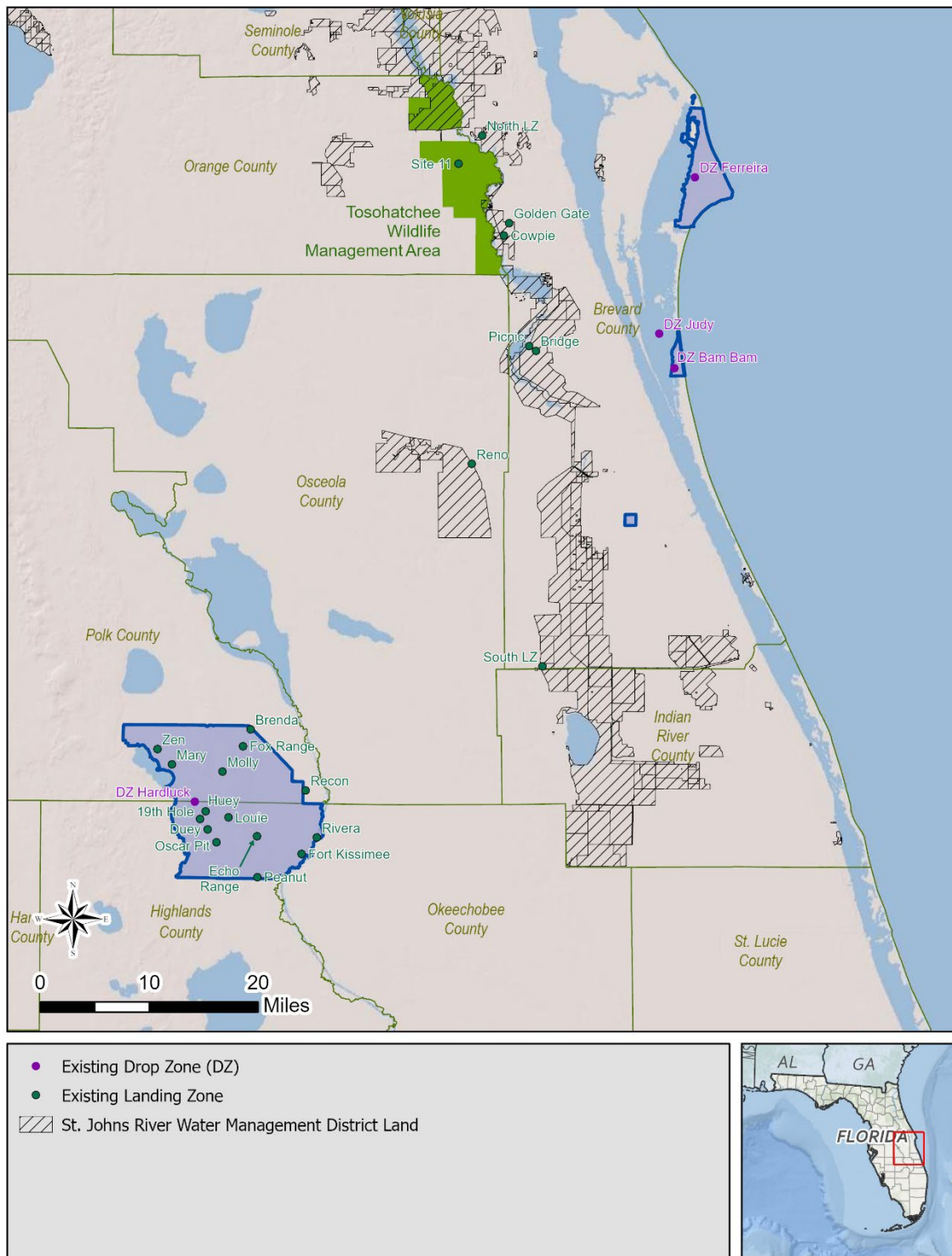


Figure 2-2. Drop Zones and Landing Zones

## 2.1.2 Proposed New or Modified Training Activities

This section details newly proposed or modified training activities by the 920<sup>th</sup> RQW since the 2016 EA, in addition to training activities conducted by SLD 45 and transient users not analyzed in the 2016 EA. A number of the trainings included in the Proposed Action are ongoing and are covered individually by a categorical exclusion. The inclusion of these activities in this EA is intended to provide comprehensive and streamlined NEPA compliance for these activities in the future. Updates to activities analyzed in the 2016 EA include increased frequency of instrument flight training, use of the gunnery at the Avon Park AFR, aerial refueling, and sling load training, as well as increased use of DZ Bam Bam and DZ Cavallo. Slight modifications to these activities since 2016 are presented in Table 2-10. Training frequency increases at Avon Park AFR are covered in the *Final Avon Park Air Force Range Operations Environmental Assessment* (USAF 2020).

**Table 2-10. Minor Modifications to Current 920th RQW Training Since 2016 EA**

Training/Event	Location	Altitude (feet above ground level)	Airspeed (knots)	Duration (hours)	Frequency from 2016 EA (sorties/ month)	Updated Frequency (sorties/ month)
Instrument Flight	SE U.S. Area	0-10,000	110	3	5	10
Gunnery	Avon Park AFR	Chaff 0-500 Flare 1,000+	0-130	1	16	24
Aerial Refueling	15V AR Tracks and North MOA track	1,000+	115	1	8	10
Sling Load	PSFB Sling Load Area	0-300	0-100	1	2	4
Airdrop	PSFB (DZ Bam Bam)	500-10,000	130	0.5	25	30
Airdrop	Atlantic Ocean (DZ Cavallo)	150-1,000	130	1	5	8

AFR = Air Force Range; DZ = drop zone; EA = Environmental Assessment; PSFB = Patrick Space Force Base

Note: Training/events included in Table 2-10 currently occur as described in the 2016 EA; however, this EA considers an increase in frequency of use. Primary resources with the potential of adverse impacts from these activities include air quality and greenhouse gas/climate, biological resources and noise. Potential effects to these resources at Avon Park AFR are analyzed in the *Final Avon Park Air Force Range Operations Environmental Assessment* (USAF 2020).

Table 2-11 provides a list of recurring and transient users for each location analyzed in this EA, and Table 2-12 provides an overview of the current and proposed training missions at each location. The following sections provide further details about the existing transient and training missions at each location not previously analyzed in the 2016 EA, along with proposed changes to the missions. Table 2-13 provides a full list of aircraft types that frequent the project area.

**Table 2-11. Recurring and Transient Users Overview**

Training Area	Group	
PSFB, including nearby WTAs in the Banana River and Atlantic Ocean	<ul style="list-style-type: none"> <li>301<sup>st</sup> RQS</li> <li>39<sup>th</sup> RQS</li> <li>308<sup>th</sup> RQS</li> </ul>	<ul style="list-style-type: none"> <li>920<sup>th</sup> SFS</li> <li>Detachment 3</li> <li>Transient users (i.e., 482<sup>nd</sup> FW)</li> </ul>
CCSFS, including nearby WTAs in the Atlantic Ocean	<ul style="list-style-type: none"> <li>301<sup>st</sup> RQS</li> <li>39<sup>th</sup> RQS</li> <li>308<sup>th</sup> RQS</li> <li>920<sup>th</sup> SFS</li> </ul>	<ul style="list-style-type: none"> <li>920<sup>th</sup> Aeromedical Staging Squadron</li> <li>Detachment 3</li> <li>U.S. Navy</li> <li>Transient users (i.e., SEAL Team Eight)</li> </ul>
MTA	<ul style="list-style-type: none"> <li>301<sup>st</sup> RQS</li> <li>39<sup>th</sup> RQS</li> </ul>	<ul style="list-style-type: none"> <li>45<sup>th</sup> SFS</li> <li>45<sup>th</sup> Civil Engineer Squadron</li> </ul>

Training Area	Group
	<ul style="list-style-type: none"> <li>308<sup>th</sup> RQS</li> <li>920<sup>th</sup> SFS</li> </ul>
Tosohatchee WMA / SJRWMD	<ul style="list-style-type: none"> <li>301<sup>st</sup> RQS</li> <li>39<sup>th</sup> RQS</li> </ul>
Avon Park AFR	<ul style="list-style-type: none"> <li>301<sup>st</sup> RQS</li> <li>920<sup>th</sup> SFS</li> <li>39<sup>th</sup> RQS</li> </ul>

AFR = Air Force Range; FW = Fighter Wing; PSFB = Patrick Space Force Base; RQS = Rescue Squadron; SFS = Security Forces Squadron; WMA = wildlife management area; WTA = water training area

**Table 2-12. Current and Proposed Transient and Training Missions Overview**

Training Area	Current Training <sup>a</sup>	Proposed Training <sup>b</sup>
PSFB	<ul style="list-style-type: none"> <li>NH20, SH20, WTAs Rick Smith, Bill Sutton, and Ronnie Cavallo<sup>c</sup></li> <li>LATN Area</li> <li>Mass casualty training</li> <li>Amphibious vehicle route</li> <li>Zodiac beach launch / Over the Beach training</li> <li>Indoor firing range</li> <li>Munitions training</li> <li>ATV training</li> <li>Sling load training</li> <li>Tactical simulations</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> <li>920<sup>th</sup> boat ramp</li> </ul>	<ul style="list-style-type: none"> <li>New Multipurpose Training Tower</li> <li>Forward Area Refueling Point Site</li> <li>Expanded wartime readiness training by resident and transient users, including the use of smoke, hot pit refueling, and transient flight training.</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> <li>Increased frequency of instrument flight training, gunnery use, aerial refueling, and sling load training.</li> <li><b>Increased use of DZ Bam Bam.</b></li> <li><b>Dining Facility boat ramp usage.</b></li> </ul>
CCSFS	<ul style="list-style-type: none"> <li>DZ Ferreira</li> <li>Two munitions training (EOD and SWAT)</li> <li>ATV training</li> <li>Zodiac beach landing / Over the Beach training</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>Helicopter brownout training</li> <li>Expanded training events including advanced medical training, air traffic control, and transient flight training.</li> <li>Use of ground burst simulators/smoke munitions/other pyro techniques.</li> <li>Capsule recovery training (Detachment 3 Rescue Force Qualification Course)</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
MTA	<ul style="list-style-type: none"> <li>Wartime readiness</li> <li>Survival, evasion, resistance and escape training</li> <li>Urban terrain and squad movement security training</li> <li>One or two joint training events per year involving compatible units with similar missions</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>Ground burst simulators/smoke munitions/dye rounds training</li> <li>EOD Improvised Explosive Device training</li> <li>Testing of communications equipment by approved transient groups</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
Atlantic Ocean	<ul style="list-style-type: none"> <li>WTAs (Ronnie Cavallo, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Increased use of DZ Ronnie Cavallo.</li> </ul>

Training Area	Current Training <sup>a</sup>	Proposed Training <sup>b</sup>
Banana River	<ul style="list-style-type: none"> <li>WOPs at DZ Judy</li> <li>Amphibious vehicle route</li> <li>920<sup>th</sup> boat ramp usage</li> </ul>	<ul style="list-style-type: none"> <li>Larger vessels at Dining Facility Boat Ramp in addition to use of Marina/ Outdoor Recreation Dock (deeper water).</li> </ul>
Tosohatchee WMA / SJRWMD	<ul style="list-style-type: none"> <li>Use of existing landing zones</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>
Avon Park AFR	<ul style="list-style-type: none"> <li>Existing landing zones, DZs, munitions training, ATV training, and amphibious vehicle route.</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>

<sup>a</sup> Current training includes operations analyzed in the 2016 EA.

<sup>b</sup> Proposed training includes some activities currently occurring under existing Memoranda of Understanding or are categorically excluded from NEPA.

<sup>c</sup> These DZs and WTAs are located in the Atlantic Ocean and are described in Section 1.2.9.

AFR = Air Force Range; ATV = all-terrain vehicle; CCSFS = Cape Canaveral Space Force Station; DZ = Drop Zone; EOD = explosive ordnance disposal; LATN = Low Altitude Technical Navigation; MRTFB = Major Range and Test Facility Base; MTA = Malabar Transmitter Annex; PSFB = Patrick Space Force Base; SJRWMD = St. John's River Water Management District Conservation Areas; SWAT = Special Weapons and Tactics; WOP = water operations WTA = Water Training Area

**Table 2-13. Aircraft Types Used within the Project Area**

Aircraft Types Used within the Project Area	
A-10	C-172
AH-64	DH-8
AN-124	F-15
B-52	F-16
B-737	F-18
B-747	F-22
B-757	F-35
BE-36	G-2
Bell 206	H-60
C-5	P-3
C-17	P-8
C-21	PA-28
C-37	UH-1
C-130	

### 2.1.2.1 PSFB

Training activities at PSFB are limited to designated areas, such as the indoor firing range, the airfield, and designated DZs, as described in Section 2.1.1. Construction of an outdoor aquatic center, which will be utilized for training activities once completed, is proposed off Rescue Road, northwest of the western end of the airfield runway. Construction of the aquatic center is analyzed in the *Environmental Assessment for Installation Development at Patrick Space Force Base, Florida* (DAF 2022). Additionally, the installation of a new Special Warfare Multipurpose Tower is described below. Areas at PSFB commonly used for training activities are shown on Figure 2-3.

The Proposed Action includes current training activities at PSFB, as described in Section 2.1.1; use of the Dining Facility Boat Ramp by the following boats: Munson 36', SAFE 39', and Boston Whaler 27'; as well as expanded training events that include more participants and equipment than required for smaller, more routine training activities, which typically include no more than 50

personnel. Larger training events are intended to prepare airmen for high-end battles and large-scale recovery missions. Proposed events include the deployment of smoke, use of HH-60 helicopters and HC-130 aircraft, and may include up to 400 personnel, to adequately simulate airfield assaults and simultaneous search and rescue missions on the ground. Most training events at PSFB would require the use of the airfield and the air traffic control communications system and would utilize existing roads and impervious surfaces. Such training events have the potential to take place during the day and night and may last multiple days. While the 920<sup>th</sup> RQW is the primary user of PSFB training areas, they frequently host other units such as the 482<sup>nd</sup> FW, for transient training events. Transient users primarily visit PSFB for the opportunity to use the airfield for flight training and hot pit refueling, which involves refueling an aircraft while the engine continues running. This allows for a faster turnaround time for the aircraft. As PSFB is one of the few airstrips in the U.S. with this capability, units stationed off-base request access to the airfield to practice this technique. Hot pit refueling sorties are proposed by the 920<sup>th</sup> RQW approximately six times per month, while transient users may additionally request to conduct their own hot pit refueling sorties approximately four times a month. Hot pit refueling would most frequently occur at taxiways Alpha, Juliet, and Mike (see Figure 2-4).

Transient flight training included under the Proposed Action closely resembles current flight training conducted by tenants of PSFB, as described in the 2016 EA. Transient flight training events may include up to 30 personnel, a variety of aircraft, as listed in Section 2.1.2, pallets to store aircraft maintenance equipment, and inert stores and trailers. Transient users may request the use of fuel trucks and fire trucks (for use by a safety observer), to be provided on-site by SLD 45.

Due to the MRTFB designation discussed in Section 1.3, Purpose of and Need for the Proposed Action, PSFB maintains the necessary T&Ev infrastructure and workforce to accommodate research, testing, and experimentation in support of technology advances by DoD agencies. As a result, other DoD agencies and non-DoD groups with a valid requirement conduct research and technology testing at this location under the Proposed Action. Radio frequencies transmitted or received at this location are evaluated by the USAF Spectrum Management Office and bioenvironmental personnel. All appropriate precautions are taken to avoid conflicts and unsafe environments.

### **308<sup>th</sup> Rescue Squadron Special Warfare Multipurpose Tower**

The 308<sup>th</sup> RQS, a unit of the 920<sup>th</sup> Operations Group, proposes the installation of a new Air Force Special Warfare Multipurpose tower to provide a versatile, dynamic, scalable, and modular training equipment system for mock helicopter simulations. An existing tower is located adjacent to Building 698 that does not meet mission training requirements as it accommodates only one type of training exercise. The proposed tower would be installed on an existing paved parking lot west of Rescue Road (see Figure 2-3).

The proposed multipurpose tower would require interior and exterior lighting, FAST<sup>TM</sup> mounts, anchor points, balconies, and helicopter mock-up with working hoist, doors, windows, stairs, and ladders. The existing tower is made with shipping containers approximately 40 feet long by 8 feet wide by 8.5 feet high. The structure consists of two containers side by side, stacked four containers high. It is assumed that the new multipurpose tower would be assembled using the same materials and to the same dimensions as the existing structure.

### **Forward Area Refueling Point Site**

SLD 45 proposes to receive a FARP Permanent Site Certification at PSFB to support refueling training operations necessary to meet training requirements and prepare troops for current world conflicts. The proposed site is located at the intersection of Taxiways Juliet and Mike, as shown

- 1 on Figure 2-4. Once acquired, the FARP Permanent Site Certification would be valid for 5 years,
- 2 with a one-time renewal permitted for 5 additional years, unless there is a change in scope.

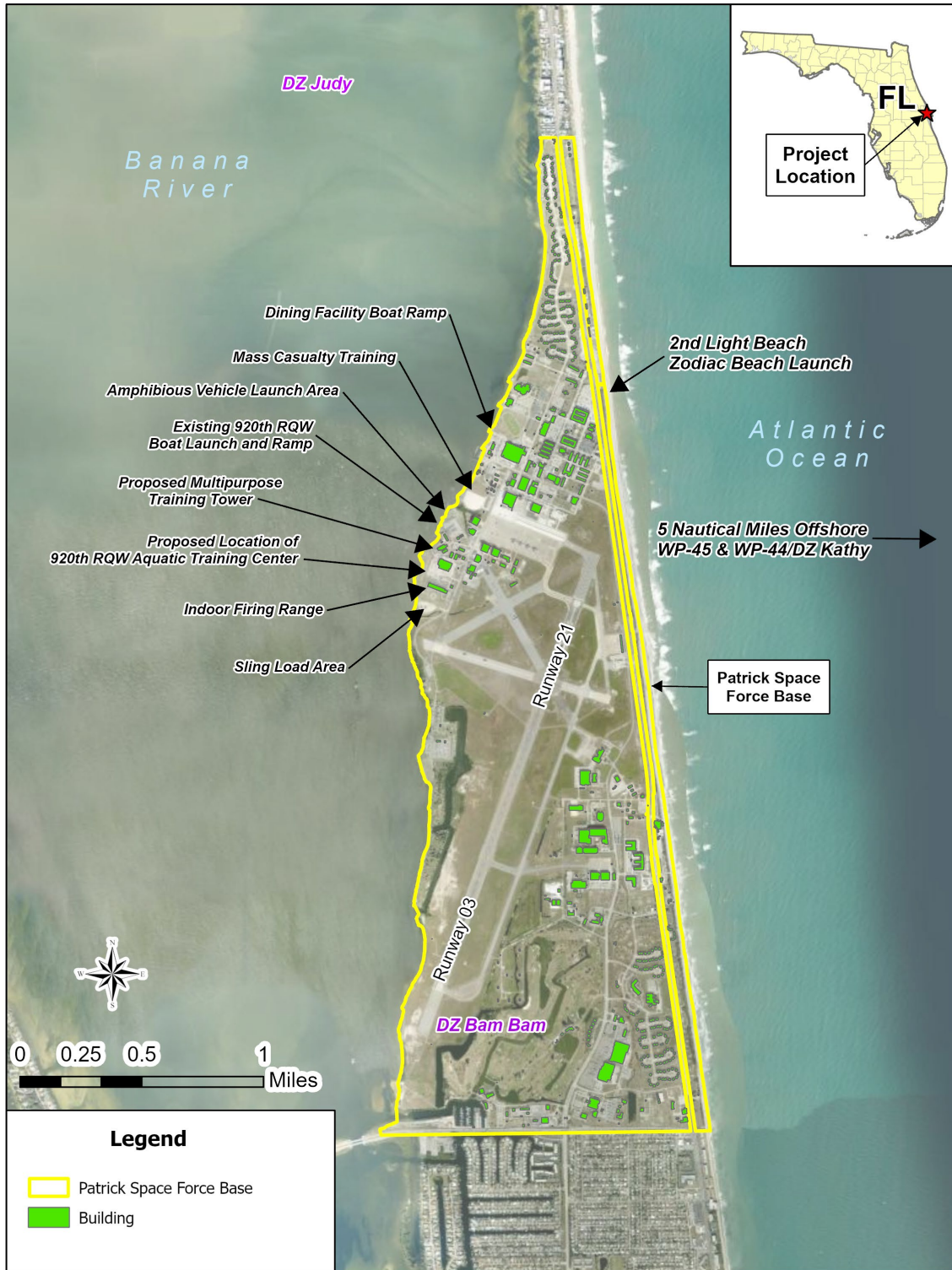
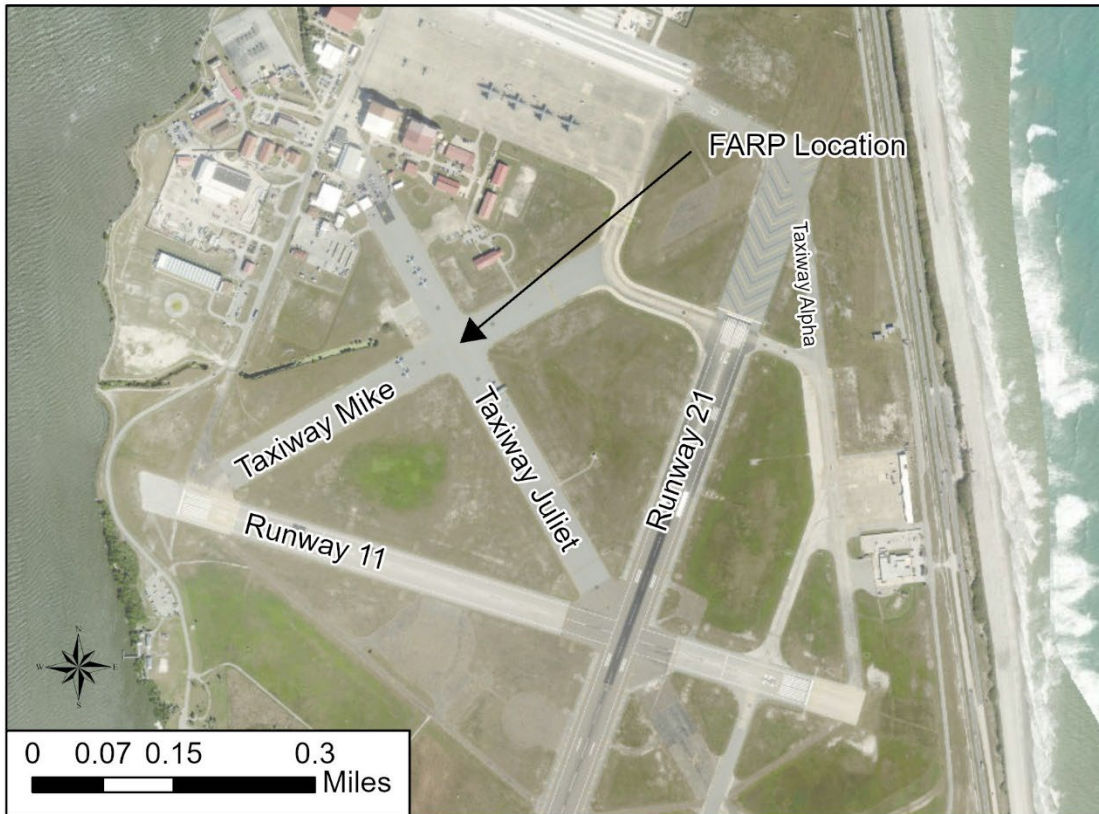


Figure 2-3. Patrick Space Force Base

FARP operations involve transferring fuel from a tanker aircraft into a receiver aircraft, while engine(s) are running on either the tanker and/or receiver aircraft. The tanker aircraft would land at PSFB and establish a stationary refueling point near the runway where receiver aircraft can be refueled quickly as they land on the airfield. All operations would occur within the confines of the airfield.



**Figure 2-4. Patrick Space Force Base Airfield**

### **2.1.2.2 CCSFS**

The flat and open landscape of CCSFS, as well as access to the beach and to multiple harbors, makes CCSFS a popular location for wartime readiness training, both for resident and transient users. All areas at CCSFS commonly used for training activities are shown on Figure 2-5.

SLC 31/32 is commonly used for wartime simulations. The 308<sup>th</sup> RQS, the 920<sup>th</sup> RQW, and the 920<sup>th</sup> SFS, among other resident and transient units, utilize SLC 31/32 in training activities intended to maintain advanced medical training proficiency, prepare for combat situations, and simulate search and rescue missions. The Proposed Action includes the use of simulated munitions, smoke, ground burst simulators (GBS), and other pyro techniques in this area, as well as rescue aircraft such as HC-130 aircraft and HH-60 helicopters.

Proposed large-scale training events include a quarterly training conducted by the 920<sup>th</sup> RQW, multi-day training events involving 50 or more personnel, and phased search and rescue missions, all requiring participants to travel by aircraft or by foot between training locations such as the Skid Strip, SLC 31/32, and the beach area at the terminus of Camera Road A and Camera Road B. All proposed training exercises may require the use of nearby DZs and LZs, as well as

1 CCSFS airspace to accommodate the HH-60 helicopters and C-130 aircraft used for personnel  
2 drop offs and search and rescue exercises. Such events may take place during the day and night.

3 Proposed transient training activities at CCSFS include the use of designated areas for training  
4 exercises similar to those described above. Additionally, the Proposed Action includes transient  
5 flight training and air traffic control training by off-base users. Air traffic control training at CCSFS  
6 would consist of deploying mobile control towers (typically an AN/MSN-7 mobile tower system  
7 consisting of two high mobility multipurpose wheeled vehicles), practicing equipment setup and  
8 tear down, and conducting common air traffic control scenarios. In order to function properly, the  
9 AN/MSN-7 system must be connected to an earth electrode system (i.e., grounding grid or  
10 grounding rods); therefore, equipment setup requires that grounding rods approximately 3 feet  
11 deep, tent stakes approximately 1 foot deep, and radio mast stakes approximately 2 feet deep  
12 are driven into the ground. Air traffic control training requires the use of the runway, ramp, Ferreira  
13 DZ, briefing room, Camera Site 21 (located at the end of Control Tower Road, north of the eastern  
14 end of the Skid Strip), and the Port-o-lets available at Camera Site 21, and may involve 60 or  
15 more personnel.

16 Due to the MRTFB designation discussed in Section 1.3, Purpose of and Need for the Proposed  
17 Action, CCSFS maintains the necessary T&Ev infrastructure and workforce to accommodate  
18 research, testing, and experimentation in support of technology advances by DoD agencies. As  
19 a result, other DoD agencies and non-DoD groups with a valid requirement conduct research and  
20 technology testing at this location under the Proposed Action. Radio frequencies transmitted or  
21 received at this location are evaluated by the USAF Spectrum Management Office and  
22 bioenvironmental personnel. All appropriate precautions are taken to deconflict and to avoid  
23 unsafe environments.



Figure 2-5. Cape Canaveral Space Force Station

### **301st RQS Helicopter Brownout Training**

A brownout approach or landing describes a situation in which a helicopter pilot is required to land on a dusty or sandy surface, during which the downward movement of air resulting from the rotor system of the helicopter creates a large dust cloud, obscuring the pilot's vision. A brownout approach is an essential skill for the 301<sup>st</sup> RQS HH-60 helicopter crews operating in dry, desert environments, where brownout landings are likely and have been known to cause accidents. As this is considered to be a more demanding maneuver than approaching a landing with full visibility, it is necessary to simulate brownouts so that crews become better able to execute them safely and consistently. Proposed training could be completed in 15 to 45 minutes per sortie and would occur five to ten times per month during the winter months, both during the day and at night. As conditions in Florida are too wet in the summer to simulate a helicopter brownout scenario, this training would not occur during the summer months. During each sortie, sand is disturbed and dust occurs during the end of the helicopter landing and at the beginning of takeoff, and lasts no longer than two minutes. To create a scenario in which the pilot loses sight of the ground, thus simulating a true brownout experience, the sand that is picked up during takeoff or landing must create a dust cloud approximately 10 to 20 feet tall.

SLC 31/32 at CCSFS is the preferred location for brownout training; however, this EA also analyzes this activity at the KSC as an alternate location.

### **Detachment 3 – Rescue Force Qualification Course**

The purpose of the Rescue Force Qualification Course (RFQC) is to instruct DoD rescue forces on human and capsule recovery for manned space flights. Detachment 3 proposes to conduct the RFQC two to four times per year, with up to 40 personnel attending each event. The course would consist of classroom instruction at existing Naval Ordnance Test Unit (NOTU) or CCSFS facilities, as well as in-water operations. In-water operations involve the placement of a training capsule in the water using an existing on-site crane, transportation of the capsule via jet skis and inflatable boats, and the use of temporary floating docks to secure watercraft. Floating docks would be removed at the conclusion of training operations.

In-water training operations conducted by Detachment 3 currently make use of the Trident Basin. Use of the Poseidon Wharf and the future 920<sup>th</sup> RQW Aquatic Training Center are also analyzed in this EA. Water depths are approximately 40-50 ft (12-15 m).

#### **2.1.2.3 MTA**

MTA serves primarily as a site for transient training events for military and non-military groups, and as a site for technology testing.

Designated training areas and in-use structures are shown on Figure 2-6.

### **Proposed Training Uses**

MTA offers an ideal setting for wartime readiness training and is frequently used for this purpose by SLD 45. The Proposed Action includes training activities that require the use of GBS, smoke, flares, and dye rounds. The 45<sup>th</sup> SFS, for instance, proposes to conduct GBS, smoke munitions, and dye round training for Military Working Dogs (MWD) and their handlers to prepare the MWD for the stimulation they may experience during wartime missions. The 920<sup>th</sup> SFS, likewise, proposes to conduct combat readiness training at MTA using dye rounds, and the 45<sup>th</sup> CES proposes to conduct explosive ordnance disposal (EOD) Improvised Explosive Device (IED) training. EOD IED training would also involve joint agency clandestine operations with local law enforcement agencies and public safety bomb technicians, and would take place over multiple days, approximately once per year. Under the Proposed Action, similar training activities may be conducted by SLD 45 units in addition to those specified above.



Figure 2-6. Malabar Transmitter Annex

Transient users such as the USMC and the Florida Tech Army ROTC propose to utilize MTA for monthly and annual training events that typically include approximately 50 to 260 personnel. Typical training operations include vehicle convoys, non-vehicle navigation practice, basic skills testing, and urban warfare exercises. Both monthly and annual events would take place over multiple days and would require the use of Building 65 for restroom facilities and overnight accommodations. The Florida Tech Army ROTC program currently conducts training exercises at MTA under the authority of a Right of Entry provided by the USAF. The ROTC trainees typically utilize the existing Malabar CE Training Camp and annex land to provide realistic field training. Annual training events typically take place over multiple days, during which trainees bivouac overnight and utilize temporary latrines that are removed from the site following the event. All other training events that occur throughout the year can be completed within a single day. This EA analyzes the potential environmental effects of training activities conducted by these users, as well as similar activities anticipated to be conducted by SLD 45 and other transient users in the future.

### **Proposed Technology Uses**

MTA is the site of many antennas and similar technology installed by various users, who require frequent access to the property for maintenance purposes. Due to the MRTFB designation discussed in Section 1.3, Purpose of and Need for the Proposed Action, MTA maintains the necessary T&Ev infrastructure and workforce to accommodate research, testing, and experimentation in support of technology advances by DoD agencies and others. This designation, as well as a relatively isolated landscape, has made MTA a sought-after designation for such research and experimentation by DoD agencies, as well as transient users with a valid requirement for utilizing the property.

Existing transient users include the U.S. Naval Research Laboratory, DARPA, AFRL, and the Air Force Life Cycle Management Center. This EA analyzes the potential environmental effects of their continued presence, as well as the potential future presence of additional users and equipment. The Proposed Action is not limited to current users and programs but includes similar and related requests to use MTA for technology testing. Radio frequencies transmitted or received at this location are evaluated by the USAF Spectrum Management Office and bioenvironmental personnel. All appropriate precautions are taken to deconflict and avoid unsafe environments.

Over-the-air High Frequency (HF) and Very High Frequency (VHF) antennas are used at MTA for a range of testing and data collection. In some instances, other antennas and radars that are not geographically located near MTA are used during testing operations to better understand how frequencies propagate through the atmosphere.

Typical HF frequency testing operations have involved the installation of HF antennas and the use of a small area inside an existing on-site building to setup and operate the transponder. Each antenna can require up ten stakes to securely install it. Required electronic equipment can include receivers and transponders that set up are co-located near the antennas. Past testing operations have involved two to four personnel on-site, with the addition of one to two contractor personnel during the first few days to support antenna setup.

VHF antennas are typically anchored into the ground with heavy gauge galvanized steel spikes known as Oz-Posts. These antennas require a larger footprint for setup sometimes up to 300 to 500 meters away from each other (approximately 984 to 1,640 feet). The antennas require access to the internet and a power supply. Occasional maintenance or replacement of antennas is required in the event that they fail, which typically occurs a few times each year. Personnel are also on-site to manually start up the control computer after a prolonged power loss, or during malfunction events. Continued, intermittent access to and use of MTA for transponder operations and testing is analyzed in this EA.

Transportable Dynasonde Systems (TDS) at MTA use atmospheric radio sounding to obtain data (in coordination with other instruments in the region) for testing space weather forecasting tools. Testing of the TDS requires the presence of approximately two personnel, a pickup truck with trailer, an electric power supply, and the installation of an L14-30 power receptacle within 100 feet of the trailer and requires an unobstructed level area of 100 meters by 150 meters (approximately 328 to 492 feet). Recurrence of TDS testing, or testing of similar equipment, is anticipated to continue to occur at this site, and is analyzed in this EA.

Testing of radar sensors providing long look radar capabilities typically consist of equipment and system setup, transmitting and receiving on primary radar tests, and a test of the secondary radar beacon system. Such tests would require the use of generators to provide necessary power, a flatbed trailer for transporting equipment, and a bare pad on which to set up the equipment. Tests are anticipated to require up to 12 personnel, with follow-up tests requiring up to 14 personnel, with each test taking place over the course of five days. It is anticipated that similar testing will be requested in the future.

## 2.2 No-Action Alternative

The No-Action Alternative is analyzed in this EA to describe the anticipated future condition if the Proposed Action is not implemented and in accordance with 32 CFR Part 989.8(d).

Under the No-Action Alternative, SLD 45 transient and training missions would not change. Transient and training missions would continue to need individual NEPA evaluation through the PSFB and CCSFS NEPA Program.

## 2.3 Selection Standards for Alternatives

CEQ NEPA implementing regulations direct federal agencies to “evaluate reasonable alternatives to the Proposed Action” (40 CFR 1502.14[a]). A range of reasonable alternatives in this EA was identified by evaluating their ability to meet the purpose of and need for the Proposed Action and their ability to reduce impacts to the transient and training missions as well as the environment

**Table 2-14. NEPA Screening Criteria**

<b>1: Reduce Level of Disturbance by Maximizing Existing Infrastructure</b>	
<ul style="list-style-type: none"> <li>Leverage existing DAF installations and USSF infrastructure and resources to minimize requirements for additional facilities and related environmental impacts from construction and operations in support of transient and training missions.</li> </ul>	
<b>2: Minimize Environmental and Socioeconomic Impacts</b>	
<ul style="list-style-type: none"> <li>Avoid or reduce adverse impacts to air quality, noise, cultural resources, wetlands, surface waters and floodplains, and protected species.</li> <li>Avoid contaminated sites for which remediation is not feasible.</li> <li>Maximize use of existing roadways, utilities, security (fencing/security access control measures), and available buildings and parking areas to reduce overall level of disturbance.</li> <li>Maximize use of existing approved airspace and airspace uses and supporting infrastructure (e.g., runways and DZs).</li> <li>Utilize previously disturbed sites to avoid impacts to undisturbed lands or open space.</li> <li>Compatible with installation master planning and training.</li> </ul>	

DAF = U.S. Department of the Air Force; DZ = drop zone; USSF = U.S. Space Force

## 2.4 Alternatives Considered but Eliminated from Detailed Analysis

Due to SLD 45 mission requirements and the screening criteria requirement to leverage existing infrastructure and resources, few other locations beyond those analyzed as part of the Proposed Action within this EA were deemed feasible. Other locations would involve construction of new

1 facilities or would create new operational (training) disturbances to locations previously not used  
2 for the transient and training missions considered within this EA.

3 For specific training activities or exercises, multiple locations were considered, resulting in the  
4 dismissal of some that were determined to be unsuitable for various reasons including  
5 environmental considerations and inability of the location to meet training requirements. The  
6 following proposed alternatives were not carried forward for detailed analysis:

#### 7 PSFB

8 Locations other than DZ Bam Bam were evaluated within the 2016 EA and found to not meet the  
9 required criteria provided in Section 2.3, Selection Standards for Alternatives. As was the case at  
10 that time, PSFB currently consists of administrative, technical, and unimproved areas in addition  
11 to its airfield. Further, regulatory requirements deny use of closed landfills located on PSFB for  
12 this type of training activity. These areas are not suitable for DZs or LZs (DAF 2016).

13 Multiple locations at PSFB were evaluated as possible locations for the 301<sup>st</sup> RQS brownout  
14 training and found to not meet the required criteria provided in Section 2.3, Selection Standards  
15 for Alternatives. Proposed locations southwest of Runway 3 or adjacent to the indoor firing range  
16 were determined to be too close in proximity to water resources or to existing operational activities  
17 occurring in these areas. Additionally, known concerns about per- and polyfluoroalkyl substances  
18 (PFAS) contamination in the soil at the location identified adjacent to the indoor firing range (due  
19 to its prior use as a fire training area) further disqualified this site from detailed analysis, as  
20 brownout training would be anticipated to kick up large amounts of dust. As a result, the only  
21 location being carried forward for detailed analysis is SLC 31/32 at CCSFS.

22 PSFB also considered sites for the proposed Multi-Purpose Training Tower that were outside of  
23 the 100-year floodplain. The location of this proposed facility requires close proximity to the 308<sup>th</sup>  
24 RQS (Building 780) and is within their future enclosure. Other sites initially considered by PSFB  
25 did not meet these requirements or were not existing paved locations which would require  
26 additional ground and resource disturbance. Section 3.2.2.7 discusses potential impacts to the  
27 Banana River floodplain.

#### 28 CCSFS

29 Locations other than DZ Ferreira at the Skid Strip were evaluated for the 2016 EA and eliminated  
30 from further consideration. As was the case at that time, the landscape at CCSFS currently  
31 consists of scrub vegetation, maritime hammock, or improved grounds with a variety of rocket  
32 launch complexes (LCs) and associated hazardous zones. DZ Ferreira provides a wide-open  
33 grassy area that is currently used for aircraft operations. As described in the 2016 EA, utilizing a  
34 different area may adversely impact the CCSFS launch mission.

35 In-water operations training by Detachment 3 was evaluated at the Hangar AF Wharf and found  
36 to not meet the required criteria provided in Section 2.3, Selection Standards for Alternatives. This  
37 location in the Banana River is environmentally sensitive and increases in wildlife encounters  
38 posed a safety concern for personnel involved in training activities. Alternative locations carried  
39 forward for detailed analysis include the Trident Basin, the Poseidon Wharf, and the future 920<sup>th</sup>  
40 RQW Aquatic Training Center.

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## Chapter 3 Affected Environment and Environmental Consequences

This chapter describes the affected environment and potential environmental consequences associated with the Proposed Action and the No-Action Alternative. Nine broad environmental resource areas were evaluated to provide a context for understanding the potential effects, and as a baseline for assessing the significance of potential impacts. Resources included or dismissed from detailed analysis in the EA, and justification for dismissals, are presented in Table 3-1.

The Region of Influence (ROI) for this EA generally includes the PSFB, CCSFS and MTA boundaries where training activities would occur, as described in Section 2.1, Proposed Action. The methodology used to identify the existing conditions and to evaluate potential impacts on resources involved the following: review of documentation and project information provided by DAF, searches of various environmental and federal and state agency databases, and public scoping. References are cited, where appropriate, throughout this EA.

Wherever possible, the analyses presented in this chapter quantify the potential impacts associated with the Proposed Action and the No-Action Alternative. Where it is not possible to quantify impacts, the analyses present a qualitative assessment of the potential impacts. The following descriptors qualitatively characterize impacts on each resource area analyzed:

- **Negligible** – no apparent or measurable impacts expected.
- **Minor** – the action would have a barely noticeable or measurable adverse impact on the resource.
- **Moderate** – the action would have a noticeable or measurable adverse impact on the resource. This category could include potentially significant impacts that could be reduced to a lesser degree by the implementation of mitigation measures.
- **Significant** – the action would have obvious and extensive adverse impacts that could result in potentially significant impacts on a resource despite mitigation measures.

The degree of effects in this EA considers the following duration, type, quality, and intensity of the impact (summarized below) and whether effects would violate federal, state, tribal, or local laws protecting the environment (as described for each resource area):

- **Duration (short- or long-term)** – In general, short-term effects are those that would occur only with respect to an activity, for a finite period. Long-term effects are those that are more likely to be persistent and may be permanent.
- **Type (direct or indirect)** – A direct effect is caused by an action and occurs around the same time and place. An indirect effect is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- **Quality (adverse or beneficial)** – An adverse impact is one having unfavorable or undesirable outcomes. Beneficial impacts provide desirable situations or outcomes.

1

**Table 3-1. Resource Area Level of Analysis**

<b>Resource</b>	<b>Level of Analysis and Justification</b>
Air Quality and GHG/Climate Change	Analyzed in detail (see Section 3.1). Activities have potential air quality impacts resulting from vehicle use and potential soil disturbance. These activities could also contribute to GHG emissions and climate change.
Water Resources	Surface waters, wetlands, floodplains and sea level rise, and water quality analyzed in detail (see Section 3.2). Potential water resource impacts could result due to sedimentation, and potential soil disturbance resulting from training activities. Additionally, many locations under the Proposed Action are located in the 100-year floodplain. Groundwater dismissed from further analysis, as no excavation or substantive ground disturbance is proposed.
Soil and Geological Resources	Soils analyzed in detail (see Section 3.3), and geology dismissed from further analysis. Certain training exercises would cause direct impacts to soils and increased potential for soil erosion and sedimentation. However, the proposed locations in Florida are not seismically active, and the SLD 45 transient and training activities would not require grading of topography or impacts to geological resources.
Cultural Resources	Analyzed in detail (see Section 3.4). Transient and training activities have the potential to adversely affect cultural resources, if present.
Biological Resources	Analyzed in detail (see Section 3.5). Potential biological resource impacts could result due to increases in noise and habitat disturbance during transient and training activities.
Noise	Analyzed in detail (see Section 3.6). Transient and training missions would increase noise and have the potential to impact sensitive noise receptors.
Utilities and Infrastructure	Eliminated from detailed analysis. Transient and training missions would not require the need for additional infrastructure and would instead utilize existing infrastructure.
Transportation	Analyzed in detail (see Section 3.7). Occasional temporary increases in vehicle traffic related to authorized personnel for the proposed transient and training missions could occur.
Public Health and Safety	Eliminated from detailed analysis. Operational activities would be consistent with training safety procedures. All activities would occur in existing training areas within the respective locations. Adherence to established safety requirements, practices, and guidelines would apply and further minimize the potential for injury during transient and training missions.
Hazardous Materials and Waste	Analyzed in detail (see Section 3.8). Transient and training activities could occur in areas with past contamination.
Socioeconomics	Eliminated from detailed analysis. The Proposed Action would not increase the need for housing and community services and would not provide noticeable economic impacts to the surrounding communities.
Environmental Justice	Analyzed in detail (see Section 3.9). If present, minority and low-income populations could experience high and adverse impacts from noise generated from transient and training mission activities.
Land Use and Aesthetics	Analyzed in detail (see Section 3.10). Transient and training missions have the potential to disrupt other land uses, particularly in the Banana River and Atlantic Ocean.

2

GHG = greenhouse gas; SLD = Space Launch Delta

### 3.1 Air Quality and Greenhouse Gas/Climate Change

Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., motor vehicles). Air quality at a given location is a function of several factors including the quantity and type of pollutants emitted locally and regionally, as well as the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion include wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

The ROI for air quality includes the associated Air Quality Control Region (AQCR) of PSFB, CCSFS, and MTA. Clean Air Act (CAA) Section 107. (a), defines an air quality control region as a geographically similar region either within one state or multiple that has similar air quality conditions. PSFB, CCSFS, and MTA are located within the Central Florida Intrastate AQCR.

#### 3.1.1 Definition of the Resource/Regulatory Setting

This section assesses the baseline conditions for air quality and climate change within the ROI and assesses the plausibility of air quality and/or climate change to affect or be affected by the implementation of the Proposed Action. National Ambient Air Quality Standards (NAAQS) are provided for: Carbon monoxide (CO); lead (Pb); nitrogen oxides (NO<sub>2</sub>); ozone (O<sub>3</sub>); particulate matter, divided into two size classes of aerodynamic size less than or equal to 2.5 micrometers (PM<sub>2.5</sub>), and aerodynamic size less than or equal to 10 micrometers (PM<sub>10</sub>); and sulfur dioxide (SO<sub>2</sub>). NAAQS are split into two types. Primary air quality standards provide public health protection, including “sensitive populations” such as the elderly. Secondary standards provide public welfare protection, including decreased visibility and damage to animals and crops. Primary NAAQS are used as the basis for determining whether a region is complying with CAA requirements. Table 3.1-1 lists the NAAQS for each criteria pollutant.

**Table 3.1-1. Criteria Air Pollutants**

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		Primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		Primary and Secondary	Rolling 3- month average	0.15 µg/m <sup>3</sup>	Not to be exceeded
Nitrogen Dioxide (NO <sub>2</sub> )		Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentration, averaged over 3 years
		Primary and Secondary	1 year	53 ppb	Annual Mean
Ozone (O <sub>3</sub> )		Primary and Secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM <sub>2.5</sub>	Primary	1 year	12.0 µg/m <sup>3</sup>	Annual mean, averaged over 3 years
		Secondary	1 year	15.0 µg/m <sup>3</sup>	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	35 µg/m <sup>3</sup>	98th percentile, averaged over 3 years
	PM <sub>10</sub>	Primary and Secondary	24 hours	150 µg/m <sup>3</sup>	Not to be exceeded once per year on average over 3 years

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Sulfur Dioxide (SO <sub>2</sub> )	Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA 2023a

µg = micrograms; CO = carbon monoxide; m<sup>3</sup> = cubic meter; NO<sub>2</sub> = nitrogen dioxide; O<sub>3</sub> = ozone; Pb = lead; PM<sub>2.5</sub> = particulate matter of diameter 2.5 microns or less; PM<sub>10</sub> = particulate matter of diameter 10 microns or less; ppb = parts per billion; SO<sub>2</sub> = sulfur dioxide

In addition to the criteria pollutants discussed above, Hazardous Air Pollutants (HAPs) also are regulated under the CAA. The USEPA has identified 188 HAPs that are known or suspected to cause health effects in small concentrations. HAPs are emitted by a wide range of anthropogenic and naturally occurring sources, including combustion mobile and stationary sources. Unlike the NAAQS for criteria pollutants, federal ambient air quality standards do not exist for non-criteria pollutants. Therefore, HAPs are regulated through specific air emission permit provisions for stationary sources and HAP emission limits for mobiles sources.

The CAA also designates visibility goals in Class I Federal areas, such as national parks or wilderness areas. Visibility-impairing pollutants can be transported over state lines, so states are encouraged to work together to develop regional visibility plans. Visibility-impairing pollutants are emitted by a range of sources, including mobile source fuel combustion, agriculture, and manufacturing. Emissions of said pollutants are regulated by NAAQS, through state programs, and through specific air emission permit provisions.

### 3.1.2 Affected Environment/Existing Conditions

#### 3.1.2.1 Ambient Air Quality

The ambient air quality in an area is classified by whether it complies with the NAAQS. Areas where monitored outdoor air concentrations are within an applicable NAAQS are considered in attainment of that NAAQS. If sufficient ambient air monitoring data are not available to make a determination, the area is instead deemed as attainment/unclassifiable. Areas where monitored outdoor air concentrations exceed the NAAQS are classified by the USEPA as nonattainment. Nonattainment designations for some pollutants (e.g., O<sub>3</sub>) can be further classified based on the severity of the NAAQS exceedances. Lastly, areas that have historically exceeded the NAAQS but have since instituted controls and programs that have successfully remedied these exceedances are known as maintenance areas.

The General Conformity Rule of the federal CAA mandates that the federal government abides by approved State Implementation Plans (i.e., air quality control plans). Air Force Policy Directive (AFPD) 32-70, Environmental Considerations in Air Force Programs and Activities, mandates that the DAF comply with all federal, state, and local environmental laws and standards. In accordance with AFPD 32-70, AFMAN 32-7002, Environmental Compliance and Pollution Prevention, explains responsibilities and specific details on how to comply with the CAA and other federal, state, and local air quality regulations. This provides further and more specific instructions on the requirements of the DAF's EIAP for air quality promulgated at 32 CFR. 989.30, which mandates that EIAP documents address General Conformity.

PSFB, CCSFS, and MTA are located in Brevard County and are under the jurisdiction of USEPA Region 4 and the FDEP. According to the EPA AirData Air Quality Monitoring Map (USEPA 2024), all sites are considered in attainment/unclassifiable. Therefore, the General Conformity Rule does not apply.

### 3.1.2.2 Climate

Due to the close proximity of sites, climatic conditions and weather is discussed regionally. The climate for the area is humid subtropical, with an average annual temperature of 73.3 degrees Fahrenheit (°F). Annual rainfall is 36.7 inches, and the wettest month is September at 5.8 inches on average. The driest month is April, with 1.9 inches of rainfall on average. The warmest month of the year is August with an average temperature of 81.1 °F. January is the coldest month with an average temperature of 62.9 °F (Climate Data 2023).

### 3.1.2.3 Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions released into the atmosphere from human-induced fossil fuel combustion are widely believed to be contributing to changes in global climate. GHGs, which include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), water vapor, and several trace gases, trap radiant heat reflected from the Earth in the atmosphere, causing the Earth's average surface temperature to rise. The predominant GHGs are CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. In the U.S., anthropogenic (human-related) GHG emissions are emitted primarily from burning fossil fuels. Although GHG levels have varied for millennia (along with corresponding variations in climate conditions), increases driven by human activity have contributed significantly to recent climatic changes.

The current level of GHG emissions from all natural and human activities within a region represent the baseline emissions for that area. The National Emissions Inventory, updated every 3 years by the USEPA, estimates the annual emissions for each county within the U.S., including point and non-point, on-road mobile, and nonroad mobile sources (USEPA 2020). Point sources include large industrial and energy facilities. On-road mobile sources are vehicle emissions that normally operate on public roadways. Nonroad mobile equipment is equipment that does not operate on roads, excluding commercial railways and aircraft. Non-point emissions include agriculture, fires, residential fuel use, and other sources not covered in the other categories. The most recent publicly available inventory data is for calendar year 2020 (USEPA 2020). Baseline GHG emissions are presented (see Table 3.1-2) by county in tons carbon dioxide equivalent (CO<sub>2</sub>e).

**Table 3.1-2. County Baseline Emissions**

Locations	Brevard	Highlands	Orange	Polk
GHG emissions (tons CO <sub>2</sub> e)	4,382,313.70	927,189.40	9,656,050	5,124,506.10

GHG emissions data from 2020 EPA County-level GHG emissions (USEPA 2020)  
CO<sub>2</sub>-eq = carbon dioxide equivalent; GHG = greenhouse gas

### 3.1.2.4 Climate Hazard and Severe Weather Assessment

The Fourth National Climate Assessment details the regional historical effects and projected impact of climate change (Carter, L. et al. 2018). The assessment breaks down the U.S. into regions. The ROI resides within the Southeast region and will be discussed as such.

The Southeast region faces extreme weather events and rising temperatures, although temperatures have had a lesser impact than other parts of the U.S. The extreme weather events expected to have a significant impact are hurricanes, heat waves, and drought. Rising sea levels and potential changes in hurricane intensity are aspects of climate change that are expected to have an impact on coastal ecosystems in the Southeast.

### 3.1.3 Environmental Consequences

#### 3.1.3.1 Analysis Approach

The air quality impact analysis follows the EIAP Air Quality Guidelines for criteria pollutants and GHG emissions (Solutio Environmental 2023a). The EA used the Air Conformity Applicability Model (ACAM) to analyze the potential air quality impacts associated with the Proposed Action, in accordance with AFMAN 32-7002, the EIAP, and the General Conformity Rule (40 CFR 93 Subpart B). The General Conformity Rule does not apply to the Proposed Action since Brevard County is classified as an attainment area for all pollutants.

Current DAF guidance provides methodology for performing an Air Quality EIAP Level II, Quantitative Assessment, which is an insignificance assessment that can determine if an action poses an insignificant impact on air quality (Solutio Environmental Inc. 2023b). An air quality impact is considered insignificant if the action does not cause or contribute to exceedance of one or more of the NAAQS. The DAF defines “insignificance indicators” for each criteria pollutant according to current air quality conditions.

For nonattainment or maintenance areas, the General Conformity Rule formally defines *de minimis* (insignificant) levels that must be used as insignificance indicators. However, General Conformity Rule *de minimis* levels have not been established for attainment criteria pollutant emissions. In areas the DAF considers in attainment, the insignificance indicators are 250 tons per year (i.e., the USEPA’s Prevention of Significant Deterioration [PSD] threshold), except for Pb, which is 25 tons per year. DAF has adopted the PSD threshold for GHG of 68,039 metric tons per year as a threshold of insignificance (Solutio Environmental Inc. 2023a).

The change in climate conditions caused by GHGs is a global effect. The Proposed Action would contribute incrementally to global and regional GHG emissions and global climate change. For comparative purposes, this EA analyzes the potential GHG emissions for each alternative, as calculated by the ACAM.

The CEQ’s interim guidance on NEPA and climate change also directs agencies to provide estimates of the social cost of GHG (SC-GHG) associated with agency actions. Estimates of SC-GHG provide an aggregated monetary measure (in U.S. dollars) of the net harm to society associated with an incremental metric ton of emissions in a given year. These estimates include, but are not limited to, climate change impacts associated with net agricultural productivity, human health effects, property damage from increased risk of natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services. In this way, SC-GHG estimates can help the public and federal agencies understand or contextualize the potential impacts of GHG emissions and, along with information on other potential environmental impacts, can inform the comparison of alternatives. SC-GHG is presented below.

#### 3.1.3.2 Proposed Action

##### Air Quality

Table 3.1-3 summarizes criteria air pollutant emissions from the Proposed Action, which are well below applicable significance thresholds. Emission sources for proposed training activities at PSFB, CCSFS, and MTA are described in greater detail below.

**Table 3.1-3. Criteria Air Pollutant Emissions from Training Activities (tons/year)**

Source	Site	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Pb
Personnel Travel	PSFB	0.04	0.02	0.51	0.00	0.00	0.00	0.00
	CCSFS	0.01	0.01	0.13	0.00	0.00	0.00	0.00

Source	Site	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Pb
	MTA	0.04	0.02	0.57	0.00	0.00	0.00	0.00
Generator Use	MTA	0.09	0.37	0.25	0.08	0.08	0.08	0.00
<b>Total</b>		0.18	0.42	1.45	0.08	0.08	0.08	0.00

CO = carbon monoxide; CO<sub>2eq</sub> = carbon dioxide equivalent; NO<sub>x</sub> = oxides of nitrogen; O<sub>3</sub> = ozone; Pb = lead; PM<sub>2.5</sub> = particulate matter of diameter 2.5 microns or less; PM<sub>10</sub> = particulate matter of diameter 10 microns or less; ppb = parts per billion; SO<sub>x</sub> = oxides of sulfur

#### PSFB

Proposed training activities at PSFB include the assembly of a new multipurpose training tower, expanded wartime readiness training by resident and transient users, including the use of smoke, hot pit refueling, FARP, and transient flight training; and testing and development for technical capabilities as part of MRTFB requirements.

The assembly of the new multipurpose training tower may involve the use of cranes and other equipment to move and stack shipping containers. However, any resulting air emissions are likely to be negligible.

Expanded wartime readiness training activities, including hot pit refueling, FARP, and transient flight training, are not anticipated to experience a quantifiable change, as the modifications to training activities would neither include new sources of emissions nor involve substantial changes in training frequency or duration. Air emissions resulting from aircraft operations would remain similar to levels evaluated in the 2016 EA. Use of smoke grenades typically occurs on improved grounds at PSFB and would not cause exceedance of any regulatory thresholds. Operation and maintenance of the assets and activities associated with training activities are expected to generate minor additional vehicle traffic and related emissions.

Testing and development activities as part of MRTFB requirements would not be expected to result in air pollutant or GHG emissions.

Minor emissions could occur during planned quarterly exercises, as a result of personnel commuting to PSFB, as shown in Table 3.1-3. These estimates assume that up to 400 personnel would travel a round trip distance of 20 miles to PSFB, for one week per quarter.

#### CCSFS

Proposed training activities at CCSFS include helicopter brownout training; expanded training events including advanced medical training, air traffic control, and transient flight training; use of GBS, smoke munitions, and other pyro techniques; capsule recovery training (Detachment 3 Rescue Force Qualification Course); and testing and development for technical capabilities as part of MRTFB requirements.

Helicopter brownout training could result in particulate matter (dust) emissions. However, this impact would be temporary and localized, and would not be likely to extend beyond the facility boundary.

Operation and maintenance of the assets and activities associated with expanded training activities are expected to generate minor additional vehicle traffic and related emissions. Transient flight training activities would not create new emissions sources or lead to significant changes in training frequency or duration and would not be likely to result in quantifiable changes to air emissions. Similarly, use of smoke munitions and other pyro techniques, capsule recovery training, and testing and development activities would not have quantifiable impacts to air quality.

Minor emissions could occur during planned quarterly exercises, as a result of personnel commuting to CCSFS, as shown in Table 3.1-3. These estimates assume that up to 100 personnel would travel a round trip distance of 20 miles to CCSFS, for one week per quarter.

## MTA

Proposed training activities at MTA include GBS, smoke munitions, and dye rounds training; EOD training; testing of communications equipment by approved transient groups; and testing and development for technical capabilities as part of MRTFB requirements. The use of smoke munitions and other devices and expanded EOD training activities would not have quantifiable impacts to air quality.

Minor air emissions could occur as a result of personnel traveling to MTA from Florida Tech ROTC and from PSFB to participate in training exercises, and from the use of generators to power equipment during testing and development activities, as shown in Table 3.1-3. As a worst case, it was assumed that up to 260 ROTC personnel would travel a round-trip distance of 15 miles on a monthly basis to MTA. Additionally, it was assumed that up to 100 personnel would travel to MTA on a monthly basis from PSFB, for a round-trip distance of 50 miles. Finally, for equipment testing and development, it was assumed that a single generator would be operated for up to 40 hours per month.

## GHGs

Proposed training activities would result in a long-term, minor increase in GHG emissions from workforce commuting and the use of emergency generator operators. GHG emissions from training activities are significantly smaller than existing baseline county-level emissions. GHG emissions and SC-GHG for commuting and emergency generator use are summarized in Table 3.1-4.

**Table 3.1-4. GHG Emissions from Training Activities (tons/year)**

Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	Indicator Exceedance <sup>1</sup> (yes/no)	SC-GHG
	(metric tons/year)					(\$K/yr [in 2020 \$]) <sup>2</sup>
2024	125	0.0055235	0.00183957	131	No	\$10.35
2025	125	0.0055235	0.00183957	131	No	\$10.48
2026	125	0.0055235	0.00183957	131	No	\$10.60
2027	125	0.0055235	0.00183957	131	No	\$10.86
2028	125	0.0055235	0.00183957	131	No	\$10.98
2029	125	0.0055235	0.00183957	131	No	\$11.11
2030	125	0.0055235	0.00183957	131	No	\$11.24
2031	125	0.0055235	0.00183957	131	No	\$11.49
2032	125	0.0055235	0.00183957	131	No	\$11.62
2033	125	0.0055235	0.00183957	131	No	\$11.87
2034	125	0.0055235	0.00183957	131	No	\$11.99

<sup>1</sup>Prevention of Significant Deterioration threshold for GHG Emissions is 68,039 metric tons of CO<sub>2</sub>e per year.

<sup>2</sup>IWG SC-GHG Discount Factor used is 2.5%. Annual estimates were found by multiplying the annual emission for a given year by the corresponding IWG Annual SC GHG Emission value.

CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2</sub>e = carbon dioxide equivalent; SC-GHG = social cost of greenhouse gas emissions; k = thousand; yr = year

## Climate Change Hazard Assessment

As described in Section 3.1.2.4, climate change impacts predicted for the southeast region of the U.S. generally include extreme weather events such as hurricanes, higher temperatures and heat waves, and rising sea levels. Climate change is predicted to potentially increase the frequency and severity of extreme weather events, which could have temporary impacts on training activities such as schedule delays, as well as other minor impacts to training facilities

such as downed trees and damaged infrastructure. Similarly, heat waves have the potential to affect training schedules or require adequate preparation such as hydration for personnel and awareness of heat risks. While rising sea levels could contribute to greater shoreline erosion and degradation of certain training areas, they are not expected to directly impact the training activities discussed in this EA.

### 3.1.3.3 No-Action Alternative

Under the No-Action Alternative, transient and training missions within the ROI would continue as described in the 2016 EA without the addition of newly proposed activities such as helicopter brownout training, the addition of quarterly or annual larger training events, and capsule recovery training. As a result, there would be no impact to air quality and GHG emissions. These newly proposed activities would require separate NEPA analysis as they are proposed.

## 3.2 Water Resources

### 3.2.1 Definition of the Resource/Regulatory Setting

Water resources requiring analysis under NEPA and analyzed in this EA include surface waters, wetlands, floodplains, and water quality. Additionally, this EA includes analysis of coastal resources for consistency with the Federal Coastal Zone Management Act (CZMA). The ROI for water resources includes PSFB, CCSFS, and MTA, with a focus on the locations identified for training and transient missions in this EA. The following definitions apply to water resources:

- **Surface waters** include natural bodies of water such as oceans, estuaries, rivers, streams, marshes, and natural ponds and lakes, as well as man-made surface waters such as canals, ditches, and impoundments.
- **Wetlands** are areas that are characterized by a high-water table during at least part of the year, which over time develops characteristic hydric soils, and favors the establishment of plant communities that are adapted to surviving and competing in wet soil conditions. These areas are important because they provide many functions including, but not limited to, nutrient cycling, flood storage, wildlife habitat, and groundwater recharge.
- **Floodplains** are areas of lower elevation adjacent to surface waters that provide temporary storage capacity for surface water overflowing normal channels or banks during times of high precipitation, either locally or upstream of the floodplain, or as a result of tidal surges associated with tropical storms. EO 11988 stipulates that impacts to floodplains should be avoided to the maximum extent practicable to protect human safety, health, and welfare. In particular, potential impacts to the 100-year floodplain (defined as any area with a one percent or greater annual chance of experiencing flooding) are evaluated under NEPA.

Water quality is regulated by the FDEP under authority of the federal CWA. Surface waters are assigned use classifications according to what is determined to be the most beneficial use of each surface water. These include such classifications as potable water supplies, shellfish propagation, fish consumption and recreation, agricultural water supply, and industrial use. Waters are monitored with respect to chemical, physical, and biological characteristics to ensure that they are suitable to meet their designated use classifications. Those that are not suitable are classified as impaired. Section 303(d) of the CWA requires states to identify impaired waters every two years. As part of its responsibilities under the CWA, FDEP develops plans to address the source of the impairment so that those waters can be removed from the state's list of impaired waters. This program is discussed in more detail in Section 3.2.2.4.

The Federal CZMA (16 U.S.C. 1451-1464) was enacted in 1972 to assist coastal states, Great Lakes states, and U.S. territories with the development of coastal management programs to

comprehensively manage and balance competing uses of coastal resources. In the State of Florida, the FDEP Florida State Clearinghouse administers the CZMA.

Table 3.2-1 lists the primary statutes, regulations, EOs, and other guidance related to water resources.

**Table 3.2-1. Water Quality Regulation Requirements**

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
CWA (Sections 401 and 402; 33 U.S.C. 1341-1342)	A National Pollutant Discharge Elimination System permit and a state water quality certificate for pollutant discharge from a "point source" into any surface water.	Ensure the "restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters."	USEPA/FDEP/Water Management Districts
CWA (Section 404; 33 U.S.C. 1344)	A general or individual permit for discharge of dredge or fill material into waters of the U.S.	Regulate the discharge of dredged and fill material into waters of the U.S, including wetlands.	USACE/FDEP
CZMA	Activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.	Preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone,	FDEP
62-330, FAC, <i>Environmental Resource Permitting</i>	A general or individual permit for work in wetlands and surface waters (as defined and delineated in Chapter 62-340, FAC) or construction/alteration of stormwater management systems.	Implement the comprehensive, statewide environmental resource permit program under Section 373.4131, F.S.	FDEP/Water Management Districts
403.067 Florida Statutes	Establishment and implementation of total maximum daily loads.	Promote improvements in water quality throughout the state through the coordinated control of point and nonpoint sources of pollution.	FDEP
Section 10 of the Rivers and Harbors Act (33 U.S.C. 403)	A general or individual permit for any work or creation of structures in, over, under, or affecting the course, location, or condition of navigable waters.	Prohibit the unauthorized obstruction or alteration of any navigable Waters of the U.S.	USACE
EO 11988, <i>Floodplain Management</i>	Avoidance of floodplain impacts to the extent practicable, prepare a FONPA, if necessary.	Reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains.	DoD
EO 11990, <i>Protection of Wetlands</i>	Avoidance of wetland impacts to the extent practicable, prepare a FONPA, if necessary.	Minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.	DoD

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
EO 13690, <i>Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input</i>	Follow implementing guidelines to increase the resilience against flooding and help preserve the natural values of floodplains.	Improve the resilience of communities and federal assets against the impacts of flooding and provide guidance to agencies on the implementation of EO 11988.	DoD
Energy Independence and Security Act of 2007 (42 U.S.C. 17001 et seq) and UFC 3-210-10, <i>Low Impact Development</i>	Development of a federal facility with a footprint that exceeds 5,000 square feet must maintain or restore the predevelopment hydrology of the property.	Manage stormwater on federal facilities.	DoD

CWA = Clean Water Act; CZMA = Coastal Zone Management Act; DoD = Department of Defense; EO = Executive Order; FAC = Florida Administrative Code; FDEP = Florida Department of Environmental Protection; FONPA = Finding of No Practicable Alternative; UFC = United Facilities Criteria; USACE = U.S. Army Corps of Engineers; U.S.C = United States Code; USEPA = United States Environmental Protection Agency

### 3.2.2 Affected Environment/Existing Conditions

#### 3.2.2.1 Surface Waters

Eight and 12-digit Hydrologic Unit Codes (HUC) and watersheds and subwatersheds within the ROI were evaluated using United States Geological Survey (USGS) HUC maps (USGS 2024).

#### PSFB

PSFB is located within the Cape Canaveral sub-basin (HUC 03080202) of the Indian River Lagoon watershed. More specifically, PSFB is located within the South Banana River subwatershed (HUC 030802020103) (USGS 2024). PSFB is located on a barrier island that is bordered to the east by the Atlantic Ocean and to the west by the Banana River. These two waterbodies represent the primary surface waters at PSFB. Additional surface waters at PSFB include man-made ponds associated with the on-base golf course and various man-made canals and drainage ditches. USGS topographic mapping data shows no natural named streams or tidal creeks occurring within the boundaries of PSFB. Based on a limited review of USGS topographic data and aerial photography, surface water runoff that does not percolate into the ground appears to collect in swales and ditches that route stormwater to ponds for treatment. These ponds ultimately discharge to the Banana River on the west side of PSFB. East of State Highway (SH) A1A, surface runoff appears to collect in the storm sewer present along some portions of the highway or drains from the dunes to the ocean (USGS 2021).

#### CCSFS

CCSFS also occurs within the Cape Canaveral sub-basin of the Indian River Lagoon watershed. The majority of CCSFS occurs within the North Banana River subwatershed (HUC 030802020101), with a small portion of the Base, including the areas of the Trident Wharf and the Poseidon Wharf which connect to the Port Canaveral channel and the Atlantic Ocean, occurring within the Cape Canaveral-Atlantic Ocean subwatershed (HUC 030802020500) (USGS 2024).

Surface waters at CCSFS drain generally west to the Banana River, with the exception of the areas of the Trident Wharf and Poseidon Wharf which are directly connected to Port Canaveral channel and the Atlantic Ocean. In addition to the Banana River and Atlantic Ocean, surface water resources at CCSFS include numerous man-made ditches and canals; natural ponded areas and

man-made ponds, impoundments, and borrow pits. Based on a review of USGS topographic mapping data, no natural named streams or tidal creeks occur at CCSFS.

### **MTA**

MTA is located within the Upper St. Johns sub-basin (HUC 03080101) of the St. Johns River watershed. More specifically, it occurs within the East Melbourne Tillman Canal subwatershed (HUC 03080101507) (USGS 2024). Surface waters at MTA consist of man-made canals, ditches, and swales. These features generally drain toward the south to the only named surface water resource identified by USGS topographic mapping data within the boundaries of MTA, the Melbourne-Tillman Canal. The Melbourne-Tillman Canal drains to the east at the southern boundary of the installation to Turkey Creek, which in turn drains to the Indian River (USGS 2021).

### **3.2.2.2 Wetlands**

EO 11990, *Protection of Wetlands*, requires Federal agencies to avoid wetland impacts to the extent practicable, and provide opportunity for early public review of any plans or proposals for new construction in wetlands (through a FONPA). Wetlands were evaluated by reviewing National Wetlands Inventory (NWI) data obtained from the USFWS (USFWS 2023a) and data provided by PSFB representing wetland delineations completed for PSFB and MTA in 2023. Figures 3.2-1, 3.2-2, and 3.2-3 present wetland types present at PSFB, CCSFS, and MTA respectively. A brief description of wetland resources onsite is presented below each figure.

### **PSFB**

Limited wetland habitats on PSFB are concentrated along the coast and include estuarine and marine wetlands and deepwater habitat. Marine systems consist of the open ocean overlying the continental shelf, as well as its associated coastline. Marine habitats are frequently exposed to the waves and currents of the open ocean. Estuarine systems consist of deepwater tidal habitats and adjacent tidal wetlands that may be partially enclosed by land but have access to the open ocean. In these areas, ocean water is at least occasionally diluted by adjacent freshwaters, or freshwater runoff from the land (USFWS 2023a).

The remaining water features at PSFB that are identified in recent delineations, as well as reflected by the NWI and Integrated Natural Resources Management Plan (INRMP), include man-made ponds, canals, and ditches, as discussed in Section 3.2.2.1. Isolated upland freshwater wetlands are also found at PSFB as identified with recent surveys; however, formal delineations would occur on a case-by-case basis based on potential site boundaries and SJRWMD permitting requirements (DAF 2020a; USFWS 2023a). Common wetland vegetation types are discussed in Section 3.5, Biological Resources.

### **CCSFS**

A number of wetland habitats occur at CCSFS, including mangrove wetlands, salt marsh, and freshwater wetlands, as well as manmade wetland habitats created by impoundments and borrow pits (DAF 2020a). The NWI has mapped a variety of wetland types adjacent to and within the boundaries of CCSFS, including estuarine and marine deepwater; estuarine and marine wetland; freshwater emergent wetland; freshwater forested/shrub wetland; freshwater ponds; lakes; and riverine wetlands (USFWS 2023a). The Poseidon and Trident Wharfs are examples of estuarine systems, as described above.

Wetlands in the interior of CCSFS are predominantly classified as freshwater emergent wetlands or freshwater forested/shrub wetlands. The majority of these interior wetlands are classified as nontidal, meaning they are not affected by the nearby tides of the Atlantic Ocean. Emergent wetlands are dominated by herbaceous vegetation, whereas forested/shrub wetlands are vegetated by trees and shrubs in addition to herbaceous plants. Common wetland vegetation

types are discussed in Section 3.5, Biological Resources. Freshwater ponds and lakes also occur within the boundaries of CCSFS (USFWS 2023a).

### **MTA**

The NWI identifies a large freshwater forested/shrub wetland located in the southeastern corner of the property (USFWS 2023a). The INRMP describes this area as mesic flatwoods, a vegetation type described in Section 3.5, Biological Resources (DAF 2020a). Wetland delineations conducted in 2023 identified additional wetland areas at MTA, as presented in Figure 3.2-3.

### **3.2.2.3 Floodplains and Sea Level Rise**

EO 11988, *Floodplain Management*, requires Federal agencies to avoid adverse impacts associated with development within floodplains when there is a practicable alternative and to protect benefits and values of floodplains. EO 13690 includes the 500-year floodplain in the Federal Flood Risk Standard. A 500-year flood has a 0.2 percent chance of occurring in a given year. As demonstrated in Figures 3.2-4 and 3.2-5, the majority of both PSFB and CCSFS are located in either the 100-year or 500-year floodplain, as defined by the Federal Emergency Management Agency (FEMA 2021). The entirety of MTA is located outside the 100- and 500-year floodplain boundaries (FEMA 2014), and as a result, floodplain impacts at MTA are not discussed.



Figure 3.2-1. PSFB Wetlands Map

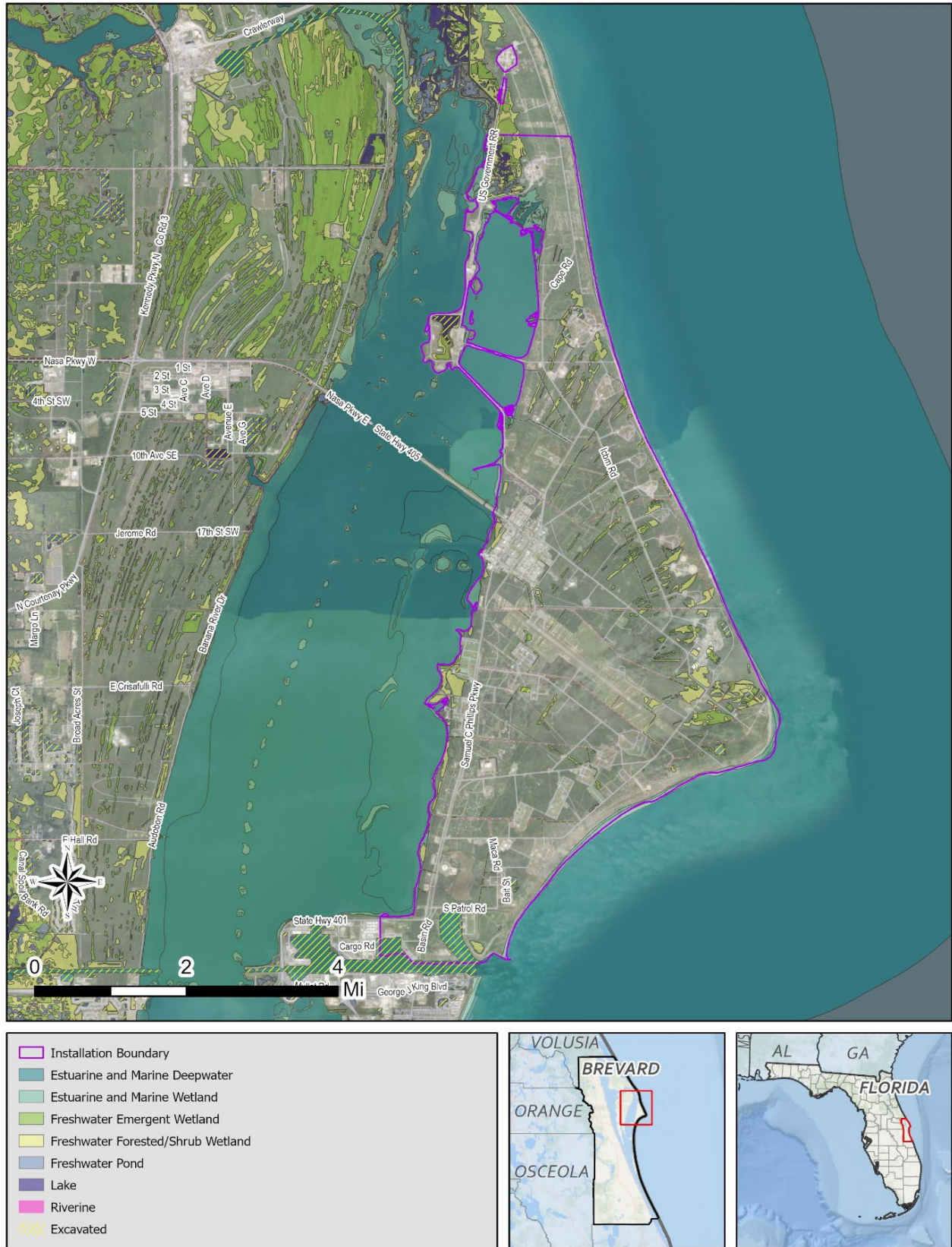


Figure 3.2-2. CCSFS Wetlands Map

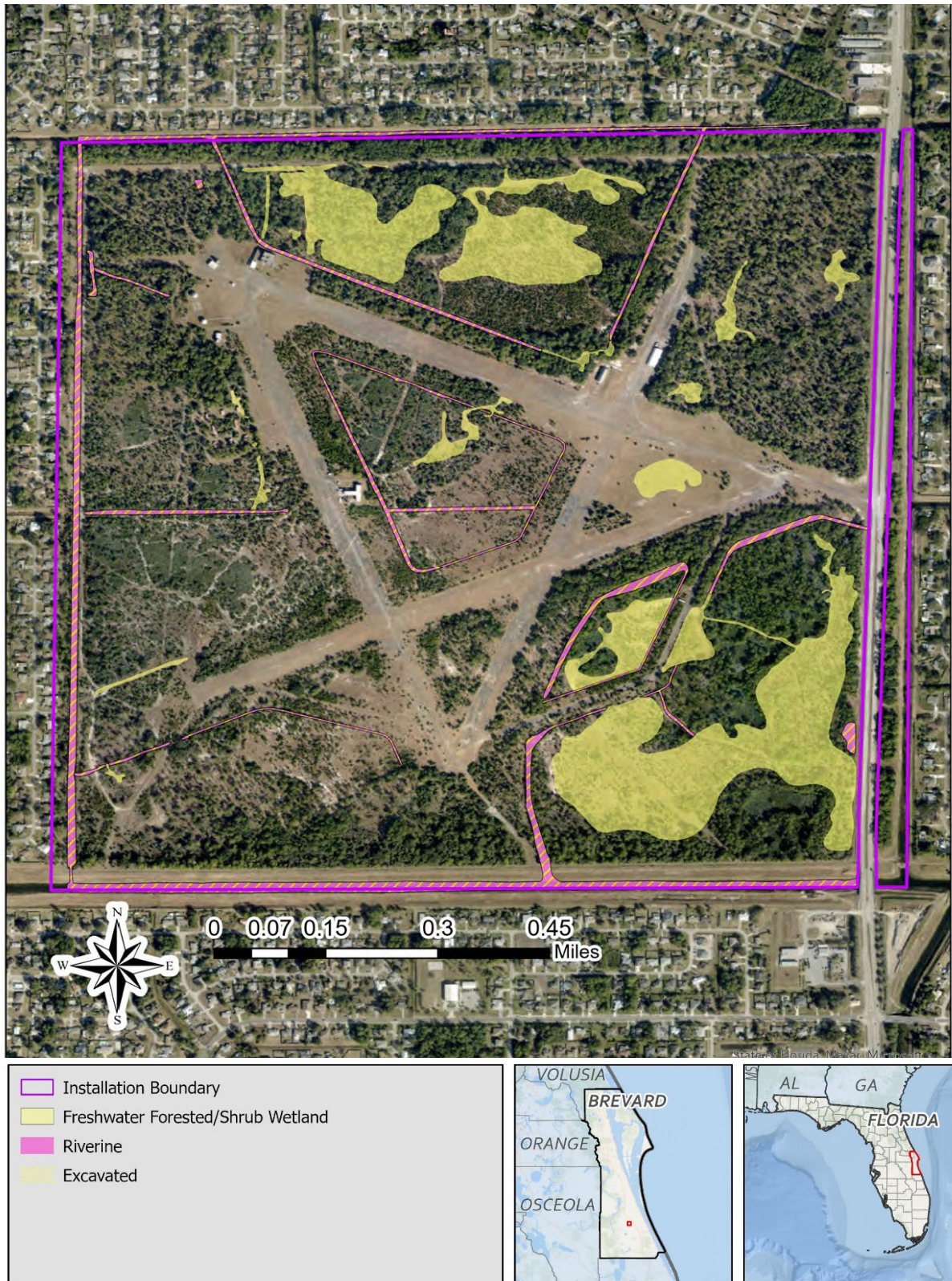


Figure 3.2-3. MTA Wetlands Map



Figure 3.2-4. PSFB Floodplain Map



Figure 3.2-5. CCSFS Floodplain Map

#### 3.2.2.4 Water Quality

For assessment purposes, FDEP has divided the state's surface waters into five basin groups, which are further divided into 29 major watersheds. FDEP assesses all five basins simultaneously every two years in compliance with Section 303(d) of the CWA, and publishes four Biennial Assessment lists: the Statewide Comprehensive Verified List of Impaired Waters, which contains a list of waterbodies that are determined to be impaired based on criteria outlined in Chapters 62-303 of the FAC; the Statewide Comprehensive Delist List, which includes waterbodies determined to no longer be impaired; the Statewide Comprehensive Study List, which contains waterbodies determined to require additional information to confirm attainment of water quality standards; and the Comprehensive Study List Removals, listing waterbodies that no longer meeting the listing requirements for the Study List. In accordance with Section 303(d) of the CWA, these lists are provided to the USEPA as an update to the state's Section 303(d) list (FDEP 2023a, FDEP 2021).

Sub-basins within watersheds are assigned water boundary identification numbers (WBIDs). Impairment is evaluated on the WBID level. (FDEP 2023a). In order to determine the status of waters within the ROI, an FDEP online Geographic Information Systems (GIS) mapping utility was used to view the WBID polygons associated with the 2020 to 2022 Biennial Assessment lists. Descriptions of causes of impairment are based on data attributes in the mapping utility that are available when the data is queried (FDEP 2023b).

#### **PSFB**

Most of PSFB is located within WBID 3057A, which is described as the portion of the Banana River sub-basin that is south of the SR-520 Causeway (and extends south to the SR-518 Causeway). This sub-basin is on the Study List due to high pH values that were caused by exceedingly high chlorophyll levels in 2016 from an algal bloom. The algal bloom resulted from high nutrient levels. An increase in nutrient levels can occur due to a variety of reasons, including but not limited to, runoff that contains fertilizers, septic systems that are releasing nutrients adjacent to waterbodies, and wastewater treatment operations that are releasing nutrients. WBID 3057A includes all of PSFB west of SH-A1A. Areas draining directly to the Atlantic Ocean east of SH-A1A including WBIDs 8109 and 8110 are not considered impaired (FDEP 2023b).

#### **CCSFS**

The majority of CCSFS is located within WBID 3057C, described as the Banana River above the barge canal. This WBID is not considered to be impaired; however, a portion of CCSFS that is approximately 930 acres in size, beginning at the Port Canaveral channel and extending north to the northern end of the Poseidon Wharf, east to just short of the Atlantic shoreline, and west to the western limit of the installation, is located within WBID 3057B, described as the Banana River above the SR-520 Causeway. WBID 3057B was found to contain high pH values caused by very high chlorophyll levels in 2016, which resulted from an algal bloom, indicating nutrient enrichment. For this reason, it is also included on the Study List (FDEP 2023b).

#### **MTA**

MTA is completely located within WBID 3090, described as the Melbourne-Tillman (C-1) Canal. Based on a review of the Biennial Assessment mapping utility, WBID 3090 is not listed as impaired or included on the Study List (FDEP 2023b).

#### 3.2.2.5 Coastal Zone Management Act Consistency

As discussed above, the CZMA dictates that any federal action with the potential to affect coastal resources is reviewed for consistency with the local coastal management plan. The entirety of the ROI is located within Florida's coastal zone; therefore, activities with the potential to affect coastal resources are subject to the Florida Coastal Management Program (FCMP). The FCMP consists

of a network of 24 Florida statutes administered by eight state agencies and five Water Management Districts. It is anticipated that the Proposed Action would be consistent with the CZMA and FCMP (see Section 3.2.3.2.5).

### **3.2.3 Environmental Consequences**

#### **3.2.3.1 Analysis Approach**

The criteria for evaluating impacts to water resources include the loss of, or adverse impacts to, a particular resource and its functions and adherence to applicable regulations. An impact to water resources would be significant if the Proposed Action:

- Permanently impacted surface waters, wetlands, or floodplains without the provision of compensatory mitigation (i.e., caused the “net loss” of these water resources).
- Threatened or damaged hydrologic characteristics.
- Adversely affected water quality or endangered public health by contributing pollutants to surface water or groundwater.
- Violated established laws or regulations that have been adopted to protect or manage water resources of the area.

#### **3.2.3.2 Proposed Action**

The following measures would be implemented under the Proposed Action to avoid and/or minimize the potential impacts to water resources described in the subsections below:

- Following operations, expendables would be removed from the Banana River and Atlantic Ocean. Personal Distress Signals (incendiaries that incinerate all projected materials except a small brass piece) used in training operations within designated WTAs would remain in the Banana River after use; however, unlike plastics or other floating and corrosive debris, these brass pieces have low potential to be ingested by marine species and would not breakdown or result in longer-term adverse effects on water quality.
- A surface support watercraft will be present during all in-water training exercises to assist in the recovery of all dropped equipment items, as practicable.
- Transient and training activities would continue to take place outside of mapped wetlands and surface waters, with the exception of designated WTAs and DZs in the Banana River and Atlantic Ocean, as shown in Figures 2-1 and 2-2.

##### **3.2.3.2.1 Surface waters**

###### **PSFB**

Proposed training and transient activities at PSFB as described in Section 2.1.2.1 would not be anticipated to impact surface waters because they would not require ground disturbance. The assembly of a multipurpose training tower composed of stacked shipping containers would be occur on an existing parking lot and would not cause disturbance of soil or any direct impact to surface waters. Other activities propose the use of the airfield, existing roads, and impervious surfaces. Capsule recovery training, if performed at PSFB, would utilize the 920<sup>th</sup> RQW Aquatic Training Center, which will consist of a concrete lined pool with a concrete deck. While this facility has not yet been constructed, potential impacts associated with its construction were evaluated under a separate EA in 2022. There would be no impact to surface waters at PSFB due to the proposed training and transient activities.

Potential impacts to surface waters associated with ongoing in-water activities, including the use of WTAs and DZs in the Banana River and Atlantic Ocean, were analyzed in the 2016 EA. Impacts were determined to be less than significant as in-water training activities would be temporary in

duration and would not directly affect water quality within these locations. Impacts to water quality analyzed in the 2016 EA are discussed in Section 3.2.3.1.4 (DAF 2016). Furthermore, as training and transient activities would occur in existing designated locations, these continued activities and use of coastal zone areas would be consistent with the Florida Coastal Management Program administered by the FDEP.

#### **CCSFS**

Proposed training and transient activities at CCSFS as described in Section 2.1.2.2 do not include ground disturbance beyond potential temporary installation of grounding rods for electrical equipment. Training would primarily utilize SLC 31/32, the Skid Strip, existing roads, and existing drop zones such as DZ Ferreira. These areas are all located in uplands.

Use of surface waters would occur in the case of capsule recovery training at Trident Basin and Poseidon Wharf. In-water activity would include use of inflatable watercraft and jet skis which would not result in direct impact to surface waters. Potential for water quality effects is discussed in Section 3.2.3.1.4.

Potential impacts to surface waters associated with ongoing in-water activities, including the use of WTAs and DZs in the Banana River and Atlantic Ocean, were analyzed in the 2016 EA. Impacts were determined to be less than significant as in-water training activities would be temporary in duration and would not directly affect water quality within these locations. Impacts to water quality analyzed in the 2016 EA are discussed in Section 3.2.3.1.4 (DAF 2016). Furthermore, as training and transient activities would occur in existing designated locations, these continued activities and use of coastal zone areas would be consistent with the Florida Coastal Management Program administered by the FDEP.

#### **MTA**

No ground disturbance is proposed for training and transient activities at MTA, as described in Section 2.1.2.3, aside from the small amount of disturbance associated with the temporary installation of antennas for communications testing and grounding rods for electronic equipment. No surface water impacts would occur as a result of these activities.

Current training and transient activities at MTA do not impact surface waters, and continuation of such activities would not be expected to introduce new impacts to surface waters. Furthermore, as training and transient activities would occur in existing designated locations, these continued activities and use of coastal zone areas would be consistent with the Florida Coastal Management Program administered by the FDEP.

### **3.2.3.2.2 Wetlands**

#### **PSFB**

Proposed training and transient activities at PSFB would not be expected to impact wetlands. The Proposed Action would not require ground disturbance beyond assembly of the multipurpose training tower, which would occur on an existing paved surface. Proposed activities would not cause any direct impact to wetlands or cause changes to flow from water sources that would negatively affect hydrology in wetlands. Activities under the Proposed Action would primarily require use of the airfield, existing roads, and impervious surfaces, and potentially the future 920<sup>th</sup> RQW Aquatic Training Center. No activities under the Proposed Action would be permitted to occur within mapped wetlands. As such there would be no impact to wetlands at PSFB.

Potential impacts to NWI-classified wetlands associated with ongoing in-water activities, including the use of WTAs and DZs in the Banana River and Atlantic Ocean, were analyzed in the 2016 EA. Impacts were determined to be less than significant as in-water training activities would be temporary in duration and would not directly affect wetlands within these locations. Furthermore,

1 as training and transient activities would occur in existing designated locations, these continued  
2 activities and use of coastal zone areas would be consistent with the Florida Coastal Management  
3 Program administered by the FDEP (see Section 3.2.3.2.5).

#### 4 **CCSFS**

5 Proposed training and transient activities at CCSFS do not include ground disturbance beyond  
6 potential temporary installation of grounding rods for electrical equipment which would be located  
7 outside of surface waters and wetland areas. Additionally, the proposed training activities would  
8 not cause changes to flow from water sources that would negatively affect hydrology in wetlands.  
9 Training would primarily utilize SLC 31/32, the Skid Strip, existing roads, and existing drop zones  
10 such as DZ Ferreira. These areas are all located in uplands. No activities under the Proposed  
11 Action would be permitted to occur within mapped wetlands. As such there would be no impact  
12 to wetlands at CCSFS.

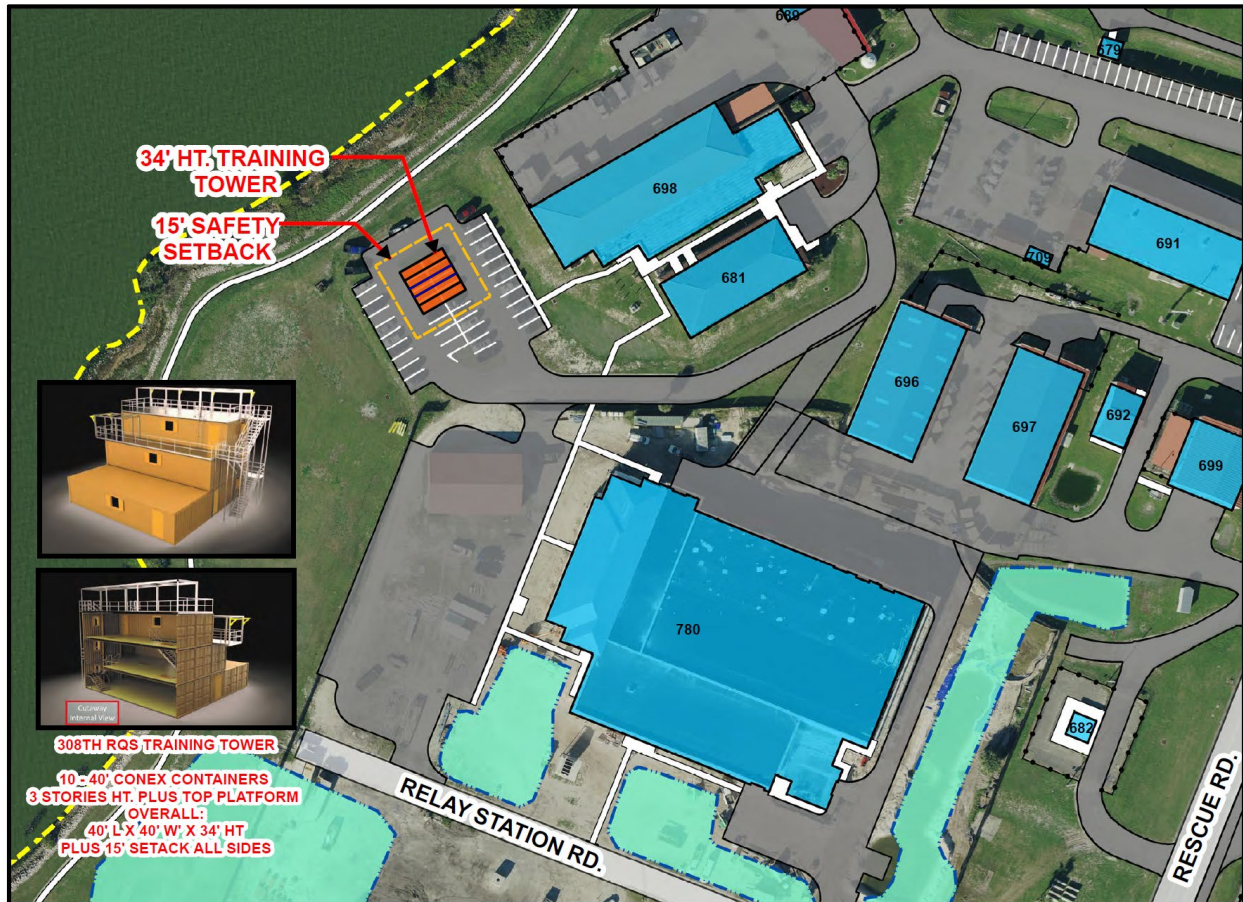
13 Potential impacts to NWI-classified wetlands associated with ongoing in-water activities, including  
14 the use of WTAs and DZs in the Banana River and Atlantic Ocean, were analyzed in the 2016  
15 EA. Impacts were determined to be less than significant as in-water training activities would be  
16 temporary in duration and would not directly affect wetlands within these locations. Furthermore,  
17 as training and transient activities would occur in existing designated locations, these continued  
18 activities and use of coastal zone areas would be consistent with the Florida Coastal Management  
19 Program administered by the FDEP (see Section 3.2.3.2.5).

#### 20 **MTA**

21 The only ground disturbance included in the Proposed Action would be the temporary installation  
22 of antennas for communications testing training and installation of grounding rods for electronic  
23 equipment which would be located outside of surface waters and wetland areas. Proposed  
24 activities would not cause changes to flow from water sources that would negatively affect  
25 hydrology in wetlands, and training and transient activities would not be permitted to occur within  
26 mapped wetlands. No wetlands impacts would occur as a result of these activities.

#### 27 **3.2.3.2.3 Floodplains and Sea Level Rise**

28 While much of PSFB and CCSFS occur within the 100- or 500-year floodplain, proposed training  
29 operations would occur within designated training areas currently utilized for this purpose. The  
30 only proposed new structure would be a multipurpose training tower assembled with stacked  
31 shipping containers that would be located on an existing paved parking lot at PSFB (see Figure  
32 3.2-7). PSFB considered multiple locations, including locations outside the 100-year floodplain,  
33 for the proposed multipurpose training tower; however, other locations were not within proximity  
34 to the 308<sup>th</sup> RQS (Building 780), within the 308<sup>th</sup> RQS future enclosure, or contained existing  
35 paved surfaces to place the facility. As shown in Figure 3.2-7, a majority of the area surrounding  
36 Building 780 contains existing infrastructure (buildings) or greenspace with limited options for use  
37 of existing paved surface to accommodate the stacked shipping containers.



**Figure 3.2-7. Proposed Location of the Multipurpose Training Tower**

Although the multipurpose training tower is proposed within the 100-year floodplain, it would not be anticipated that the addition of this structure (base measuring approximately 40 feet by 40 feet) would impede flood waters or result in changes to flooding patterns downstream. Additionally, the stacked shipping containers comprising the multipurpose training tower would not be a permanent facility.

#### **3.2.3.2.4 Water Quality**

For each of the installations evaluated in this EA, it should be noted that surface water quality management protocols have been previously developed and are consistently implemented, as discussed in the beginning of this section. These measures serve to limit impacts to water resources located in the vicinity of the Proposed Action while training and transient activities are being conducted. Ongoing training operations are consistent with the protocols established for PSFB, CCSFS, and MTA. The Proposed Action would likewise be required to be consistent with these protocols.

#### **PSFB**

The Proposed Action at PSFB would result in short-term, negligible, direct, adverse impacts to water quality in the Banana River and Atlantic Ocean. As there are no increases in impervious surfaces under the Proposed Action and no proposed soil or ground disturbance, no sedimentation or erosion would occur. Training and transient activities are limited to the airfield, existing roads, and impervious surfaces, and the future 920<sup>th</sup> RQW Aquatic Training Center. None of the training activities would have any effect on levels of nutrients in the Banana River, therefore

they would not contribute to impairment that is currently being studied for this system. The Proposed Action would have no effect on water quality.

Potential impacts to water quality associated with ongoing in-water activities, including the use of WTAs and DZs in the Banana River and Atlantic Ocean, were analyzed in the 2016 EA. Impacts were determined to be associated with the use of the outboard engines on the boats and zodiacs used in these areas and the potential for expendables, and were determined to be less than significant in the Banana River due to existing recreational usage, and in the Atlantic Ocean due to the assumption that dynamic mixing and general circulation of sea water would dissipate potential slight variations in water quality associated with transient and training activities (DAF 2016).

#### **CCSFS**

The Proposed Action at CCSFS would result in short-term, negligible, direct, adverse impacts to water quality in the Banana River and Atlantic Ocean. As there are no increases in impervious surfaces under the Proposed Action and the limited soil and ground disturbing activities under the Proposed Action would occur in areas not directly adjacent to waterbodies, no impact to water quality resulting from sedimentation or erosion would be expected. Many of the activities proposed would be limited to designated areas such as SLC 31/32, the Skid Strip, existing roads, and existing drop zones such as DZ Ferreira; however, the Proposed Action also includes the potential use of the Trident Basin and the Poseidon Wharf as well as use of onsite beaches.

If the Trident Basin or Poseidon Wharf are selected as locations for capsule recovery training, the use of engines in the water may result in short-term, negligible effects on water quality due to the use of jet skis in the water. Due to the existing recreational use of both areas, the slight increase in usage under the Proposed Action would be expected to result in negligible changes to water quality. No increase in nutrient level within this sub-basin would be expected. Therefore, the Proposed Action would not contribute to the existing impairment that is being studied in this area.

Potential impacts to water quality associated with ongoing in-water activities, including the use of WTAs and DZs in the Banana River and Atlantic Ocean, were analyzed in the 2016 EA. Impacts were determined to be less than significant for the reasons stated above (DAF 2016).

#### **MTA**

The Proposed Action at MTA would not be expected to result in water quality impacts, due to the nature of the proposed activities and limited water resources occurring in this area. Ground disturbance under the Proposed Action would be limited to the amount required for the temporary installation of antennas, grounding rods for electronics, and related equipment. Such minor disturbance would not be expected to result in sufficient erosion and sedimentation to alter existing water quality onsite. No increase in impervious surfaces is proposed, and no increase in stormwater runoff would be anticipated. As a result, no impacts to water quality onsite would be expected to occur under the Proposed Action.

### **3.2.3.2.5 Coastal Zone Management Act Consistency**

Table 3.2-2 provides a summary of the 24 Florida statutes included in the FCMP and the Proposed Action's consistency with each.

**Table 3.2-2. Coastal Zone Management Act Consistency Determination**

Florida Statute	Legal Scope	Consistency Evaluation
Chapter 161 Beach and Shore Preservation	Authorizes the Bureau of Beaches and Coastal Systems within FDEP jurisdiction to regulate construction on or seaward of the state's beaches.	Construction is not proposed for this project.

Florida Statute	Legal Scope	Consistency Evaluation
Chapter 163, Part II Growth Policy; County and Municipal Planning; Land Development Regulation	Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner consistent with the public interest.	The Proposed Action would occur entirely within DAF-managed land previously designated for transient and training activities and, therefore, would not affect municipal or county government comprehensive plans.
Chapter 186 State and Regional Planning	Details state level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.	As part of the NEPA process, the Proposed Action has been coordinated with Federal, state, and local governments and agencies, including the FDEP State Clearinghouse, for compatibility with state and regional planning.
Chapter 252 Emergency Management	Provides for planning and implementation of the state's response to, efforts to recover from, and the mitigation of natural and man-made disasters.	The Proposed Action would occur entirely within DAF-managed land previously designated for transient and training activities and would not have an effect on the ability of the state to respond to or recover from natural or manmade disasters.
Chapter 253 State Lands	Addresses the state's administration of public lands and property of this state and provides direction regarding the acquisition, disposal, and management of all state lands.	The Proposed Action would occur entirely within DAF-managed land previously designated for transient and training activities. No state lands would be acquired, modified, or disturbed.
Chapter 258 State Parks and Preserves	Addresses administration and management of state parks and preserves.	The Proposed Action would not directly impact state parks, recreational areas or preserves. Secondary or indirect impacts to environmental or social resources related to the Proposed Action are not anticipated. Opportunity for recreation on state lands would not be affected.
Chapter 259 Land Acquisition for Conservation or Recreation	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands.	The Proposed Action would occur entirely within DAF-managed land previously designated for transient and training activities and would not have an effect on the acquisition of environmentally endangered or outdoor recreation lands.
Chapter 260 Recreational Trails System	Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system.	The Proposed Action would occur entirely within DAF-managed land previously designated for transient and training activities and would not impact the acquisition of land to create a recreational trails system.
Chapter 267 Historical Resources	Addresses management and preservation of the state's archaeological and historical resources.	The Proposed Action is not anticipated to adversely affect historical or cultural resources of the State of Florida (see Section 3.4). The project would adhere to standard operating procedures for management and protection of cultural resources, as described in the SLD 45 ICRMP. Section 106 of

Florida Statute	Legal Scope	Consistency Evaluation
		the NHPA consultation with the Florida SHPO is ongoing.
Chapter 288 Commercial Development and Capital Improvements	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy.	The Proposed Action would occur entirely within DAF-managed lands designated for training activities, and primarily on active military installations with limited access to the public and limited or no implications for or effect on general business, trade, and tourism components of the state economy.
Chapter 334 Transportation Administration	Addresses the state's policy concerning transportation administration.	The Proposed Action would not have an impact on the state's transportation administration policies.
Chapter 339 Transportation Finance and Planning	Addresses the finance and planning needs of the state's transportation system.	The Proposed Action would not have an effect on the finance and planning needs of the state's transportation system.
Chapter 373 Water Resources	Addresses the state's policy concerning water resources.	The Proposed Action could have negligible impacts on water resources. As minimal ground disturbance is proposed, impacts would be primarily associated with in-water training activities (see Section 3.2). The project would adhere to avoidance and minimization measures described in this EA and the SLD 45 INRMP.
Chapter 375 Outdoor Recreation and Conservation Lands	Develops comprehensive multipurpose outdoor recreation plans to document recreational supply and demand, describes current recreational opportunities, estimates need for additional recreational opportunities, and proposes means to meet the identified needs.	The Proposed Action would occur entirely within DAF-managed land previously designated for transient and training activities and would not impact the state's development or evaluation of multipurpose outdoor recreation plans.
Chapter 376 Pollutant Discharge Prevention and Removal	Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.	The Proposed Action could result in negligible impacts regarding hazardous materials and waste management; however, the project would follow the existing HWMP and all related standard operating procedures for safety preventing, handling, and removing pollutants (see Section 3.8).
Chapter 377 Energy Resources	Addresses regulation, planning, and development of energy resources of the state.	The Proposed Action would not cause unsupportable demands on available natural resources or energy supplies and would not require nonrenewable resources.
Chapter 379 Fish and Wildlife Conservation	Addresses management and protection of fish and wildlife in the state.	Consultation with USFWS and NMFS under Section 7 of the ESA (pending) is anticipated to result in concurrence that the Proposed Action would not adversely affect federally listed species with the implementation of approved impact

Florida Statute	Legal Scope	Consistency Evaluation
		avoidance and minimization measures (see Section 3.5).
Chapter 380 Land and Water Management	Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.	The Proposed Action would be consistent with local land and water management plans.
Chapter 381 Public Health, General Provision	Establishes public policy concerning the state's public health system.	The Proposed Action does not include activities that would be expected to impact public policy or management in regard to sanitation, communicable diseases, or public health.
Chapter 388 Mosquito Control	Addresses mosquito control efforts in the state.	The Proposed Action would not affect local mosquito control efforts or contribute to increased propagation of mosquitos.
Chapter 403 Environmental Control	Establishes public policy concerning environmental control in the state.	The Proposed Action would include project specific BMPs and pollution prevention measures. The project is not expected to exceed applicable state water quality standards or have substantial and long-term water quality impacts (see Section 3.2). Air pollutant emissions associated with the Proposed Action would not exceed significance thresholds or cause exceedances of air quality standards (see Section 3.1). Wastes would be collected, transported, and disposed of in compliance with all applicable regulations (see Section 3.8).
Chapter 553 Building Construction Standard	Provides a mechanism for the uniform adoption, updating, amendment, interpretation, and enforcement of a single, unified state building code, to be called the Florida Building Code. Obtain a permit from the appropriate enforcing agency.	Construction is not proposed for this project.
Chapter 582 Soil and Water Conservation	Provides for the control and prevention of soil erosion.	The Proposed Action require very minimal soil disturbance that would not be expected to result in erosion, except in isolated areas away from water resources (see Section 3.3).
Chapter 597 Aquaculture	Establishes public policy concerning the cultivation of aquatic organisms.	The Proposed Action has no activities related to the cultivation of marine species and would not affect aquaculture.

BMP = best management practice; DAF = Department of the Air Force; ESA = Endangered Species Act; FDEP = Florida Department of Environmental Protection; HWMP = Hazardous Waste Management Plan; ICRMP = Integrated Cultural Resources Management Plan; INRMP = Integrated Natural Resources Management Plan; NEPA = National Environmental Protection Act; NHPA = National Historic Preservation Act; NMFS = National Marine Fisheries Service; SHPO = State Historic Preservation Officer; SLD = Space Launch Delta; USFWS = United States Fish and Wildlife Service

An Early Notification Letter was sent to the FDEP Florida State Clearinghouse in June 2023. The Florida State Clearinghouse responded via email on June 7, 2023, stating that "...the Florida State Clearinghouse does not select the project for review. You may proceed with your project."

A sample Early Notification Letter and FDEP's response are provided in Appendix A. The Draft EA will be provided to the Florida State Clearinghouse in accordance with the CZMA.

### **3.2.3.3 No-Action Alternative**

Under the No-Action Alternative, transient and training missions within the ROI would continue without the addition of newly proposed activities such as helicopter brownout training, the addition of larger training events, and capsule recovery training. As a result, there would be no increase in impact to water resources, and newly proposed activities would require separate NEPA analysis as they are proposed.

## **3.3 Soil**

### **3.3.1 Definition of the Resource/Regulatory Setting**

The term "soil" refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the capacity of the ground to support man-made structures, provide a landscaped environment, and control the transport of eroded soils into nearby drains, canals, and surface waters.

This EA analyzes the potential for soil erosion and sedimentation within the ROI of the Proposed Action. The ROI for soil includes PSFB, CCSFS, and MTA, with a focus on the locations identified for training and transient missions in this EA. Contaminated sediments managed through the Installation Restoration Program are addressed in Section 3.8, Hazardous Materials and Waste.

The Farmland Protection Policy Act (FPPA) (7 U.S.C. 4201 et seq.) of 1981 states that federal agencies must "minimize the extent to which federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses." Prime and unique farmland, which is categorized by the United States Department of Agriculture Natural Resources Conservation Service based on underlying soil characteristics, is protected by the FPPA.

Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding, for a sufficient duration during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, hydric soils are capable of supporting the growth and reproduction of hydrophytic vegetation. Presence of hydric soils is one of the criteria used to identify and delineate wetlands, which are discussed in Section 3.2, Water Resources.

### **3.3.2 Affected Environment/Existing Conditions**

#### **3.3.2.1 PSFB**

The unconsolidated surficial materials that underlie PSFB are the undifferentiated Pleistocene/Holocene deposits known as the Pamlico sands. These deposits are primarily composed of marine sands, which are sandy, well drained, and generally suitable for development. Along the shorelines of the Banana River and Atlantic Ocean, soils are less stable, highly susceptible to erosion, and more suitable for lower intensity development (DAF 2020a).

Known areas of soil contamination (PFAs) are located at PSFB, as discussed in Section 2.4, Alternatives Considered but Eliminated from Detailed Analysis. Section 3.8, Hazardous Materials and Waste, contains additional information related to contamination in these areas.

Ten major soil types occur within PSFB, most of which are sands (DAF 2020a). The most prominent soil association is the Canaveral-Anclote complex. This association is composed of nearly level and gently sloping ridges interspersed with narrow wet sloughs that generally parallel the ridges and includes areas of broad floodplains. No prime or unique farmland soils occur at PSFB. The Basinger sand soil type is classified as 100 percent hydric and the Canaveral-Anclote

complex in this region is 30 percent hydric. The remaining soils on-base are not hydric or predominantly non-hydric (USDA 2022).

### 3.3.2.2 CCSFS

The majority of mapped soils on CCSFS are sands. The most prominent soil association is the Canaveral-Anclote complex, comprising approximately 50% of mapped soil types on-base. Canaveral soil is typically found on the dunes and ridges of marine terraces with parent material from sandy marine deposits. It is found along the Atlantic Coast on narrow ridges interspersed with parallel narrow sloughs. The drainage is considered somewhat poor, with a depth to water table of approximately 12 to 36 inches. The Anclote soil forms on flats on marine terraces, with the same parent material as Canaveral soil. It is typically found on broad areas of floodplains, in marsh depressions in flatwoods, and in poorly defined drainageways. Anclote soil is very poorly drained, with a depth to water table of approximately 0 to 6 inches. In addition to Canaveral and Anclote soils, the Canaveral-Anclote complex contains minor components of Palm Beach and Pomello sands. (DAF 2020a).

The second most prominent soil association at CCSFS is the Canaveral-Urban complex, making up approximately 11 percent of mapped soil types on-base. Canaveral-Urban complex is primarily found around structures and impervious surfaces. Soils are moderately well drained with a depth to surface water of 30 to 60 inches. The predominant wetland soils on-base are Turnbull and Riomar soils, which are located primarily in the northern portion of the installation, adjacent to the Banana River. Turnbull is described as muck on top of clay, very poorly drained, with frequent flooding and ponding. The parent material is herbaceous organic matter over estuarine deposits. Riomar soil is mucky clay, very poorly drained, with frequent flooding and ponding, and with a parent material of loamy and clayey marine deposits over limestone (DAF 2020a). No prime or unique farmland soils occur at CCSFS (USDA 2022).

### 3.3.2.3 MTA

The most prevalent mapped soils at MTA include a mixture of Malabar, Holopaw, and Pineda soils, which together make up approximately 40 percent of mapped soils on-site. This soil group surrounds the majority of paved roadways located at MTA. With the exception of Quartzipsamments, smoothed (moderately well drained) soils at MTA are classified as either poorly drained or very poorly drained, but are not prone to flooding or ponding. Farmland soils of unique importance include EauGallie sand (0 to 2 percent slopes), Riviera sand (0 to 2 percent slopes), Pineda sand (0 to 2 percent slopes), and Wabasso sand (0 to 2 percent slopes).

## 3.3.3 Environmental Consequences

### 3.3.3.1 Analysis Approach

Impacts to soils would be considered significant if the Proposed Action:

- Resulted in the loss of soil used for agriculture or habitat or loss of mineral resources.
- Caused severe erosion or sedimentation.

### 3.3.3.2 Proposed Action

No construction is anticipated under the Proposed Action, and training activities do not involve excavation or substantive ground disturbance. No impacts to contaminated sites are anticipated, as these sites have been removed from consideration for training activities that may cause minor disturbance of topsoil, such as helicopter brownout training, EOD IED training, and use of GBS. Activities causing minor ground disturbance (temporary installation of grounding rods for electrical equipment) or disturbance of topsoil may cause short-term, minor, direct, adverse effects in

proposed areas, as disturbed topsoil may result in small amounts of sedimentation within the vicinity of the activity. Such impacts would be anticipated to be localized and less than significant.

The proposed expansion of training events to include temporary increases in personnel and equipment may also lead to increased soil compaction and erosion in localized areas where these events may be proposed. These areas include SLC 31/32 and the beaches at CCSFS, and the entirety of MTA. Most large-scale training events at PSFB would consist of activities taking place inside existing facilities or on impervious surfaces such as the airfield or the proposed location of the multipurpose training tower discussed in Section 2.1, Proposed Action. Such impacts would be anticipated to be localized and less than significant. Impacts associated with current training and transient missions that would continue under the Proposed Action are discussed in the 2016 EA. Continued collection and removal of training materials and continued compliance with installation-specific Hazardous Waste Management Plans (see also Section 3.8, Hazardous Materials and Waste) would prevent contribution to contamination of soils.

As no prime or unique farmland soils occur at PSFB or CCSFS, no impacts to FPPA-protected farmland would be anticipated at these installations. Soils underlying portions of MTA are classified as farmland soils of unique importance; however, projects on land already in urban development or construction for national defense purposes are exempt from the requirements of the FPPA (USDA 2024). Therefore, implementation of the Proposed Action would have no effect on FPPA-protected farmland.

No significant impacts to soils are anticipated under the Proposed Action.

### 3.3.3.3 No-Action Alternative

Under the No-Action Alternative, training and transient missions within the ROI would continue without the addition of newly proposed activities such as helicopter brownout training, use of GBS, and the addition of larger training events. As a result, no impacts to soils would occur, and newly proposed activities would require separate NEPA analysis as they are proposed.

## 3.4 Cultural Resources

### 3.4.1 Definition of the Resource/Regulatory Setting

In addition to considerations under NEPA, Section 106 of the NHPA requires federal agencies to consider the effect an undertaking may have on historic properties, as defined under 36 CFR 800 (Protection of Historic Properties). Air Force Instruction (AFI) 32-7065 (Cultural Resources) provides the following definition: cultural resources may be considered “historic properties” as defined in the NHPA, Title 16, U.S.C., section 470, et seq., (16 U.S.C. §470, et seq.; “cultural items” as defined in the Native American Graves Protection and Repatriation Act [NAGPRA], 25 U.S.C. §§3001-3013; “archaeological resources” as defined in the Archaeological Resources Protection Act [ARPA], 16 U.S.C. §§470aa-470mm; and “sacred sites” as defined in EO 13007, Indian Sacred Sites, May 24, 1996). Native American consultation is required in compliance with AFI 90-2002, *Air Force Interactions with Federally Recognized Tribes*, and the American Indian Religious Freedom Act.

The Proposed Action is considered an undertaking and is required to comply with Section 106, including consultation with applicable State Historic Preservation Officer (SHPO) and Tribal Historic Preservation Officers (THPO).

All Section 106 correspondence with SHPOs and THPOs for this Proposed Action is provided in Appendix A. Consistent with Section 106 of the NHPA, DoD Instruction 4710.02, AFI 90-2002, and AFMAN 32-7003, the DAF is also consulting with the following three federally recognized tribes that are historically affiliated with the geographic region of each alternative site regarding

the potential for the Proposed Action to affect properties of cultural, historical, or religious significance:

- Miccosukee Tribe of Indians of Florida
- Seminole Tribe of Florida
- Seminole Nation of Oklahoma

In addition, DAF consulted with the following Florida Division of Historical Resources (SHPO).

The DAF sent letters to Tribes on June 7, 2023, to initiate government-to-government consultation and to request input on the Proposed Action for assistance in identifying any potential areas of environmental impact for consideration within the EA (see Appendix A). The Seminole Tribe of Florida (STOF) provided a response on June 20, 2023, stating that the proposed undertaking falls within the STOF Area of Interest. STOF provided the following comments and initial assessment pursuant to Section 106 of the NHPA and its implementing authority, 36 CFR 800:

- Have all the areas proposed for transient and training been previously subjected to cultural resource assessment surveys?
- If locations have been surveyed and assessed for possible historic properties, the Tribe request that all historic properties (if present) be avoided during all activities that might result in ground disturbance or other adverse impacts to the properties.
- If portions of the areas proposed for transient and training have not been previously surveyed for the presence of cultural resources, the Tribe requests that those areas be either surveyed or avoided during all activities that might result in ground disturbance or other adverse impacts to possible sites.
- Requesting clarification on areas to be used and type of use within the boundaries of the Tosohatchee WMA/SJRWMD.
- All burial resource locations should be avoided.

### **3.4.2 Affected Environment/Existing Conditions**

#### **3.4.2.1 Archaeological APE**

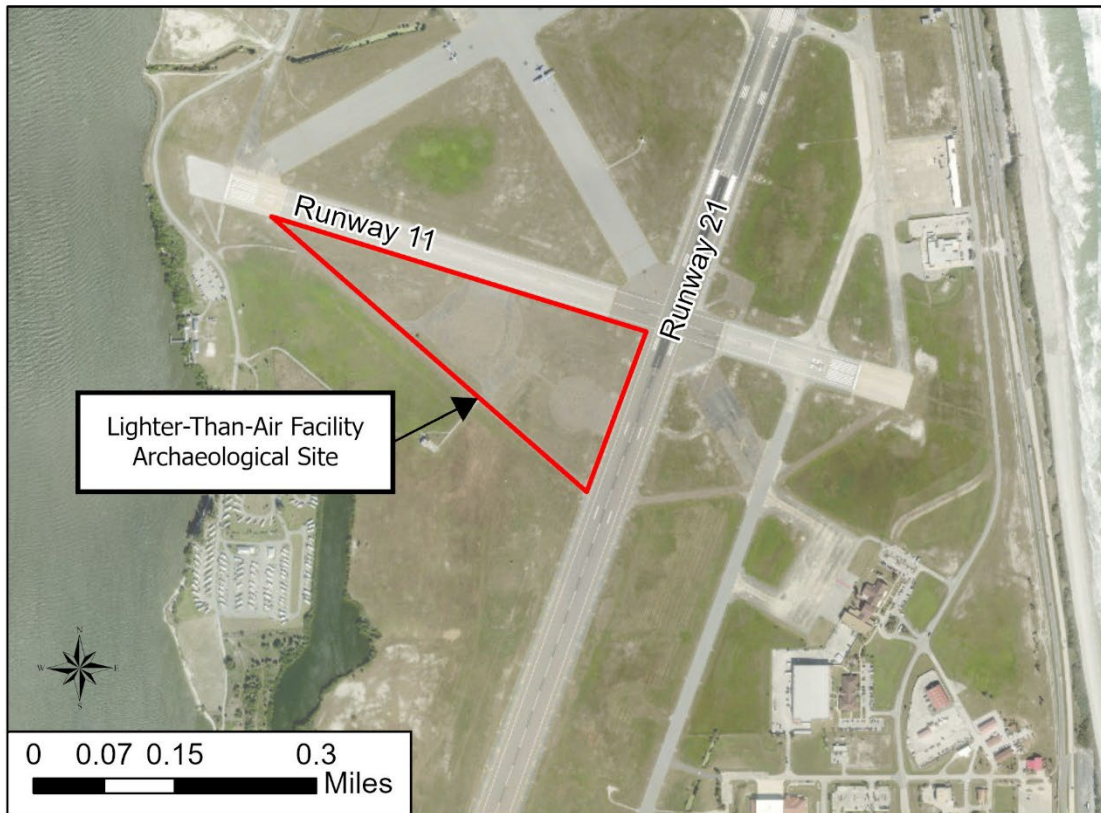
Examples of archaeological sites include burials, artifacts, shell middens, cemeteries, rock piles, rock shelters, chimney falls, brick walls, piers, trash pits and piles, and building remains. Archaeological sites are associated with activities occurring in the historic period (post-European arrival) or prehistoric period (also called pre-Contact), and sites often contain evidence from both periods. The ARPA limits archaeological resources to sites or items that are more than 100 years old, while under NHPA and other legislation, sites more than 50 years old, and in rare cases of exceptional significance less than 50 years, may be evaluated for their historical significance.

The following summary of the archaeological setting of PSFB, CCSFS, and MTA was provided through coordination with the PSFB Cultural Resources Manager (CRM) in addition to a review of the Integrated Cultural Resources Management Plan (ICRMP) for SLD 45 (DAF 2020c), which includes a robust prehistoric and historic background that is both relevant and useful for this analysis.

#### **PSFB**

One known archaeological site occurs at PSFB, known as the Lighter-Than-Air Facility Archaeological Site. It is located at the airfield, in the southwestern quadrant created by the intersection of Runways 21 and 11 (see Figure 3.4-1). A Phase I assessment has not yet been completed for the site. There are no additional known archaeological sites at PSFB, and it is

generally thought to have low potential for archaeological sites. During World War II, the relic dune and swale system common on the barrier island was completely flattened. Dredged soils from the Banana River were used to expand the western end of the base as well as fill within wetlands and low-lying areas. Any sites that existed prior to 1940 were either destroyed or were so deeply buried that the likelihood of finding them is next to impossible. Though a low probability, there is the potential for buried World War II resources in the form of evidence of former facilities, buried cisterns or wells, and landfills.



**Figure 3.4-1. Lighter-Than-Air Facility Archaeological Site**

### CCSFS

Prehistoric archaeological sites at CCSFS primarily consist of large shell middens along the east bank of the Banana River and west of Samuel Phillips Parkway. The middens are primarily composed of coquina shell with minor species such as clam, oyster, and whelk. The sites along the river tend to be large and appear to have been permanent or semi-permanent occupation sites. They are readily identifiable by the black organic soils filled with shell. This readily distinguishes the sites from the typical tan to white beach sand deposits. The "black earth" or "sheet" middens are typical of sites in the region. In addition to the large occupation sites are a series of smaller permanent seasonal camps or middens adjacent to the dune line along the coast. These sites tend to be special use camps with at least one site thought to be a shark procurement site occupied in late spring through the summer. All prehistoric occupation sites on CCSFS are distinguishable by the presence of "black earth" or "sheet" midden materials. Between these sites are smaller artifact scatters thought to be associated with seasonal movements between the Atlantic Ocean and Banana River. Occupation of CCSFS dates to at least 5,000 BC,

though exact dates are hampered by the lack of radiometric data. Except for one site (Little Midden-8BR1933) there have been no radiometric dates taken from any site at CCSFS.

Historic archaeological sites are found almost anywhere within CCSFS. The most accurate means to locate historic sites within CCSFS is looking at the built environment as well as the historical record including nineteenth century government land maps, county records, and the original USSF real estate maps. The highest probability for historic archaeological sites is along the Banana River (usually on prehistoric sites), along Pier and Lighthouse Roads, the area around LC-36, and along the beach. The oldest known historic site ever found at CCSFS is the 1840s Cape Canaveral Lighthouse site located adjacent to LC-46. Other sites range from the 1860s up to the 1950s and include homesteads, cisterns, cemeteries, old missile facilities, and missile crash sites. Given the recent identification of the freshwater lake at the tip of Cape Canaveral, its appearance on maps dating to the mid-nineteenth century, known interaction between the Ais and Europeans dating to at least 1513, and the numerous shipwrecks off the coast, older previously unrecorded historic sites may be present on CCSFS.

#### MTA

According to the ICRMP, there are no known archaeological sites within the MTA and the archaeological potential is considered to be low.

### 3.4.2.2 Architectural APE

#### PSFB

The following summary of historic properties at PSFB is found in the ICRMP (DAF 2020c):

From 2001 to 2011, facilities at PSFB were considered for NRHP-eligibility on a case-by-case basis when an undertaking involved a building or structure. In 2009, the SLD 45 CRM entered into consultation with the SHPO to rectify the issues with previous inventory. As a part of this consultation, previous surveys were submitted to the SHPO along with an updated report that corrected the errors noted in the previous surveys and updated the status of others. The report and proposed status of all buildings at PSFB 45 years and older was accepted by the SHPO in November 2011 (FDHR Project File No. 2011-3861). It was agreed that most of the buildings no longer retained the original characteristics that made them individually NRHP-eligible; however, many were eligible as contributing elements. A total of six distinct historic districts were identified at PSFB based on uniform themes:

- **Banana River Naval Air Station Seaplane Historic District (8BR1975):** The district consists of five contributing facilities: 302 (8BR1970), 303 (8BR1971), 304 (8BR2026), 305 (8BR1972), and 313 (8BR1974). This district was the heart of the purpose for the development of BRNAS [Banana River Naval Air Station]. It was here seaplane pilots were trained.
- **High Explosive Storage Facility Historic District (8BR2076):** The district consists of five contributing facilities: 1425(8BR2037), 1432 (8BR2038), 1435 (8BR2039), 1437 (8BR2040), and 1440 (8BR2041). This district was the ammunition storage area for high explosives and bombs at BRNAS. It continues to serve as an explosives storage facility.
- **Patrick Air Force Base Missile Instrumentation Station Historic District (8BR2170):** The district consists of three contributing facilities: 965 (8BR2150), 969 (8BR2140), and 970 (8BR2141). This district was used to track early missile launches from both CCAFS [Cape Canaveral Air Force Station] and

PAFB [Patrick Air Force Base] and still serves in that capacity. It is NRHP-eligible as a Cold War resource.

- **Bomarc-SAGE Tracking Facility Historic District (8BR2181):** The district consists of three contributing resources: 990(8BR2179), 991 (8BR2158) and 996 (8BR2159). The Bomarc-SAGE program was an early Cold War defense tracking system developed by the USAF. The warning and tracking system were tested at PAFB and was linked to Bomarc missile testing at CCAFS.
- **Patrick Air Force Base Facilities Landplane Historic District (8BR2438):** The district consists of thirteen contributing facilities: 630 (8BR2462), 632 (8BR2463), 637 (8BR2464), 647 (8BR2465), 688 (8BR2070), 750 (8BR2137), 751 (8BR2138), 810(8BR2478), 985 (8BR2155), 986 (8BR2156), 20610 (8BR2499), the Airfield (8BR2439), and the Lighter-than-Air Facility Archaeological Site (8BR2477). This district is both a World War II and Cold War resource. The facilities are linked primarily to the Cold War use of the airfield.
- **Patrick Air Force Base Administrative Historic District (8BR2440):** The district consists of nineteen contributing facilities: 408 (8BR2044), 410(8BR2453), 423 (8BR2045), 425 (8BR2046), 431 (8BR2047), 439 (8BR2025), 440 (8BR2177), 530(8BR2061), 534 (8BR2048), 535 (8BR2049), 536 (8BR2050), 537 (8BR2056), 545 (8BR2063), 556 (8BR2142), 557 (8BR1837), 559 (8BR2064), 560 (8BR2065), 561 (8BR2066), 562 (8BR2067), 926 (8BR2152), 978 (8BR2162), and 989 (8BR2136). This district is associated with both World War II and the Cold War. Buildings within this district were defined by their importance to both historic periods.

## CCSFS

The following summary of historic properties at CCSFS is found in the ICRMP (DAF 2020c).

In 1980, an inventory and evaluation of historic sites throughout the United States associated with the early space program identified a grouping of properties at CCSFS associated with this theme. A subsequent architectural and engineering evaluation, completed at the reconnaissance level, resulted in the identification of 21 LCs, the lighthouse, Hangar S, and the original Mission Control building as potentially eligible for the NRHP. This study was the basis for the 1984 nomination of six LCs (LCs 5/6, 13 Mobile Service Tower, 14, 19, 26, and 34) and Mission Control Center as a National Historic Landmark district. The SHPO and the National Park Service concurred with these findings.

In 1993, 16 of the facilities identified in the aforementioned study were evaluated for possible NRHP eligibility. This evaluation recommended six additional LCs (LCs 1/2, 3/4, 17, 21/22, 25, and 31/32) for nomination to the NRHP under Criteria A, C, D and G. It was suggested that the remaining facilities (LCs 10, 11, 12, 15, 16, 18, 30, 37, and Hangar S) should be documented in lieu of being preserved. The LCs were reassessed by the SLD 45 CRM on a case-by-case basis. A "missing" LC was identified in 2008 by the SLD 45 CRM (LC 23/24). Based on informant reports, LC 23/24 was constructed to serve as a Snark missile processing pads as part of LC 1-4. The SHPO concurred that individually it was not NRHP-eligible but was a contributing element to LC-1/2. One of the most important hangars at CCSFS is Hangar C. It is associated with LC 1-4 and was the first missile processing hangar built on CCSFS. It is NRHP-eligible.

In 2006, the SLD 45 CRM determined there were several deficiencies in the historic resources' determinations of eligibility (surveys and studies never submitted to SHPO). In

1 conjunction with Section 106 consultations these previous reports were submitted to the  
2 SHPO along with a determination of eligibility and are still ongoing. To date, final  
3 determinations of eligibility have been made for LCs 1-4, 9/10, 11-13, 15, 16, 17, 21/22,  
4 23/24, 31/32, and 36. Determinations include all individual facilities within each LC. In all  
5 cases, the NRHP-eligible LCs (LCs 1-4, 9/10, 17, 21/22, 25/29, 31/32, and 36) were  
6 determined to meet Criteria A, C and D. Associated reports and SHPO concurrence letters  
7 are on file at the Civil Engineering Squadron/Installation Management and Environmental  
8 Element, CCSFS.

9 SLD 45 additionally owns one of the few cast iron lighthouses in the United States, built in  
10 1868 and moved to its present location in 1893-1894. In 2005, an archaeological survey  
11 and historic building assessment of the Cape Canaveral Lighthouse (8BR212)  
12 recommended (and the SHPO concurred) that the lighthouse was NRHP-eligible under  
13 Criteria A, C and D.

14 Multiple buildings and structures exist at CCSFS that have not been included in recent  
15 cultural resource inventories. Many of the outlying structures have been identified and  
16 assessed by SLD 45 on a case by case basis. The CCAFS Industrial Area historic  
17 properties survey was completed in April 2015. In 2021, LCs 37, 40, 41 and 46 were  
18 assessed. The ICRMP reports that results of this survey are currently under review.

19 There are six cemeteries and two individual graves located on CCSFS. Except for two, all  
20 are located along the Banana River west of Samuel Phillips Parkway.

## 21 **MTA**

22 The SLD 45 ICRMP reports that a cultural resources assessment survey was conducted at MTA  
23 in 2014. The survey identified the Malabar Out Lying Airfield (8BR3136), a World War II auxiliary  
24 airfield associated with nearby Melbourne Naval Air Station and six buildings/structures  
25 (8BR3137-3142) associated with the Cold War and space vehicle tracking usage of MTA between  
26 1959 and 1997. The SHPO declined to concur with the report's findings, citing insufficient  
27 information (FDHR Project File No. 2014-0523), and follow-up correspondence met with no reply.  
28 Due to a lack of response from SHPO within 30 days and consistent with Section 106 of the  
29 NHPA, the SLD 45 CRM decided to treat 8BR3123 and 8BR3138 through 8BR3142 as eligible  
30 for listing in the NRHP under Criteria A through D. In addition, 8BR2139 through 8BR3142 are  
31 considered eligible for listing in the NRHP under Criterion G (DAF 2020c).

## 32 **3.4.3 Environmental Consequences**

### 33 **3.4.3.1 Analysis Approach**

34 A cultural resources impact would be significant if it would constitute an unresolved adverse effect  
35 as defined in Section 106 of the NHPA (36 CFR 800.5): alteration, directly or indirectly, of any of  
36 the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that  
37 would diminish the integrity of its location, design, setting, materials, workmanship, feeling, or  
38 association.

39 Analysis of potential impacts to cultural resources considers both direct and indirect impacts.  
40 Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a  
41 resource; 2) altering the characteristics of the 29 surrounding environment that contribute to  
42 resource significance; 3) introducing visual, audible, or atmospheric elements that are out of  
43 character with the property or alter its setting; or 4) neglecting the resource to the extent that it is  
44 deteriorated or destroyed. Direct impacts can be assessed by identifying the types and locations  
45 of activities proposed and determining the exact locations of cultural resources that could be  
46 affected. Indirect impacts primarily result from the effects of project-induced population increases  
47 and the resultant need to develop new housing areas, utilities services, and other support

functions necessary to accommodate population growth. These activities and facilities' subsequent use can disturb or destroy cultural resources.

As described in the subsections below, the Proposed Action would have no significant impact on cultural resources under any alternative. These conclusions include prescribed standard operating procedures for management and protection of cultural resources outlined in Chapter 7 of the ICRMP. Coordination with the SHPO and the SLD 45 Cultural Resource Manager would occur if archaeological artifacts or NAGPRA cultural items were uncovered during transient or training operations.

#### **3.4.3.2 Proposed Action**

#### **3.4.3.3 PSFB**

##### **Archaeological APE**

The Proposed Action would have no effect on archaeological resources at PSFB. Transient and training activities described in Chapter 2 would not involve extensive ground disturbances that might impact known or unknown archaeological sites. The assembly of a multipurpose training tower composed of stacked shipping containers will occur on an existing parking lot west of Rescue Road. This would not cause disturbance to surface soils. Other activities propose the use of the airfield, existing roads, and impervious surfaces. Capsule recovery training, if performed at PSFB, would utilize the 920<sup>th</sup> RQW Aquatic Training Center, which will consist of a concrete lined pool with a concrete deck. While this facility has not yet been constructed, potential impacts associated with its construction were evaluated under a separate EA in 2022. As described in Section 4.5.2.1 of this document, there are no previously recorded archaeological sites at PSFB, and it is generally considered to have low potential for archaeological sites. Should any unknown cultural resources be uncovered during training operations, work would be stopped immediately and procedures for coordination with the SHPO would commence.

##### **Architectural APE**

The Proposed Action at PSFB involves the assembly of a multipurpose training tower. The proposed location is outside of the historic districts noted in Section 3.5.2.2, Architectural APE, and is not adjacent to any individual NRHP-listed or eligible buildings. The nearest NRHP historic district is the PAFB Facilities Landplane Historic District. Rescue Road serves as the western NRHP boundary of the district. The proposed tower is located west of Rescue Road and is geographically and visually separated from the historic district by several large buildings and other landscape features. The Proposed Action has no potential to create adverse effects on aboveground historic properties.

#### **3.4.3.4 CCSFS**

##### **Archaeological APE**

Ground-disturbing activities under the Proposed Action at CCSFS would be minimal from the installation of electrodes for the AN/MSN-7 system with a low probability for impacting unknown archaeological sites. In-water training activities would not involve disturbance to river or ocean sediments and thus will have no effect on submerged archaeological resources. Should any unknown cultural resources be uncovered during training operations, work would be stopped immediately and procedures for coordination with the SHPO would commence.

##### **Architectural APE**

In general, transient and training missions occur within areas designated for training operations, which are utilized regularly for these purposes. Although transient and training activities occur within the NRHP-eligible SLC 31/32, actions would avoid direct or indirect impacts to specific

culturally sensitive structures in this area. In addition, the CRM would be notified prior to SLC 31/32 exercises to provide guidance regarding what areas must be avoided. The Proposed Action at CCSFS would have no direct or indirect effects on historic properties. The installation of mobile control towers for the AN/MSN-7 system is considered to be a temporary minor visual element and has no potential to create adverse effects on aboveground historic properties.

#### **3.4.3.5 MTA**

##### **Archaeological APE**

As previously stated, there are no known archaeological sites within MTA and a low potential for archaeological sites exists. Activities from transient and training missions would require minor ground disturbance (temporary installation of grounding rods for electrical equipment). Due to the minimal amount of ground disturbance and low potential for archaeological resources, transient and training mission activities are not anticipated to have an adverse effect on archaeological resources. Should any unknown cultural resources be uncovered during training operations, work would be stopped immediately and procedures for coordination with the SHPO would commence.

##### **Architectural APE**

The Proposed Action at MTA involves the installation of HF antennas (height of 30 feet), VHF antennas (height of 3.5 feet), TDS, and the occasional use of generators to test radar sensors. The installation of this small-scale equipment, some of which will be temporary, has no potential to create adverse effects on aboveground historic properties.

#### **3.4.3.6 No-Action Alternative**

As no new activities would occur under the No-Action alternative, there would be no potential to affect significant cultural resources. In accordance with Section 106 of the National Historic Preservation Act, the No-Action alternative would not constitute an undertaking and therefore no additional consultations would be required.

### **3.5 Biological Resources**

#### **3.5.1 Definition of the Resource/Regulatory Setting**

Biological resources include fish, wildlife, plants, and their respective habitat. Typical types of biological resources include:

1. Terrestrial and aquatic plant and animal species.
2. Game and non-game species.
3. Special status species including state or federally listed threatened or endangered species, species proposed for listing, marine mammals protected under the Marine Mammal Protection Act (MMPA), migratory birds protected under the Migratory Bird Treaty Act (MBTA), and other species of special concern.
4. Environmentally sensitive or critical habitats.

For biological resources, the ROI includes the boundaries of PSFB, CCSFS, and MTA.

The Endangered Species Act of 1973 (ESA), as amended, establishes federal protections for fish, wildlife, and plants that are listed as threatened or endangered, and their respective habitats. Federal species of concern or candidate species are not protected under the ESA but are given special consideration.

The USFWS and NOAA NMFS jointly administer the ESA. The USFWS has jurisdiction over Federally listed terrestrial and freshwater species and the NMFS has jurisdiction over Federally listed marine and anadromous species. The ESA provides the following definitions:

- Threatened species are any species likely to become endangered species within the foreseeable future throughout all or a significant portion of its range.
- Endangered species are any plant or animal species in danger of extinction throughout all or a significant portion of its range.
- Critical habitat for threatened and endangered species is defined as:
  - The specific areas within the geographical areas occupied by the species, at the time it is listed in accordance with the provisions of Section 4 – Determination of Endangered and Threatened Species of the ESA on which are found those physical or biological feature essential to the conservation of the species and which may require special management considerations or protection; and
  - Specific areas outside the geographical area occupied by the species at the time it is listed with the provision of Section 4 – Determination of Endangered and Threatened Species of the ESA, upon a determination by the Secretary that such areas are essential for conservation of the species.

Chapter 68A of the Florida Administrative Code (FAC) provides a list of species receiving state protections under the responsibility of the Florida Fish and Wildlife Conservation Commission (FWC).

Table 3.5-1 lists the primary statutes, regulations, EOs, and other guidance related to biological resources.

**Table 3.5-1. Summary of Biological Resource Regulation Requirements**

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
Endangered Species Act (16 U.S.C. 1531 et seq)	Consultation with USFWS and, if necessary, obtain and comply with BOs/incidental take permits and comply with existing threatened and endangered species permits and commitments.	Conserve ecosystems that support threatened and endangered species. Section 7 requires federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.	USFWS/NMFS
Florida Endangered and Threatened Species Act of 1977 (379.2291, F.S.)	Follow approved Species Conservation Measures and Permitting Guidelines for projects that may adversely affect protected species.	Conserve and protect threatened and endangered species as a natural resource.	FWC
Sikes Act (16 U.S.C. 670 et seq)	Cooperation between the Department of Interior and DoD with state agencies to plan, develop and maintain fish and wildlife resources on U.S. military installations.	Develop an INRMP that is reviewed/approved by USFWS, NMFS, FDEP, and FWC.	DoD

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
Migratory Bird Treaty Act (16 U.S.C. 703-712)	Consultation with USFWS, as necessary.	Prohibit intentional destruction of the eggs or nest of migratory and resident birds without a permit. Beach nesting locations must be protected and avoided during beach restoration activities.	USFWS
Marine Mammal Protection Act (16 U.S.C. 1361 et seq)	Consultation with USFWS and NMFS, as necessary.	Prohibit, with certain exceptions, the "take" of marine mammals in WOTUS and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S.	USFWS/NMFS
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq)	Consultation with NMFS, as necessary.	Promote the conservation and management of marine fisheries and essential fish habitat.	NMFS
Bald and Golden Eagle Act (BGEA, 16 U.S.C. 668-668c)	Coordination with USFWS and if necessary, obtain individual or programmatic permits.	Prohibit, without a permit issued by USFWS, the taking of bald eagles ( <i>Haliaeetus leucocephalus</i> ) or golden eagles ( <i>Aquila chrysaetos</i> ).	USFWS
North Atlantic Right Whale Vessel Speed Rule	Most vessels (military vessels are exempt) equal to or greater than 65 feet in length must reduce speed to 10 knots between November 15 and April 15 in the southeast SMA, which would encompass the ROI if proposed modifications are made final. Proposed modifications to the rule would additionally include vessels equal to or greater than 35 feet in this requirement.	Requires seasonal speed reductions to reduce the risk of vessel strikes.	NMFS
EO 13112, <i>Invasive Species</i>	Remove and control invasive species.	Prevent the introduction of invasive species and provide for their control.	DoD
EO 13751, <i>Safeguarding the Nation from the Impacts of Invasive Species</i>	Prevention and control invasive species	Amends EO 13112 to strengthen coordinated, cost-efficient, federal prevention and control efforts.	N/A
EO 13186, <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i>	Incorporate migratory bird protection measures into federal agency activities.	Protect migratory birds, in accordance with the MBTA, BGEA, the Fish and Wildlife Coordination Act, ESA, and NEPA.	DoD
AFMAN 32-7003, <i>Environmental Conservation</i>	Long-term management of natural and cultural resources on the installation.	Implement the INRMP. Protect listed species, biodiversity, migratory birds, wetlands, and floodplains.	DoD

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
45 Space Wing Instruction (SWI) 32-7001, <i>Exterior Lighting Management</i>	Use full cut off, well shielded, low wattage, limited wavelength amber light-emitting diode (LED) lights.	Reduce the amount of exterior lighting visible from the beach during the sea turtle nesting season to reduce mortality.	SLD 45
Marine Animal Regulation, Florida Marine Turtle Protection Act (379.2431, F.S.)	Coordination with FWC and consultation with USFWS, as necessary.	Ensure FWC has the appropriate authority and resources to implement its responsibilities under USFWS Recovery for five species of marine turtle.	USFWS/FWC
Model Lighting Ordinance for Marine Turtle Protection Rule (62B-55, FAC)	Consultation with USFWS, as necessary.	Protect hatchling marine turtles from the adverse effects of artificial lighting, provide overall improvement in nesting habitat degraded by light pollution, and increase successful nesting activity and production of hatchlings.	USFWS
Mangrove Trimming and Preservation Act (403.9323, F.S.)	Coordination with FDEP and SJRWMD.	Protect and preserve mangrove resources valuable to the environment and economy from unregulated removal, defoliation, and destruction.	FDEP/SJRWMD

BO = Biological Opinion; DoD = Department of Defense; EO = Executive Order; FAC = Florida Administrative Code; FDEP = Florida Department of Environmental Protection; F.S. = Florida Statute; FWC = Florida Fish and Wildlife Conservation Commission; LED = light-emitting diode; ROI = Region of Influence; SJRWMD = St. John's River Water Management District Conservation Areas; SMA = Seasonal Management Area; SWI = Space Wing Instruction; UFC = United Facilities Criteria; USACE = U.S. Army Corps of Engineers; U.S.C = United States Code; USFWS = U.S. Fish and Wildlife Service

## 3.5.2 Affected Environment/Existing Conditions

### 3.5.2.1 Vegetation and Habitat

Descriptions of vegetation and habitat provided in the subsections below were retrieved from the INRMP (DAF 2020a).

#### PSFB

Most of PSFB is developed. Vegetated areas primarily consist of maintained turfgrass and landscaping; however, the following two natural landcover types exist at PSFB in small areas:

- The **beach dune** community occurs primarily east of SH-A1A, with a small additional area along the western boundary of PSFB, along the Banana River. Beach dunes cover approximately 29 acres of the installation.
- Estuarine wetlands**, which can include mangrove and salt marsh communities, cover approximately 3 acres of the installation area. Saltmarsh communities are typically vegetated with species such as saltmarsh cordgrass (*Spartina alterniflora*), needle rush (*Juncus roemerianus*), perennial glasswort (*Sarcocornia ambigua*), saltmeadow cordgrass (*Spartina patens*), marsh elder (*Iva frutescens*), and christmasberry (*Lycium carolinianum*).

The INRMP reports that there is also an approximately 35-acre hardwood forested upland that is part of a restoration area in which efforts have been made to remove exotic vegetation. This area is vegetated by cabbage palm and other desirable native species, and red and white mangrove along the Survival Canal fringe.

## CCSFS

While portions of CCSFS have been developed and can be characterized as hardscape or maintained turfgrass, CCSFS retains large areas of natural vegetative communities. All historic vegetative communities known to occur within the boundaries of CCSFS still exist in some form today, although they have been affected by fire suppression, hydrological alteration associated with development, and invasion by non-native plant species. The following 13 vegetative community types are found at CCSFS.

- **Beach dune** is a highly unstable and dynamic upland community with predominantly herbaceous vegetation. Typical plant species found in this habitat include sea oats (*Uniola paniculata*), beach elder (*Iva imbricata*), railroad vine (*Ipomoea pes-caprae*), beach croton (*Croton punctatus*), bitter panicgrass (*Panicum amarum*), saltgrass (*Distichlis spicata*), camphorweed (*Heterotheca subaxillaris*), and beach cordgrass (*Spartina patens*). This community is found on the eastern shoreline of CCSFS and accounts for only 6 acres.
- **Coastal grassland** is found in the drier portions of the transition zone between beach dunes and inland communities dominated by woody vegetation such as maritime hammock or coastal strand. Typical species include camphorweed, earleaf greenbrier (*Smilax auriculata*), and species of broomsedge (*Andropogon* spp.). This community has been mapped within the coastal strand community at CCSFS.
- **Coastal strand** develops in the absence of natural disturbance on somewhat older deposits of sand, inland of beach or coastal grassland, and is dominated by shrub species including live oak (*Quercus virginiana*), buckthorn (*Sideroxylon tenax*), seagrape (*Coccoloba uvifera*), wax myrtle (*Myrica cerifera*), and saw palmetto (*Serenoa repens*). This community is found primarily along the eastern shoreline of CCSFS, but a mapped area of coastal strand also occurs at the northern extent. This is the second largest vegetation type at CCSFS, accounting for approximately 1,728 acres.
- **Basin marshes** are freshwater, herbaceous marshes that are regularly inundated. Characteristic plant species include sawgrass (*Cladium jamaicense*), sand cordgrass (*Spartina bakeri*), American white waterlily (*Nymphaea odorata*), maidencane (*Panicum hemitomum*), pickerelweed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*), giant leather fern (*Acrostichum danaeifolium*), and herb-of-grace (*Bacopa monnieri*). This community is found in a small area between the Skid Strip and the Atlantic Ocean, between coastal strand and maritime hammock communities.
- **Coastal interdunal swale** is a freshwater wetland community type that forms in linear depressions between dune ridges. Vegetation varies depending on hydrology, substrate, and age of the swale. This community accounts for approximately 142 acres at CCSFS.
- **Maritime hammock** communities become established on stabilized coastal dunes located at varying distances from the shoreline. Maritime hammock communities occurring at CCSFS likely include both temperate species, such as live oak, cabbage palm, redbay (*Persea borbonia*), and red cedar (*Juniperus virginiana*), and tropical plant species such as gumbo limbo (*Bursera simaruba*), seagrape, and white or Spanish stopper (*Eugenia* spp.). This community is found in both the northern and southern areas of CCSFS, with large swaths of maritime hammock occurring in the south central portion, on both sides of the eastern half of the Skid Strip. This is the largest vegetation type at CCSFS, accounting for approximately 2,291 acres.
- **Live oak/saw palmetto hammock** is an upland forest type with low species diversity intermediate between a maritime hammock and a xeric hammock. It may result from long

term fire exclusion and does not easily fit into the Florida Natural Areas Inventory (FNAI) natural community categories used to classify vegetation communities on-base.

- **Live oak/saw palmetto shrubland** is another upland forest type that does not fit easily into FNAI natural community categories and may result from long term fire exclusion.
- **Xeric hammocks** are upland evergreen forest communities found on well-drained sandy soils and in areas of fire exclusion. Xeric hammocks are often dominated by sand live oak (*Quercus geminata*), although other oaks may be present. Other common species include myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmanii*), turkey oak (*Quercus cerris*), bluejack oak (*Quercus incana*), rusty lyonia (*Lyonia ferruginea*) and saw palmetto. An emergent canopy of pine may also be present. This community occurs throughout CCSFS, but primarily within the interior and north of the Skid Strip.
- **Scrub habitat** is composed of shrubs, with or without a canopy of pines, and is often found on dry, acid, sandy ridges. Characteristic species include Florida rosemary (*Ceratiola ericoides*), sand pine (*Pinus clausa*), live oak, myrtle oak, Chapmans oak, rusty staggerbush (*Lyonia ferruginea*), and saw palmetto. This community occurs throughout CCSFS, but primarily within the interior, both north and south of the Skid Strip, within the western half of the installation. It is frequently intermixed with xeric hammock vegetation.
- **Tropical hammock** is not specifically described by FNAI but is synonymous with FNAI's rockland hammock community, which is described as an upland rich tropical hardwood forest community that grows where limestone is near the ground surface. Tropical hammock communities have been observed at CCSFS in a nearly continuous band bordering the Banana River.
- **Hydric hammock** is a wetland community of evergreen hardwoods and/or a palm forest. Understory vegetation varies but is frequently dominated by palms and ferns that occur in moist soils. Hydric hammocks typically have a closed canopy of oaks and palms, an open understory, and a sparse to moderate groundcover of grasses and ferns. At CCSFS, this community type occurs along the Banana River at the west edge of the tropical hammock.
- **Mangroves** are indigenous to the Florida coast and are protected by the State because of their valuable contribution to erosion control, water quality, and habitat. Mangroves are located on the western side of CCSFS, in the Banana River.

## MTA

The following five natural vegetation communities occur at MTA:

- **Mesic flatwoods** are open woodlands with a canopy of slash pine and longleaf pine (*Pinus palustris*) and an understory containing species such as gallberry (*Ilex glabra*), staggerbush, fetterbush (*Lyonia lucida*), shiny blueberry (*Vaccinium myrsinites*), panic grass (*Dichantheium* spp.), saw palmetto, broomsedges, and wiregrass (*Aristida stricta*). This community occurs between the installation boundary and the old airfield, with the exception of the wetland area located in the southeast corner. This vegetation type is the largest at MTA, accounting for approximately 265 acres.
- **Wet prairie and bogs** are wetland communities. The wet prairie is continuously wet but not inundated and is often found on flat or gently sloping areas between depressions, bogs, flatwoods, and swamps. Bogs are found on mucky soils with water less than one foot deep. Wet prairies contain a diversity of herbaceous vegetation species, often including yellow-eyed grass (*Xyris* spp.), pitcher plants (*Sarracenia* spp.), wiregrass,

toothache grass (*Ctenium aromaticum*), water cowbane (*Oxypolis filifolia*), beaksedges (*Rhynchospora* spp.), and flattened pipewort (*Eriocaulon compressum*).

- **Pine flatwoods** are upland habitats with a canopy dominated by slash pine interspersed with laurel oak, live oak, and cabbage palms. The understory consists of Brazilian pepper, saw palmetto, gallberry, American beautyberry (*Callicarpa americana*), and fetterbush, while groundcover includes cypress witchgrass (*Dichanthelium dichotomum*), shiny blueberry, sword fern (*Nephrolepis exaltata*) bracken fern (*Pteridium aquilinum*), goldenrods (*Solidago* spp.), lantana, and little bluestem (*Schizachyrium scoparium*).
- **Cabbage palm hammocks** at MTA occur as patches within the pine flatwoods community type. Cabbage palm hammocks are characterized by a midstory dominated by cabbage palm with an overstory of slash pine and, to a lesser extent, live oak. Groundcover includes lantana, African spotted orchid (*Oeceoclades maculata*), common guava (*Psidium guajava*), and cabbage palm seedlings.
- **Hydric pine flatwoods** have a sparse to moderate canopy of slash pine with a midstory of cabbage palm and occasionally slash pine in small quantities. Ground cover includes bachelor button (*Polygala nana*), bog bachelor button (*Polygala lutea*), tickseed (*Coreopsis gladiata*), sundew (*Drosera capillaris*), St. Johnswort (*Hypericum* spp.), bog button (*Lachnocaulon anceps*), white bracted sedge (*Dichromena latifolia*), marsh pinks (*Sabatia* spp.), queensdelight (*Stillingia sylvatica*), rush-fuirena (*Fuirena scirpoidea*), common stargrass (*Hypoxis juncea*), blue maidencane (*Amphicarpum muhlenbergianum*), swamp sneeze weed (*Helenium pinnatifidum*), arrowfeather grass (*Aristida purpurascens*), Florida dropseed grass (*Sporobolus floridannus*), and common carpet grass (*Axonopus affinis*). This community occurs in limited areas within the wetland area located in the southeast corner.

### 3.5.2.2 Wildlife and Migratory Birds

Various wildlife species are known to inhabit, utilize, or frequent PSFB, CCSFS, and MTA. At PSFB, six species of mammals, 19 species of amphibians and reptiles, and 46 species of birds are known to occur onsite. At CCSFS, more than 25 species of mammals, more than 50 species of reptiles and amphibians, and more than 200 bird species are known to occur in the vicinity. Various biotic surveys conducted at MTA have identified as many as 18 species of mammals, 20 species of reptiles and amphibians, and 56 species of birds. A full list of species identified at each installation may be found in the INRMP (DAF 2020a).

The USFWS Information for Planning and Consultation (IPaC) system was consulted to generate an Official Species List of federally listed species that may have the potential to occur within the ROI (see Section 3.5.2.4) (USFWS 2023f). The IPaC identified the following migratory birds within the respective ROI locations (see Appendix C for a listing of the species):

- **PSFB** - 18 species of migratory birds could occur that are either on the USFWS Birds of Conservation Concern List or that are described as warranting special protection.
- **CCSFS** - 38 species of migratory birds could occur that are either on the USFWS Birds of Conservation Concern List or are described as warranting special protection. CCSFS is designated as an "Important Bird Area" by the American Bird Conservancy, and many programs at the installation serve to manage migratory birds onsite (DAF 2020a). Migratory birds such as waterfowl, shorebirds, and passerines are highly dependent on habitats such as those at CCSFS for stopover during migration.
- **MTA** - 14 species of migratory birds could occur that are either on the USFWS Birds of Conservation Concern List or are described as warranting special protection.

The MBTA (16 U.S.C. 703-712) prohibits the take (including killing, capturing, selling, trading, and transport) of migratory bird species without special authorization by USFWS. The MBTA protects both resident and migratory bird species. Birds that are considered non-native species are not protected. USFWS has jurisdictional responsibility for species covered under the MBTA.

### 3.5.2.3 Essential Fish Habitat and Habitat Areas of Particular Concern

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), federal agencies are required to consult with NMFS when an action may adversely affect essential fish habitat (EFH), identified pursuant to the MSFCMA. NMFS defines EFH for highly migratory species under its jurisdiction, and regional management councils define EFH for species under their jurisdiction. Habitat Areas of Particular Concern (HAPCs) have also been designated within EFH areas; these include localized areas that are vulnerable to degradation or are especially important ecologically. Figure 3.5-1 presents HAPC within the waters adjacent to PSFB and CCSFS, as well as managed EFH, which occurs continuously in the Banana River and the Atlantic Ocean throughout the entirety of the figure's extent.

For the marine area surrounding PSFB and CCSFS, the South Atlantic Fishery Management Council is the primary managing body, and manages fisheries for several species in the vicinity of PSFB and CCSFS, including the South Atlantic snapper and grouper fishery; dolphin and wahoo fishery; South Atlantic shrimp; coastal migratory pelagic species; highly migratory species; spiny lobster (*Panulirus argus*); golden crab (*Chaceon fenneri*); coral, coral reefs, and live/hard bottom habitats; and sargassum (*Sargassum* spp.) (DAF 2020a).

Substrates designated as EFH and HAPC include live/hard bottom, coral reefs, submerged aquatic vegetation, outcroppings around the shelf break zone, estuarine nursery areas, oyster reefs or shell banks, unconsolidated bottom (i.e., soft sediments), estuarine scrub/shrub (e.g., mangrove fringe), shelf current systems, sandy offshore shoals/bard, tidal creeks, coral, and coastal inlets. Submerged aquatic vegetation and mangrove EFH are documented within the ROI, and recent SLD 45 surveys have identified seagrass and several macroalgae species occurring along the western shoreline of CCSFS in the Banana River and in the impounded area north of Titan III Road (DAF 2023). SLD 45 surveys have also identified patchy seagrass near the western shoreline of PSFB in the Banana River (PSFB 2023b).

Additionally, a line of rock outcroppings occurring in nearshore Atlantic Ocean waters approximately 10 miles from PSFB's southern shoreline to roughly within the southern 2 miles of PSFB shoreline serve as habitat for the sabellariid polychaete worm (*Phragmatopoma lapidosa*) and other marine organisms and provide protection to the shoreline by dissipating and absorbing wave energy. The Oculina Bank near Cape Canaveral serves as HAPC for the ivory tree coral and snapper grouper complex series (DAF 2020a). Florida laws also provide some protection to mangroves through the Mangrove Trimming and Preservation Act (403.9323, F.S.). Mangroves are found along the Banana River shoreline and within canals connected to the river. These mangroves are noncontiguous and interspersed in between herbaceous wetland vegetation (DAF 2023).

The Blake Plateau, which lies in the Atlantic Ocean between the continental shelf and the deep ocean basin, provides abundant deep-sea coral reef habitat (NSF 2023). Recent research has identified the Blake Plateau as the largest deep-sea coral reef habitat on Earth, supporting a wide variety of marine life including fish, shellfish, sea turtles, and seabirds that feed on marine life (Chase 2024). Depth ranges from 500 meters to 1,000 meters (NSF 2023). Much of the Blake Plateau off the coast of Florida occurs within existing areas protected by the South Atlantic Fishery Management Council.

Due to its inland location and lack of waterways, MTA does not contain any EFH.

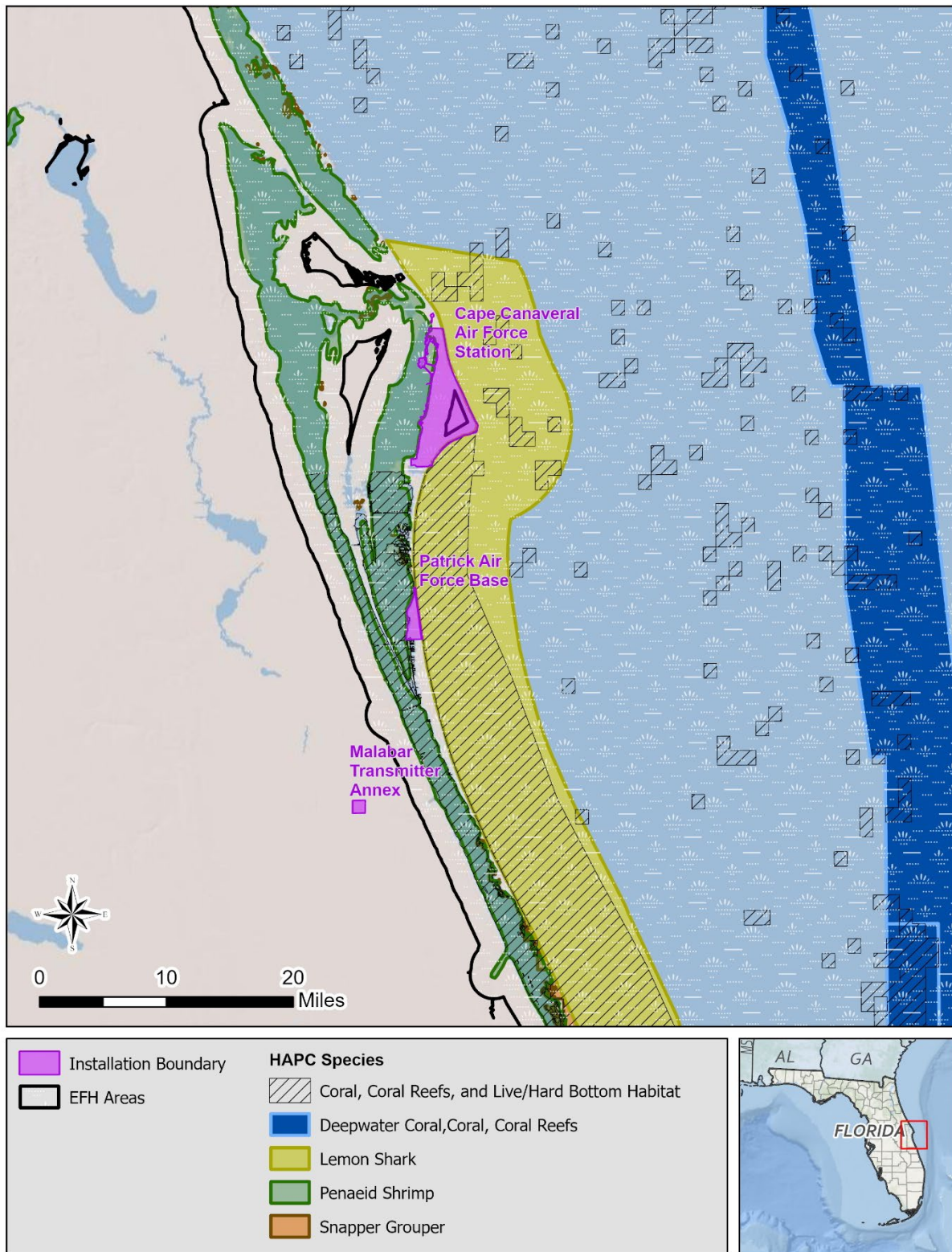


Figure 3.5-1. EFH and HAPC Within or Adjacent to the ROI

**3.5.2.4 Federally Listed Species**

Certain special status species receive federal protections under the ESA, the MMPA, and the MBTA (discussed in Section 3.5.2.2). Marine mammals found in waters adjacent to PSFB and CCSFS that receive protections under the MMPA include the dolphin, the humpback whale (*Megaptera novaeangliae*), the North Atlantic right whale (*Eubalaena glacialis*), smalltooth sawfish (*Pristis pectinata*), and manatee (DAF 2020a). Many of these species are additionally protected under the ESA.

Table 3.5-2 presents species receiving federal protections under the ESA with the potential to occur within the ROI, based on the USFWS IPaC Official Species List, the FNAI Biodiversity Matrix, past survey data included in the INRMP, and communications with PSFB natural resources staff. Species not observed within the ROI in recent years or unlikely to occur due to lack of habitat or typical range are not discussed further in this EA.

1

Table 3.5-2. Federally Listed Species with Potential to Occur in the ROI

Species	Federal Status	Habitat	PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
<b>Mammals</b>							
North Atlantic right whale ( <i>Eubalaena glacialis</i> )	E	Nearshore and offshore waters.	No	No	No	Yes	No
Southeastern beach mouse ( <i>Peromyscus polionotus niveiventris</i> )	T	Beach dunes and inland areas of scrub vegetation.	No	Yes	No	No	No
Tricolored bat ( <i>Perimyotis subflavus</i> )	E (Proposed)	In winter, the species is found in caves and mines, or in man-made structures in areas where caves are sparse. During the remainder of the year the species can be found in forested habitats.	Yes	Yes	Yes	No	No
West Indian manatee ( <i>Trichechus manatus</i> )	T	Large, slow-moving rivers and shallow coastal areas. Known to inhabit the local salt-water lagoon system near PSFB and CCSFS (see also Section 3.5.2.5).	Yes	Yes	No	Yes	Yes
<b>Birds</b>							
Audubon's crested caracara ( <i>Polyborus plancus audubonii</i> )	T	Improved pasture, dry prairie, freshwater marsh, mixed upland hardwoods, shrub swamp, shrub and brushland, grassland, pinelands, bare soil, urban, other agriculture areas, citrus, and scrub.	No	Yes	No	No	No
Eastern black rail ( <i>Laterallus jamaicensis</i> ssp. <i>Jamaicensis</i> )	T	Brackish marsh, salt marsh, and freshwater marsh in Florida.	No	No	No	No	No
Everglade snail kite ( <i>Rostrhamus sociabilis plumbeus</i> )	E	MTA is within the USFWS consultation area for the everglade snail kite; however, there is no suitable habitat present at MTA, based on suitable habitat requirements described in the USFWS South Florida Ecological Services Office Snail Kite Survey Protocol.	No	No	No	No	No
Florida scrub-jay ( <i>Aphelocoma coerulescens</i> )	T	Sandy xeric scrub habitats dominated by sand live oak, Chapman's oak, myrtle oak, and scrub oak ( <i>Quercus inopina</i> ), optimally 4 to 5.5 feet high with less than 15 percent canopy cover.	No	Yes	No	No	No
Piping plover	T	Sandy beaches, particularly those near the ends of barrier islands, on peninsulas, and near inlets. Species is a wintering migrant in Florida.	Yes	Yes	No	No	No

Species	Federal Status	Habitat	PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
( <i>Charadrius melodus</i> )							
Red knot ( <i>Calidris canutus rufa</i> )	T	Breeds in the tundra of the central Canadian Arctic Circle and winters at the tip of South America, traveling along the Atlantic coast.	Yes	Yes	No	No	No
Red-cockaded woodpecker ( <i>Picoides borealis</i> )	E	Old-growth pine forests relatively free of hardwood undergrowth. Prefer to nest in longleaf pine trees but will forage in younger pine and mixed pine-hardwood stands.	No	No	No	No	No
Roseate tern ( <i>Sterna dougallii</i> )	T	Nests in the Florida Keys.	No	Yes	No	No	No
Wood stork ( <i>Mycteria americana</i> )	T	Freshwater and estuarine habitats, nesting in trees occurring in standing water or on islands that are surrounded by open water. Forages in open, shallow wetlands including freshwater marshes; depressions in cypress heads; swamp sloughs; managed impoundments; stock ponds; shallow, seasonally flooded roadside or agricultural ditches; and narrow tidal creeks or shallow tidal pools.	Yes	Yes	Yes	No	No
Whooping crane ( <i>Grus americana</i> )	Experimental Population, Non-Essential <sup>1</sup>	Efforts have been made to establish whooping crane populations in Florida as part of two non-essential experiment populations. The first was an attempt to establish a non-migratory population and was discontinued due to poor survival and reproduction. The second was established to experiment with teaching a migratory route by allowing the birds to follow an ultralight aircraft. This migratory population consists of approximately 80 birds, with one pair having been observed wintering in central Florida in 2021.	No	No	No	No	No
<b>Fish</b>							
Atlantic sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> )	E	Salt and freshwater systems. Some migrate into brackish and saltwater during the fall and feed in these areas throughout the winter, before migrating into freshwater rivers in the spring, while others remain at sea for years.	No	No	No	Yes	No
Giant manta ray ( <i>Manta birostris</i> )	T	Tropical, subtropical, and temperate deep waters. It is known to utilize offshore waters but can also utilize productive coastal waters, estuaries, inlets, bays, and intercoastal waterways at depths varying from less than 10 meters up to 450 meters.	No	No	No	Yes	No
Mangrove rivulus ( <i>Kryptolebias marmoratus</i> )	SC	Tidal flat/shore, scrub-shrub wetlands, lagoons, river mouth/tidal river areas, bays and sounds, and herbaceous wetlands.	No	No	No	Yes	No
Nassau grouper	T	Tropical and subtropical waters, usually around shallow reefs.	No	Yes	No	Yes	No

Species	Federal Status	Habitat	PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
( <i>Epinephalus striatus</i> )							
Oceanic whitetip shark ( <i>Carcharinus longimanus</i> )	T	Open ocean in tropical and subtropical regions. Typically reside in the upper 200 meters of the water column but can descend to greater depths.	No	No	No	Yes	No
Opossum pipefish ( <i>Microphis brachyurus</i> )	SC	Near shore, pelagic marine habitats and estuarine habitats such as bays, sounds, lagoons, river mouths and tidal rivers. Breeds in freshwater systems.	No	No	No	Yes	Yes
Scalloped hammerhead shark ( <i>Sphyrna lewini</i> )	E/T	Coastal and deep waters.	No	No	No	Yes	No
Smalltooth sawfish ( <i>Pristis pectinata</i> )	E	Waters of the Indian River, Banana River, and Atlantic Ocean are within its historic range, although it is rarely reported in these areas today.	No	No	No	Yes	Yes
Striped croaker ( <i>Corvula sanctaeluciae</i> )	SC	Nearshore reefs at depths to 30 meters.	No	No	No	Yes	No
<b>Reptiles</b>							
American alligator ( <i>Alligator mississippiensis</i> )	SAT	Fresh and brackish marshes, ponds, lakes, rivers, swamps, bayous, and large spring runs.	Yes	Yes	Yes	Yes	Yes
American crocodile ( <i>Crocodylus acutus</i> )	T	Coastal mangrove swamps, brackish and saltwater bays, lagoons, marshes, tidal rivers, brackish creeks, and abandoned coastal canals or borrow pits.	Yes	No	No	Yes	Yes
Atlantic salt marsh snake ( <i>Nerodia clarkia taeniata</i> )	T	Brackish coastal marshes. Feeds on small fish in shallow water.	No	No	No	No	No
Eastern indigo snake ( <i>Drymarchon couperi</i> )	T	Scrub, sandhill, and wetland habitat. The species is known to take refuge in gopher tortoise burrows.	Yes	Yes	Yes	No	No
Green sea turtle ( <i>Chelonia mydas</i> )	E/T	Spend most of their life cycles in open waters of the ocean or in estuaries but utilize beach shoreline habitat for nesting.	Yes	Yes	No	Yes	Yes

Species	Federal Status	Habitat	PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
Hawksbill sea turtle ( <i>Eretmochelys imbricata</i> )	E	Spend most of their life cycles in open waters of the ocean or in estuaries but utilize beach shoreline habitat for nesting.	No	Yes	No	Yes	No
Kemp's ridley sea turtle ( <i>Lepidochelys kempii</i> )	E	Spend most of their life cycles in open waters of the ocean or in estuaries but utilize beach shoreline habitat for nesting.	Yes	Yes	No	Yes	No
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	E	Spend most of their life cycles in open waters of the ocean or in estuaries but utilize beach shoreline habitat for nesting.	Yes	Yes	No	Yes	No
Loggerhead sea turtle ( <i>Caretta caretta</i> )	E/T	Spend most of their life cycles in open waters of the ocean or in estuaries but utilize beach shoreline habitat for nesting.	Yes	Yes	No	Yes	Yes
<b>Insects</b>							
Monarch butterfly ( <i>Danaus plexipuss</i> )	C	Known to use a variety of coastal habitats during migration.	No	Yes	Yes	No	No
<b>Plants</b>							
Beach jacquemontia ( <i>Jacquemontia reclinata</i> )	E	Dunes or disturbed openings in maritime hammock, coastal strand, and coastal scrub. This species has not been observed within the ROI in recent surveys.	No	No	No	No	No
Carter's Mustard ( <i>Warea carteri</i> )	E	Scrubby flatwoods, turkey oak/hickory ( <i>Carya</i> sp.)-dominated sandhills, xeric hammocks, coastal scrub, and slashpine dominated flatwoods with sandy soil.	No	No	No	No	No
Florida perforate lichen ( <i>Cladonia perforata</i> )	E	Sandy openings in stabilized sand dunes with Florida scrub vegetation.	No	No	No	No	No
Four-petal Pawpaw ( <i>Asimina tetramera</i> )	E	Occurs in sand pine scrub on old dunes inland from the Atlantic coast. This species has not been observed within the ROI in recent surveys.	No	No	No	No	No
Lakela's Mint ( <i>Dicerandra immaculata</i> )	E	Small sandhills with sand pine scrub vegetation. This species has not been observed within the ROI in recent surveys.	No	No	No	No	No

Species	Federal Status	Habitat	PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
Lewton's Polygala ( <i>Polygala lewtonii</i> )	E	Oak scrub (typically dominated by turkey oak) and high pine as well as the transitional areas between these two habitat types.	No	No	No	No	No
Tiny polygala ( <i>Polygala smallii</i> )	E	Open grassy pineland; sandy pine rockland, scrubby flatwoods, and sandhill. Often found in disturbed areas. This species has not been observed within the ROI in recent surveys.	No	No	No	No	No

Source: CCSFS 2024; DAF 2020a; Federal Register 2001; FNAI 2023; NatureServe 2024; NMFS 2023a; NMFS 2009; PSFB 2023a; PSFB 2023b; Thompson and Poitras 2021; USACE 2008, USFWS 2023d, USFWS 2023e, USFWS 2019, USFWS 1999, USFWS 1997

<sup>1</sup> Non-essential experimental populations are treated as threatened species under the ESA; however, for Section 7 interagency cooperation purposes, when the non-essential population is located outside of a National Park or National Wildlife Refuge, it is treated as a species proposed for listing, and consultation requirements under Section 7(a)(2) do not apply.

T = Threatened; E = Endangered; C = Candidate; E/T = Species listed as endangered in a portion of its range but only listed as threatened in others (federally threatened in Florida);

SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species; SC = Not currently listed but considered a "species of concern" to USFWS

### 3.5.2.5 Critical Habitat

Critical habitat is defined by the ESA as habitat areas that are essential to the conservation of a listed species. Areas designed as critical habitat do not need to be occupied by the species at the time they are designated, provided the area is deemed essential for the species' conservation. Critical habitat is protected under Section 7 of the ESA. Critical habitat within the ROI was identified by reviewing GIS data provided by USFWS (USFWS 2023b) and NMFS (NMFS 2023b). In areas where critical habitat was identified, species-specific data provided more detailed information. Figure 3.5-2 displays existing and proposed critical habitat present in the waters adjacent to PSFB and CCSFS, with additional details found in the subsections below.

#### PSFB

Although there are no federally designated critical habitat areas within the boundaries of PSFB, critical habitat does occur within the Banana River and the Atlantic Ocean bordering the installation for the West Indian manatee (*Trichechus manatus*) and within the Atlantic Ocean for the loggerhead sea turtle (*Caretta caretta*) and the North Atlantic right whale (*Eubalaena glacialis*). Critical Habitat for the West Indian manatee is designated throughout the Banana River, including the area adjacent to PSFB and the channels leading into the Manatee Cove Marina at the south end of the installation and the channel leading into the Manatee Cove Campground, west of Runway 21. Critical habitat for the West Indian manatee is also designated along the eastern shoreline of PSFB at the Atlantic Ocean. Critical Habitat for both the loggerhead sea turtle and the North Atlantic right whale is designated along the eastern boundary of PSFB within the Atlantic Ocean (USFWS 2023b; NMFS 2023b).

In a proposed rule published in the Federal Register on July 19, 2023, NMFS proposed to designate critical habitat for distinct population segments of the green sea turtle off the coast of Florida and other areas under U.S. jurisdiction, including waters adjacent to PSFB. Concurrently, the USFWS is proposing to designate terrestrial critical habitat for five distinct population segments of the green sea turtle in areas where turtles are known to bask, nest, incubate, hatch, and travel to sea (*Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Green Sea Turtle*, published in the Federal Register on July 19, 2023). A portion of this proposed area abuts the southernmost extent of the PSFB boundary. The comment period for both proposed rules ends on October 17, 2023 (Federal Register 2023a; Federal Register 2023b).

#### CCSFS

Critical Habitat for the West Indian Manatee is also identified within the Banana River and Atlantic Ocean adjacent to CCSFS. Critical Habitat extends into the Trident Wharf but not into the area of the Poseidon Wharf. Critical Habitat for the loggerhead sea turtle and the North Atlantic right whale is designated within the Atlantic Ocean adjacent to CCSFS, but does not include the Port Canaveral Channel, the Trident Wharf or the Poseidon Wharf (USFWS 2023b).

As stated above, NMFS published a proposed rule to designate critical habitat for the green sea turtle off the coast of Florida, including waters adjacent to CCSFS, in the Federal Register on July 19, 2023. Concurrently, the USFWS is proposing to designate terrestrial critical habitat for the green sea turtle in areas where turtles are known to bask, nest, incubate, hatch, and travel to sea. A portion of this proposed area abuts the northernmost extent of the CCSFS boundary. The comment period for both proposed rules ended on October 17, 2023 (Federal Register 2023a).

#### MTA

No areas of Critical Habitat are designated in the vicinity of MTA.

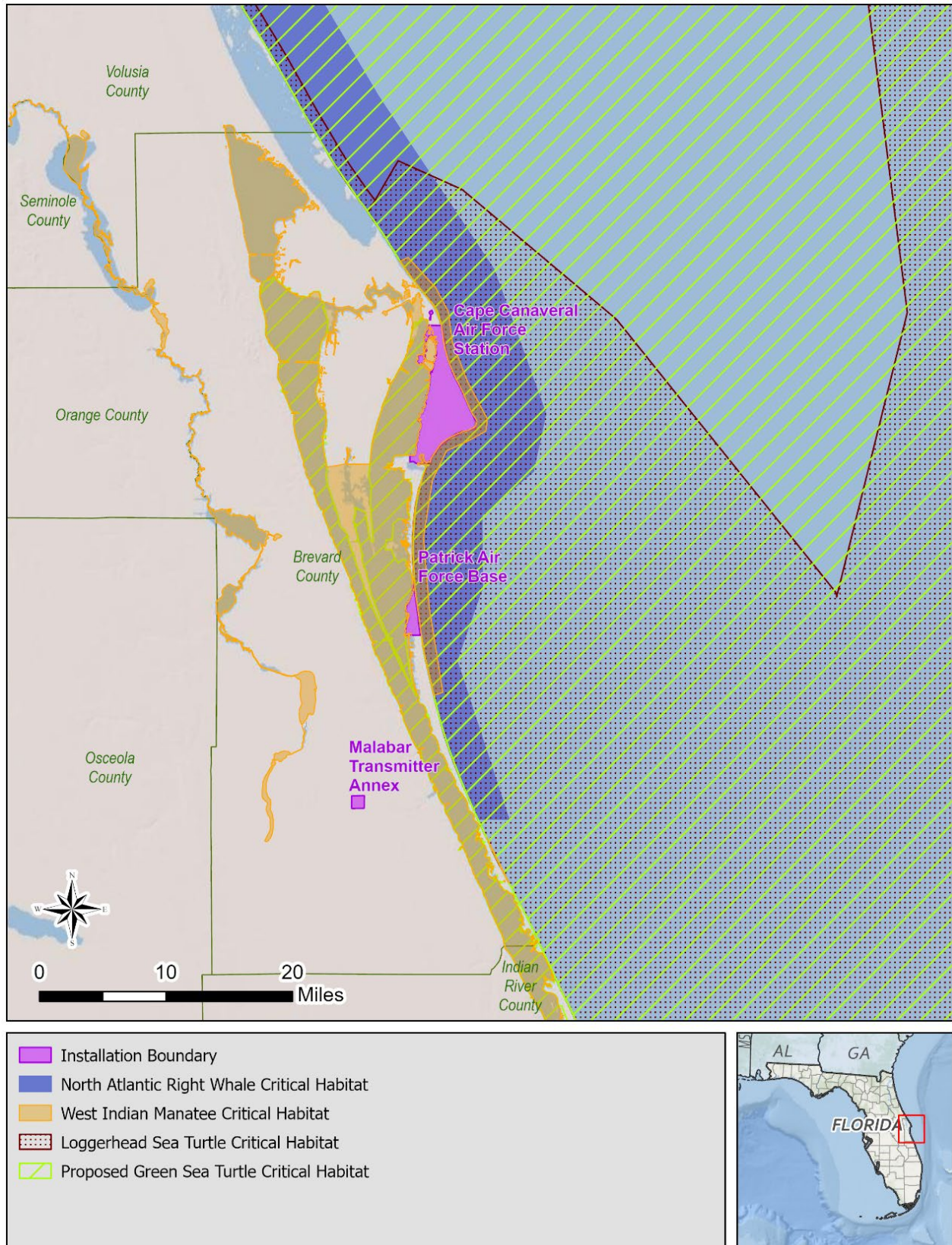


Figure 3.5-2. Critical Habitat Within or Adjacent to the ROI

### 3.5.2.6 Other Protected Species or Habitats

#### Bald Eagle

The bald eagle was removed from protection under the ESA in 2007; however, it still receives protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), which prohibits the take of bald or golden eagles, including their parts (i.e., feathers, nests, or eggs) without a permit from the USFWS. The USFWS recommends a 660-foot buffer around each active and alternative bald eagle nest if the activity will be visible from nest (USFWS 2023c). Activity within 660-feet of an active or alternate bald eagle nest may require a permit from USFWS during the nesting season (May 15 to October 1).

According to the Audubon EagleWatch program, there are no bald eagle nests within the boundaries of PSFB and MTA. One bald eagle nest has been identified within the boundaries of CCSFS, at the southern extent (Audubon 2024).

#### Osprey

The osprey is protected by the MBTA. Although the osprey is no longer listed as a Species of Special Concern in Florida, it is still included in Florida's Imperiled Species Management Plan. It is currently protected under 68A-4.001, FAC (FWC 2019a). In Florida, ospreys typically feed on saltwater catfish, mullet, spotted trout, shad, crappie and sunfish from coastal habitats and freshwater lakes and rivers. Ospreys build stick nests in large trees (dead or living) and manmade structures such as utility poles, channel markers and nest platforms. Nests are used for multiple years. Nesting can begin as early as December (South Florida) and can last into the early summer (North Florida) each year (FWC 2019a). Inactive nest or nests without eggs or flightless young can be removed without a permit. Osprey have been observed at PSFB, CCSFS, and MTA in recent years (DAF 2020a).

#### Bats

Thirteen native and seven "accidental" bat species have been identified in Florida. An accidental species is a species of which there are only a few records of occurrence in the northern or southern extremes of the state (FWC 2023a). Six of the 13 native species found in Florida are included in Florida's State Wildlife Action Plan as Species of Greatest Conservation Need: Rafinesque's big-eared bat (*Corunorhinus rafinesquii*), Florida bonneted bat (*Eumops floridanus*), northern yellow bat (*Lasiurus intermedius floridanus*), southeaster myotis (*Myotis austroriparius*), gray bat (*Myotis grisescens*), and tricolored bat (*Perimyotis subflavus*) (FWC 2019b).

A 2019 acoustic bat survey conducted within the ROI identified the big brown bat (*Eptesicus fuscus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), eastern red bat (*Lasiurus borealis*), evening bat (*Nycticeius humeralis*), northern yellow bat, Seminole bat (*Lasiurus seminolus*), and the tricolored bat at PSFB, CCSFS, and MTA. Additionally, the Rafinesque's big-eared bat was identified at CCSFS, and the southeastern bat was identified at MTA (Carver N.D.).

Bats are protected from illicit take per 68A-4.001 and 68A-0.010, FAC. Should bats need to be removed from buildings, FAC requires relocation outside of the maternity/breeding season between April 15 and August 15. Additionally, exclusionary devices (systems used to remove roosting bats) must be in place a minimum of four nights when the overnight temperature is anticipated to be at least 50 °F and to prevent bats from returning to the site.

#### State Listed Species

Table 3.5-3 presents species within Brevard County that are included in FWC's Endangered and Threatened Species List.

1

Table 3.5-3. State Listed Species with Potential to Occur in the ROI

Species	State Status	Habitat	Known to Occur (Detected in Recent Surveys)				
			PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
Birds							
American oystercatcher ( <i>Haematopus palliatus</i> )	T	Beaches, dunes, saltmarsh, spoil islands, and mud flats.	No	Yes	No	No	No
Black skimmer ( <i>Rynchops niger</i> )	T	Beaches, estuaries, sandbars, tidal creeks, and inland lakes and flooded fields. The species nests on beaches, small islands, and occasionally on gravel rooftops near the coast.	Yes	Yes	No	No	No
Florida burrowing owl ( <i>Athene cunicularia floridana</i> )	T	Open areas of grassy, prairie-like habitat.	Yes	Yes	No	No	No
Florida sandhill crane ( <i>Antigone canadensis pratensis</i> )	T	Shallow water and riparian herbaceous wetland areas. For instance, wet prairies, marshy lake regions, low lying pastures, and shallow flooded open areas. Often found in areas vegetated by saw palmetto and in wooded hammocks vegetated by cabbage palms, pines, oaks, magnolia, and cypress.	No	No	No	No	No
Least tern ( <i>Sternula antillarum</i> )	T	Beaches, estuaries, bays, sandbars, lagoons, lakes, and rivers. The species nests on sandy or gravelly beaches and riverbanks and occasionally on gravel rooftops near the coast.	Yes	Yes	No	No	No
Little blue heron ( <i>Egretta caerulea</i> )	T	Marshes, ponds, lakes, meadows, mudflats, lagoons, streams, mangrove lagoons, and other bodies of calm, shallow water. Primarily found in freshwater habitat but can also occur in estuarine areas.	Yes	Yes	No	No	No
Reddish egret ( <i>Egretta rufescens</i> )	T	Estuarine habitat such as tidal flat/shore, scrub-shrub wetland, herbaceous wetland, bays and sounds, river mouths and tidal rivers, and lagoons.	Yes	Yes	No	No	No
Roseate spoonbill ( <i>Platalea ajaja</i> )	T	Marshes, swamps, ponds, rivers, lagoons, and tidal flats. In Florida, the species often prefers brackish waters and coastal bay. Nests in mangroves, in low bushes along coastal islands, and on the ground along waterways.	Yes	Yes	No	No	No

Species	State Status	Habitat	Known to Occur (Detected in Recent Surveys)				
			PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
Snowy plover ( <i>Charadrius nivosus</i> )	T	Sandy beaches. In Florida, the species is primarily found on the shoreline of the Gulf of Mexico where it nests between February and August.	No	Yes	No	No	No
Southeastern American kestrel ( <i>Falco sparverius Paulus</i> )	T	Typically nests in cavities of standing dead trees, and forages in open pine savannahs, sandhills, prairies, and pastures.	Yes	Yes	Yes	No	No
Tricolored heron ( <i>Egretta tricolor</i> )	T	Marshes, ponds, sloughs, bayous, rivers, mangrove swamps, saltwater lagoons, and islands. Species is found in salt and fresh waters.	Yes	Yes	No	No	No
<b>Reptiles</b>							
Florida pine snake ( <i>Pituophis melanoleucus mugitus</i> )	T	Upland habitats with dry, sandy soils and predominantly open canopy coverage.	No	Yes	No	No	No
Gopher tortoise ( <i>Gopherus polyphemus</i> )	T	Hardwood, conifer, and mixed woodlands. Sand/dune, cropland, hedgerows, and grasslands.	Yes	Yes	Yes	No	No
<b>Plants</b>							
Banded wild-pine ( <i>Tillandsia flexuosa</i> )	T	Hammocks, cypress swamps, scrub and coastal communities.	No	No	No	No	No
Beach jacquemontia ( <i>Jacquemontia reclinata</i> )	E	Dunes or disturbed openings in maritime hammock, coastal strand, and coastal scrub.	No	No	No	No	No
Beach star ( <i>Remirea maritima</i> )	E	Occurs on sandy beaches and dunes.	Yes	Yes	No	No	No
Blue-flowered butterwort ( <i>Pinguicula caerulea</i> )	T	In Florida, occurs in bogs and low pinelands.	No	No	No	No	No
Blunt-leaved peperomia	E	In Florida, usually occurs on oaks, tropical hammocks, and cypress swamps.	No	No	No	No	No

Species	State Status	Habitat	Known to Occur (Detected in Recent Surveys)				
			PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
( <i>Peperomia obtusifolia</i> )							
Catesby lily ( <i>Lilium catesbaei</i> )	T	Mesic flatwoods, wet prairie, wet flatwoods, open seepage areas.	No	No	No	No	No
Celestial lily ( <i>Nemastylis floridana</i> )	E	Occurs in low sunny areas in wet flatwoods, swamps, and marsh borders, as well as in wet, grassy, sandy peat clearings in slash pine/saw palmetto vegetation, as well as in cabbage palm hammocks.	No	No	No	No	No
Coastal hoary-pea ( <i>Tephrosia angustissima</i> var. <i>curtissii</i> )	E	Occurs in conifer woodlands, savannas, and other forest habitats.	No	No	No	No	No
Coastal vervain ( <i>Glandularia maritima</i> )	E	Occurs in sandy clearings in coastal dune swales, scrub, pinelands, and open live oak/cabbage palm woods. The species is also found in disturbed clearings.	No	Yes	No	No	No
Common wild-pine ( <i>Tillandsia fasciculata</i> )	E	Rockland hammock and tidal swamps.	No	Yes	No	No	No
Curtiss's milkweed ( <i>Asclepias curtissii</i> )	E	Occurs on the leached, excessively drained, white sand that supports scrub, sand pine scrub, and scrubby flatwoods.	No	Yes	No	No	No
Curtiss' sandgrass ( <i>Calamovilfa curtissii</i> )	T	Occurs in moist sands or sandy peats of pine savannas and longleaf pine/saw palmetto flatwoods.	No	No	No	No	No
Dancing-lady orchid ( <i>Tolumnia bahamensis</i> )	E	Coastal scrub.	No	No	No	No	No
Florida beargrass ( <i>Nolina atopocarpa</i> )	T	Endemic to Florida. Occurs in wet pine flatwoods, deeply rooted in black, sandy-peaty high hydroperiod soils.	No	No	No	No	No
Florida perforate lichen ( <i>Cladonia perforata</i> )	E	Sandy openings in stabilized sand dunes with Florida scrub vegetation.	No	No	No	No	No

Species	State Status	Habitat	Known to Occur (Detected in Recent Surveys)				
			PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
Florida tree fern ( <i>Ctenitis sloanei</i> )	E	Inland hammock forests with deep shade and adequate soil moisture, in humus over limestone.	No	No	No	No	No
Four-petal pawpaw ( <i>Asimina tetramera</i> )	E	Occurs in sand pine scrub on old dunes inland from the Atlantic coast.	No	No	No	No	No
Giant orchid ( <i>Pteroglossaspis eristata</i> )	T	Shrubland/chaparral, old field, savanna, forests and forest edge.	No	No	No	No	No
Hand fern ( <i>Cheiroglossa palmata</i> )	E	Occurs in forested wetlands and hardwood forests.	No	No	Yes	No	No
Hay scented fern ( <i>Dennstaedtia bipinnata</i> )	E	Terrestrial habitats in deep, muck soil in full shade. Occurs in moist thickets, ravines, and shaded talus slopes.	No	No	No	No	No
Inkberry ( <i>Scaevola plumieri</i> )	T	Coastal sand dunes.	Yes	Yes	No	No	No
Lakela's mint ( <i>Dicerandra immaculata</i> )	E	Small sandhills with sand pine scrub vegetation.	No	No	No	No	No
Large-flowered rosemary ( <i>Conradina grandiflora</i> )	T	Sandy flats or sandhills, mostly with sand pine, in the vicinity of ancient dunes and along the coast.	No	No	No	No	No
Many-flowered grass-pink ( <i>Calopogon multiflorus</i> )	E	Occurs most often in well-drained soils of open, damp to somewhat drier, pine savannas-flatwoods and meadows.	No	No	No	No	No
Nodding pinweed ( <i>Lechea cernua</i> )	T	Found in deep sands, often ancient dunes, on which the most common forest is a mixture of evergreen scrub oaks. Also occurs under mature scattered pine or oak.	No	No	No	No	No
Piedmont jointgrass ( <i>Coelorachis tuberculosa</i> )	T	The species is confined to karst areas in Florida and Alabama. Occurs in shallow water and herbaceous wetlands.	No	No	No	No	No

Species	State Status	Habitat	Known to Occur (Detected in Recent Surveys)				
			PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
Pineland Florida lantana ( <i>Lantana depressa</i> var. <i>Floridana</i> )	E	Endemic to Florida. Occurs on stabilized dunes of the Atlantic coast barrier islands and dunes of central Florida.	No	Yes	No	No	No
Pine pinweed ( <i>Lechea divaricata</i> )	E	Shrubland/chaparral, forests, and sand/dune. Often found in deep sands of sand pine scrub, ancient dunes, scrub oak, and moist dune swales.	No	No	No	No	No
Redmargin zephyrilly ( <i>Zephyranthes simpsonii</i> )	T	Herbaceous wetlands, forests and forest edges, and grasslands.	No	No	No	No	No
Sand butterfly pea ( <i>Centrosema Arenicola</i> )	E	Endemic to Florida. Occurs in shrubland/chaparral, forest, and savanna. Often found in open areas of slash pine/turkey oak sandhills and scrubby flatwoods.	No	No	No	No	No
Sand-dune spurge ( <i>Chamaesyce cumulicola</i> )	E	Beach dunes or further inland on dune-like sand hills.	No	Yes	No	No	No
Satin-leaf ( <i>Chrysophyllum oliviforme</i> )	T	Hardwood and conifer forests. In Florida, the species is often found in hardwood hammocks and pinelands.	No	Yes	No	No	No
Scentless vanilla ( <i>Vanilla Mexicana</i> )	E	Coastal/island (rockland and maritime) hammocks.	No	No	No	No	No
Sea lavender ( <i>Argusia gnaphalodes</i> )	E	Coastal strand and dunes.	No	Yes	No	No	No
Shell mound prickly-pear cactus ( <i>Opuntia stricta</i> )	T	Sandy soils of coastal woods and dunes, jungles, shell mounds, and swamp borders just above sea level.	Yes	Yes	No	No	No
Simpson's prickly apple ( <i>Harrisia simpsonii</i> )	E	Scrub-shrub wetlands as well as hardwood forests. Species is found on higher coastal hammock islands of Florida Bay, mangrove swamps, thickets, buttonwood ( <i>Conocarpus erecta</i> ) hammocks, and shell mounds.	No	No	No	No	No
Simpson's stopper	T	Mixed woodlands/forests.	No	Yes	No	No	No

Species	State Status	Habitat	Known to Occur (Detected in Recent Surveys)				
			PSFB	CCSFS	MTA	Atlantic Ocean	Banana River
( <i>Myrcianthes fragrans</i> )							
Small's flax ( <i>Linum carteri</i> var. <i>smallii</i> )	E	Forested and herbaceous wetlands as well as along forest edges, conifer woodlands, and urban areas.	No	No	No	No	No
Tampa vervain ( <i>Glandularia tampensis</i> )	E	Old field, shrubland/chaparral, forest edges, sand/dunes, mixed woodlands.	No	No	No	No	No
Terrestrial peperomia ( <i>Peperomia humilis</i> )	E	Hummocks, often on limestone.	No	No	No	No	No
Tiny polygala ( <i>Polygala smallii</i> )	E	Open grassy pineland; sandy pine rockland, scrubby flatwoods, and sandhill. Often found in disturbed areas.	No	No	No	No	No
Titusville balm ( <i>Dicerandra thimicola</i> )	E	Endemic to Brevard County. Occurs along the coast.	No	No	No	No	No
Tropical ironwood ( <i>Eugenia confusa</i> )	E	Coastal hammocks.	No	No	No	No	No

Source: DAF 2020a; Florida Native Plant Society 2024; Florida Wildflower Foundation 2022; Florida Wildflower Foundation 2017; FNAI 2023; FNAI 2001; FNAI 2000; FWC 2023b, FWC 2022; NatureServe 2024; University of Florida 2024; University of Florida 2016a; University of Florida 2016b  
T = Threatened; E = Endangered; C = Candidate

### 3.5.3 Environmental Consequences

#### 3.5.3.1 Analysis Approach

An impact on biological resources would be significant if the Proposed Action:

- Jeopardized the continued existence of a federally listed threatened or endangered species or resulted in the destruction or adverse modification of federally designated critical habitat, as determined by USFWS or NMFS.
- Substantially diminished a regionally or locally important plant or animal species population.
- Interfered substantially with wildlife movement or reproductive behavior.
- Resulted in a substantial infusion of exotic plant or animal species.

Any action that may affect federally listed species or their critical habitats requires consultation with USFWS and NMFS under Section 7 of the ESA of 1973 (as amended). The MMPA prohibits the take of marine mammals, including harassment, and may require consultation with USFWS or NMFS. NMFS is also responsible for evaluating potential impacts to EFH and enforcing the provisions of the 1996 amendments to the MSFCMA. Consultation with USFWS and NMFS (consultation pending) is anticipated to result in concurrence that the Proposed Action would not adversely affect federally listed species with the implementation of approved avoidance and minimization measures discussed below. Additional requirements that result from the consultation process will be included in the Final EA.

#### 3.5.3.2 Proposed Action

The following measures would be implemented under the Proposed Action to avoid and/or minimize the potential impacts to biological resources described in the subsections below, and to establish BMP (avoidance and minimization measures):

- Safe speeds would be maintained along travel routes within the ROI to prevent harassment or injury of wildlife. The existing year-round slow-speed/minimum-wake zones in the Banana River would continue to be honored in non-emergency situations in order to ensure avoidance of impacts to manatees and their critical habitat zone, as well as use of the deepest water routes from the shore to in-water training locations.
- Boats in the Banana River would maintain at least 1 foot above the river bottom to reduce effects to seagrass, hardbottom, etc., and reduce wildlife collision risks.
- Following operations, expendables would be removed from the area as practicable.
- Visual surveys would continue to proceed potentially disruptive operations in known or suitable areas of habitat for sensitive species known to occur in the vicinity. Operations will not take place if listed species are observed within 100 meters of a training area and will not take place until the area is clear of sensitive species.
- If gopher tortoises or burrows are observed during visual surveys prior to transient or training activities, burrows would continue to be marked for avoidance (25-foot buffer) or tortoises would be removed and relocated if necessary.
- Training activities would continue to be restricted during the nesting season of birds protected under the MBTA if nests are in the immediate training area.
- Over the beach training at PSFB and CCSFS would continue to be restricted to avoid nighttime/dark hours during the peak sea turtle nesting and hatching season of May 1<sup>st</sup> through October 31<sup>st</sup>. All such launches, including the movement of zodiacs between dune crossovers and water, would continue to be conducted by hand.

- A minimum of one week prior to daytime over the beach training occurring during peak sea turtle nesting and hatching season, users must contact the SLD 45 environmental office so they can provide real-time guidance and notify users of any sea turtle or shorebird nests in or near the over the beach training areas.
- Water depth and amphibious vehicle draft/clearance, assumed to be two feet, would continue to be assessed prior to launch so that vehicles follow routes of deep water while operating within designated in-water training areas and when transitioning in and out of those areas.
- Trainers and trainees would continue to be provided with a wildlife awareness and protection briefing before training events to ensure their understanding of which species may occur in training areas, how they should avoid them, and which laws protect those species. Additionally, trainees will continue to be presented with briefings related to seagrass avoidance when using propellers and amphibious vehicles (i.e., a minimum of 1-foot clearance must be maintained above seagrass) and information on the importance of avoiding contact with or disturbance of mangroves, coral, oysters, shallow-water habitat, and other habitat complexes serving as nursery habitat.
- Trainees would avoid coral and hardbottom habitat when anchoring and deploying materials and minimize difficult to retrieve materials at the Ronnie Cavallo WTA.
- Latitudes/longitudes of the Oculina Bank, the Stetson-Miami Terrace deepwater coral HAPC (includes the Stetson Reefs, Savannah and East Florida Lithotherms, and Miami Terrace) and Blake Plateau deepwater coral management areas would be maintained by Ronnie Cavallo trainers/trainees to prevent anchoring and deployed material impacts to the maximum extent possible.
- During night operations, light management would continue to be followed to prevent disorientation of sea turtles. Per a USFWS-issued Biological Opinion (BO) and 45 SWI 32-7001, Exterior Light Management, non-amber lighting used specifically for training and required night maintenance is immediately extinguished following operations, and only low pressure sodium or amber LED are utilized for general safety and security.
- Low-level flying and/or hovering exercises (including refueling) would continue to be restricted to greater than 1,500 feet over the Atlantic Ocean during the calving season for the Atlantic right whale (November 15<sup>th</sup> through April 15<sup>th</sup>).
- In accordance with the Right Whale Ship Strike Rule (50 CFR 224.15), vessels would continue to maintain slower speeds in order to prevent impacts to Atlantic right whales migrating to birthing areas (November through April) and would continue to maintain the required 500-yard distances from observed whales.
- Should bats need to be removed from buildings, exclusions would be conducted outside of maternity season, and exclusionary devices would be in place a minimum of four nights when the overnight temperature is forecast to be at least 50 degrees Fahrenheit, in compliance with 68A-4.001 and 68A-9.010, FAC.
- Seasonal vessel speed restrictions in place to prevent North Atlantic right whale vessel strikes will be adhered to (although military vessels are exempt), including proposed modifications to the North Atlantic Right Whale Vessel Speed Rule, which would include the ROI in the southeast Seasonal Management Area (SMA) (to be called Seasonal Speed Zone following implementation of the final rule), if made final. At present, the rule requires most vessels equal to or greater than 65 feet in length to travel at 10 knots or less within the southeast SMA between November 15 and April 15. If finalized, proposed modifications to the rule would extend this requirement to vessels greater than or equal to 35 feet in length.
- The 500 Yard Minimum Approach Distance regulatory measure implemented by NMFS in 1997 would be adhered to, requiring vessels to avoid approaching a North Atlantic

right whale within 500 yards, and to immediately leave the area at a safe speed if it finds itself within 500 yards of a right whale.

- Vessels would adhere to the voluntary Dynamic Management Area (DMA) program, through which a DMA is triggered when a group of three or more North Atlantic right whales are sighted in close proximity. The DMA remains in place for 15 days, during which vessels are encouraged to avoid the area or travel through at speeds less than 10 knots. The proposed modifications to the North Atlantic Right Whale Vessel Speed Rule would replace this program with a mandatory Dynamic Speed Zone (DSZ) framework, through which a mandatory DSZ would be created for an area outside an active Seasonal Speed Zone based on a confirmed visual sighting of three or more whales in close proximity, or a confirmed whale acoustic detection, and a NMFS determination that the area to be designated has a greater than 50 percent likelihood of whale presence during a minimum effective period of 10 days (Federal Register 2022).
- Coyote decoys are deployed at PSFB on the Facility 425 rooftop annually, in March, where least tern and black skimmer have historically nested. Decoys are removed in August. It is anticipated that additional decoys will be purchased through the Bird Air Strike Hazard (BASH) program to be deployed annually in other areas where bird species have historically nested. Decoy deployment occurs prior to the nesting season, not during, and decoys are not installed if an active nest is already present. If active nests are identified, they are not disturbed.
- Construction conditions for the protection of sea turtles and the smalltooth sawfish would be adhered to for all in-water activities.
- In the event that training activities may have impacted coral or hardbottom habitat, the NMFS Habitat Conservation Division will be notified and informed of the location and nature of the impact, to assist with identification of habitat restoration requirements.

### **3.5.3.2.1 Vegetation and Habitat**

#### **PSFB**

No impacts to vegetation and habitat are anticipated. The Proposed Action at PSFB would primarily utilize the maintained airfield and existing roads, buildings, and other impervious surfaces. The proposed multipurpose training tower would be assembled on an existing paved parking lot. No clearing or removal of vegetation would be required.

#### **CCSFS**

No impacts to vegetation and habitat are anticipated. The Proposed Action at CCSFS would primarily utilize designated areas such as SLC 31/32, the Skid Strip, existing roads, and existing DZs. These areas are currently developed, mowed, and maintained.

#### **MTA**

Impacts to vegetation and habitat at MTA would be long-term, negligible, direct, and adverse. The Proposed Action would primarily utilize designated areas currently used for transient and training activities and analyzed in the 2016 EA. Such areas include the Malabar CE training camp, existing buildings and gravel surfaces, and open spaces maintained for antenna installation and communications equipment testing. Proposed increases in personnel and equipment associated with large training events could contribute to vegetation and habitat loss in the long-term, due to continued trampling and use of soil disturbing equipment such as GBS. While increased use of this area may result in long-term, direct, adverse impacts to vegetation and habitat, such impacts would be negligible, as this area has long been disturbed and used by various factions of DoD for training and technology testing purposes. Any increase in use under the Proposed Action would be expected to result in a negligible increase in vegetation and habitat loss.

### 3.5.3.2.2 Wildlife and Migratory Birds

The Proposed Action could result in short-term, negligible, direct and indirect, adverse impacts to wildlife and migratory birds within the ROI. Training areas and protocols have been chosen and adopted to avoid or reduce impacts to wildlife species consistent with the INRMP, and although no permanent modifications to wildlife habitat would occur, it is possible that transient and training activities could result in temporary disturbances to species occurring in the area. In general, it is anticipated that individuals would return to the area following disturbance.

Activities under the Proposed Action such as the use of GDB, smoke munitions, and MWD, as well as minor increased frequency of air traffic as outlined in Table 2-10, have an increased likelihood of causing noise and visual disturbances to nearby wildlife. Individuals flushed from the area of disturbance may abandon den sites and miss foraging or mating opportunities. Wildlife temporarily fleeing an area may face increased vulnerability to predation from other species. It is possible that vehicles used in transient and training activities could be involved in collisions with wildlife, resulting in injury or mortality. Likewise, activities associated with increased use of aircraft within designated training areas could incrementally increase the risk of bird aircraft strikes. This activity would be implemented in consistency with the BASH program standards to minimize this risk.

Potential impacts to wildlife and migratory birds described above are consistent with those expected from existing transient and training operations that are ongoing within the ROI and were analyzed in the 2016 EA. Additionally, the Proposed Action would not conflict with implementation of the INRMP or other habitat management efforts at PSFB. It is expected that any increase in impact to wildlife and migratory birds associated with the Proposed Action would be negligible.

### 3.5.3.2.3 Essential Fish Habitat and Habitat Areas of Particular Concern

The Proposed Action would not be expected to result in an adverse impact to EFH or HAPCs. Activities under the Proposed Action with the potential to affect EFH or HAPCs are limited to the proposed capsule recovery training, should this activity take place at the Trident Wharf and/or the Poseidon Wharf at CCSFS. Both locations can be described as highly developed industrialized subbasins adjacent to the port Canaveral channel. The area is subject to frequent watercraft traffic. The proposed capsule recovery training would be limited to simulated recovery of spacecraft capsules using small watercraft near the surface of what water. Increased watercraft traffic associated with this activity would not be expected to cause a noticeable change in activity and water disturbance in this area. As a result, the Proposed Action would not be expected to have an adverse effect on EFH.

Coral habitat within the Blake Plateau would not be impacted, as activities under the Proposed Action would not extend to the depth of the coral.

All ongoing activities under the Proposed Action that were analyzed in the 2016 EA were determined to have no adverse effects on EFH with the implementation of avoidance and impact minimization procedures described in Section 6, Avoidance Minimization Measures and Best Management Practices (DAF 2016).

### 3.5.3.2.4 Federally Listed Species

Generally, training areas and protocols have been chosen and adopted to avoid or reduce impacts to protected fauna (including those species protected by the ESA, the MMPA, and the MBTA), consistent with the INRMP (DAF 2016); however, short-term, negligible, direct and indirect, adverse impacts may occur, primarily related to noise and visual disturbances associated with increased human presence. Activities under the Proposed Action that could result in wildlife displacement are expected to be temporary and intermittent, and with implementation of the

avoidance/minimization measures described in the beginning of this section, would not jeopardize the continued existence of a species or adversely modify critical habitat, as described in Section 3.2.3.2.5.

Intermittent marine noise would result from the operation of watercraft and amphibious craft motors during in-water activities in the Banana River and Atlantic Ocean, as well as at Trident Basin and Poseidon Wharf, in the case that capsule recovery training occurs in these locations. A recent analysis and review of available marine noise studies completed by the National Science Foundation concluded that routine vessel operation may result in temporary localized behavioral changes in marine mammals or sea turtles in the short-term, but that such activity would not be expected to result in significant negative effect on individual animals or species populations and would not cause impact sufficient to be considered a take under the MMPA or ESA (NSF 2023).

Regarding marine noise impacts on fish species, the National Science Foundation cited Popper et. al., who reported that “there is no direct evidence of mortality or mortal injury to fish from ship noise” and found the potential for temporary auditory tissue damage in some species after prolonged periods of noise exposure (170 decibel [dB] for 48 hours) with recovery periods of three to 14 days (NSF 2023). Under the Proposed Action, use of motors would occur for relatively short periods of time, typically while watercraft is enroute to a WTA or capsule recovery training location, and vice versa.

Table 3.5-4 summarizes the potential effects to federally listed species under the Proposed Action. Species not detected in recent surveys (see Table 3.5-2) are not expected to be adversely affected; therefore, they are dismissed from further consideration in this EA. Additionally, federally listed plant species identified in Table 3.5-2 have not been observed at PSFB, CCSFS, or MTA in recent surveys, and as a result are not expected to be adversely affected and are likewise dismissed from further consideration in this EA.

**Table 3.5-4. Potential Effects to Federally Listed Species**

Species	Potential Impact Summary
<b>Mammals</b>	
North Atlantic right whale ( <i>Eubalaena glacialis</i> )	This species is known to occur in waters adjacent to PSFB and CCSFS. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. Adherence to the North Atlantic Right Whale Vessel Speed Rule (and proposed modifications, if implemented), as well as the voluntary DMA program would limit the possibility of vessel strikes causing harm to whales in the area. With this as well as the implementation of additional impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Southeastern beach mouse ( <i>Peromyscus polionotus niveiventris</i> )	This species is known to occur at CCSFS. Currently, the most viable populations of the species occur on federal lands, including CCSFS and nearby KSC. SLD 45 currently has two programmatic BOs issued by the USFWS for the species, one that addresses impacts associated with temporary disturbances, and one that addresses pest control operations at CCSFS. USSF currently has plans to develop a Southeastern Beach Mouse Management Plan in partnership with USFWS and FWC. With adherence to existing BOs and implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Tricolored bat ( <i>Perimyotis subflavus</i> )	This species is known to occur within the ROI at all three installations. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
West Indian manatee ( <i>Trichechus manatus</i> )	This species is known to occur in waters adjacent to PSFB and CCSFS. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.

Species	Potential Impact Summary
<b>Birds</b>	
Audubon's crested caracara ( <i>Polyborus plancus audubonii</i> )	This species is known to occur at CCSFS and has the potential to occur at Avon Park AFR; however, it is expected that transient individuals would leave the area during disturbance and return afterwards. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts would be less than significant.
Florida scrub-jay ( <i>Aphelocoma coerulescens</i> )	This species is known to occur at CCSFS and has the potential to occur at Avon Park AFR; however, it is expected that transient individuals would leave the area during disturbance and return afterwards. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts would be less than significant.
Piping plover ( <i>Charadrius melodus</i> )	While this species is known to occur within the ROI, no nests or nesting behavior has been observed. Transient and training activities would generally avoid the species' primary habitat, and it is expected that individuals would leave the area during disturbance and return afterwards. Therefore, impacts to this species are not anticipated.
Red knot ( <i>Calidris canutus rufa</i> )	While this species is known to occur within the ROI, no nests or nesting behavior has been observed. Transient and training activities would generally avoid the species' primary habitat, and it is expected that individuals would leave the area during disturbance and return afterwards. Therefore, impacts to this species are not anticipated.
Roseate tern ( <i>Sterna dougallii</i> )	While this species is known to occur within the ROI, no nests or nesting behavior has been observed. Transient and training activities would generally avoid the species' primary habitat, and it is expected that individuals would leave the area during disturbance and return afterwards. Therefore, impacts to this species are not anticipated.
Wood stork ( <i>Mycteria americana</i> )	While this species is known to occur within the ROI, no nests or nesting behaviors have been observed. MTA is located within two wood stork Core Foraging Areas as established by USFWS; however, suitable habitat in this location is considered to be negligible. Impacts to this species are not anticipated.
<b>Fish</b>	
Atlantic sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> )	This species is known to occur in waters adjacent to CCSFS. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Giant manta ray ( <i>Manta birostris</i> )	This species is known to occur in waters adjacent to CCSFS. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Mangrove rivulus ( <i>Kryptolebias marmoratus</i> )	This species has been documented occurring in waters adjacent to PSFB and CCSFS. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Nassau grouper ( <i>Epinephalus striatus</i> )	This species is known to occur in waters adjacent to CCSFS. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Oceanic whitetip shark ( <i>Carcharhinus longimanus</i> )	This species has been identified in the Atlantic Ocean adjacent to PSFB and CCSFS. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures

Species	Potential Impact Summary
	described in the beginning of this section, impacts to this species would be less than significant.
Opossum pipefish ( <i>Microphis brachyurus</i> )	This species has been documented occurring in waters adjacent to PSFB. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Scalloped hammerhead shark ( <i>Sphyrna lewini</i> )	The eastern Atlantic Ocean is within the range of the Central Atlantic distinct population segment (listed as endangered under the ESA). In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Smalltooth sawfish ( <i>Pristis pectinata</i> )	Waters of the Indian River, Banana River, and Atlantic Ocean are within the historic range of this species; however, it is rarely reported in these areas today. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Striped croaker ( <i>Coryula sanctaeluciae</i> )	This species has been documented occurring in waters south of PSFB. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. Additionally, occurrences of this species have not been identified immediately adjacent to the ROI. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
<b>Reptiles</b>	
American alligator ( <i>Alligator mississippiensis</i> )	This species is known to occur within the ROI at all four installations; however, the species predominantly inhabits open waters such as ponds and lakes, as well as wetland habitats. The Proposed Action would not take place in any of these areas; therefore, impacts to this species are not anticipated.
American crocodile ( <i>Crocodylus acutus</i> )	This species has been observed in waters close to the PSFB boundary; however, the species predominantly inhabits wetland habitats such as swamps, bays, lagoons, and marshes. The Proposed Action would not take place in any of these areas; therefore, impacts to this species are not anticipated.
Eastern indigo snake ( <i>Drymarchon couperi</i> )	This species is known to occur at CCSFS and MTA, and due to the presence of gopher tortoise burrows, could occur at PSFB as well. The INRMP recommends adherence to the USFWS Standard Eastern Indigo Snake Protection Measures. With this and the implementation of the impact avoidance/minimization measures described at the beginning of this section, impacts to this species would be less than significant.
Green sea turtle ( <i>Chelonia mydas</i> )	This species is known to occur in waters adjacent to PSFB and CCSFS. SLD 45 currently has one USFWS-issued BO for federally listed sea turtles as well as a Sea Turtle Management Plan. Annual surveys along the PSFB and CCSFS beaches and in the Trident Basin monitor the effect of SLD 45 and other tenant operations and provide long-term population trends. In-water activities under the Proposed Action are consistent with those analyzed in the 2016 EA, which concluded that impacts would be short-term and less than significant. With adherence to existing BOs and implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Kemp's ridley sea turtle ( <i>Lepidochelys kempii</i> )	Less than significant impacts anticipated. Refer to Potential Impact Summary for the green sea turtle.
Hawksbill sea turtle ( <i>Eretmochelys imbricata</i> )	Less than significant impacts anticipated. Refer to Potential Impact Summary for the green sea turtle.

Species	Potential Impact Summary
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	Less than significant impacts anticipated. Refer to Potential Impact Summary for the green sea turtle.
Loggerhead sea turtle ( <i>Caretta caretta</i> )	Less than significant impacts anticipated. Refer to Potential Impact Summary for the green sea turtle.
<b>Insects</b>	
Monarch butterfly ( <i>Danaus plexipuss</i> )	While this species is known to occur within the ROI, it is expected that transient individuals will leave the area during disturbance and return afterwards. Impacts to this species are not anticipated.

Source: DAF 2020a; DAF 2016; USFWS 2018

AFR = Air Force Range; BO = Biological Opinion; CCSFS = Cape Canaveral Space Force Station; DAF = Department of the Air Force; DMA = Dynamic Management Area; EA = Environmental Assessment; FWC = Florida Fish and Wildlife Conservation Commission; INRMP = Integrated Natural Resources Management Plan; MTA = Malabar Transmitter Annex; PSFB = Patrick Space Force Base; ROI = Region of Influence; SLD = Space Launch Delta; SW = Space Wing; USFWS = U.S. Fish and Wildlife Service

### 3.5.3.2.5 Critical Habitat

No impacts to designated critical habitat areas within the ROI would be anticipated under the Proposed Action. As discussed in Section 3.5.2.5, critical habitat has been identified within the Banana River and the Atlantic Ocean bordering PSFB and CCSFS for the West Indian manatee and the loggerhead sea turtle. Activities included in the Proposed Action would not be anticipated to impact critical habitat, as intermittent, temporary disturbances associated with transient and training activities would not alter habitat of any kind. Potential impacts to federally listed species, including the West Indian manatee and the loggerhead sea turtle, are identified in the subsection above.

### 3.5.3.2.6 Other Protected Species or Habitats

No bald eagle nests or nesting behaviors have been observed within the boundaries of PSFB or MTA; however, and one nest has been identified within CCSFS boundaries. The nest is not located in an area where training activities or flight paths would be likely to disturb it (Audubon 2024; DAF 2020a). While transient individuals may occur throughout the ROI, including PSFB, CCSFS, and MTA, it is expected that individuals would leave the area during disturbance associated with transient and training activities and return afterwards. Therefore, impacts to this species are not anticipated.

With implementation of the impact avoidance and minimization measures described in the beginning of this section, it is anticipated that potential impacts to ospreys and bats occurring within the ROI would be short-term and negligible. Transient and training operations would not be permitted to occur in areas where these species are known to be nesting, and it is assumed that transient individuals would leave the area during training activities and return afterwards. FWC's Species Conservation Measures and Permitting Guidelines for Osprey would be adhered to in the event that an active or inactive nest needed to be replaced. Artificial platforms designed to encourage nesting birds to nest on the platform instead of other man-made mission essential structures are utilized throughout the ROI.

Table 3.5-5 summarizes the potential effects to state listed species under the Proposed Action. Species not detected in recent surveys (see Table 3.5-3) are not expected to be adversely affected; therefore, they are dismissed from further consideration in this EA. The Proposed Action is anticipated to have a negligible impact on vegetation; therefore, state-listed plant species are likewise dismissed from further consideration and are not included in Table 3.5-5.

Overall, training areas and protocols have been chosen and adopted to avoid or reduce impacts to protected fauna, consistent with the INRMP (DAF 2016), but short-term, negligible, direct and

indirect, adverse impacts may occur, primarily related to noise and visual disturbances associated with increased human presence.

**Table 3.5-5. Potential Effects to State Listed Species**

Species	Potential Impact Summary
<b>Birds</b>	
American oystercatcher ( <i>Haematopus palliatus</i> )	While this species is known to occur within the ROI, no nests or nesting behavior has been observed. Transient and training activities would generally avoid the species' primary habitat, and it is expected that individuals would leave the area during disturbance and return afterwards. Therefore, impacts to this species are not anticipated.
Black skimmer ( <i>Rynchops niger</i> )	This species is known to occur within the ROI and has been observed nesting on roofs at PSFB. Increases in air traffic described in this EA may result in minor disturbance to nesting individuals. To discourage nesting, coyote decoys are deployed prior to the nesting season, an action that is considered harassment of the species. Despite disturbance resulting from the decoys themselves, discouragement of nesting along with implementation of other impact avoidance/minimization measures described in the beginning of this section would result in overall impacts to the species that are less than significant.
Florida burrowing owl ( <i>Athene cunicularia floridana</i> )	This species is known to occur at PSFB and CCSFS and has the potential to occur at Avon Park AFR. Burrowing owls were documented nesting on PSFB in 2022. The INRMP recommends adherence to FWC's Species Conservation and Permit Guidelines. In general, it is anticipated that transient and training activities would avoid known nesting areas, and transient individuals occurring near designated training areas would leave the area during disturbance. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts would be less than significant.
Florida sandhill crane ( <i>Antigone canadensis pratensis</i> )	This species has the potential to occur at Avon Park AFR. It is expected that individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Least tern ( <i>Sternula antillarum</i> )	This species is known to occur within the ROI and has been observed nesting on roofs at PSFB. Increases in air traffic described in this EA may result in minor disturbance to nesting individuals. To discourage nesting, coyote decoys are deployed prior to the nesting season, an action that is considered harassment of the species. Despite disturbance resulting from the decoys themselves, discouragement of nesting along with implementation of other impact avoidance/minimization measures described in the beginning of this section would result in overall impacts to the species that are less than significant.
Little blue heron ( <i>Egretta caerulea</i> )	This species is known to occur within the ROI; however, no rookeries have been identified by FWC in this area. It is anticipated that transient individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated.
Reddish egret ( <i>Egretta rufescens</i> )	This species is known to occur within the ROI; however, no rookeries have been identified by FWC in this area. It is anticipated that transient individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated.
Roseate spoonbill ( <i>Platalea ajaja</i> )	This species is known to occur within the ROI; however, no rookeries have been identified by FWC in this area. It is anticipated that transient individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated.
Snowy plover ( <i>Charadrius nivosus</i> )	While this species is known to occasionally roam the Atlantic shoreline, its occurrence within the ROI would be infrequent. It is expected that individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated.

Species	Potential Impact Summary
Southeastern American kestrel ( <i>Falco sparverius Paulus</i> )	This species is known to occur within the ROI at all four installations. It is expected that individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Tricolored heron ( <i>Egretta tricolor</i> )	This species is known to occur within the ROI; however, no rookeries have been identified by FWC in this area. It is anticipated that transient individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated.
<b>Reptiles</b>	
Florida pine snake ( <i>Pituophis melanoleucus mugitus</i> )	This species is known to occur at CCSFS and has the potential to occur at Avon Park AFR. It is expected that individuals would leave the area during disturbance and return afterwards; therefore, impacts to this species are not anticipated. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.
Gopher tortoise ( <i>Gopherus polyphemus</i> )	This species is known to occur within the ROI at all four installations and is considered a keystone species because their burrows provide refuge for more than 300 other animal species. Gopher tortoises within the ROI are managed per the FWC Gopher Tortoise Management Plan and the SLD 45 Gopher Tortoise Relocation Plan. Additionally, SLD 45 prepares an annual assessment report for the species to document conservation activities. With implementation of the impact avoidance/minimization measures described in the beginning of this section, impacts to this species would be less than significant.

Source: DAF 2020a; DAF 2016; PSFB 2023b

AFR = Air Force Range; CCSFS = Cape Canaveral Space Force Station; FWC = Florida Fish and Wildlife Conservation Commission; PSFB = Patrick Space Force Base; ROI = Region of Influence

### 3.5.3.3 No-Action Alternative

Under the No-Action Alternative, transient and training missions within the ROI would continue without the addition of newly proposed activities such as helicopter brownout training, use of GBS, and the addition of larger training events. As a result, there would be no increase in impact to biological resources, and newly proposed activities would require separate NEPA analysis as they are proposed.

## 3.6 Noise

### 3.6.1 Definition of the Resource/Regulatory Setting

Noise is generally defined as unwanted sound. Excessive noise can lead to annoyance and disrupt simple day-to-day activities, especially in areas where occupants are more susceptible to the adverse effects of noise pollution. These areas are referred to as noise-sensitive receptors and include, but are not limited to, residences, schools, daycare facilities, libraries, hospitals, elderly housing, and public recreational areas. The ROI for the noise analysis includes areas within and adjacent to the respective installation's boundary.

Noise levels are measured in terms of dB, typically adjusted to the "A-weighted" scale (i.e., dBA) to account for the varying sensitivity of the human ear to different frequencies of sound. Table 3.6-1 presents typical sound levels and the corresponding human response. In general, sounds at or below 70 dBA are considered safe, though may begin to become intrusive. The USEPA and the World Health Organization recommend maintaining environmental noises below 70 dBA over 24-hours (75 dBA over 8-hours) to prevent noise-induced hearing loss. Over two hours of continuous noise levels between 80 dBA to 85 dBA can lead to hearing damage (CDC 2022).

**Table 3.6-1. Sound Levels and Human Response**

Sound Level (dBA)	Effect	Outdoor	Indoor
30	Very quiet	Rustling leaves	Soft whisper (15 feet)
40	Quiet	Quiet residential area	Library
55	Ambient	Rainfall or light auto traffic (100 feet)	Refrigerator
60	Intrusive	Normal Conversation	Air conditioning unit (20 feet)
70	Telephone use difficult	Freeway traffic	Noisy restaurant or TV audio
80	Annoying	Downtown (large city)	Alarm clock (2 feet) or ringing telephone
90	Very annoying; hearing damage (8 hours)	Tractor, bulldozer, excavator	Garbage disposal
100	Very annoying	Garbage truck, motorcycle	Subway train
110	Strained vocal effort	Pile drivers	Power saw at 3 feet
120	Maximum vocal effort	Jet takeoff (200 feet) or auto horn (3 feet)	Rock concert
140	Painfully loud	Carrier deck jet operation	--

Source: USEPA 1981  
dBA = A-weighted decibel

The standard reduction for point source noise is 6 dB per doubling of distance from the source. Barriers, both manmade (e.g., sound walls) and natural (e.g., forested areas, hills, etc.), as well as other natural factors, such as temperature and climate, may reduce noise levels. Standard buildings typically provide approximately 15 dB of noise reduction between exterior and interior noise levels (USEPA 1978).

The Noise Control Act of 1972 (42U.S.C.4901) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. In 1982, the USEPA transferred the primary responsibility of regulating noise to state and local governments. Additionally, under the Noise Control Act, the Occupational Health and Safety Act (OSHA) noise standard (29 CFR 1910.95) establishes workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA; exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that reduces sound levels to acceptable limits (OSHA 2008).

Because military noise is a by-product of weapons used to train for national defense, Congress exempted military weapons being regulated as a product as defined by the Noise Control Act. Despite the exemption, in practice, all services have had a long-standing policy to work to minimize the public's exposure to high noise levels (AFCEC 2023). As such, the DoD established the Air Installation Compatible Use Zone (AICUZ) program as a planning tool to help avoid incompatible urban development and land use conflicts around military airfields. Studies under this program are used in coordination efforts with local, state, and federal governments for their consideration in land use planning.

Under the AICUZ program, aircraft operational data from an installation is collected and is used to develop noise contour maps indicating ground dB-level averages and noise exposure from aircraft operations using the Day-Night Average Sound Level (DNL) metric. The DNL metric has become the standard metric used by many government agencies and organizations, including the Federal Aviation Administration and the Department of Defense, for addressing aircraft noise. The DNL metric reflects how people are affected by the time-varying noise exposure levels resulting

from activities that result in transient and intermittent noise levels at a given location over a 24-hour period.

As part of AICUZ noise studies, noise contours are plotted in increments of 5 dB, ranging from a DNL of 65 dBA up to 80+ dBA. For land use planning purposes, an area with a 65-dBA or less DNL is considered an area of low or no impact (DAF 2020b). The USAF sites new construction on installations in compatible land use areas to the maximum extent possible. In circumstances when it is not feasible, USAF incorporates appropriate sound attenuation in the design and construction for structures in the high noise zone per AICUZ guidelines (AFCEC 2023).

### 3.6.2 Affected Environment/Existing Conditions

#### 3.6.2.1 PSFB

The primary sources of noise at PSFB and the surrounding area are vehicular traffic on nearby highways, SH-A1A and SR-404, and aircraft activities at the airfield. The airfield occupies a large portion of the installation and supports flight operations and training exercises. Aircraft flyovers from the airfield can result in intermittent, acute increases in noise levels over short periods of time.

Numerous noise-sensitive receptors are located within and adjacent to PSFB and are presented in Figure 3.6-1. Off-base residential communities are located along the northern and southern boundaries of the installation. The waterbodies serve as natural buffers to the installation. Residential communities are located to the west of the installation, on Merritt Island across the Banana River, at a distance of 1.5 to 3 miles from the airfield.

An AICUZ study was prepared for PAFB (now PSFB) in 1979, and subsequently updated in 1993, 2001, and 2018. The 2018 modeling results indicated that noise contours around the airfield range from 65 dB to 80+ dB DNL and that noise levels exceeding 65 dB DNL occur almost entirely within the PSFB property boundary, on the open water, or along the public road corridor right-of-way (USSF 2018). The study also noted that no residences (on- or off-base) were included in any noise contours above 65 dB DNL. Several buildings along the PAFB flight line, which are not generally considered to be noise-sensitive, were found to be exposed to noise levels greater than 65 dB DNL. The northern portion of Tortoise Island, which is located 0.5 miles from the southern tip of the installation's airfield, is within the 59 to 65 dB DNL contour.

A noise study for PSFB was prepared in 2024 to model baseline conditions of aircraft noise using the number of flight operations from the year 2022. Operational data from the 2018 noise study was collected, updated, and scaled to reflect 2022 operational levels (HMMH 2024). The modeling results in the 2024 noise study are generally similar to those in the 2018 study (see Figure 3.6-2 for the DNL contours under baseline conditions). That is, the 65 dB DNL contours were found to extend beyond the southern PSFB boundary near the south entrance gate and across SR-404 and beyond the northern boundary into the Atlantic Ocean and a small segment of SH-A1A. Similar to the 2018 study, a segment of 2<sup>nd</sup> Light Beach is located within the 65 dB DNL; it is the only noise-sensitive location with an estimated DNL of at least 65 dB. No other noise-sensitive receptors were found to be within any noise contours above 65 dB DNL. There are no DNLs equal to or above 85 dB. The 2024 aircraft noise modeling study is provided in Appendix D.

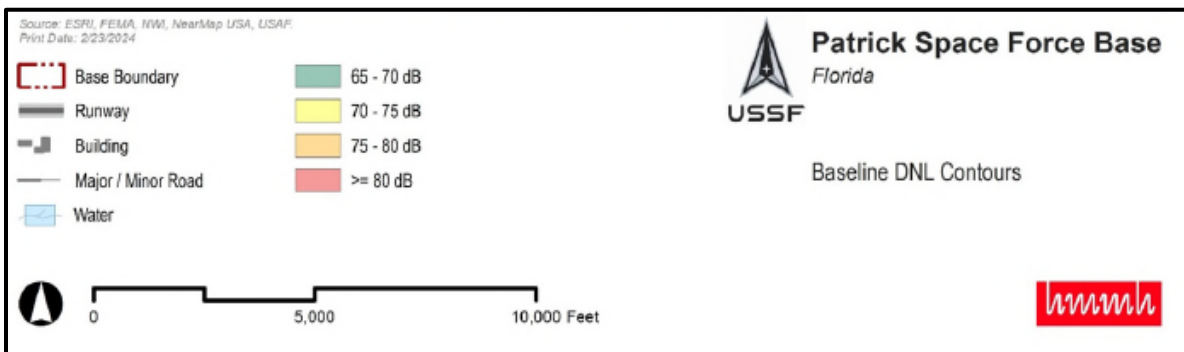
Noise within DZ Judy is associated predominantly with 920 RQW training operations and nearby aircraft operations at PSFB. Noise levels associated with WTAs are approximately 45 dB DNL (DAF 2016).

AFI 13-204, *Airfield Operations Procedures and Programs*, establishes procedures for safe and efficient airfield operations at PSFB (USSF 2019). The instruction includes noise abatement procedures for PSFB, which include the following:

- 1 • Noise complaints – Calls are referred to the SLD 45 Public Affairs.
- 2 • Noise abate restrictions – Aircraft must climb the runway, heading to the appropriate
- 3 altitude as rapidly as possible, and consistent with safety of flight and flight manual
- 4 procedures. Specifically, for Runway 21:
  - 5 ○ Large and heavy Instrument Flight Rule (IFR) and Visual Flight Rule (VFR) aircraft
  - 6 departures must proceed to 2.5-mile distance measuring equipment (DME) prior
  - 7 to turning east of the extended runway centerline. Turns must be completed prior
  - 8 to 4.5-mile DME to the maximum extent possible.
  - 9 ○ Large and heavy IFR/VFR aircraft arrivals must not turn base leg from the west
  - 10 prior to 2.5-mile DME.
- 11 • Merritt Island flight restrictions - Large and heavy aircraft must not fly over Merritt Island
- 12 below 2,000 feet mean sea level. Helicopters and small aircraft must not fly over Merritt
- 13 Island below 1,000 feet mean sea level, with the exception that helicopters are permitted
- 14 to enter/exit PSFB Class D airspace at or above 500 feet along SR-404/Pineda Causeway
- 15 (navigable airspace is divided into three-dimensional segments, each of which is assigned
- 16 to a specific class for which flight rules and requirements apply. In the U.S., airspace is
- 17 categorized as regulatory and non-regulatory. Regulatory airspace is further divided into
- 18 Classes A, B, C, and D, with Class A being the most restrictive and Class D being the
- 19 least restrictive. Generally, Class D airspace extends upward from the surface to 2,500
- 20 feet above the airport elevation surrounding those airports that have an operating control
- 21 tower [ATP 2023]).
- 22 • Transient aircraft restrictions - Transient aircraft pattern work is not authorized between
- 23 10:00 p.m. and 8:00 a.m.
- 24 • Engine runs – Running maintenance ground engines above idle is prohibited from 10:30
- 25 p.m. to 8:00 a.m., unless otherwise approved by airfield management.
- 26 • Airfield quiet period request – Quiet periods may be requested for ceremonies on or near
- 27 the airfield when noise reduction from aircraft operations and airfield ground support
- 28 equipment/vehicles is required.



Figure 3.6-1. Noise-Sensitive Receptors at PSFB



Source: HMMH 2024

**Figure 3.6-2. Baseline DNL Contours at PSFB**

As stated in Section 2.1, Proposed Action, this EA is evaluating the removal of the abovementioned noise abatement restriction for PSFB Runway 21.

### **3.6.2.2 CCSFS**

The primary noise sources at CCSFS include activities from industrial facilities (e.g., air ventilation systems), on-base vehicle traffic, construction- and maintenance-related activities, aircraft operations at the Skid Strip, and periodic rocket launch and landing operations at both CCSFS and KSC.

Rocket launch facilities are located along the eastern border of CCSFS and contribute to intense but infrequent elevated noise levels. The Skid Strip is located in the central portion of CCSFS and supports numerous airfield operations, contributing to high noise levels in the immediate vicinity. In addition to airfield noise, training operations result in elevated noise levels within and adjacent to designated training areas; however, training areas have been sited to avoid adverse noise impacts to noise-sensitive receptors (DAF 2016). Other noise sources are concentrated along the southern border of CCSFS, where the boundary abuts Port Canaveral, a busy commercial and tourist area. Noise from this area primarily results from vehicle traffic and marine traffic.

CCSFS is located in a relatively isolated area and is not directly adjacent to any residential communities, as it is mostly surrounded by the Banana River and the Atlantic Ocean to the west and east, respectively. KSC is located to the north and the port area of Cape Canaveral is located to the south. As such, noise generated at the Skid Strip typically does not exceed 55 dB outside of the installation's boundaries (DAF 2016). The closest residential communities reside approximately 5 miles south and west from the station's airfield at Cape Canaveral and Merritt Island, respectively.

### **3.6.2.3 MTA**

MTA is a 1-mile by 1-mile base that is enclosed in wooded terrain. Off-base, the MTA is surrounded by dense residential areas on all sides. Minton Road and a canal are directly adjacent to the eastern and southern boundaries of the base, respectively. The region experiences relatively heavy traffic on the major transportation corridors nearby, including Minton Road, Emerson Drive, and Interstate 95 (I-95) (see Section 3.7, Transportation). Therefore, vehicle traffic is a dominant source of noise in the surrounding area. Due to the developed nature of the area, it is expected that ambient noise levels would be similar to suburban residential or urban residential areas, which experience average DNL levels of 55 to 60 dBA (FAA 2022). Access to MTA is primarily by vehicle and parking is provided within paved areas and mowed grass within MTA. Out of town users for multi-day events typically stay at local hotels or in on-base lodging at PSFB with some occasional overnight camping at MTA depending on mission requirements.

MTA is an established training area utilized by several DoD entities for various ground training operations. Noise levels at MTA during training exercises have not been monitored. Although these operations are infrequent and of limited duration, residential encroachment within MTA has resulted in noise conflicts associated with military training operations in proximity to residential areas. SLD 45 is required to notify adjacent residents prior to substantial training operations and controlled burns. To limit noise conflicts, the MTA has established procedures that include training during daytime hours consistent with local noise ordinances as well as notification of the surrounding community and Palm Bay Police Department prior to training exercises (DAF 2016).

## **3.6.3 Environmental Consequences**

### **3.6.3.1 Analysis Approach**

A noise impact would be significant if the Proposed Action:

- Violated applicable noise limit guidelines.
- Caused harm or injury to receptors, including on-site workers and nearby communities.
- Substantially disrupted the intended use of a facility or area.

### 3.6.3.2 Proposed Action

#### 3.6.3.2.1 PSFB

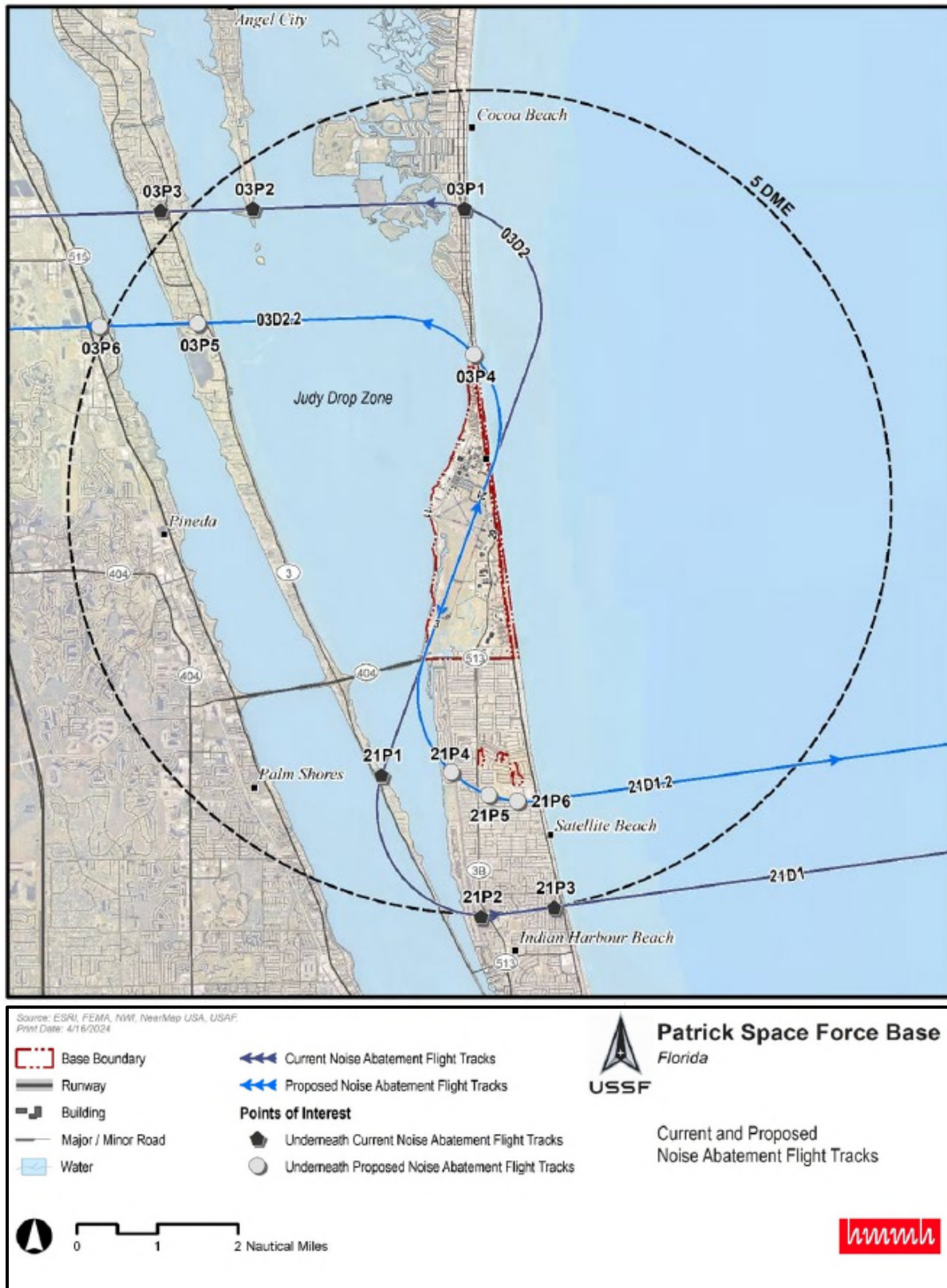
The Proposed Action at PSFB would result in long-term, minor to moderate, direct, adverse noise impacts. New activities proposed in this location include transient flight training events involving a variety of aircraft (listed in Table 2-13) and an increased number of personnel/users (up to 400 personnel for larger training events). As such, the Proposed Action would result in an increase in elevated noise levels during these events. Training events have the potential to take place during the day and night and may last multiple days.

Elevated noise levels would occur from large ground training events. These training exercises would generally be limited to the western portion of the PSFB (see Figure 2-3). The type of training activities and the nature of the noise increases would be similar to those analyzed in the 2016 EA and would not be expected to result in noise nuisances to off-base residential communities. Beach users along the coastline may detect increases in noise levels but existing vegetation and structures would greatly attenuate noise levels. On-base residential areas located approximately 0.5 mile north and 1.5 miles northeast of designated training areas would likely detect increases in noise levels, especially during night training sessions; however, noise levels are expected to be less than or similar to those routinely generated at the airfield and would not result in noise nuisance at these receptor locations. Generally, ground training exercises would result in intermittent, long-term, minor to moderate adverse noise impacts.

Adverse noise impacts are expected to be limited from the assemblage of a new multipurpose training tower at PSFB, as no ground disturbance, excavation, or impaction would be required. Any increase in noise levels would be short-term, intermittent, and minor, and would primarily result from truck transport of modular parts along the transportation route. Use of the proposed tower would result in a minor increase in noise levels within the immediate vicinity of the tower. Such increases would likely be negligible within the scope of an active, developed base.

Personnel in the vicinity of the airfield could be exposed to high noise levels during aircraft takeoff and landing. Such noise levels would be consistent with existing operations, and personnel would be required to wear adequate hearing protection in compliance with OSHA standards for noise exposure. As a result, such impacts would be considered negligible.

As discussed in Section 2.1, Proposed Action, and Section 3.6.2.1, PSFB is evaluating the removal of existing noise abatement procedures at Runway 21 (see Appendix D for additional information). This would involve the removal of aircraft climbing procedures specific to large and heavy IFR/VFR aircraft departures and arrivals on Runway 21. To determine the impact of eliminating current noise abatement procedures, noise levels at specific points on the ground beneath the current and proposed (i.e., removal of noise abatement) flight paths were estimated. Figure 3.6-3 presents the point locations under the current and proposed flight paths and Table 3.6-2 presents the estimated noise levels at these point locations.



Source: HMMH 2024

**Figure 3.6-3. Current and Proposed Flight Tracks and Point Locations for Noise Analysis**

**Table 3.6-2. Current and Proposed Noise Levels at Point Locations**

Point ID <sup>1</sup>	DNL
21P1 (current)	46.7 dB
21P2 (current)	38.5 dB
21P3 (current)	35.0 dB
21P4 (proposed)	50.0 dB
21P5 (proposed)	50.0 dB
21P6 (proposed)	45.1 dB

1 - See Figure 3.6-3 for point locations.

Source: HMMH 2024

dB = decibel; DNL = day-night

The noise modeling results shown in Table 3.6-2 indicate that removal of the noise abatement procedures would increase noise levels under the proposed flight path; however, the estimated levels would be well below 65 dB, the threshold at which a land use conflict could occur. To more broadly evaluate noise exposure under these flight tracks, the Sound Exposure Level (SEL) and Maximum Sound Level (Lmax) were also calculated for these points. The Lmax metric is used to determine the possibility of outdoor speech interference and the SEL metric is used in the analysis of sleep disturbance. In neither case does the reference metric surpass the guideline values to trigger additional analysis. Pilots would still be required to maneuver aircrafts consistent with safety of flight and flight manual procedures. PSFB would ensure that new flight maneuvers would be within the bounds of the existing noise exposure contours and, therefore, minor adverse noise impacts are expected.

### 3.6.3.2.2 CCSFS

The Proposed Action at CCSFS would result in long-term, negligible, direct, adverse noise impacts. New activities proposed in this location consist of helicopter brownout training, expanded training events (including an influx of personnel and aircraft), use of GBS, and capsule recovery training (see Table 2-12). Each of these activities would result in noise level increases that would be considered negligible within the scope of an active, developed base.

Figure 2-5 shows that the majority of designated training areas at which increased noise levels would be expected are located in the central eastern portion of the CCSFS, on and around the airfield, and approximately 4 to 6 miles from the closest residential communities. Additionally, these areas have been sited and approved for elevated noise levels associated with these types of training (DAF 2016). Recovery training in the Poseidon Wharf and Trident Wharf would increase noise levels in these areas; however, increased noise would only be noticeable within the immediate vicinity of these activities and would not impact any noise-sensitive human receptors. However, due to proximity to sensitive habitats, elevated noise levels from training in the water and near the coastline on the eastern side of CCSFS could result in intermittent disturbance to wildlife (see Section 3.5, Biological Resources).

### 3.6.3.2.3 MTA

The Proposed Action at PSFB would result in long-term, minor to moderate, direct, adverse noise impacts. New activities proposed in this location consist of the use of GBS and other pyro techniques, expanded training events (including an influx of personnel), vehicle convoys, and continued installation and monitoring of technology equipment (see Table 2-12). These activities have the potential to result in intermittent increases in noise levels in the immediate vicinity and surrounding areas. Designated training areas and in-use structures are shown on Figure 2-6.

Transient and resident users propose to utilize MTA for monthly and annual training events as described in Section 2.1.2. The majority of training events would be completed within a single

day; however, several events have the potential to take place over multiple days annually by multiple user groups. It is expected that personnel would drive to MTA for these events, potentially generating intermittent noise impacts along the transportation route. It is not expected that additional commuting noise would substantially add to existing traffic noise levels and would be similar to existing background noise expected due to the urban environment surrounding MTA.

Because MTA is surrounded by residential areas on all sides, intermittent noise level increases would be detected by these receptors. As such, the potential for land use conflict from noise during training would increase. To limit noise conflicts, MTA would continue implementation of established procedures that include limiting training activities between 10:00 a.m. and 4:00 p.m., consistent with local noise ordinances. Additionally, MTA would continue providing notification to the surrounding community and Palm Bay Police Department prior to conducting these training exercises.

### **3.6.3.3 No-Action Alternative**

Under the No-Action Alternative, training and transient missions within the ROI would continue without the addition of newly proposed activities, such as the addition of larger training events and increasing use of aircraft in training. As a result, no additional impacts to the existing noise environment would occur, and newly proposed activities would require separate NEPA analysis as they are proposed.

## **3.7 Transportation**

### **3.7.1 Definition of the Resource/Regulatory Setting**

The Florida Department of Transportation (DOT) is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways, which include interstate highways, U.S. highways, and state highways. Brevard County and local municipalities also coordinate with the Florida DOT and are responsible for the maintenance and operation of the county/local roads.

Annual average daily traffic (AADT) is a measure of the average daily number of vehicles that pass through a given segment of roadway and is indicative of traffic conditions (i.e., higher AADT volumes lead to increases in traffic congestion and delays). Available AADT data from the state's DOT database are presented in the subsections below for nearby roadway segments near the respective installation.

The ROI for transportation consists of the principal public roadways providing access to an installation and the main roadways within an installation providing access to the project site(s).

### **3.7.2 Affected Environment/Existing Conditions**

As discussed in the 2016 EA, major regional transportation corridors that serve PSFB, CCSFS, and MTA include: I-95, U.S. Highway 1 (US-1), SR-405, SH-A1A, SR-520, and SR-404 (also referred to as the Pineda Expressway).

#### **3.7.2.1 PSFB**

PSFB is located on the East Coast of Central Florida and is situated on a barrier island with the Banana River and Indian River directly to the west and the Atlantic Ocean on the east, separated by SH-A1A/South Atlantic Avenue. Access to the base is mainly provided by SH-A1A and SR-404.

SH-A1A traverses in a north-south direction along the eastern border of the base and separates the main installation from the beach areas along the coastline. This highway connects PSFB to CCSFS, approximately 10 miles to the north.

SR-404 is a causeway that traverses in an east-west direction along the southern border of the installation and connects the mainland to PSFB and SH-A1A. This causeway has a partial interchange with SR-513/Patrick Drive, with only an eastbound exit ramp and a westbound entrance ramp. SR-513 is a major north-south thoroughfare on the island and connects to PSFB's southern entry point.

AADT data for the main public roadways serving PSFB are presented in Table 3.7-1. Traffic volumes on these roadways substantially decreased since 2020 and have remained relatively low (FDOT 2023), which likely resulted from COVID restrictions implemented at the installation.

**Table 3.7-1. Annual Average Daily Traffic on Public Roadways Serving PSFB**

Street (Location)	Number of Lanes	2019 AADT (vehicles per day)	2022 AADT (vehicles per day)
SH-A1A (between SR-404 and Orlando Ave, north of PSFB)	4	21,500	16,800
SR-404 (east of South Gate)	4	22,000	21,000
SR-404 (west of South Gate)	4	54,000	46,000
SR-513 (south of SR-404)	4	16,300	14,000

Source: FDOT 2023

AADT = Annual Average Daily Traffic; PSFB = Patrick Space Force Base; SH-A1A = State Highway A1A; SR-404 = State Route 404; SR-513 = State Route 513

As shown in Figure 3.7-1, PSFB has three entry control points (controlled gates) for vehicle and pedestrian access. The Main Gate/East Gate provides access from SH-A1A. The Main Gate is currently located in the northern portion of the base at the intersection of SH-A1A and Jupiter Street (on-base) but will be shifted north following construction of its new location (shown on Figure 3.7-1). This construction is ongoing. Once the new Main Gate is opened, the current gate will be demolished. The South Gate provides access from SR-513 along the southern border of the base at the intersection SR-513 and South Patrick Drive (on-base). A Commercial Vehicles Gate is located on SH-A1A, a mile north from SR-404.

On-base, South Patrick Drive is the main arterial that carries the majority of the north-south traffic and connects most areas of the base. Several connector roads off of South Patrick Boulevard provide access to various parts of the installation. Access to support functions in the south is constrained by the location and configuration of South Gate. Traffic congestion during peak hours creates long queues onto access roadways and into adjacent neighborhoods. There are proposed projects to improve the transportation infrastructure that would address congestion issues at PSFB, including the aforementioned construction of a new gate on SH-A1A (near Matador Street), a new intersection to accommodate the new gate, and a multi-use pathway that would connect the new gate to South Gate (DAF 2022).



Figure 3.7-1. PSFB Transportation Network

### 3.7.2.2 CCSFS

CCSFS is located on a barrier island and is approximately 10 miles north of PSFB and adjacent to KSC to the north. The general region can be accessed from the north and south on the Florida mainland via I-95 or US-1 and from the west via SR-528 or SR-520. The key roads providing access from the surrounding local communities where most of the personnel reside include SH-A1A/SR-528, SR-520, SR-401, SR-405, and SR-3.

As shown in Figure 3.7-2, the main east-west routes that connect the Florida mainland to CCSFS are SR-405/NASA Parkway and SH-A1A/SR-528. The main on-site roadway on CCSFS is Phillips Parkway, which accommodates most of north-south traffic and connects with KSC to the north.

Controlled access to CCSFS is provided by Gate 1, the southern gate and is accessed via SR-401 and SR-528/SH-A1A just northeast of Port Canaveral. West access into CCSFS is provided by SR-405/NASA Parkway, near the Kennedy Center Visitor Complex. There are also two gates located in the KSC, which provide access onto Cape Road, a connector road that enters CCSFS from the north and traverses along the eastern border of the station.

Table 3.7-2 presents AADT data for key roadway segments leading up to the Gate 1. Generally, traffic volumes on roadways near the installation has declined. Since the Shuttle Program was terminated in 2011, the general workforce and resulting traffic has declined on the roadways leading into CCSFS (Space Florida 2020). COVID restrictions implemented at the station likely resulted in some additional decreases in traffic volumes. Recent commercial space launch activities, however, have resulted in an uptick in traffic volumes at KSC and CCSFS (Space Florida 2017).

**Table 3.7-2. Annual Average Daily Traffic on Key Roadway Segments Serving CCSFS**

Street (Location)	Number of Lanes	2019 AADT (vehicles per day)	2022 AADT (vehicles per day)
SR-528/SH-A1A (bridge, west of SR-401)	4	40,500	26,000
SH-A1A (east of SR-401)	4	37,500	35,500
SR-520/Cocoa Beach Causeway	4	40,500	23,000
SR-405	4	11,700	11,300

Source: FDOT 2023

AADT = Annual Average Daily Traffic; CCSFS = Cape Canaveral Space Force Station; SH-A1A = State Highway A1A; SR-401 = State Route 401; SR-405 = State Route 405; SR-520 = State Route 520; SR-528 = State Route 528

To support more efficient operations at CCSFS, several infrastructure projects are planned that would address traffic inefficiencies, including the widening of critical roads to accommodate trucks with oversized loads, the widening of Phillips Parkway from a four-lane to a six-lane roadway, and modernizing South Gate (DAF 2023).

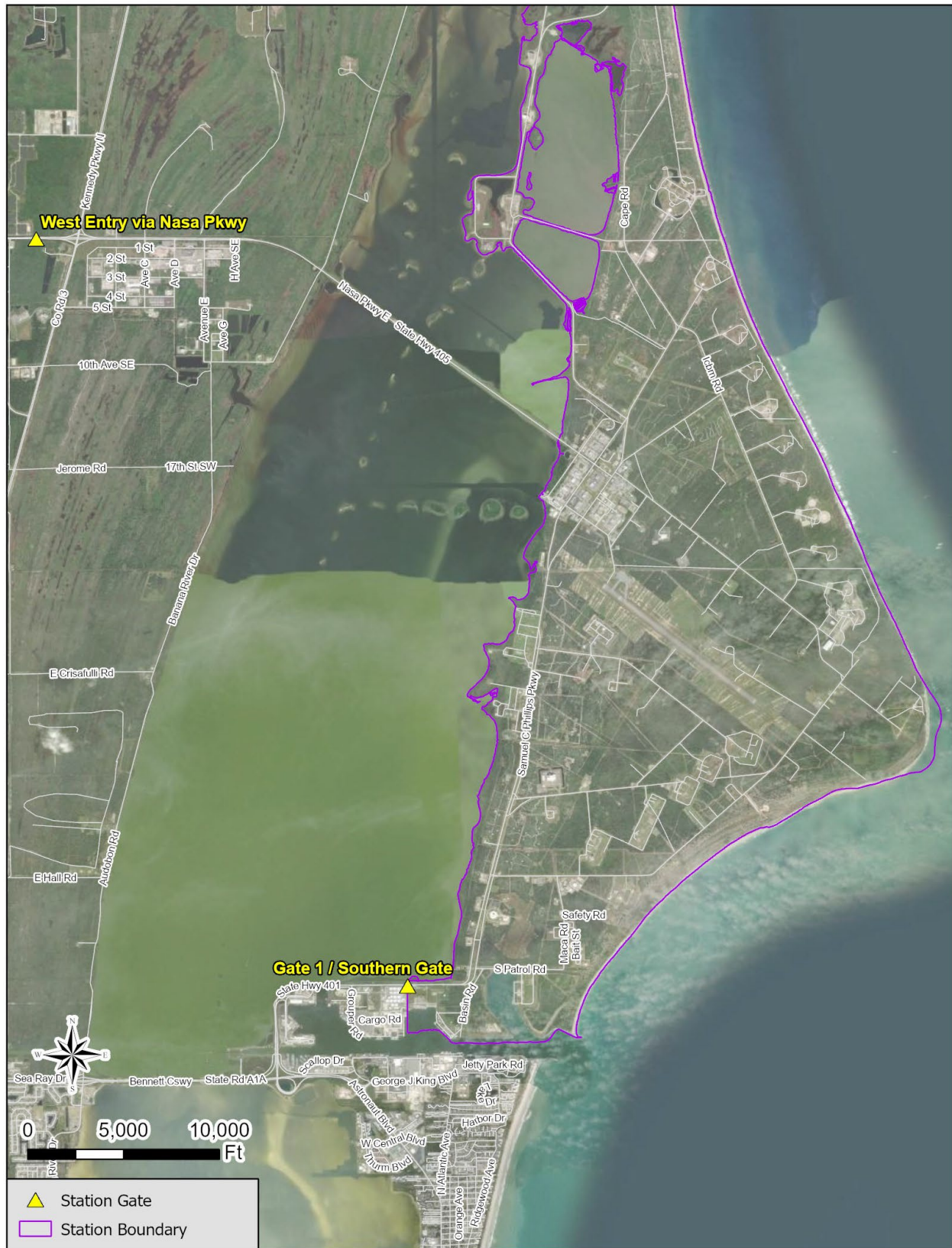


Figure 3.7-2. CCSFS Transportation Network

### 3.7.2.3 MTA

The MTA is located within a relatively densely populated region inside the City of Palm Bay and is surrounded on all sides by roads and residential areas. The major roadways that serve the annex include Minton Road, Emerson Drive, Americana Boulevard, Jupiter Boulevard and I-95. Entrance into MTA is provided on Minton Road. Figure 3.7-3 presents the roadways surrounding MTA. Access to MTA is primarily by vehicle and parking is provided within paved areas and mowed grass within MTA. Out of town users for multi-day events typically stay at local hotels or in on-base lodging at PSFB with some occasional overnight camping at MTA depending on mission requirements.

Table 3.7-3 presents AADT on the key roadway segments serving MTA. Trends in traffic volumes vary on the roadways surrounding MTA. Although traffic volumes have generally been declining since 2019, some roadways (e.g., Minton Road) have experienced an increase in AADT due to population growth.

**Table 3.7-3. Annual Average Daily Traffic on Key Roadway Segments Serving MTA**

Street (Location)	Number of Lanes	2019 AADT (vehicles per day)	2022 AADT (vehicles per day)
Minton Road	4	26,500	31,500
Emerson Drive (between Malabar Road and Jupiter Boulevard)	4	24,500	23,700
Jupiter Boulevard (near MTA)	2	8,900	8,500
Americana Boulevard (near MTA)	2	4,700	3,800

Source: FDOT 2023

AADT = Annual Average Daily Traffic; MTA = Malabar Transmitter Annex

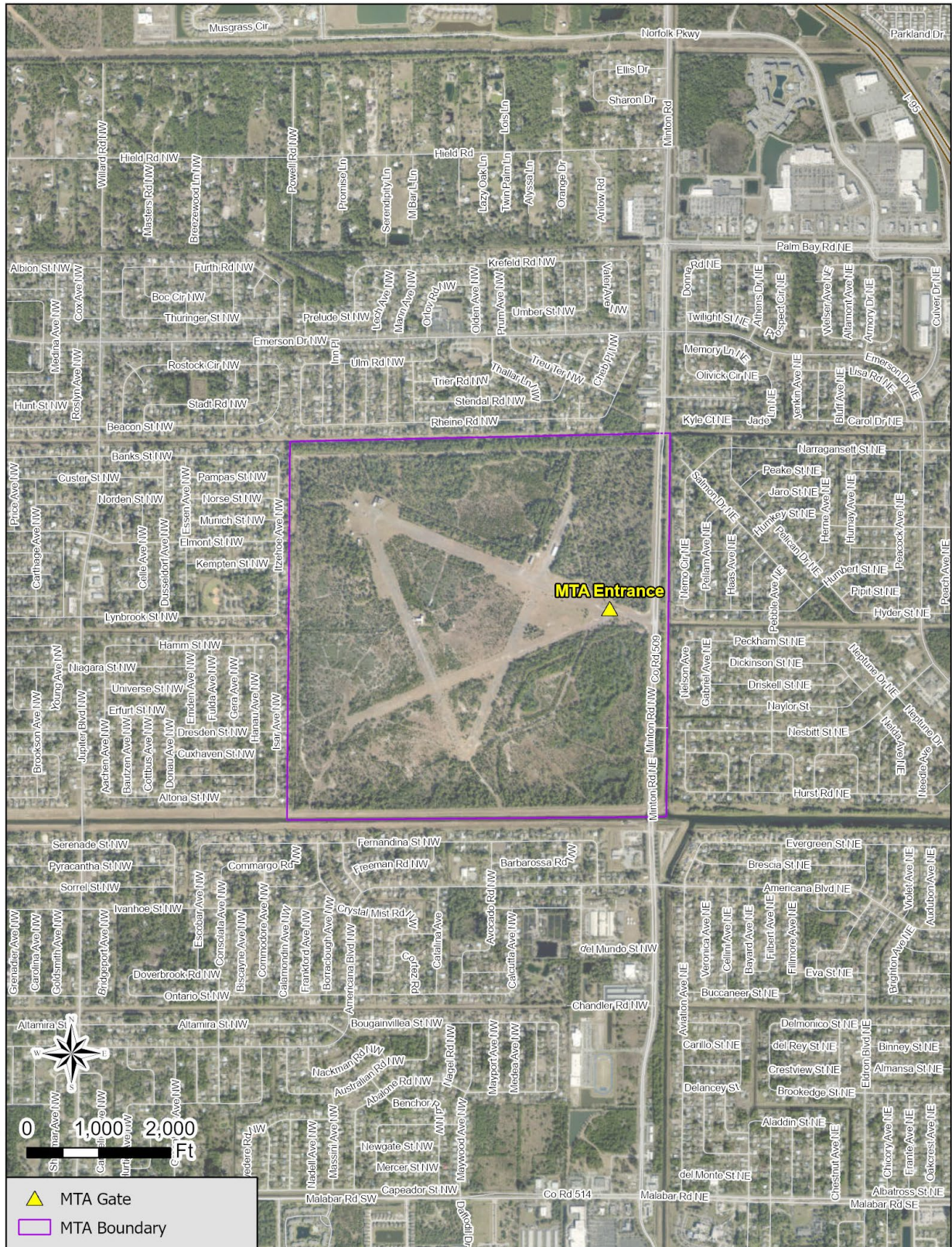


Figure 3.7-3. MTA Transportation Network

### 3.7.3 Environmental Consequences

#### 3.7.3.1 Analysis Approach

An impact on transportation resources would be significant if the Proposed Action:

- Increased traffic volumes that would exceed the capacity of local roadways and intersections.
- Increased traffic volumes resulting in deficient operations at the installation.
- Increased traffic volumes resulting in traffic hazards to workers and users at the installation.

#### 3.7.3.2 Proposed Action

##### 3.7.3.2.1 PSFB

The Proposed Action at PSFB would result in long-term and short-term duration, minor to moderate, direct, adverse impacts to transportation, as increases in traffic volumes would result from additional commuting personnel/users to and from PSFB. Traffic impacts would be greatest during larger quarterly and annual training events (up to 400 users) that could result in hundreds of additional vehicles on the surrounding public roadways during these periods. Increased usage during large training events could intermittently (quarterly or annually) generate 800 additional daily vehicle trips (assuming 2 vehicle trips from each of the 400 users) on SR-404 and, to a lesser extent, on SH-A1A and SR-513. This could result in short-term duration increased traffic congestion, delays, and safety hazards, though these impacts would largely occur during peak a.m. and p.m. commuting hours. Table 3.7-4 presents the percent increase in daily traffic on key roadway segments near PSFB resulting from quarterly or annual training events under the Proposed Action. As a conservative estimate, the additional 400 daily traffic volumes were applied to each segment.

**Table 3.7-4. Percent Increase in Daily Traffic at the PSFB under the Proposed Action**

Street (Location)	Number of Lanes	2022 AADT <sup>1</sup> (vehicles per day)	New Daily Traffic Volumes <sup>2</sup>	Percent increase in daily traffic
SH-A1A (between SR-404 and Orlando Avenue, north of PSFB)	4	16,800	17,600	5%
SR-404 (east of South Gate)	4	21,000	21,800	4%
SR-404 (west of South Gate)	4	46,000	46,800	2%
SR-513 (south of SR-404)	4	14,000	14,800	6%

<sup>1</sup> Source: FDOT 2023

<sup>2</sup> New Daily Traffic Volumes = 2022 AADT volumes + 800 daily vehicle trips.

AADT = Annual Average Daily Traffic; PSFB = Patrick Space Force Base; SH-A1A = State Highway A1A; SR-404 = State Route 404; SR-513 = State Route 513

Although some on-base lodging and carpooling could be used by personnel, it is assumed that the majority would stay off-base and commute to the base. Most of the new vehicle trips would add to existing traffic volumes on SR-404 as it provides a direct connection between the more densely populated areas and lodging areas on the Florida mainland and PSFB. During large training events, the percent increase in traffic volumes on the key roadway segments, as presented in Table 3.7-4, would be relatively low and these roadways would have excess capacity to handle the additional daily vehicle trips, especially considering the decline of traffic volumes since 2019. For comparison, total traffic volumes during these events would still be under or slightly above traffic levels that occurred several years ago (see Table 3.7-1).

The concentration of additional vehicle trips during large training events delays would be noticed by other vehicles on SR-404, SH-A1A, SR-513 and other local roads and could cause major congestion during peak commuting periods. Use of the South Gate to enter/exit during commuting hours would also lead to congestion and major delays. To minimize adverse traffic impacts on local roadways, the start and end times of training events would be scheduled to avoid peak traffic hours.

To avoid congestion at the PSFB entrance points, DAF could utilize a parking lot located off-base that would serve as a meeting location to shuttle users from the lot to the training areas within the installation. The lot is located on SH-A1A, across the eastern boundary of the base and about 0.25 miles north of the Commercial Vehicle Gate.

Overall, adverse traffic impacts to the public roadways would be temporary and intermittent, occurring over the timeframe of each event (single day to multiple days, a few times a year), and would result in long-term, minor to moderate impacts.

### 3.7.3.2.2 CCSFS

The Proposed Action at CCSFS would result in long-term, minor, direct, adverse impacts to transportation, as increases in traffic volumes would result from additional commuting personnel/users to and from CCSFS. Traffic impacts would be greatest during multi-day training events involving 50 or more personnel. For conservative estimates, it is assumed that an additional 200 daily vehicle trips (assuming 2 vehicle trips from 100 users) could contribute to traffic volumes on the surrounding public roadways. The temporary increase in additional traffic would result in increased traffic congestion, delays, and safety hazards though these impacts would largely occur during peak a.m. and p.m. commuting hours. Table 3.7-5 presents the percent increase in daily traffic on key roadway segments near CCSFS resulting from the Proposed Action. As a conservative estimate, the additional 200 daily traffic volumes were applied to each segment.

**Table 3.7-5. Percent Increase in Daily Traffic at the CCSFS under the Proposed Action**

Street (Location)	Number of Lanes	2022 AADT (vehicles per day) <sup>1</sup>	New Daily Traffic Volumes <sup>2</sup>	Percent increase in daily traffic
SR-528/SH-A1A (bridge, west of SR-401, near Gate 1)	4	26,000	26,200	0.5%
SH-A1A (east of SR-401)	4	35,500	35,700	0.5%
SR-520/Cocoa Beach Causeway	4	23,000	23,200	1%
SR-405	4	11,300	11,500	2%

<sup>1</sup> Source: FDOT 2023

<sup>2</sup> New Daily Traffic Volumes = 2022 AADT volumes + 200 daily vehicle trips

AADT = Annual Average Daily Traffic; CCSFS = Cape Canaveral Space Force Station; SH-A1A = State Highway A1A; SR-401 = State Route 401; SR-405 = State Route 405; SR-520 = State Route 520; SR-528 = State Route 528

During multi-day training events, the percent increase in traffic volumes on the key roadway segments, as presented in Table 3.7-5, would be relatively low and these roadways would have excess capacity to handle the additional daily vehicle trips, especially considering the decline of traffic volumes since 2019. For comparison, total traffic volumes during these events would still be under or slightly above traffic levels that occurred several years ago (see Table 3.7-2). Use of Gate 1 to enter/exit during commuting hours could lead to slight delays during training events. However, at these traffic volumes, it is expected that adverse traffic impacts would be minor.

### 3.7.3.2.3 MTA

The Proposed Action at MTA would result in long-term, minor to moderate, direct, adverse impacts to transportation, as increases in traffic volumes would result from additional commuting personnel/users to and from MTA during training events that could involve a large influx of personnel. Traffic impacts would be greatest during the larger training events involving approximately 260 personnel. For conservative measures, it is assumed that an additional 520 daily vehicle trips (assuming 2 vehicle trips from 260 users) would contribute to traffic volumes on the surrounding public roadways. The intermittent increases in additional traffic would result in increased traffic congestion, delays, and safety hazards on local roadways though these impacts would largely occur during peak a.m. and p.m. commuting hours when roadways experience the greatest volumes of vehicles. Table 3.7-6 presents the percent increase in daily traffic on key roadway segments near MTA resulting from the Proposed Action. As a conservative estimate, the additional 520 daily traffic volumes were applied to each segment.

**Table 3.7-6. Percent Increase in Daily Traffic at MTA under the Proposed Action**

Street (Location)	Number of Lanes	2022 AADT (vehicles per day) <sup>1</sup>	New Daily Traffic Volumes <sup>2</sup>	Percent increase in daily traffic
Minton Road	4	31,500	32,020	2%
Emerson Drive (between Malabar Road and Jupiter Boulevard)	4	23,700	24,220	2%
Jupiter Boulevard (near MTA)	2	8,500	9,020	6%
Americana Boulevard (near MTA)	2	3,800	4,320	14%

<sup>1</sup> Source: FDOT 2023a

<sup>2</sup> New Daily Traffic Volumes = 2022 AADT volumes + 520 daily vehicle trips

AADT = Annual Average Daily Traffic; PSFB = Patrick Space Force Base; SH-A1A = State Highway A1A; SR-404 = State Route 404; SR-513 = State Route 513

During larger training events, the percent increase in traffic volumes on the key roadway segments, as presented in Table 3.7-6, would be low to moderate and these roadways would have excess capacity to handle the additional daily vehicle trips, especially considering the decline of traffic volumes since 2019. Except for Minton Road, total traffic volumes during these events would still be under or slightly above traffic levels that occurred several years ago (see Table 3.7-3). The concentration of additional vehicle trips during the larger training events delays would be noticed by other vehicles on these roadways and other local roads and could cause major congestion during peak commuting periods, especially on Minton Road due to its relatively high traffic volume and the location of the MTA entrance. Use of the MTA entrance during commuting hours would lead to congestion and major delays on Minton Road.

Measures to minimize adverse traffic impacts on public roadways would be in place during large training events, which could include scheduling the start and end times of training events to avoid peak traffic hours; utilizing a shuttle bus to transport personnel to MTA; or implementing a carpooling plan.

Potential use of vehicle convoys would also result in traffic congestion and safety hazards. If use of any special military vehicles is required on public roadways, DAF would follow procedures as outlined in the Defense Transportation Regulations, which assigns the DoD the responsibility to ensure effective cooperation between the Department of Defense, the DOT, and state DOTs regarding the use of public roadways. The procedures provide for the safe and efficient movement of oversize/overweight military vehicles and other special military movements, to include convoys on public highways and for obtaining Convoy Movement Orders and permits for oversized/overweight vehicles from the appropriate federal, state and local authorities.

Overall, adverse traffic impacts to the public roadways would be temporary and intermittent, occurring over the timeframe of each event (single day to multiple days, a few times a year), and would result in long-term, minor to moderate impacts.

### 3.7.3.3 No-Action Alternative

Under the No-Action Alternative, training and transient missions within the ROI would continue without the addition of newly proposed activities, such as the addition of larger training events. As a result, no additional impacts to transportation resources would occur, and newly proposed activities would require separate NEPA analysis as they are proposed.

## 3.8 Hazardous Materials and Waste

### 3.8.1 Definition of the Resource/Regulatory Setting

The ROI for hazardous materials and wastes is defined as on and off-installation areas where hazardous materials would be encountered or utilized and where hazardous/solid wastes would be generated and disposed of (e.g., landfills).

#### 3.8.1.1 Hazardous Materials and Waste

Hazardous material, waste or substances are generally associated with industrial activities. The technical meanings of these terms are defined below:

- **Hazardous material:** a substance or material that the Secretary of Transportation has determined can pose an unreasonable risk to health, safety, and property when transported in commerce, as defined in 49 CFR 171.8, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601 et seq), and the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. 6901 et seq).
- **Hazardous waste:** any solid, liquid, contained gaseous, or semisolid waste or any combination of wastes that either exhibit one or more hazardous characteristics (e.g., 4 ignitable, corrosive, reactive, or toxic) or are listed in 40 CFR Part 261. These are also known as “characteristic wastes.” USEPA has deemed certain solid wastes hazardous. These substances may be referred to as “listed wastes” and are regulated by RCRA.
- **Hazardous substance:** includes hazardous waste, PFAS, HAPs, hazardous substances as defined under the CWA and Toxic Substance Control Act (15U.S.C. 2601 et seq), and elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that pose substantial harm to human health or environmental resources.
- **Installation Restoration Plan (IRP) site:** an area of DoD land with contamination from past activities being restored to usable conditions. It falls under one of two comprehensive programs established under the Defense Environmental Restoration Program to identify, investigate and clean up hazardous substances, pollutants, and contaminants that pose environmental health and safety risks at active military installations and formerly used defense sites.
- **Solid Waste Management Unit (SWMU):** any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.
- **Area of concern:** an area with known or suspected contamination.

### 3.8.1.2 Solid Waste

Solid wastes are those substances defined in 40 CFR 261.2. Subtitle D of RCRA and its amendments, sets national standards for the management of solid waste, including collection and storage and its subsequent burning, use as a fuel, or landfilling. AFMAN 32-7002 provides guidance for USSF installations to develop solid waste management plans that ensure regulatory compliance.

### 3.8.1.3 Hazardous Materials and Waste Regulations

Specific hazardous material/waste laws and requirements related to the Proposed Action are summarized in Table 3.8-1.

**Table 3.8-1. Summary of Hazardous Waste Regulations Requirements**

Law or Rule	Permit/ Action(s)	Requirement	Agency or Organization
Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 et seq)	The law authorizes actions that reduce or eliminate dangers associated with releases or threats of releases of hazardous substances at sites listed on USEPA's National Priorities List.	Provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment.	USEPA
Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq)	SWMUs are listed on the RCRA Corrective Action permit and activities follow the RCRA corrective process	Control hazardous waste from generation to disposal. RCRA also sets forth a framework for the management of non-hazardous solid wastes.	FDEP/USEPA
Toxic Substances Control Act (15 U.S.C. 2601 et seq)	Before and after demolition, all friable asbestos must be encapsulated or removed, and the asbestos waste disposed of in an approved landfill. Lead-based paint and PCBs must be managed at the installation in accordance with all applicable regulations	Assess and regulate new commercial chemicals before they enter the market, chemicals already existing in 1976 that posed an "unreasonable risk to health or to the environment" (e.g., PCBs, lead, mercury, and radon), and distribution and use of these chemicals.	USEPA
Pollution Prevention Act (42 U.S.C. 13101 et seq)	Develop pollution prevention initiatives and plans.	Prevent or reduce the amount of pollution through cost-effective change in production, operation, and raw material used by industry and governmental agencies.	USEPA
Residential Property Renovation: State, Territorial and Tribal Program Authorization Guidance (40 CFR 745, Subpart E)	Lead-Based Paint Abatement Program regulations provide a framework for lead abatement, risk assessment and inspections.	Require those performing lead removal are to be trained and certified by USEPA or an authorized state. Training providers must be accredited and teach approved curricula.	USEPA
62- 257, FAC, <i>Asbestos Program</i>	FDEP administers the asbestos removal permitting program.	Sets standards and BMPs for removal and disposal of asbestos.	FDEP
62-204.800, FAC, <i>Federal Regulations Adopted by Reference</i>	State of Florida adopted asbestos NESHAP from USEPA	The State of Florida must maintain NESHAP set forth in the CAA.	FDEP
AFI 32-1001, <i>Civil Engineer Operation, Chapter 15</i>	Incorporate facility asbestos management principles and practices into all USAF programs	Manage asbestos-containing materials.	DoD

Law or Rule	Permit/ Action(s)	Requirement	Agency or Organization
AFMAN 32-7002, <i>Environmental Compliance and Pollution Prevention, Chapter 7 Asbestos</i>	All construction contracts are required to comply with hazardous materials procedures and ensure that all recyclable material (e.g., concrete) is recycled and recycled quantities are reported by weight to SLD 45 Installation Management and 45 CES/CEIE.	Establish procedures and standards that govern management of hazardous materials throughout the Department of the Air Force.	DoD
62-701, FAC, <i>Solid Waste Facilities</i>	Solid waste management facilities must be permitted through FDEP. Solid waste must be stored, processed, and disposed of in accordance with regulations.	Regulate sludge from a waste treatment works, water supply treatment plant, and air pollution control facility; garbage, rubbish, refuse, and special waste; and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from domestic, industrial, commercial, mining, agricultural, or governmental operations.	FDEP
62-730, FAC, <i>Hazardous Waste</i>	All persons who own or operate a facility that treats, stores, or disposes of hazardous waste, must notify FDEP using Form 62- 730.900(1)(b), "8700-12FL – Florida Notification of Regulated Waste Activity," with exception of small quantity generators as defined in under 40 CFR 260.10.	Regulate generators of hazardous waste.	FDEP

AF I = Air Force Instruction; AFMAN = Air Force Manual; CEIE = Civil, Environmental and Infrastructure Engineering; CES = Civil Engineering Squadron; CFR = Code of Federal Regulations; DoD = Department of Defense; FAC = Florida Administrative Code; FDEP = Florida Department of Environmental Protection; NESHAP = National Emission Standards for Hazardous Air Pollutants; PCB = polychlorinated biphenyls; RCRA = Resource Conservation and Recovery Act; SLD = Space Launch Delta; SWMU = Solid Waste Management Unit; U.S.C = United States Code; USEPA = United States Environmental Protection Agency

## 3.8.2 Affected Environment/Existing Conditions

### 3.8.2.1 Hazardous Materials and Waste

#### PSFB

A wide variety of hazardous materials ranging from paint, solvents, adhesives, cleaners, metal treatments, and fuels are used on PSFB. The collection, management, transportation, and disposition of hazardous wastes are defined and strictly regulated by the RCRA, as amended, and by applicable federal and state regulations. All hazardous material purchases are required to be authorized. The materials are required to be tracked through the HAZMART Pharmacy. 45 SW Operations Plan 19-14, *Petroleum Products and Hazardous Waste Management Plan*, describes waste management procedures on PSFB (AFCEC 2017). The PSFB RCRA 45 Corrective Action permit contains procedures for remediation of the SWMUs, ERP sites, and Areas of Concern at PSFB. The permit lists SWMUs and activities follow the RCRA corrective process. The Air Force Civil Engineer Center (AFCEC) IRP has established specific guidance to minimize the spread of known contamination, comply with regulatory requirements, and protect personnel from safety and health hazards (DAF 2022). IRP sites are present on PSFB, including in the vicinity of 920 RQW training areas. As of 2023, there are 187 SWMUs, 76 IRP sites, and no Areas of Concern at PSFB. Most of these have been approved for No Further Action (NFA) or Site Rehabilitation

Completion Orders (DAF 2016). IRP, SWMUs, and Areas of Concern are discussed in further detail in Section 3.8.2.4. SLD 45 has developed a Hazardous Waste Management Plan (HWMP) that provides a guide on the proper handling and storage of waste, petroleum products, and hazardous materials in accordance with 40 CFR 260 & 279 and 62-730, FAC.

An additional concern regarding potential impacts from hazardous materials is the Atlantic Ocean coastal beach, which constitutes the eastern boundary of PSFB. Periodically, drums, containers, and other suspicious items are washed onto the beach from the Atlantic. The majority of these items are discarded from ocean-going vessels and identification of the contents is not easily obtainable. In some cases where contents have been analyzed, hazardous substances were identified. It is not possible to prevent items from washing ashore. However, periodic beach patrols are conducted to promptly discover potentially harmful items on the beach, remove such items before they can create an adverse impact to natural resources, and properly dispose of them (DAF 2020a).

#### **CCSFS**

Numerous types of hazardous materials are used to support the various missions and general maintenance operations at CCSFS. These include, but are not limited to, petroleum products, oils, lubricants, volatile organic compounds, corrosives, refrigerants, adhesives, sealants, epoxies, and propellants. Hazardous waste materials on CCSFS are handled according to the SLD 45 Petroleum Products and Hazardous Waste Management Plan, which ensures that adequate and appropriate guidance, policies, and protocols regarding hazardous material incidents and associated emergency response are available to all installation personnel (DAF 2016). As of 2023, there are 259 SWMUs, 163 IRP sites, and no Areas of Concern in CCSFS. Most of these have been approved for NFA or Site Rehabilitation Completion Orders. Numerous contamination areas, including SWMU No. C045, SWMU No. C027, and SWMU No. C026 are near proposed training sites at CCSFS (DAF 2016). SLD 45 has developed a HWMP that provides a guide on the proper handling and storage of waste, petroleum products, and hazardous materials in accordance with 40 CFR 260 & 279 and 62-730, FAC.

An additional concern regarding potential impacts from hazardous materials is the Atlantic Ocean coastal beach, which constitutes the eastern boundary of CCSFS. Periodically, drums, containers, and other suspicious items are washed onto the beach from the Atlantic. The majority of these items are discarded from ocean-going vessels and identification of the contents is not easily obtainable. In some cases where contents have been analyzed, hazardous substances were identified. It is not possible to prevent items from washing ashore. However, periodic beach patrols are conducted to promptly discover potentially harmful items on the beach, remove such items before they can create an adverse impact to natural resources, and properly dispose of them (DAF 2020a).

#### **MTA**

MTA is a conditionally exempt small quantity generator (CESQG), generating less than 100 kilograms of hazardous waste per month. A waste accumulation point is located adjacent to Building 00006. The majority of waste generated at MTA is non-hazardous (oils, off-spec fuels, water contaminated with oils and lubricants), primarily from generator/equipment maintenance. Occasionally, due to facility maintenance (i.e., painting) hazardous waste is generated. MTA has its own USEPA Identification number for hazardous waste generation (DAF 2008). The MTA contains several aboveground storage tanks and hazardous materials associated with training activities (DAF 2016). All containers utilized for the management of wastes must be new and meet the DOT's performance-oriented packaging requirements. All containers must be labeled to accurately reflect the contents. These materials are managed in accordance with 40 CFR 260-279 and SLD 45 Management Plan 19-14 (45 CES/CED 2022).

### 3.8.2.2 PFAS

PFAS are a large group of chemicals that have been widely used in industrial and consumer applications such as Teflon and fire-fighting foam. Examples include perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), and perfluorobutane sulfonic acid. These chemicals have relatively recently attracted the interest of researchers, regulators, and the public due to their widespread occurrence and persistence in the environment. There is evidence that exposure to certain PFAS can lead to adverse effects in wildlife and humans. While some PFAS, such as PFOA and PFOS, have extensive amounts of human epidemiological, exposure, and toxicity data, there is little toxicity and exposure information for much of the other chemicals in the group that could be used to make informed decisions about their safety. PFAS represent several waste disposal challenges DoD-wide. PFAS-impacted media must be properly managed according to SLD 45 policy during project design and execution phases.

### PSFB

A PFAS Site Investigation (SI) was conducted in 2017. SI results identified several areas (seven USAF sites) across the central/central-south portion of the base that have elevated/high concentrations of PFAS in groundwater in excess of the Lifetime Health Advisory (70 parts per 9 trillion) for PFOS/PFOA. These sites are not fully delineated; however, a full Remedial Investigation (RI) is expected to begin in Fiscal Year 2023. The RI is a large, base-wide comprehensive effort and results will not be made available until after the investigation is complete. Additionally, the 45th Civil Engineer Squadron, Environmental Office (45 CES/CEIE) is planning a PSFB Infiltration and Inflow study to identify areas of groundwater infiltration that could carry PFAS or other contaminants into the sewer system (DAF 2022).

### CCSFS

A PFAS SI was conducted in 2017, which confirmed positive detections of PFAS in groundwater and limited areas in soil in excess of the Lifetime Health Advisory (70 parts per 9 trillion) for PFOS/PFOA. A full RI is expected to begin in Fiscal Year 2023 (DAF 2023).

### MTA

The presence of PFAS has not been identified at MTA, therefore the Proposed Action would not result in the potential for any PFAS related hazards.

### 3.8.2.3 Asbestos and Lead-based Paint

Asbestos and lead-based paint can occur in older facilities. Asbestos was designated as a hazardous air pollutant in 1971, under the National Emission Standards for Hazardous Air Pollutants (NESHAPs) of the CAA. In 1982, the USEPA delegated primary authority for the implementation and enforcement of the Asbestos NESHAP to the State of Florida. According to USEPA, facilities built before 1978 may contain lead-based paint and these paints can chip or deteriorate creating dust that poses serious health risks to occupants and visitors.

Facilities used for transient and training missions do not contain asbestos-containing materials or lead-based paint.

### 3.8.2.4 Installation Restoration Program Sites

The IRP is managed by AFCEC to identify, characterize, clean up, and restore sites contaminated with toxic and hazardous substances, low-level radioactive materials, petroleum products, or other pollutants and contaminants. The IRP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites. Land Use Controls (LUCs) are established for sites where residual contamination is well-defined, remains in place, and may require special management

practices should land disturbance be required. Typical LUCs include limiting contact with surface water, groundwater, sediment, and soils based on the nature of the contaminant and resource affected.

#### PSFB

AFCEC manages 16 SWMUs as part of the IRP at PSFB that have LUCs or are under investigation or cleanup. Cleanup has been completed at over 154 SWMUs at PSFB, and they have been approved for NFA under the regulatory review process through the IRP, FDEP, and USEPA. The SWMUs are listed on the PAFB RCRA 45 Corrective Action permit and activities follow the RCRA corrective process. Construction is not prohibited on/near PSFB SWMUs sites and certain training and other use restrictions also apply to these areas. AFCEC IRP has established specific guidance to minimize the spread of known contamination, comply with regulatory requirements, and protect personnel from safety and health hazards. Table 3.8-2 summarizes the primary contaminants of concern in groundwater, surface water, and soil for all active IRP sites (DAF 2022).

**Table 3.8-2. Active Solid Waste Management Unit (SWMU) Sites**

SWMU Site ID	Groundwater Contaminants	Surface Water Contaminants	Soil Contaminants
P022	Pesticides, Metals	Metals, SVOCs	None
P023	Pesticides, Metals	Metals, SVOCs	None
P024	Pesticides, Metals	Metals, SVOCs	None
P025	Pesticides, Metals	Metals, SVOCs	None
P026	Metals	Metals	None
P031	None	None	PAHs
P033	Petroleum, Metals	None	Petroleum
P035	Petroleum, Metals	None	Petroleum
P036	Petroleum, Pb	None	Petroleum
P040	Petroleum, Metals	None	Petroleum
P041	Chlorinated solvents/VOCs	None	Metals
P045	Petroleum, VOCs, Metals, Pesticides	None	Pesticides, Metals
P128	Chlorinated solvents/VOCs	None	None
P173	None	None	SVOC, PAH, Metals
P181	Pesticides, PAHs	None	PCBs, Metals, PAHs, Pesticides
P187	None	None	Pb

PAHs = Polynuclear Aromatic Hydrocarbons; Pb = Lead; PCBs = Polychlorinated biphenyls; SVOCs = Semi-Volatile Organic Compounds; VOCs = Volatile Organic Compounds

Further discussion of SWMUs collocated with proposed training areas is provided below. An analysis of potential impacts to SWMUs and IRP sites is included in Section 3.8.3.2.2.

#### SWMU P033

SWMU P033 is located west of Building 693 in North Mission Support Area. This site was used as a fire fighter training area from 1963–1985 and contained a pit that was used to burn petroleum waste and waste products from industrial solvents/degreasing operations. Known contaminants at this location include petroleum and metals. After the completion of an RI in 1993, several remedial actions were completed including a shoreline stabilization project and bioventing from

1993 to 1998 to address petroleum, metals and SVOCs in soil and groundwater. Long-term monitoring (LTM) was subsequently initiated in 1999 and was later terminated in 2000 when it was determined that all residual contamination was less than FDEP Contaminant Cleanup Target Levels, which was documented in a Site Rehabilitation Completion Order issued by the State of Florida. Based on the discovery of petroleum soil and groundwater impacts during a construction project in 2018, an additional assessment and remedial activities are planned as part of the upcoming Optimized Remediation Contract. In addition, a 2017 SI documented PFAS in soil and groundwater at levels exceeding the regional screening levels for soil and the USEPA drinking water “lifetime health advisory;” however, the site is not employed as a drinking water source. Additional PFAS assessments are planned under CERCLA. This work is being prioritized at PSFB and sites across the USAF/USSF inventory (DAF 2022). Conducting training exercises of any kind such as the use of explosives and addition of new chemicals of concerns or debris is currently not feasible (AFCEC 2022).

### **SWMU P035**

SWMU P035 is the Fuel Farm located in the North Mission Support Area, adjacent to Banana River. Petroleum and metals were detected in the groundwater and low levels of petroleum were detected in the surface water. No contamination was detected in the adjacent surface waters; however, the sediments contained petroleum-related compounds. A Phase I Remedial Action has been completed to remediate soil and groundwater at the site; documentation is currently being prepared for regulatory coordination. A Phase II action to remediate the south end of the Fuel Farm is planned to begin in 2023. Between Phase I and Phase II, monitoring will be performed to ensure that remaining contamination has not mobilized. Following completion of the Phase II assessment, an LTM/Monitored Natural Attenuation and LUC program will likely be required for the foreseeable future (DAF 2022).

### **CCSFS**

According to an SLD 45 update, prepared August 28, 2020, there are approximately 258 current or past SWMUs as part of the IRP at CCSFS. Of those there are approximately 213 SWMUs that are now listed as NFA, 10 that are active and under investigation, and 35 that have LTM and/or are under LUC agreements. The SWMUs are listed on the CCSFS RCRA Corrective Action permit and activities follow the RCRA corrective process. Construction is not prohibited on or near CCSFS SWMUs; however, LUCs are established for sites where residual contamination is well-defined, remains in place, and may require special management practices should land disturbance be required.

AFCEC IRP has established specific guidance to minimize spread of known contamination, comply with regulatory requirements, and protect personnel from safety and health hazards (DAF 2023). Table 3.8-3 summarizes the primary contaminants of concern in groundwater, surface water, and soil for all active IRP sites.

**Table 3.8-3. Active Solid Waste Management Units (SWMUs)**

<b>SWMU Site ID</b>	<b>Groundwater Contaminants</b>	<b>Surface Water Contaminants</b>	<b>Soil Contaminants</b>
C021	Chlorinated Solvents, 1,4-dioxane	Solvent Residuals	None
C022	Chlorinated Solvents, 1,4-dioxane	Residual Chlorinated Solvents	PAHs
C025	Manganese	None	Pb
C030	Chlorinated Solvents (1,4- dioxane), Metals, Industrial Waste	Petroleum, Chlorinated Solvents, Metals	None

SWMU Site ID	Groundwater Contaminants	Surface Water Contaminants	Soil Contaminants
C033	Petroleum, Chlorinated Solvents, Polychlorinated biphenyl (PCBs), Metals, Industrial Waste Products, PFAS	Residual Chlorinated Solvents	Petroleum, Chlorinated Solvents, Pesticides, PCBs, Metals, Industrial Waste Products, PFAS
C035	PAHS	None	None
C036	Chlorinated Solvents, Industrial Waste	None	PCBs
C037	Chlorinated Solvents, Metals, PCBs	Iron, Mercury (both found in surface water and fish)	PCBs
C038	Chlorinated Solvents (1,4- dioxane)	None	PCB, Metals, PAHs
C040	Chlorinated Solvents (Trichloroethylene, cis-1,2- Dichloroethene [DCE], Vinyl Chloride [VC]), and 1,4-dioxane	None	PCBs, PAHs
C042	Chlorinated Solvents	None	PCBs, PAHs, Arsenic
C043	None	None	PCBs
C046	None	None	PCBs
C047	None	None	PCBs, Arsenic, PAHs
C050	Chlorinated Solvents	None	PCBs
C054	PCBs DCE- Chlorinated Solvents	Unknown	Unknown
C055	Chlorinated Solvents (VC and DCE), PFAS, and 1,4- dioxane	None	PCB, Metals (Arsenic, Iron, Pb), PAHs
C056	VOCs, PCBs	None	PCBs
C057	Chlorinated Solvents, VOCs	None	PCBs, PAHs
C091	Chlorinated Solvents	None	None
C127	None	None	PCBs
C148	Chlorinated Solvents, Chromium	None	PAHs
C150	Chlorinated Solvents	None	PCBs
C153	Residual Chlorinated Solvents	None	PCBs
C154	Residual Chlorinated Solvents	None	None
C157	Petroleum	None	Petroleum
C200	VOC	None	None

PAHs = Polynuclear Aromatic Hydrocarbons; Pb = Lead; PCBs = Polychlorinated biphenyls; PFAS = per- and poly-fluoroalkyl substances; SVOCs = Semi-Volatile Organic Compounds; TRPHs = total recoverable petroleum hydrocarbons; VOCs = Volatile Organic Compounds

The proposed training areas do not overlap with any SWMUs. While some SWMUs are in the vicinity of current and proposed training sites, they are not expected to be impacted by the Proposed Action. An analysis of potential impacts to SWMUs and IRP sites is included in Section 3.8.3.2.2.

## MTA

The USAF identified three historic contaminated sites on Malabar Annex that were investigated in 2002. After soil and groundwater sampling and soil removal/remediation, where required, these sites were approved for NFA by USEPA and Florida Department of Environmental Protection in

2005, with clearance for unrestricted land use based on screening criteria indicating no potential human health or ecological risks (DAF 2016).

### **3.8.2.5 Solid Waste**

Solid waste, more commonly known as non-hazardous refuse, trash or garbage, consists of construction and demolition debris and everyday items such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, and appliances.

#### **PSFB**

Non-hazardous solid waste generated at PSFB is managed in compliance with the PSFB Integrated Solid Waste Management Plan (ISWMP). Non-hazardous solid waste is properly collected, handled, managed, transported, and disposed off-base by a contractor. 45 CES/CEIE has primary responsibility for the management of non-hazardous solid waste at PSFB (DAF 2022).

#### **CCSFS**

Non-hazardous solid waste generated at CCSFS is managed in compliance with the SLD 45 ISWMP. General solid refuse at CCSFS is collected by a private contractor and disposed of off-site at a Brevard County landfill or other appropriate and permitted facilities. C&D items with mercury- or chromium-based paints, lead-based paint not from residential units, and any PCB bulk waste with 500 ppm PCBs (hazardous) are not accepted at Brevard County landfill facilities. SLD 45 also manages a recycling program for appropriate waste material from CCSFS sites (DAF 2023).

#### **MTA**

Solid waste must be managed in accordance with federal, state, local, and DoD regulations. All waste must be properly disposed of and coordinated with the MTA Manager. SLD 45 supports the recycling of materials and debris to the largest extent possible. The SLD 45 recycles high-grade office paper and corrugated containers (cardboard) as required in accordance with 40 CFR 246.200, 201 and 202. These items must be recycled and not put in trash containers. Large pieces of cardboard must be broken down and placed in a cardboard recycle bin or placed next to mixed paper or secure bins. Batteries, metals, and plastic materials can be recycled onsite. Styrofoam used in shipping packages is not recyclable (NRL 2020).

## **3.8.3 Environmental Consequences**

### **3.8.3.1 Analysis Approach**

The potential impacts associated with hazardous materials/waste and solid waste depend on the toxicity, storage, use, transportation, and disposal of these substances, as well as how the Proposed Action would impact sites managed by the IRP. The threshold level of significance for hazardous materials, toxic substances, and hazardous/solid wastes is surpassed only if the storage, use, handling, or disposal of these substances substantially increases the risk to human health due to direct exposure, substantially increases the risk of environmental contamination, or violates applicable federal, state, DoD, and/or local regulations. For this analysis, a significant impact would occur if the Proposed Action:

- Resulted in the use of hazardous materials that are highly toxic or have a potential to cause severe environmental damage.
- Generated hazardous/solid waste types or quantities that could not be accommodated by the current management system.

- Disturbed an existing IRP (or PFAS) site resulting in the potential release of hazardous constituents or an elevated safety risk to workers due to exposure to these constituents.

### **3.8.3.2 Proposed Action**

The potential impacts of the Proposed Action consider the SLD 45 HWMP includes procedures for the handling, storage, and disposal of hazardous materials. These programs and procedures are designed to prevent adverse impacts to the environment resulting from the use of hazardous materials and handling of hazardous waste. Examples of these procedures include safety and environmental awareness training for proper HazMat handling techniques and a comprehensive spill plan that establishes procedures to address spills and minimize spill impacts to the environment, including use of secondary containment for storage and handling of POL (DAF 2022).

#### **3.8.3.2.1 Hazardous Materials and Waste Management**

##### **PSFB**

The Proposed Action could result in short-term, negligible, direct, adverse impacts when considering hazardous materials and waste management. Hazardous materials used or hazardous wastes generated as a result of implementation of the Proposed Action would be identified, accumulated, and removed in accordance with local, state, and federal laws/regulations and in compliance with the procedures included in the existing HWMP. The proponent is responsible for sampling all wastes to determine whether they are hazardous or non-hazardous.

Since there are no plans for demolition or construction under the Proposed Action, the use and generation of hazardous materials and waste would be minimal and limited to proposed operations. Proposed use of firearms, flares, smoke grenades and similar hazardous items would occur under direct oversight of the SLD 45 Fire Department and Safety office, and these materials would continue to be stored and utilized in accordance with local, state, and federal laws/regulations and in compliance with USAF procedures. Material Safety Data Sheets of hazardous materials would be maintained for hazardous or potentially explosive materials utilized during transient and training operations. At MTA, the Proposed Action may utilize hazardous materials under the parameters of existing generators that would be used to power radar sensors testing. Hazardous waste generation would be maintained under the CESQG limits. Portable spill containment would be used for all portable generators (AFLCMC/HBZ 2021). Existing hazardous material storage within the ROI would remain in place and would be handled and disposed of as approved by the SLD 45 Fire Department and Safety office and in accordance with SLD 45 Management Plan 19-14, *Petroleum Products and Hazardous Waste Management Plan* (DAF 2016).

Similar materials and quantities analyzed in the 2016 EA are anticipated. Implementation of the Proposed Action would result in negligible changes to storage of hazardous materials associated with SLD 45 operations. Additionally, implementation of the Proposed Action would not result in any substantial or long-term increase in the use or generation of hazardous materials or hazardous wastes associated with training operations. Therefore, impacts created by hazardous materials and wastes would be less than significant.

#### **3.8.3.2.2 IRP Sites and PFAS**

The Proposed Action would result in less than significant impacts to ongoing remediation activities at IRP or PFAS sites within the ROI. The Proposed Action does not include any construction or

subsurface exposure; therefore, it would not result in contaminant exposure to users of training facilities and areas.

Users training within active IRP sites would be made aware of the presence and nature of known contaminants and LUCs specific to IRP sites (Table 3.8-2). Pursuant to FDEP guidance, any users training in or near IRP sites should communicate any questions that arise before and during field activities to AFCEC IRP. Any soil surface or subsurface disturbance on a SWMU site with soil LUCs would require coordination with the IRP.

The three historic contaminated sites on MTA became NFA sites with clearance for unrestricted land use based on screening criteria indicating no potential human health or ecological risks. No adverse impacts are anticipated.

Given the measures described above, no significant impacts to or from IRP or PFAS sites are anticipated.

### **3.8.3.2.3 Solid Waste**

Potential solid waste generated during transient and training exercises includes spent ammunition casings, debris from explosive devices, and other waste produced by mission activities. Potential increases in solid waste generated under the Proposed Action would be negligible.

For solid, non-hazardous waste that exceeds capacity for disposal within the facilities utilized for exercises, the responsibility for off-site disposal lies with the proponent. SLD 45 supports the recycling of materials and debris to the largest extent possible. Batteries, metals, paper, cardboard and plastic materials can be recycled onsite at PSFB and CCSFS. Styrofoam used in shipping packages is not recyclable (920 RQW 2021; 45 OG/DET3/CD 2021; AFLCMC/HBZ 2021). The generation of solid waste under the Proposed Action would be minimal and would fall under the existing disposal capacity of the PSFB, CCSFS, and MTA; therefore, impacts created by the Proposed action would be less than significant.

### **3.8.3.3 No-Action Alternative**

Under the No-Action Alternative, the proposed modification of training operations would not be implemented. There would be no changes in the quantity of hazardous materials and waste and non-hazardous solid waste used, generated, or disposed of at the proposed installations. Current conditions and management would continue at each of the proposed installations.

## **3.9 Environmental Justice**

### **3.9.1 Definition of the Resource/Regulatory Setting**

USEPA defines Environmental Justice as "the fair treatment and meaningful involvement of all people regardless of race, ethnicity, income, national origin, or education level, for development, implementation, and enforcement of environmental laws, regulations, and policies." EO 12898, *Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*, directs federal agencies to consider whether impacts from a Proposed Action on human health or the environment (including social and economic aspects) would be disproportionately high and adverse for minority and low-income populations, and would outweigh impacts on the general population or other comparison group. EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, directs federal agencies to remove barriers to the meaningful involvement of the public in decision-making that affects or has the potential to affect human health and the environment, including for communities with environmental justice

concerns. The Air Force Guide for Environmental Justice Analysis under the EIAP (DAF 1997) also provides guidance on how to fulfill the requirement for environmental justice analysis.

The definitions of minority, low-income, and minority or low-income populations are presented below.

- **Minority** – Individual(s) who are members of the following population groups as designated in the U.S. Census: Black or African American, American Indian, and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, as well as Hispanic or Latino of any race.
- **Low-income** – The U.S. Census Bureau uses a set of income thresholds that vary by family size and composition to determine who is in poverty (i.e., classified as 'low-income'). If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically but are updated for inflation using the Consumer Price Index. The official poverty definition uses income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps) (USCB 2023a).
- **Minority or low-income population** – Populations where either: (a) the total number of minority or low-income individuals of the affected area exceeds 50 percent of the overall population in the same area, or (b) the total number of minority or low-income individuals within the affected area is meaningfully greater (e.g., 120 percent greater) than the minority or low-income population percentage in an appropriate comparison unit of geographic analysis (CEQ 1998). A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds. In identifying minority or low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Indigenous people), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as not to artificially dilute or inflate the affected minority population.
- **Meaningfully Greater** – A meaningfully greater minority or low-income population within a geographic unit affected by a federal action is determined by comparing the minority or low-income composition of the geographic unit to the minority or low-income composition of the general population. As with selecting the appropriate unit of geographic analysis, a comparison population should be selected so as not to artificially dilute or inflate the affected minority populations. For this analysis, the comparison population is the total population of the respective county of each installation considered.

The analysis of minority and low-income populations focuses on U.S. Census Bureau data for geographic units (i.e., census tracts and block groups) that represent, as closely as possible, the potentially affected areas. A census tract is a geographic area for which the U.S. Census Bureau provides consistent sample data and is comprised of smaller census block groups. Census tracts generally contain a population between 1,200 and 8,000 people. A census block group is the smallest geographic area for which the U.S. Census Bureau provides consistent sample data, and generally contains a population between 600 and 3,000 individuals (USCB 2023b).

The analysis also considers information from the USEPA's EJSCREEN model. The EJSCREEN model serves as a screening-level tool to identify areas that may have a higher susceptibility to environmental justice impacts because of their demographic composition and existing exposure

to contaminants or proximity to certain facilities that generate pollution. The model uses environmental indicators to quantify susceptibility to exposure, including data related to proximity to air pollution, water pollution, traffic, as well as potentially contaminated sites associated with historic use of lead paint, leaking underground storage tanks (USTs), or facilities that handle hazardous materials and waste. USEPA typically considers a project to be in an area of potential environmental justice concern when an EJSCREEN analysis for the impacted area shows 1 or more of the 13 indices at or above the 80<sup>th</sup> percentile in the nation and/or state. Therefore, this analysis considers EJSCREEN information for the block groups that meet or exceed the 80<sup>th</sup> percentile in the nation and/or state.

Additional, more recent federal direction on Environmental Justice includes EO 13990, *Protecting Public Health and the Environment and Restoring Science to Address the Climate Crisis* and EO 14030, *Climate-Related Financial Risk*. EO 13990 directs federal agencies to prioritize both environmental justice and employment and supports the national goal of improving public health and the environment by ensuring access to clean air and water, limiting exposure to dangerous chemicals and pesticides, and holding polluters accountable, including those who disproportionately harm people of color and low-income people. EO 14030 outlines the government approach to mitigating climate-related financial risks and ensuring financial security for workers, families, and businesses who may be disproportionately affected by climate change. The EO advises federal agencies to assess their government programs, assets, and liabilities, and to identify causes of, and address disparate impacts on, disadvantaged communities and communities of color.

### **Protection of Children's Health and Safety and Elderly Populations**

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, places a high priority on the identification and assessment of environmental health and safety risks that may disproportionately affect children. The EO requires that each agency "shall ensure that its policies, programs, activities, and standards address disproportionate risks to children." It considers that physiological and social development of children makes them more sensitive than adults to adverse health and safety risks, and it recognizes that children in minority and low-income populations are more likely to be exposed to and have increased health and safety risks from environmental contamination than the general population.

Children have increased vulnerabilities from age-related physiological differences in types and levels of exposure. Children are more likely to be susceptible to certain environmental impacts from air pollution or noise. Specifically, children are especially vulnerable due to higher relative doses of air pollution, smaller diameter airways, and more active time spent outdoors and closer to ground-level sources of vehicle exhaust. Increased level of noise can affect children's learning, especially near homes, schools, and recreational areas.

In addition to children, elderly individuals are also considered vulnerable populations as they are more likely to face specific challenges such as health care, social isolation, limited mobility, and fixed incomes.

### **3.9.2 Affected Environment/Existing Conditions**

The ROI for environmental justice focuses on the project area and the immediate surrounding area. Potential impacts with the greatest intensity and longest duration (e.g., air quality, noise, transportation, changes in socioeconomic conditions) would occur near the project area. Therefore, environmental justice considerations are analyzed within a respective 1-mile radius of the project area.

## PSFB

### Environmental Justice

Table 3.9-1 summarizes the percentage of minority and low-income populations within 1 mile of the project area, Brevard County, Florida, and the United States for comparison purposes.

**Table 3.9-1. Minority and Low-Income Populations in the PSFB ROI**

Geographic Area	Total Population	Minority (%)	Low Income (%)
1 Mile ROI Total (PSFB)	9,314	18.3	7.2
Census Tract 669, Block Group 1	755	13.5	0.0
Census Tract 669, Block Group 2	912	21.5	1.0
Census Tract 669, Block Group 3	2,091	11.7	5.5
Census Tract 669, Block Group 4	1,105	19.0	11.0
Census Tract 669, Block Group 5	1,411	15.2	2.3
Census Tract 671, Block Group 1	1,308	38.4	16.8
Census Tract 681.01, Block Group 2	1,732	13.9	10.6
Brevard County (Reference Area)	606,612	29.0	10.6
<b>Meaningfully Greater Criterion</b>	-	<b>34.8</b>	<b>12.7</b>
Florida	21,538,187	48.5	13.1
United States	331,449,281	42.2	12.6

Source: USCB 2020, USCB 2021a  
% = percent

The average minority population percentage of Brevard County is approximately 29 percent. If a block group's percentage of minority individuals meets the 50 percent criterion or exceeds 120 percent of the total minority population within Brevard County (i.e., 34.8 percent), the area is considered to have a minority population. Because the minority population percentage relative to the general population of Brevard County would not exceed the 50 percent threshold defined by CEQ, the secondary threshold of 34.8 percent is used to identify areas with meaningfully greater minority populations within 1 mile of the project area. There are seven block groups within the PSFB ROI, and one of those block groups (i.e., Block Group 1, Census Tract 671) contains individual racial group minority populations or aggregate minority populations that meet the environmental justice criteria. This block group represents exclusively areas on PSFB. The total minority population residing within 1 mile of the project area is approximately 1,709 or 18.3 percent of the entire population. Therefore, the overall composition of the ROI is predominantly nonminority. Minority populations in the ROI are predominantly Hispanic or Latino, followed by populations of two or more races and Black or African American.

Low-income populations were evaluated using the absolute 50 percent and the relative 120 percent or greater criteria for potentially affected block groups within the ROI. If a block group's percentage of low-income individuals meets the 50 percent criterion or is more than 120 percent of the total low-income population within Brevard County (i.e., 12.7 percent), then the area is considered to have a low-income population. Out of the seven block groups within the 1 mile ROI, one block group has a low-income population that exceeds the meaningfully greater criteria (i.e., Block Group 1, Census Tract 671). This block group represents exclusively PSFB, and considering the margins of error that are inherently present in the dataset, as well as general salary levels and other social and economic benefits offered to enlisted personnel, it is possible that the low-income population in this block group is less. The total low-income population residing within 1 mile of the project area is approximately 731 or 7.3 percent of the entire population.

Based on a review of the USEPA's EJSCREEN model, no block groups within a 1-mile radius of the project area were identified as meeting or exceeding the 80<sup>th</sup> national percentile threshold for any environmental justice indicators (USEPA 2023b).

#### Protection of Children's Health and Safety and Elderly Populations

Table 3.9-2 shows the population of children under age 5 and ages 5 to 19, as well as elderly populations within 1 mile of the ROI, Brevard County, Florida, and the United States for comparison. Within 1 mile of the ROI, there are six sites identified that children may regularly attend (e.g., childcare centers or schools, community centers, or recreational facilities), as presented in Table 3.9-3. Within 1 mile of the project area, no sites were identified where elderly populations may be regularly present.

**Table 3.9-2. Children and Elderly Populations in the PSFB ROI**

Location	Children under Age 5 (%)	Children 5 to 19 Years (%)	Individuals Greater than 65 Years (%)
1-Mile ROI	3.6	14.3	26.4
Brevard County	4.6	15.9	23.5
Florida	5.2	17.0	20.4
United States	5.9	19.3	16.0

Source: USCB 2021b

**Table 3.9-3. Sites within a 1-Mile Radius of the PSFB ROI that Children Likely Frequent**

Site	Distance from Installation Boundary (feet)
On-Base childcare facility	-
On-Base Pineda Beach Park	-
South Patrick Shores beach	350
Seagull Park	2,600
South Patrick Community Park	2,700
Sea Park Elementary	3,400

#### CCSFS

#### Environmental Justice

Table 3.9-4 summarizes the percentage of minority and low-income populations within 1 mile of the project area, Brevard County, Florida, and the United States for comparison purposes.

**Table 3.9-4. Minority and Low-Income Populations in the Cape Canaveral ROI**

Geographic Area	Total Population	Minority (%)	Low Income (%)
1 Mile ROI Total (Cape Canaveral)	5,854	16.0	11.2
Census Tract 686.01, Block Group 1	2,107	15.7	8.5
Census Tract 686.03, Block Group 1	1,005	23.9	25.7
Census Tract 686.03, Block Group 2	511	18.8	13.7
Census Tract 686.04, Block Group 1	950	11.2	8.2
Census Tract 686.04, Block Group 2	1,238	12.0%	4.2
Census Tract 9800, Block Group 1	43	39.5	0.0
Brevard County (Reference Area)	606,612	29.0	10.6

<b>Meaningfully Greater Criterion</b>	<b>-</b>	<b>34.8</b>	<b>12.7</b>
Florida	21,538,187	48.5	13.1
United States	331,449,281	42.2	12.6

Source: USCB 2020, USCB 2021a

% = percent

There are six block groups within the Cape Canaveral ROI, and one of those block groups (i.e., Block Group 1, Census Tract 9800) contains individual racial group minority populations or aggregate minority populations that meet the environmental justice criteria. This block group represents exclusively areas on CCSFS. The total minority population residing within 1 mile of the project area is approximately 938 or 16.0 percent of the entire population. Therefore, the overall composition of the ROI is predominantly nonminority. Minority populations in the ROI are predominantly Hispanic or Latino, followed by populations of two or more races and Black or African American.

Out of the six block groups within the 1-mile ROI, two block groups have a low-income population that exceeds the meaningfully greater criteria (i.e., Block Group 1, Census Tract 686.03 and Block Group 2, Census Tract 686.03). The total low-income population residing within 1 mile of the project area is approximately 667 or 11.2 percent of the entire population.

Based on a review of the USEPA's EJSCREEN model, no block groups within a 1-mile radius of the project area were identified as meeting or exceeding the 80<sup>th</sup> national percentile threshold for any environmental justice indicators (USEPA 2023b).

### Protection of Children's Health and Safety and Elderly Populations

Table 3.9-5 shows the population of children under age 5 and ages 5 to 19, as well as elderly populations within 1 mile of the project area, Brevard County, Florida, and the United States for comparison. Within 1 mile of the project area, two sites were identified that children may regularly attend, as presented in Table 3.9-6. Within 1 mile of the project area, no sites were identified where elderly populations may be regularly present.

**Table 3.9-5. Children and Elderly Populations in the CCSFS ROI**

<b>Location</b>	<b>Children under Age 5 (%)</b>	<b>Children 5 to 19 Years (%)</b>	<b>Individuals Greater than 65 Years (%)</b>
1-Mile ROI	0.7	4.7	41.0
Brevard County	4.6	15.9	23.5
Florida	5.2	17.0	20.4
United States	5.9	19.3	16.0

Source: USCB 2021b

% = percent

**Table 3.9-6. Sites within a 1-Mile Radius of the CCSFS ROI that Children Likely Frequent**

<b>Site</b>	<b>Distance from Installation Boundary (feet)</b>
Cape View Elementary School	1,000
Cape Canaveral Community Park	3,800

## MTA

### Environmental Justice

Table 3.9-7 summarizes the percentage of minority and low-income populations within 1 mile of the project area, Brevard County, Florida, and the United States for comparison purposes.

**Table 3.9-7. Minority and Low-Income Populations in the MTA ROI**

Geographic Area	Total Population	Minority (%)	Low Income (%)
1 Mile ROI Total (Malabar Annex)	26,981	41.5	8.6
Census Tract 713.35, Block Group 1	1,850	35.9	9.1
Census Tract 713.35, Block Group 2	2,326	28.7	2.3
Census Tract 713.35, Block Group 3	1,240	32.3	1.5
Census Tract 713.37, Block Group 1	1,108	39.5	1.3
Census Tract 713.37, Block Group 2	2,878	44.8	3.5
Census Tract 713.37, Block Group 3	1,851	46.1	3.9
Census Tract 713.37, Block Group 4	1,866	45.9	2.0
Census Tract 713.43, Block Group 1	2,186	51.3	14.9
Census Tract 713.43, Block Group 2	1,768	43.7	8.2
Census Tract 713.44, Block Group 1	2,092	44.5	1.7
Census Tract 713.44, Block Group 2	1,407	40.9	38.1
Census Tract 713.44, Block Group 3	1,732	37.1	9.0
Census Tract 713.51, Block Group 1	1,795	46.2	9.7
Census Tract 713.52, Block Group 2	2,882	40.0	10.2
Brevard County (Reference Area)	606,612	29.0	10.6
<b>Meaningfully Greater Criterion</b>	-	<b>34.8</b>	<b>12.7</b>
Florida	21,538,187	48.5	13.1
United States	331,449,281	42.2	12.6

Source: USCB 2020, USCB 2021a  
% = percent

There are 14 block groups within the MTA ROI, and 12 of those block groups contains individual racial group minority populations or aggregate minority populations that meet the environmental justice criteria, as listed in Table 3.9-6. The total minority population residing within 1 mile of the project area is approximately 11,196 or 41.5 percent of the entire population. Therefore, the overall composition of the ROI is predominantly nonminority. Minority populations in the ROI are predominantly Hispanic or Latino, followed by populations of two or more races and Black or African American.

Out of the fourteen block groups within the 1-mile ROI, two block groups have a low-income population that exceeds the meaningfully greater criteria (i.e., Block Group 1, Census Tract 713.43 and Block Group 2, Census Tract 713.44). The total low-income population residing within 1 mile of the project area is approximately 2,505 or 8.6 percent of the entire population.

Based on a review of the USEPA's EJSCREEN model, three block groups within a 1-mile radius of the project area were identified as meeting or exceeding the 80<sup>th</sup> national percentile threshold for environmental justice indicators (USEPA 2023b). Environmental justice indicators met within respective block groups include:

- Census Tract 713.44, Block Group 2: Traffic Proximity, Superfund Proximity, and Underground Storage Tanks
- Census Tract 713.43, Block Group 1: Superfund Proximity and Underground Storage Tanks
- Census Tract 713.35, Block Group 1: Superfund Proximity

Review of EJSCREEN suggests elevated risk to environmental justice populations throughout the ROI for exposure to traffic levels and contaminated sites.

### Protection of Children’s Health and Safety and Elderly Populations

Table 3.9-8 shows the population of children under age 5 and ages 5 to 19, as well as elderly populations within 1 mile of the project area, Brevard County, Florida, and the United States for comparison. Within 1 mile of the project area, there are nine sites identified that children may regularly attend, as presented in Table 3.9-9. Within 1 mile of the ROI, one site was identified where elderly populations may be regularly present: Greater Palm Bay Senior Center, approximately 4,000 feet from the nearest MTA boundary.

**Table 3.9-8. Children and Elderly Populations in the MTA ROI**

Location	Children under Age 5 (%)	Children 5 to 19 Years (%)	Individuals Greater than 65 Years (%)
1-Mile ROI	4.9	16.2	20.0
Brevard County	4.6	15.9	23.5
Florida	5.2	17.0	20.4
United States	5.9	19.3	16.0

Source: USCB 2021b  
% = percent

**Table 3.9-9. Sites within a 1-Mile Radius of the MTA ROI that Children Likely Frequent**

Site	Distance from Installation Boundary (feet)
Lynbrook Park	1,000
Palm Bay Christian Preschool	1,100
Christa McAuliffe Elementary	1,600
Pineapple Cove Classical Academy	3,000
Miss Bunny’s TLC Child Care	3,100
Oak View Park	3,700
Pineapple Cove Classical Academy at Lockmar	3,900
Cradlestone Academy	3,300
A Brighter Day Academy, Inc.	3,800
Pineapple Cove Academy North Shore	3,800
Giggles Preschool and Daycare	4,000
Great Leaps Academy	4,000
The Learning Tree Academy of Palm Bay	4,200
Lockmar Elementary School	4,200

## 3.9.3 Environmental Consequences

### 3.9.3.1 Analysis Approach

The EA identifies the following impacts that may affect minority and low-income populations and children’s health and safety surrounding the project area.

- Air Quality Impacts** – Short-term, negligible to minor, adverse air quality impacts would be expected locally during operations as described in Section 3.1, Air Quality and Greenhouse Gas/Climate Change. Emissions would be primarily from employee commutes, facility space HVAC use, and emergency generator operation.

- **Noise Disturbance** – Short-term, negligible to minor adverse impacts from noise would be expected locally during operations as described in Section 3.6, Noise, primarily from new personnel generating increased traffic volumes on the local roadways, as well as an increase in training activities including larger quarterly and annual training events.
- **Traffic Congestion** – Short-term, minor to moderate impacts to traffic congestion would occur from a detectable increase in traffic on local roadways from relocated employees.

### **3.9.3.2 Proposed Action**

#### **PSFB**

##### **Environmental Justice**

As discussed in Section 3.9.2, no environmental justice populations meeting the evaluation criteria for low-income have been identified outside of PSFB that would be affected by the Proposed Action; therefore, the Proposed Action would not result in disproportionately high and adverse impacts on environmental justice populations either during construction or operations.

##### **Protection of Children’s Health and Safety and Elderly Populations**

Impacts to children or elderly populations surrounding PSFB during transient and training operations would be short-term and primarily negligible to minor and associated with increases in traffic. Based on the distance of the project area from sensitive receptors and the nature of anticipated impacts, children or elderly populations are not anticipated to be disproportionately or significantly affected.

#### **CCSFS**

##### **Environmental Justice**

As discussed in Section 3.9.2, two block groups meeting the environmental justice evaluation criteria have been identified off CCSFS. There would be occasional, temporary increases in traffic on roadways near CCSFS during temporary increases in vehicle traffic related to authorized personnel for the proposed transient and training missions. Overall, while the short-term air, traffic, and noise impacts on environmental justice populations would be considered disproportionate, the impacts would not be significant. There could be short-term minor beneficial impacts to low-income populations from increased spending at local businesses during these larger training events including food and lodging.

##### **Protection of Children’s Health and Safety and Elderly Populations**

Impacts to children or elderly populations surrounding the project area at PSFB during transient and training activities would be short-term and primarily negligible to minor and associated with minor increases in traffic. Based on the distance of the project area from sensitive receptors and the nature of anticipated impacts, children or elderly populations are not anticipated to be disproportionately or significantly affected.

#### **MTA**

Environmental justice populations have been identified directly adjacent to the MTA that would be impacted during trainings. As discussed in Section 3.9.2, some of these populations fall within the 80<sup>th</sup> percentile or greater for various EJSCREEN indices, including those related to traffic congestion and contamination. Therefore, this suggests that traffic from the Proposed Action could result in a disproportionate impact on these populations. However, the impacts are not expected to be significant as the nearest off-base residence is 0.75 mile from the project area

1 where the majority of emissions would be generated, and BMPs would be implemented to reduce  
2 emissions from use of GBS, smoke, flares, and dye rounds.

3 There would be occasional, temporary increases in traffic on roadways near the project area  
4 during temporary increases in vehicle traffic related to authorized personnel for the proposed  
5 transient and training missions. Overall, while the short-term air, traffic, and noise impacts on  
6 environmental justice populations would be considered disproportionate, the impacts would not  
7 be significant. There could be short-term minor beneficial impacts to low-income populations from  
8 increased spending at local businesses during these larger training events including food and  
9 lodging.

### 10 **3.9.3.3 No-Action Alternative**

11 Under the No-Action Alternative, existing training as described in the 2016 EA would continue to  
12 occur. Any modifications and addition of new training not previously captured in that EA would  
13 require separate NEPA analysis. Impacts would be negligible on environmental justice  
14 populations near PSFB, CCSFs, or MTB.

## 15 **3.10 Land Use**

### 16 **3.10.1 Definition of the Resource/Regulatory Setting**

17 The term land use refers to either natural conditions or the types of human activity occurring on a  
18 parcel. Human land uses may include residential, commercial, industrial, agricultural, and  
19 recreational uses. In many cases, land use descriptions are codified in local zoning laws. Other  
20 attributes of land use include general land use and ownership, land management plans, and  
21 special use areas. The ROI for land use includes PSFB, CCSFS, and MTA, as well as the Banana  
22 River and Atlantic Ocean adjacent to PSFB and CCSFS, in which transient and training operations  
23 would occur.

### 24 **3.10.2 Affected Environment/Existing Conditions**

25 Land use within training areas utilized under the Proposed Action remains unchanged since the  
26 analysis completed in support of the 2016 EA. Although many municipalities in the vicinity have  
27 experienced growth, development and operational changes within established training areas have  
28 been minor since 2016 (see Section 2.1.2).

#### 29 **PSFB**

30 Land use at PSFB is dominated by the airfield, which is bounded by the main base to the north  
31 and a golf course and wooded area to the south and west (DAF 2016). As described earlier in  
32 this EA, PSFB consists primarily of administrative facilities, the airfield, and designated training  
33 areas. Other land uses include community (dining facility, gym, theater, etc.), housing, industrial,  
34 and medical/dental uses, as well as open space and areas designated for outdoor recreation  
35 (DAF 2022). Overall, land use at PSFB remains primarily as described in the 2016 EA.

36 Waters of the Banana River off the shoreline of PSFB are designated as Class III waters for  
37 recreation and fish and wildlife management. The Banana River is an integral part of the Indian  
38 River Lagoon Estuary and is additionally designated as an Aquatic Preserve and categorized as  
39 Florida Outstanding Waters. Use of the Banana River is predominantly for wildlife habitat and  
40 recreational boating (DAF 2016).

41 DZs located in the Atlantic Ocean off the coast of PSFB are located in State and Federal waters.  
42 Use of these areas remains similar to as described in the 2016 EA. These areas continue to  
43 support recreational and commercial fishing.

**CCSFS**

Land use at CCSFS remains primarily as described in the 2016 EA, including airfield clearance and pavement, administrative, industrial, operational and maintenance uses, as well as areas of open space/buffer zone and areas designated for outdoor recreation. Designated training areas discussed in this EA remain unchanged from the 2016 EA, with the exception of the Poseidon Wharf, which is analyzed in this EA as a potential location for in-water recovery training conducted by Detachment 3. Within CCSFS, USSF designates its own land use and zoning regulations. Wharf facilities on CCSFS support multiple users, including NASA, the U.S. Navy, DAF, the U.S. Coast Guard, and commercial space launch companies (DAF 2023).

In addition to tenant and transient training activities conducted within designated DZs and WTAs, uses of the open waters of the Banana River and the Atlantic Ocean surrounding CCSFS include commercial fishing, marine recreation, and marine transportation (DAF 2023).

**MTA**

MTA is surrounded by residential development on all sides. The area within the boundaries of the installation contain areas of mesic and wet flatwood forest, grassy fields, abandoned runways, and numerous transmitter antennas, support buildings, and training areas. Land use at MTA remains as described in the 2016 EA.

**3.10.3 Environmental Consequences**

**3.10.3.1 Analysis Approach**

The land use impact assessment methodology determines the degree to which land use would be affected by the Proposed Action. Significance of potential land use impacts is based on the level of land use sensitivity in affected areas. An impact to land use would be significant if the Proposed Action:

- Was inconsistent or non-compliant with applicable land use plans or policies
- Precluded an existing land use of concern from continuing to exist
- Precluded continued use of an area
- Was incompatible with adjacent or vicinity land use to the extent that public health or safety was threatened.

**3.10.3.2 Proposed Action**

Transient and training activities included in the Proposed Action are consistent with current and future land uses as determined by DAF and documented in installation planning documents. Under the Proposed Action, SLD 45 and transient users would continue to conduct training activities within designated areas described in the 2016 EA, including WTAs, LZs, DZs, AR tracks, ATV training areas, live-fire munitions training areas, and tactical training areas, in the same capacity as was analyzed in the 2016 EA. Proposed new training, or modifications to existing training operations, would likewise be conducted within areas currently designated for training operations, consistent with current usage. No rezoning or conversion of land from one use to another would be required, and consistency with the CZMA and the FCMP would be expected, as detailed in Section 3.2.3.2.5.

The Proposed Action would not preclude continued recreational use of waters adjacent to PSFB and CCSFS, as in-water activities (such as use of WTAs in the Banana River and Atlantic Ocean and wharf facilities at CCSFS) would occur intermittently, a limited number of times per year, as detailed in Section 2.1, Proposed Action. Although expanded training events would increase the number of personnel and equipment present on-site for limited times throughout the year, such events would continue to occur within designated areas consistent with the existing and intended use of those areas. Over the beach operations would occur infrequently and intermittently and would not conflict with species management with incorporation of resource protection measures required by the SLD 45 INRMP (see also Section 3.5, Biological Resources). The DAF would continue to implement measures to minimize potential land use conflicts at MTA, where intermittent use of pyro techniques and increased noise may disturb nearby communities (see also Section 3.6, Noise). As a result, implementation of the Proposed Action would not be expected to result in impacts to land use within the ROI.

**3.10.3.3 No-Action Alternative**

Under the No-Action Alternative, transient and training missions within the ROI would continue without the addition of newly proposed activities such as the addition of larger training events. No impacts to land use would occur, and newly proposed activities would require separate NEPA analysis as they are proposed.

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## Chapter 4 Cumulative Effects

CEQ NEPA-implementing regulations define cumulative effects as effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.1(g)(3)). A cumulative impacts analysis normally encompasses geographic boundaries beyond the immediate area of the Proposed Action to capture any additional impacts.

### 4.1 Past, Present, and Reasonably Foreseeable Actions

The assessment of cumulative effects begins with defining the scope of other project actions and the potential interrelationship with the Proposed Action. The scope of the analysis must consider other projects that coincide with the location and timetable of implementation of the Proposed Action. The ROI for cumulative impacts generally includes PSFB, CCSFS, MTA, and surrounding municipalities. Physical impacts related to the Proposed Action would be largely confined to PSFB, CCSFS, and MTA, however, some physical impacts may have a larger effect on a larger resource area (i.e., water quality or lighting impacts on marine sea turtles). The DAF focused the cumulative impacts analysis consistent with NEPA regulations 40 CFR 1508.1(g)(3). Because the Proposed Action involves continued and proposed changes to training and no new construction, the Proposed Action would cause incremental and negligible additions to the impacts from construction of larger projects in the affected areas.

Table 4-1 lists past, present, and reasonably foreseeable future projects on or near PSFB, CCSFS, MTA, and within the ROI.

**Table 4-1. Past, Present, and Reasonably Foreseeable Future Actions**

Project	Project Summary	Location	Relevance to Proposed Action
<b>Past/Present Actions</b>			
Continued transient/training activities	Transient and training missions ongoing within the ROI, including all activities presented in Table 2-2, and as analyzed in the 2016 EA.	PSFB, CCSFS, MTA, Tosohatchee WMA / SJRWMD, Avon Park AFR, and WTAs in the Banana River and Atlantic Ocean	Existing conditions / activities overlap with the Proposed Action and are included in the Proposed Action.
Delta 10 Beddown	Beddown of Delta 10 to PSFB, possible site location within the proposed SLD 45 headquarters complex site on West Tech Road.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Refurbish SLC 16 for Terran R Launch Program (Relativity)	New construction at SLC 16 to accommodate the Terran R launch vehicle.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Renourish Brevard County Beaches	Hydraulic beach fill from an offshore sand source in Brevard County from Cape Canaveral to Sebastian Inlet State Park. Sand fencing and native	PSFB, CCSFS	Existing conditions / activity would be in proximity to and may

Project	Project Summary	Location	Relevance to Proposed Action
	dune planting also contribute to the shoreline stabilization. Partnership between the USSF, USACE, Brevard County and local municipalities.		overlap with the Proposed Action. Construction may overlap with the Proposed Action.
SR-518 / Eau Gallie Beachside Corridor Planning Study	Address the safety and mobility needs of the community (for vehicle, transit, bicycle, and pedestrian transportation modes), and advance the long-term vision for the corridor, based on the input received by the public as well as the local agency partners.	PSFB, CCSFS	Existing conditions / activity would be in proximity to and may overlap with the Proposed Action. Construction may overlap with the Proposed Action.
SR-528 from east of SR-3 to Port Canaveral Interchange	Widening SR-528 from four to six lanes from east of SR-3 (North Courtenay Parkway) to SR-401 (Port Canaveral interchange) by adding a lane in each direction in the median. The project also plans to reconstruct the interchanges at Banana River Drive, SR-401 and George King Boulevard and reconstruct the bridge over the Banana River.	PSFB, CCSFS	Existing conditions / activity would be in proximity to and may overlap with the Proposed Action. Construction may overlap with the Proposed Action.
Develop NOTU campus (U.S. NAVY)	Development of the NOTU campus on CCSFS.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Refurbish and reuse SLC 11 and SLC 36 (Blue Origin)	Construction and launch operations at SLCs 11 and 36: <i>EA for the Blue Origin Orbital Launch Site Construction at Launch Complex 11 and 36 Cape Canaveral Air Force Station, FL December 2016</i>	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Upgrade SLC 41 and nearby facilities for the Vulcan Centaur launch program	Construction and launch operations at SLC 41: <i>EA for the United Launch Alliance Vulcan Centaur Program Space Launch Complex 41 Cape Canaveral Air Force Station, FL, June 2019</i>	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Refurbish SLC 16 for Terran 1 launch program (Relativity)	Construction and launch operations at SLC 16: <i>EA Terran 1 Launch Program Cape Canaveral Air Force Station, June 2020</i>	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Refurbish and enhance existing SLC 20 and associated facilities (Space Florida)	Construction and launch operations at SLC 20: <i>EA for Space Florida's Reconstitution and Enhancement of Space Launch Complex 20 Cape Canaveral Air Force Station, FL, October 2020</i>	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
<b>Future Actions</b>			
Construct DEOMI building expansion	Construct expansion on the north side of the existing DEOMI building to handle future curriculum and additional throughput.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Airfield repaving	Implement all airfield repaving planned projects.	PSFB	Existing conditions / activities overlap with the Proposed Action.

Project	Project Summary	Location	Relevance to Proposed Action
			Construction would overlap with the Proposed Action.
Demolish facilities within the Airfield Operation Clear Zone.	Implement efforts to demolish facilities 533 and 556 within the Clear Zone by 2030.	PSFB	Existing conditions / activities overlap with the Proposed Action. Construction may overlap with the Proposed Action.
Construct new general C-130J hangar	Construct new C-130J hangar.	PSFB	Existing conditions / activities overlap with the Proposed Action.
Construct new Aerospace Ground Equipment (AGE) shop	Construct new AGE shop enclosure for equipment that is currently exposed to the elements.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Construct new 920 RQW Training Facility	Construct new 920 RQW Training facility.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action. Construction would overlap with Proposed Action implementation.
Construct boresight tower and equipment	Construct the Radar Open System Architecture radar/telemetry test bed boresight tower and building replacement.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Construct new primitive cottages at FAMCAMP	Construct primitive recreational cottages along the Banana River near FAMCAMP.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Construct DoS Campus	Consolidate DoS campus to include hangars, administrative and storage facilities, and parking; possible site location west of South Patrick Drive.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Construct new vehicle maintenance facility	Construct vehicle maintenance facility.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Relocate STARCOM HQ	Relocate STARCOM HQ to PSFB, possible site location within the proposed SLD 45 headquarters complex site on West Tech Road.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Construct new beach cottages	Construct three duplex beach cottages.	PSFB	Existing conditions / activity would be in proximity to the Proposed Action.
Resurface SH-A1A	Resurface SH-A1A from SR-404 to the northern boundary of PSFB.	PSFB	Existing conditions / activity would be in proximity to and may overlap with the Proposed Action. Construction may overlap with the Proposed Action.
Upgrade infrastructure and facilities at PSFB (USSF)	Installation Development to meet SLD 45 and tenant mission requirements.	PSFB	Existing conditions / activity would be in proximity to and may overlap with the Proposed Action. Construction may overlap with the Proposed Action.

Project	Project Summary	Location	Relevance to Proposed Action
Repair / construct Airfield infrastructure (USSF)	Repairs and new construction at Skid Strip, including paved overruns, administrative facility, hangar, and apron for future DoD missions.	CCSFS	Existing conditions / activity would be in proximity to and may overlap with the Proposed Action. Construction may overlap with the Proposed Action.
Improve/develop pad C at SLC 20 (north pad) (Space Florida)	Construction of third launch pad at SLC 20.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Reactivation SLC 13 (Phantom/ Vaya Space)	Refurbishment of existing, inactive SLC for Phantom / Vaya Space launch operations.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Reactivation of SLC 14 (STOKE Space)	Refurbishment of existing, inactive SLC for STOKE Space launch operations.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Reactivation of SLC 15 (ABL Space Systems)	Refurbishment of existing, inactive SLC for ABL Space Systems launch operations.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Potential construction of new SLC on CCSFS (USSF)	Construction of new SLC 50 to support future launch operations.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action, if developed.
Redevelopment of SLC 37 on CCSFS (Commercial Launch Service Provider)	Refurbishment of existing SLC to support future heavy-list launch vehicle operations.	CCSFS	Existing conditions / activity would be in proximity to the Proposed Action.
Upgrade infrastructure and facilities at CCSFS (USSF)	Installation Development to meet SLD 45 tenant mission requirements.	CCSFS	Existing conditions / activity would be in proximity to and may overlap with the Proposed Action. Construction may overlap with the Proposed Action.
Florida Army National Guard Annex Readiness Center (FLARNG)	FLARNG has requested long-term authorization to construct and operate an Army National Guard Readiness Center within a 50-acre area of land located in the northern portion of MTA. The facility would be fully sustained by FLARNG, with no operational support from USSF, and would consolidate two FLARNG units from nearby facilities into one.	MTA	Existing conditions / activities overlap with the Proposed Action. Construction would overlap with Proposed Action implementation.
Space Operations Command (SpOC) Antennas	SpOC proposes to construct two new antennas, which would be constructed inside a 1.5-acre fenced-in area.	MTA	Existing conditions / activities overlap with the Proposed Action. Construction would overlap with Proposed Action implementation.

AGE = Aerospace Ground Equipment; CCSFS = Cape Canaveral Space Force Station; DEOMI = Defense Equal Opportunity Management Institute; DoD = Department of Defense; DoS = Department of State; EA = Environmental Assessment; FLARNG = Florida Army National Guard; HQ = Headquarters; MTA = Malabar Transmitter Annex; NEPA = National Environmental Policy Act; PSFB = Patrick Space Force Base; NOTU = Naval Ordnance Test Unit; ROI = Region of Influence; SLC = Space Launch Complex; RQW = Rescue Wing; SLD = Space Launch Delta; SpOC = Space Operations Command; SR = State Road; USACE = U.S. Army Corps of Engineers; USSF = U.S. Space Force.

The planned actions summarized above were considered in conjunction with the Proposed Action and form the basis for the cumulative impact analysis. In accordance with the CEQ NEPA-

implementing regulations, USSF analyzed the potential cumulative impacts on the resource areas discussed in Chapter 3.

For the scenarios under consideration to have a cumulatively significant impact on an environmental resource, two conditions must be met. First, the combined impacts of all identified past, present, and reasonably foreseeable actions, including the Proposed Action, must be significant. Significance of an impact is determined based on the potentially affected environment and degree of the effects (duration and quality) of the action as defined by 40 CFR 1501.3(b) and described in Chapter 3. Second, the Proposed Action must make a substantial contribution to that significant cumulative impact. It is anticipated that the reasonably foreseeable actions would proceed whether or not the Proposed Action was implemented. Under the No-Action Alternative, the Proposed Action would not occur and there would be no contribution to cumulative impacts within the ROI. Future federal actions would be evaluated under separate analyses in accordance with NEP and EIAP guidelines.

## **4.2 Assessment of Cumulative Impacts by Resource**

### **4.2.1 Air Quality and Greenhouse Gas/Climate Change**

The Proposed Action would result in short-term, negligible to minor, direct, adverse impacts to air quality, primarily due to increased vehicle traffic and related emissions. Air emission resulting from aircraft operations and use of smoke grenades and similar pyro techniques would be similar to levels evaluated in the 2016 EA and would not cause exceedances of any permit conditions. Particulate matter (dust) emissions from helicopter brownout training would be temporary and localized.

The estimated GHG emissions from the Proposed Action are not anticipated to contribute significantly to climate change, but any emission of GHGs represents an incremental increase in global GHG concentrations. The DAF supports climate change initiatives globally, while preserving military operations, sustainability, and readiness, by working to reduce GHG emissions. When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts to air quality.

### **4.2.2 Water Resources**

The Proposed Action would result in short-term, negligible, direct, adverse impacts to water quality; however, those impacts would not result in a permanent loss of function, threaten hydrologic characteristics, endanger public health, or violate laws. No impacts to surface waters, wetlands, or floodplains are anticipated under the Proposed Action.

Projects identified in Table 4-1 would likely cause the potential for adverse impacts to water quality within the ROI due to construction-related soil disturbance and the potential for erosion and runoff to reach downstream waters. As the Proposed Action does not involve construction, it is not expected that transient and training activities would contribute to sedimentation and erosion within the region. Overall, the project would negligibly contribute to cumulative effects, as potential water quality impacts associated with the Proposed Action are limited to the use of engines in the Trident Basin and the Poseidon Wharf, and the continued use of WTAs and DZs in the Banana River and Atlantic Ocean, activities that would not be expected to result in noticeable variations in water quality due to the dynamic nature of water within the ocean and existing recreational usage in the Banana River. In conjunction with other past, present, or reasonably foreseeable projects, less than significant cumulative impacts on water resources.

### 4.2.3 Soil

The Proposed Action would result in short-term, negligible, direct, adverse impacts to soils, resulting from installation of grounding rods for electrical equipment in isolated areas, and potential soil compaction associated with large quarterly or annual training events. Projects identified in Table 4-1 would likely remove soils during construction and contribute to sedimentation and erosion in the region. All projects identified, both present and future, would be subject to permitting requirements that would mandate the use of BMPs and other methods for managing impacts to soils. Due to the small scale of soil disturbance associated with the Proposed Action, it is not anticipated that implementation would contribute to erosion and sedimentation in the region. When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts to soils.

### 4.2.4 Cultural Resources

The Proposed Action would occur within existing designated training areas with little to no potential to effect NRHP-listed or eligible archaeological sites or historic properties. Transient and training activities would be required to occur outside of areas at CCSFS known to contain archaeological sites or other cultural resources. Projects identified in table 4-1 would be required to adhere to Section 106 requirements regarding identification, avoidance, and mitigation for cultural resources, if present.

When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts to cultural resources.

### 4.2.5 Biological Resources

The Proposed Action would result in short-term, negligible, direct and indirect, adverse impacts to biological resources. Temporary displacements of wildlife could occur during transient and training activities; however, no permanent alteration of habitat would be expected, and it is assumed that individuals would return to the area following disturbance. A total of 25 federally listed and 12 state-listed species occur within the area. Transient and training activities would be short-term and occur in designated areas, many of which have been previously disturbed and in which human presence/activity is common. Removal of vegetation is not proposed. No adverse effects to protected species are anticipated with the implementation of impact avoidance and minimization measures and BMPs described in Section 3.5.3.2.

Projects identified in Table 4-1 would likely result in habitat removal and disturbances to biological resources from planned activities and other cumulative activities within the ROI; however, these actions would comply with Section 7 of the ESA and consultation with USFWS would be required. Additionally, all activities affecting biological resources would be conducted in agreement with the INRMP (DAF 2020a). Mitigation measures would be developed through consultation with USFWS on a project-by-project basis to minimize potential future impacts. Implementation of the Proposed Action, in conjunction with other cumulative activities, could result in a cumulative impact to biological resources. With required mitigation, this impact would be less than significant; therefore, implementation of the Proposed Action in conjunction with other past, present, or reasonably foreseeable projects would not result in significant cumulative impacts to biological resources.

### 4.2.6 Noise

The Proposed Action would result in long-term, minor to moderate, direct, adverse impacts to noise within the ROI due to increased generation of noise levels resulting from large training events and increased air and road traffic in the area.

Projects identified in Table 4-1 would likely cause the potential for adverse impacts to noise within the region during construction, but impacts would lessen or cease to occur following construction.

As impacts associated with the Proposed Action would be intermittent and would occur in already developed and active areas, implementation would not be expected to significantly contribute to existing and future noise impacts. When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts to noise.

#### **4.2.7 Transportation**

The Proposed Action would result in long-term, minor to moderate, direct, adverse impacts to transportation in the region, as traffic volumes would be expected to increase, particularly during quarterly or annual large training events.

Projects identified in Table 4-1 would likely cause the potential for adverse impacts to transportation within the region during construction but may provide an overall beneficial impact when infrastructure improvements are complete. It is possible that overall transportation conditions would improve as a result of other projects occurring concurrently or in the near future, mitigating any increases in traffic associated with the Proposed Action. When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts to transportation.

#### **4.2.8 Hazardous Materials and Waste**

The Proposed Action could result in overall short-term, negligible, direct, adverse impacts to hazardous materials and waste management. Types and quantities of hazardous materials and waste used and generated under the Proposed Action would be similar to those analyzed in the 2016 EA, and existing storage protocols would remain in place. No substantial or long-term increase in the use or generation of hazardous materials or waste would be associated with transient and training operations. As the Proposed Action does not include subsurface exposure, users of training areas and facilities would not be exposed to contaminants, and solid waste produced during transient and training activities would be disposed of appropriately.

Projects identified in Table 4-1 would like cause increases in hazardous materials and waste generation and use. As impacts associated with the Proposed Action would be negligible and intermittent, implementation would not be expected to significantly contribute to existing and future impacts. When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts regarding hazardous materials and waste.

#### **4.2.9 Environmental Justice**

The Proposed Action would result in short-term, minor, direct, adverse impacts to environmental justice populations due to temporary increases in noise and traffic levels, and potential decreases in air quality during larger training events and use of GBS and similar pyro techniques. When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts to environmental justice communities.

#### **4.2.10 Land Use**

Transient and training activities included in the Proposed Action are consistent with current and future land uses as determined by DAF and documented in installation planning documents. The Proposed Action would not preclude continued recreational use of waters adjacent to PSFB and CCSFS, as in-water activities (such as use of WTAs in the Banana River and Atlantic Ocean and wharf facilities at CCSFS) would occur intermittently, a limited number of times per year. When considered with other past, present, and foreseeable future actions, the Proposed Action would not result in significant cumulative impacts to land use.

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## Chapter 6 References

- 32 Code of Federal Regulations (CFR) Part 989 – Environmental Impact Analysis Process (EIAP).
- 36 CFR Part 800 – Protection of Historic Properties.
- 40 CFR Parts 1500-1508 – Council on Environmental Quality.15 United States Code (U.S.C.) 2601 et seq – Title II of the Toxic Substances Control Act of 1975.
- 16 U.S.C. 469a et seq – Archaeological and Historic Preservation Act of 1974.
- 16 U.S.C. 470 et seq – National Historic Preservation Act of 1966, as amended.
- 16 U.S.C. 470aa-mm – Archaeological Resources Protection Act of 1979, Supplemental Regulations of 1984.
- 16 U.S.C. 668-668c – Bald and Golden Eagle Protection Act.
- 16 U.S.C. 670 et seq – Sikes Act.
- 16 U.S.C. 703-712 – Migratory Bird Treaty Act of 1918, as amended.
- 16 U.S.C. 1361 et seq – Marine Mammal Protection Act.
- 16 U.S.C. 1451-1464 – Coastal Zone Management Act of 1972.
- 16 U.S.C. 1531 et seq – Endangered Species Act.
- 16 U.S.C. 1801 et seq – Magnuson-Stevens Fishery Conservation and Management Act.
- 25 U.S.C. 3001-3013 – Native American Graves Protection and Repatriation Act of 1990.
- 29 U.S.C. 659-678 – Occupational Safety and Health Act of 1970.
- 29 U.S.C. 794d – Section 508 of the Rehabilitation Act of 1973.
- 33 U.S.C. 403 – Section 10 of the Rivers and Harbors Act.
- 33 U.S.C. 1251 et seq – Clean Water Act of 1977, as amended.
- 42 U.S.C. 1996 – American Indian Religious Freedom Act of 1978.
- 42 U.S.C 4321 et seq – National Environmental Policy Act of 1969, as amended.
- 42 U.S.C. 4901 et seq – Noise Control Act of 1972.
- 42 U.S.C. 6901 et seq – Resource Conservation and Recovery Act of 1976.
- 42 U.S.C. 17001 et seq – Energy Independence and Security Act of 2007.
- 42 U.S.C. 7401 et seq – Clean Air Act of 1970 and CAA Amendments of 1990.
- 42 U.S.C. 9601-9675 – Comprehensive Environmental Response, Compensation, and Liability Act.
- 42 U.S.C. 13101-13109 – Pollution Prevention Act of 1990.
- 45<sup>th</sup> Space Wing Instruction (SWI) 32-7002, Environmental Impact Analysis Process (EIAP). March 2018.
- 45 CES/CED, 2022. Request for Environmental Impact Analysis. May 19, 2022.
- 45 OG/DET 3/CD, 2021. Request for Environmental Impact Analysis. February 3, 2021.
- 920 RQW, 2021. Request for Environmental Impact Analysis. March 23, 2021.

- 1 Air Force Civil Engineer Center (AFCEC), 2023. AICUZ Program Frequently Asked Questions.  
2 Accessed June 12, 2023 at [https://www.afcec.af.mil/About-Us/Fact-](https://www.afcec.af.mil/About-Us/Fact-Sheets/Display/Article/2388269/aicuz-program-frequently-asked-questions/)  
3 [Sheets/Display/Article/2388269/aicuz-program-frequently-asked-questions/](https://www.afcec.af.mil/About-Us/Fact-Sheets/Display/Article/2388269/aicuz-program-frequently-asked-questions/).
- 4 AFCEC 2022. Smoke Grenade Dispersement – response [email]. Email dated March 10, 2022.
- 5 AFCEC, 2017. Environmental Assessment for Shoreline Stabilization and Airfield Protection-  
6 Draft Final. March 2017.
- 7 Air Force Instruction (AFI) 32-1001, Civil Engineer Operations. October 2019.
- 8 AFI 32-1015, Integrated Installation Planning. January 2021.
- 9 AFI 32-1067, Water and Fuel Systems. April 2016.
- 10 AFI 32-7001, Environmental Management. August 2019.
- 11 AFI 32-7020, The Environmental Restoration Program. March 2020.
- 12 Air Force Life Cycle Management Center (AFLCMC)/HBZ, 2021. Request for Environmental  
13 Impact Analysis. February 3, 2021.
- 14 Air Force Manual (AFMAN) 32-7002, Environmental Compliance and Pollution Prevention.  
15 February 2020.
- 16 AFMAN 32-7003, Environmental Conservation. April 2020.
- 17 ATP Flight School (ATP), 2023. Airspace Classes. Accessed July 19, 2023 at  
18 <https://atpflightschool.com/become-a-pilot/flight-training/airspace-classes.html>.
- 19 Audubon, 2024. Audubon Florida EagleWatch Public Nest Map. Audubon Center for Birds of  
20 Prey. Accessed March 5, 2024 at [https://cbop.audubon.org/conservation/about-eaglewatch-](https://cbop.audubon.org/conservation/about-eaglewatch-program)  
21 [program](https://cbop.audubon.org/conservation/about-eaglewatch-program).
- 22 Cape Canaveral Space Force Station (CCSFS), 2024. Personal Communication with CCSFS  
23 Biologist. March 2024.
- 24 Carter, L., A. Terando, K. Dow, K. Hiers, K.E. Kunkel, A. Lascurain, D. Marcy, M. Osland, and  
25 P. Schramm, 2018. Southeast. In *Impacts, Risk, and Adaptation in the United States: Fourth*  
26 *National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E.  
27 Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change  
28 Research Program, Washington, DC, USA, pp. 743-808. Doi: 10.7930/NCA4.2018.CH19.
- 29 Carver, Brian D, N.D. Bat (Chiroptera) Surveys for Midwest AFCEC Installations. Task 3-East  
30 Region Tasks. Final Report. Tennessee Tech University Department of Biology.
- 31 Centers for Disease Control and Prevention (CDC), 2023. What Noise Can Cause Hearing  
32 Loss. Accessed July 11, 2023 at  
33 [https://www.cdc.gov/nceh/hearing\\_loss/what\\_noises\\_cause\\_hearing\\_loss.html](https://www.cdc.gov/nceh/hearing_loss/what_noises_cause_hearing_loss.html).
- 34 Chase, A., 2024. Scientists Discover the World’s Largest Deep-Sea Coral Reef Habitat. Natural  
35 Resources Defense Council. January 23, 2024. Accessed March 8, 2024 at  
36 [https://www.nrdc.org/bio/alison-chase/scientists-discover-worlds-largest-deep-sea-coral-](https://www.nrdc.org/bio/alison-chase/scientists-discover-worlds-largest-deep-sea-coral-reef-habitat)  
37 [reef-habitat](https://www.nrdc.org/bio/alison-chase/scientists-discover-worlds-largest-deep-sea-coral-reef-habitat).
- 38 Climate Data, 2023. United States of America Climate: Average Temperature in USA, Weather  
39 & USA Weather by Month. Accessed July 2023 at [https://en.climate-data.org/north-](https://en.climate-data.org/north-america/united-states-ofamerica-163/)  
40 [america/united-states-ofamerica-163/](https://en.climate-data.org/north-america/united-states-ofamerica-163/).
- 41 Council on Environmental Quality (CEQ), 1998. Final Guidance for Incorporating Environmental  
42 Justice Concerns in EPA’s NEPA Compliance Analyses. April 1998. Accessed July 4, 2023

- 1 at [https://www.epa.gov/sites/default/files/2015-](https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_epa0498.pdf)
- 2 [02/documents/ej\\_guidance\\_nepa\\_epa0498.pdf](https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_epa0498.pdf).
- 3 Department of the Air Force (DAF), 2023. Environmental Assessment for Eastern Range
- 4 Planning and Infrastructure Development Cape Canaveral Space Force Station, Florida.
- 5 DAF, 2022. Environmental Assessment for Installation Development at Patrick Space Force
- 6 Base, Florida. Department of the Air Force United States Space Force. September 6, 2022.
- 7 DAF, 2020a. Department of the Air Force Integrated Natural Resources Management Plan,
- 8 Patrick.
- 9 DAF, 2020b. A Guide to the Air Installations Compatible Use Zones Program. October 6, 2020.
- 10 Accessed July 2023 at
- 11 [https://www.afcec.af.mil/Portals/17/images/AICUZ/Guide%20to%20AICUZ\\_USAF%2020201](https://www.afcec.af.mil/Portals/17/images/AICUZ/Guide%20to%20AICUZ_USAF%2020201006.pdf?ver=0HrhaKW0tjeLowz_PMRN7w%3D%3D)
- 12 [006.pdf?ver=0HrhaKW0tjeLowz\\_PMRN7w%3D%3D](https://www.afcec.af.mil/Portals/17/images/AICUZ/Guide%20to%20AICUZ_USAF%2020201006.pdf?ver=0HrhaKW0tjeLowz_PMRN7w%3D%3D).
- 13 DAF, 2020c. Integrated Cultural Resources Management Plan, Patrick.
- 14 DAF, 2017. U.S. Air Force Integrated Natural Resources Management Plan, Avon Park Air
- 15 Force Range. 598<sup>th</sup> Range Squadron. Accessed September 15, 2023 at
- 16 <https://education.nri.tamu.edu/media/vkkf1eng/avon-park-inrmp-2017.pdf>.
- 17 DAF, 2016. Environmental Assessment for 920<sup>th</sup> Rescue Wing Training Operations.
- 18 DAF, 2008. Environmental Assessment for the Implementation of the Integrated Natural
- 19 Resources Management Plan for the 45th Space Wing. August 2008.
- 20 DAF, 1997. Guide for Environmental Justice Analysis within the Environmental Impact Analysis
- 21 Process (EIAP). November 1997. Accessed 2023 at
- 22 <https://p2infohouse.org/ref/22/21454.pdf>.
- 23 Department of the Air Force Instruction (DAFI) 90-2002, Interactions with Federally Recognized
- 24 Tribes. August 2020.
- 25 Department of the Air Force Manual (DAFMAN) 32-1067, Water and Fuel Systems. August
- 26 2022.
- 27 DAFMAN 32-1084, Standard Facility Requirements. November 2022.
- 28 DAFMAN 91-203, Air Force Occupational Safety, Fire and Health Standards. March 2022.
- 29 Department of Defense (DoD) Directive 3200.11, Major Range and Test Facility Base (MRTFB).
- 30 October 2018.
- 31 DoD Directive 4710.02, DoD Interactions with Federally Recognized Tribes. September 2018.
- 32 DoD Instruction 3200.18, Management and Operation of the Major Range and Test Facility
- 33 Base (MRTFB). October 2018.
- 34 Executive Order (EO) 11988. 1977, Floodplain Management.
- 35 EO 11990. 1977, Protection of Wetlands.
- 36 EO 12989. 1994, Federal Actions to Address Environmental Justice in Minority Populations and
- 37 Low-Income Populations.
- 38 EO 13045. 1997, Protection of Children from Environmental Health Risks and Safety Risks.
- 39 EO 13175. 2000, Consultation and Coordination with Indian Tribal Governments.

- 1 EO 13690. 2015, Establishing a Federal Flood Risk Management Standard and a Process for  
2 Further Soliciting and Considering Stakeholder Input.
- 3 EO 13990. 2021, Protecting Public Health and the Environment and Restoring Science to  
4 Tackle the Climate Crisis.
- 5 EO 14008. 2021, Tackling the Climate Crisis at Home and Abroad.
- 6 Florida Administrative Code (FAC) Chapter 5B-40 – Preservation of Native Flora of Florida.
- 7 FAC, Chapter 62-302, Surface Water Quality Standards.
- 8 FAC, Chapter 62-303, Identification of Impaired Surface Waters.
- 9 FAC, Chapter 62-330, Environmental Resource Permitting.
- 10 FAC, Chapter 62B-55, Model Lighting Ordinance for Marine Turtle Protection Rule.
- 11 FAC, Chapter 68A, Freshwater Fish and Wildlife.
- 12 Federal Aviation Administration (FAA), 2022. Community Response to Noise. Updated March  
13 29, 2022. Accessed July 2023 at  
14 [https://www.faa.gov/regulations\\_policies/policy\\_guidance/noise/community](https://www.faa.gov/regulations_policies/policy_guidance/noise/community).
- 15 Federal Emergency Management Administration (FEMA), 2021. FEMA Flood Map Service  
16 Center. Accessed August 29, 2023 at  
17 <https://msc.fema.gov/portal/advanceSearch#searchresultsanchor>.
- 18 FEMA, 2014. FEMA Flood Map Service Center. Accessed August 29, 2023 at:  
19 <https://msc.fema.gov/portal/search?AddressQuery=Minton%20Rd%2C%20Palm%20Bay%2C%20FL%2032907>.
- 20
- 21 Federal Register, 2023a. Endangered and Threatened Wildlife and Plants: Proposed Rule to  
22 Designate Marine Critical Habitat for Six Distinct Population Segments of Green Sea Turtles.  
23 Federal Register. Publication Date: July 19, 2023. Accessed August 31, 2023 at  
24 [https://www.federalregister.gov/documents/2023/07/19/2023-14109/endangered-and-](https://www.federalregister.gov/documents/2023/07/19/2023-14109/endangered-and-threatened-wildlife-and-plants-proposed-rule-to-designate-marine-critical-habitat-for)  
25 [threatened-wildlife-and-plants-proposed-rule-to-designate-marine-critical-habitat-for](https://www.federalregister.gov/documents/2023/07/19/2023-14109/endangered-and-threatened-wildlife-and-plants-proposed-rule-to-designate-marine-critical-habitat-for).
- 26 Federal Register, 2023b. Endangered and Threatened Wildlife and Plants; Designation of  
27 Critical Habitat for Green Sea Turtle. Federal Register. Published July 19, 2023. Accessed  
28 August 31, 2023 at [https://www.federalregister.gov/documents/2023/07/19/2023-](https://www.federalregister.gov/documents/2023/07/19/2023-14225/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-green-sea-turtle)  
29 [14225/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-](https://www.federalregister.gov/documents/2023/07/19/2023-14225/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-green-sea-turtle)  
30 [green-sea-turtle](https://www.federalregister.gov/documents/2023/07/19/2023-14225/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-green-sea-turtle).
- 31 Federal Register, 2022. 50 CFR Part 224 – Amendments to the North Atlantic Right Whale  
32 Vessel Strike Reduction Rule. Volume 87, Number 146. August 1, 2022. Accessed October  
33 24, 2023 at [https://www.federalregister.gov/documents/2022/08/01/2022-](https://www.federalregister.gov/documents/2022/08/01/2022-16211/amendments-to-the-north-atlantic-right-whale-vessel-strike-reduction-rule#:~:text=The%20proposed%20rule%20would%3A%20%281%29%20modify%20the%20spatial,%284%29%20update%20the%20speed%20rule%27s%20safety%20deviation%20provision)  
34 [16211/amendments-to-the-north-atlantic-right-whale-vessel-strike-reduction-](https://www.federalregister.gov/documents/2022/08/01/2022-16211/amendments-to-the-north-atlantic-right-whale-vessel-strike-reduction-rule#:~:text=The%20proposed%20rule%20would%3A%20%281%29%20modify%20the%20spatial,%284%29%20update%20the%20speed%20rule%27s%20safety%20deviation%20provision)  
35 [rule#:~:text=The%20proposed%20rule%20would%3A%20%281%29%20modify%20the%20](https://www.federalregister.gov/documents/2022/08/01/2022-16211/amendments-to-the-north-atlantic-right-whale-vessel-strike-reduction-rule#:~:text=The%20proposed%20rule%20would%3A%20%281%29%20modify%20the%20spatial,%284%29%20update%20the%20speed%20rule%27s%20safety%20deviation%20provision)  
36 [spatial,%284%29%20update%20the%20speed%20rule%27s%20safety%20deviation%20pr](https://www.federalregister.gov/documents/2022/08/01/2022-16211/amendments-to-the-north-atlantic-right-whale-vessel-strike-reduction-rule#:~:text=The%20proposed%20rule%20would%3A%20%281%29%20modify%20the%20spatial,%284%29%20update%20the%20speed%20rule%27s%20safety%20deviation%20provision)  
37 [ovision](https://www.federalregister.gov/documents/2022/08/01/2022-16211/amendments-to-the-north-atlantic-right-whale-vessel-strike-reduction-rule#:~:text=The%20proposed%20rule%20would%3A%20%281%29%20modify%20the%20spatial,%284%29%20update%20the%20speed%20rule%27s%20safety%20deviation%20provision).
- 38 Federal Register, 2001. 50 CFR Part 17 – Endangered and Threatened Wildlife and Plants;  
39 Proposal to Establish a Nonessential Experimental Population of Whooping Cranes in the  
40 Eastern United States. Volume 66, Number 47. March 9, 2001. Accessed August 4, 2023 at  
41 <https://www.govinfo.gov/content/pkg/FR-2001-03-09/pdf/01-5821.pdf#page=1>.

- 1 Florida Department of Environmental Protection (FDEP), 2023a. Assessment Lists. Accessed  
2 July 9, 2023 at [https://floridadep.gov/dear/watershed-assessment-](https://floridadep.gov/dear/watershed-assessment-section/content/assessment-lists)  
3 [section/content/assessment-lists](https://floridadep.gov/dear/watershed-assessment-section/content/assessment-lists).
- 4 FDEP, 2023b. Biennial Assessment 2020-2022 Final Lists. Accessed July 9, 2023 at  
5 [https://fdep.maps.arcgis.com/home/webmap/viewer.html?webmap=84773af76da44c1fa20f7](https://fdep.maps.arcgis.com/home/webmap/viewer.html?webmap=84773af76da44c1fa20f7317279cdca7)  
6 [317279cdca7](https://fdep.maps.arcgis.com/home/webmap/viewer.html?webmap=84773af76da44c1fa20f7317279cdca7).
- 7 FDEP, 2021. Indian River Lagoon Basin, Banana River Lagoon Basin Management Action Plan.  
8 Accessed October 17, 2023 at  
9 [https://publicfiles.dep.state.fl.us/DEAR/BMAP/IndianRiverLagoon/BMAP\\_Documents/2021\\_IRL\\_BMAP\\_Final/BRL/Final\\_BRL\\_BMAP20210216.pdf](https://publicfiles.dep.state.fl.us/DEAR/BMAP/IndianRiverLagoon/BMAP_Documents/2021_IRL_BMAP_Final/BRL/Final_BRL_BMAP20210216.pdf).  
10
- 11 Florida Department of Transportation (FDOT), 2023. Florida Traffic Online Web Application.  
12 Accessed June 17, 2023 at <https://tdaappsprod.dot.state.fl.us/fto/>.
- 13 Florida Fish and Wildlife Conservation Commission (FWC), 2023a. Living with Bats. Accessed  
14 July 25, 2023 at <https://myfwc.com/conservation/you- conserve/wildlife/bats/>.
- 15 FWC, 2023b. Florida's Resident American Kestrels. Accessed July 14, 2023 at  
16 <https://myfwc.com/research/wildlife/birds/southeastern-american-kestrel/fl-american-kestrel/>.
- 17 FWC, 2022. Florida's Endangered and Threatened Species. Updated December 2022.  
18 Accessed July 27, 2023 at [https://myfwc.com/media/1945/threatened-endangered-](https://myfwc.com/media/1945/threatened-endangered-species.pdf)  
19 [species.pdf](https://myfwc.com/media/1945/threatened-endangered-species.pdf).
- 20 FWC, 2019a. Osprey, *Pandion haliaetus*. Approved by FWC Commission September 2018.  
21 Incorporated by reference in Rule 68A-16.003, F.A.C., April 2019. Accessed July 14, 2023  
22 at <https://myfwc.com/media/18642/osprey-guidelines.pdf>.
- 23 FWC, 2019b. Florida's State Wildlife Action Plan 2019. Accessed July 25, 2023 at  
24 <https://myfwc.com/media/22767/2019-action-plan.pdf>.
- 25 Florida Native Plant Society, 2024. *Eugenia confusa*. Accessed May 7, 2024 at  
26 <https://www.fnps.org/plant/eugenia-confusa>.
- 27 Florida Natural Areas Inventory (FNAI), 2023. Biodiversity Matrix Query Results For Matrix Units  
28 60790, 60791, 61074, 61075, 61927 through 61930, 61941, 62201 through 62205, 62214  
29 through 62227, 62489 through 62501, 62762 through 62771, 63032 through 63037, and  
30 63300 through 63303. Accessed July 10, 2023 at  
31 <https://www.fnai.org/BiodiversityMatrix/index.html>.
- 32 FNAI, 2001. Field Guide to the Rare Animals of Florida. Florida Pine Snake (*Pituophis*  
33 *melanoleucus mugitus*). Accessed July 25, 2023 at  
34 [https://www.fnai.org/PDFs/FieldGuides/Pituophis\\_melanoleucus\\_mugitus.pdf](https://www.fnai.org/PDFs/FieldGuides/Pituophis_melanoleucus_mugitus.pdf).
- 35 FNAI, 2000. Low Peperomia. Accessed May 7, 2024 at  
36 [https://www.fnai.org/PDFs/FieldGuides/Peperomia\\_humilis.pdf#:~:text=Habitat%3A%20Shel](https://www.fnai.org/PDFs/FieldGuides/Peperomia_humilis.pdf#:~:text=Habitat%3A%20Shel)  
37 [l%20mounds%20and%20limestone%20outcrops,in%20mesic%20hammocks%2C%20coast](https://www.fnai.org/PDFs/FieldGuides/Peperomia_humilis.pdf#:~:text=Habitat%3A%20Shel)  
38 [al%20berms%2C%20cypress%20swamps](https://www.fnai.org/PDFs/FieldGuides/Peperomia_humilis.pdf#:~:text=Habitat%3A%20Shel).
- 39 Florida Statutes (F.S.) 379.2291 – Florida Endangered and Threatened Species Act of 1977.  
40 F.S., 379.2431. Marine Animal Regulation, Florida Marine Turtle Protection Act.  
41 F.S., 403.9323. Mangrove Trimming and Preservation Act, Legislative Intent.
- 42 Florida Wildflower Foundation, 2022. Blueflower butterwort. Accessed May 7, 2024 at  
43 <https://www.flawildflowers.org/flower-friday-pinguicula-caerulea/>.

- 1 Florida Wildflower Foundation, 2017. Titusville balm. November 17, 2017. Accessed May 7,  
2 2024 at <https://www.flawildflowers.org/flower-friday-dicerandra-thinicola/>.
- 3 Harris Miller Miller & Hanson Inc. (HMMH), 2024. Noise Model Operational Data Documentation  
4 (100%) for Patrick Space Force Base, FL. April 2024.
- 5 National Marine Fisheries Service (NMFS), 2023a. Species Directory. Accessed July 13, 2023  
6 at <https://www.fisheries.noaa.gov/species-directory>.
- 7 NMFS, 2023b. National NMFS ESA Critical Habitat Mapper. Accessed August 29, 2023 at  
8 [https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=68d8df16b39c48fe9f60640](https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=68d8df16b39c48fe9f60640692d0e318)  
9 [692d0e318](https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=68d8df16b39c48fe9f60640692d0e318).
- 10 NMFS, 2009. Smalltooth Sawfish Recover Plan (*Pristis pectinate*). Accessed July 13, 2023 at  
11 <https://repository.library.noaa.gov/view/noaa/15983>.
- 12 National Science Foundation (NSF), 2023. Final Environmental Assessment/Analysis of Marine  
13 Geophysical Research of the Blake Plateau, Northwest Atlantic Ocean. Prepared for  
14 Lamont-Doherty Earth Observation and NSF Division of Sciences. June 20, 2023. Accessed  
15 March 8, 2024 at [https://www.nsf.gov/geo/oce/envcomp/blake-plateau-2023/Blake-Plateau-](https://www.nsf.gov/geo/oce/envcomp/blake-plateau-2023/Blake-Plateau-Final-EA-27June2023.pdf)  
16 [Final-EA-27June2023.pdf](https://www.nsf.gov/geo/oce/envcomp/blake-plateau-2023/Blake-Plateau-Final-EA-27June2023.pdf).
- 17 NatureServe, 2024. NatureServe Explorer. Accessed 2023 and 2024 at  
18 <https://explorer.natureserve.org/>.
- 19 Occupational Safety and Health Administration (OSHA), 2008. Occupational Noise Exposure.  
20 Standard 1910.95. Updated December 12, 2008. Accessed July 2023 at  
21 <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95>.
- 22 Patrick Space Force Base (PSFB), 2023a. Personal Communication with Keitha Dattilo-Bain, 45  
23 CES/CEIE. October 2023.
- 24 PSFB, 2023b. Personal Communication with Keitha Dattilo-Bain, 45 CES/CEIE. December  
25 2023.
- 26 PSFB, 2021. Space Launch Delta 45 History. June 2021. Accessed March 2023 at  
27 <https://www.patrick.spaceforce.mil/history/>.
- 28 Solutio Environmental. 2023a. Air Conformity Applicability Model. Accessed April 2, 2024 at  
29 <https://aqhelp.com/AQtools.html>.
- 30 Solutio Environmental. 2023b. AF AQ EIAP Guide Volume 1. Accessed April 2, 2024 at  
31 <https://aqhelp.com/AQdocs.html>.
- 32 Space Florida, 2020. Environmental Assessment for the Reconstitution and Enhancement of  
33 Space Launch Complex 20 Multi-User Launch Operations at Cape Canaveral Air Force  
34 Station Florida. September 2020. Accessed July 2023 at [https://www.spaceflorida.gov/wp-](https://www.spaceflorida.gov/wp-content/uploads/2020/09/SLC20-Reuse-EA-CCAFS-Revised-Draft-9-1-2020.pdf)  
35 [content/uploads/2020/09/SLC20-Reuse-EA-CCAFS-Revised-Draft-9-1-2020.pdf](https://www.spaceflorida.gov/wp-content/uploads/2020/09/SLC20-Reuse-EA-CCAFS-Revised-Draft-9-1-2020.pdf).
- 36 Space Florida, 2017. Cape Canaveral Space Port Master Plan. January 2017. Accessed July  
37 2023 at [https://www.spaceflorida.gov/wp-content/uploads/2018/12/sf-bod-approved-ccs-](https://www.spaceflorida.gov/wp-content/uploads/2018/12/sf-bod-approved-ccs-master-plan-02-01-17.pdf)  
38 [master-plan-02-01-17.pdf](https://www.spaceflorida.gov/wp-content/uploads/2018/12/sf-bod-approved-ccs-master-plan-02-01-17.pdf).
- 39 Thompson, H. and A. Poitras, 2021. EMP Field Team Annual Report 2021. International Crane  
40 Foundation. Accessed August 4, 2023 at [https://savingcranes.org/wp-](https://savingcranes.org/wp-content/uploads/2022/07/emp_field_team_annual_report_2021.pdf)  
41 [content/uploads/2022/07/emp\\_field\\_team\\_annual\\_report\\_2021.pdf](https://savingcranes.org/wp-content/uploads/2022/07/emp_field_team_annual_report_2021.pdf).
- 42 United Facilities Criteria (UFC) 3-210-10, 2020. Low Impact Development, with Change 3.  
43 Revised Date March 1, 2020.

- 1 United States Air Force (USAF), 2020. Final Avon Park Air Force Range Operations  
2 Environmental Assessment. February 2020.
- 3 United States Army Corps of Engineers (USACE), 2008. The Corps of Engineers, Jacksonville  
4 District, U.S. Fish and Wildlife Service, Jacksonville Ecological Services Field Office and  
5 State of Florida Effect Determination Key for the Wood Stork in Central and North  
6 Peninsular Florida. September 2008. Accessed July 25, 2023 at  
7 [https://www.saj.usace.army.mil/Portals/44/docs/regulatory/sourcebook/endangered\\_species](https://www.saj.usace.army.mil/Portals/44/docs/regulatory/sourcebook/endangered_species/wood_stork/JAX_WoodStorkKey_Sep2008.pdf)  
8 [/wood\\_stork/JAX\\_WoodStorkKey\\_Sep2008.pdf](https://www.saj.usace.army.mil/Portals/44/docs/regulatory/sourcebook/endangered_species/wood_stork/JAX_WoodStorkKey_Sep2008.pdf).
- 9 United States Census Bureau (USCB), 2023a. How the Census Bureau Measures Poverty.  
10 Revised January 30, 2023. Accessed July 4, 2023 at [https://www.census.gov/topics/income-](https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html#:~:text=The%20official%20poverty%20definition%20uses,Medicaid%2C%20and%20food%20stamps)  
11 [poverty/poverty/guidance/poverty-](https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html#:~:text=The%20official%20poverty%20definition%20uses,Medicaid%2C%20and%20food%20stamps)  
12 [measures.html#:~:text=The%20official%20poverty%20definition%20uses,Medicaid%2C%20](https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html#:~:text=The%20official%20poverty%20definition%20uses,Medicaid%2C%20and%20food%20stamps)  
13 [and%20food%20stamps](https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html#:~:text=The%20official%20poverty%20definition%20uses,Medicaid%2C%20and%20food%20stamps).
- 14 USCB, 2023b. Glossary- Block Group. Accessed August 6, 2023 at  
15 [https://www.census.gov/programs-](https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4)  
16 [surveys/geography/about/glossary.html#par\\_textimage\\_4](https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4).
- 17 USCB, 2021a. Table C17002, Ratio of Income to Poverty Level in the Past 12 Months. 2021:  
18 ACS 5-Year Estimates Detailed Tables. Accessed July 3, 2023 at  
19 [https://data.census.gov/table?t=Income+and+Poverty:Official+Poverty+Measure:Poverty&q](https://data.census.gov/table?t=Income+and+Poverty:Official+Poverty+Measure:Poverty&q=1500000US120090669001,120090669002,120090669003,120090671001&tid=ACSDT5Y2021.C17002)  
20 [=1500000US120090669001,120090669002,120090669003,120090671001&tid=ACSDT5Y2](https://data.census.gov/table?t=Income+and+Poverty:Official+Poverty+Measure:Poverty&q=1500000US120090669001,120090669002,120090669003,120090671001&tid=ACSDT5Y2021.C17002)  
21 [021.C17002](https://data.census.gov/table?t=Income+and+Poverty:Official+Poverty+Measure:Poverty&q=1500000US120090669001,120090669002,120090669003,120090671001&tid=ACSDT5Y2021.C17002).
- 22 USCB, 2021b. Table B01001 Sex by Age. 2021: ACS 5-Year Estimates Detailed Tables.  
23 Accessed July 3, 2023 at  
24 [https://data.census.gov/table?t=Age+and+Sex&q=010XX00US\\_040XX00US12\\_050XX00U](https://data.census.gov/table?t=Age+and+Sex&q=010XX00US_040XX00US12_050XX00US12009_1500000US120090669001,120090669002,120090669003,120090671001&tid=ACSDT5Y2021.B01001)  
25 [S12009\\_1500000US120090669001,120090669002,120090669003,120090671001&tid=AC](https://data.census.gov/table?t=Age+and+Sex&q=010XX00US_040XX00US12_050XX00US12009_1500000US120090669001,120090669002,120090669003,120090671001&tid=ACSDT5Y2021.B01001)  
26 [SDT5Y2021.B01001](https://data.census.gov/table?t=Age+and+Sex&q=010XX00US_040XX00US12_050XX00US12009_1500000US120090669001,120090669002,120090669003,120090671001&tid=ACSDT5Y2021.B01001).
- 27 USCB, 2020. Table P2 Hispanic of Latino, and Not Hispanic or Latino by Race. 2020: DEC  
28 Redistricting Data (PL 94-171). Accessed July 3, 2023 at  
29 [https://data.census.gov/table?q=p2&t=Race+and+Ethnicity&q=010XX00US\\_040XX00US12](https://data.census.gov/table?q=p2&t=Race+and+Ethnicity&q=010XX00US_040XX00US12_050XX00US12009_1500000US120090669001,120090669002,120090669003,120090669004,120090669005,120090671001&tid=DECENNIALPL2020.P2)  
30 [\\_050XX00US12009\\_1500000US120090669001,120090669002,120090669003,120090669](https://data.census.gov/table?q=p2&t=Race+and+Ethnicity&q=010XX00US_040XX00US12_050XX00US12009_1500000US120090669001,120090669002,120090669003,120090669004,120090669005,120090671001&tid=DECENNIALPL2020.P2)  
31 [004,120090669005,120090671001&tid=DECENNIALPL2020.P2](https://data.census.gov/table?q=p2&t=Race+and+Ethnicity&q=010XX00US_040XX00US12_050XX00US12009_1500000US120090669001,120090669002,120090669003,120090669004,120090669005,120090671001&tid=DECENNIALPL2020.P2).
- 32 United States Department of Agriculture (USDA), 2024. Farmland Protection Policy Act.  
33 Accessed March 19, 2024 at [https://www.nrcs.usda.gov/conservation-basics/natural-](https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/land/cropland/farmland-protection-policy-act)  
34 [resource-concerns/land/cropland/farmland-protection-policy-act](https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/land/cropland/farmland-protection-policy-act).
- 35 USDA, 2022. Brevard County, Florida (FL009). September 1, 2022. Accessed June 29, 2023 at  
36 <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.
- 37 United States Environmental Protection Agency (USEPA), 2024. AirData Air Quality Monitors.  
38 Accessed January 3, 2024 at [https://www.epa.gov/outdoor-air-quality-data/interactive-map-](https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors)  
39 [air-quality-monitors](https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors).
- 40 USEPA, 2023a. NAAQS Table. Accessed 2023 at [https://www.epa.gov/criteria-air-](https://www.epa.gov/criteria-air-pollutants/naaqs-table)  
41 [pollutants/naaqs-table](https://www.epa.gov/criteria-air-pollutants/naaqs-table).
- 42 USEPA, 2023b. EJSCREEN. Accessed July 4, 2023 at <https://ejscreen.epa.gov/mapper/>.
- 43 USEPA, 2022. 2020 National Emissions Inventory (NEI) Data. Accessed March 6, 2024 at  
44 <https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventorynei-data>.

- 1 USEPA, 1981. Noise Effects Handbook. A Desk Reference to Health and Welfare Effects of  
2 Noise. Office of Noise Abatement and Control. October 1979, Revised July 1981. Accessed  
3 2023 at <http://nonoise.org/epa/Roll7/roll7doc27.pdf>.
- 4 USEPA, 1978. Protective Noise Levels, Condensed Version of EPA Levels Document. Office of  
5 Noise Abatement and Control. EPA 550/9-79-100. November 1978.
- 6 United States Fish and Wildlife Service (USFWS), 2023a. Wetlands Mapper. Accessed May 1,  
7 2023 at <https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper>.
- 8 USFWS, 2023b. USFWS Threatened & Endangered Species Active Critical Habitat Report.  
9 Accessed July 13, 2023 at <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>.
- 10 USFWS, 2023c. National Bald Eagle Management Guidelines. Accessed July 14, 2023 at  
11 [https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-](https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf)  
12 [guidelines\\_0.pdf](https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf).
- 13 USFWS, 2023d. Search for Species. Accessed July 25, 2023 at <https://www.fws.gov/species>.
- 14 USFWS, 2023e. Everglade Snail Kit Survey Protocol. Accessed July 25, 2023 at  
15 <https://ipac.ecosphere.fws.gov/guideline/survey/population/1221/office/41420.pdf>.
- 16 USFWS, 2023f. Information for Planning and Consultation (IPaC). Accessed July 7, 2023 and  
17 September 15, 2023 at <https://ecos.fws.gov/ipac/>.
- 18 USFWS, 2019. Recovery Plan for the Florida Scrub-Jay (*Aphelocoma coerulescens*). Accessed  
19 July 25, 2023 at [https://ecos.fws.gov/docs/recovery\\_plan/20190926%20Florida%20Scrub-](https://ecos.fws.gov/docs/recovery_plan/20190926%20Florida%20Scrub-Jay%20Revised%20Recovery%20Plan_1a.pdf)  
20 [Jay%20Revised%20Recovery%20Plan\\_1a.pdf](https://ecos.fws.gov/docs/recovery_plan/20190926%20Florida%20Scrub-Jay%20Revised%20Recovery%20Plan_1a.pdf).
- 21 USFWS, 2018. Florida Woodstork Nesting Colonies. Last updated November 20, 2018.  
22 Accessed March 5, 2024 at  
23 <https://www.arcgis.com/home/item.html?id=b11f2d77938a4cf688e0e706016fd968>.
- 24 USFWS, 1999. South Florida Multi-Species Recovery Plan. May 18, 1999. Accessed July 13,  
25 2023 at [https://ecos.fws.gov/docs/recovery\\_plan/sfl\\_msrp/SFL\\_MSRP\\_Species.pdf](https://ecos.fws.gov/docs/recovery_plan/sfl_msrp/SFL_MSRP_Species.pdf).
- 26 USFWS, 1997. Wood Stork Recovery Plan. Accessed July 25, 2023 at  
27 [https://ecos.fws.gov/docs/recovery\\_plan/970127.pdf](https://ecos.fws.gov/docs/recovery_plan/970127.pdf).
- 28 United States Geological Survey (USGS), 2024. Science in Your Watershed. Locate Your  
29 Watershed. Last Modified January 10, 2024. Accessed March 21, 2024 at  
30 <https://water.usgs.gov/wsc/acc/030802.html>.
- 31 USGS, 2021. 7.5-minute series 1:24,000 Quadrangles for Tropic, Florida – Brevard County;  
32 Cape Canaveral – Brevard County; False Cape, Florida – Brevard County; and Melbourne  
33 West, Florida – Brevard County. Accessed July 28, 2023 at  
34 <https://ngmdb.usgs.gov/topoview/viewer/#12/28.1351/-80.6627>.
- 35 United States Naval Research Laboratory (NRL), 2020. Request for Environmental Impact  
36 Analysis. September 29, 2020.
- 37 United States Space Force (USSF), 2019. Airfield Operations, Patrick Air Force Base, 45th  
38 Space Wing Instruction, 13-204, Volume 1. October 22, 2019.
- 39 USSF, 2018. Patrick AFB Noise Modeling Operational Data Documentation. July 2018.
- 40 United States Transportation Command (USTRANSCOM), 2016. Defense Transportation  
41 Regulation - Part III, Mobility, Appendix F - Military Movements on Public Roads. April 27,  
42 2022. Accessed July 2023 at [https://www.ustranscom.mil/dtr/part-iii/dtr\\_part\\_iii\\_app\\_f.pdf](https://www.ustranscom.mil/dtr/part-iii/dtr_part_iii_app_f.pdf).

- 1 University of Florida, 2024. Scaevola Plumieri Inkberry. Publication #FPS539. February 25,  
2 2024. Accessed May 7, 2024 at <https://edis.ifas.ufl.edu/publication/FP539>.
- 3 University of Florida, 2016a. Tillandsia flexuosa. Twisted Airplant. February 17, 2016. Accessed  
4 May 7, 2024 at [https://entnemdept.ufl.edu/frank/savebromeliads/floridas-](https://entnemdept.ufl.edu/frank/savebromeliads/floridas-bromeliads/Tillandsia-flexuosa.html)  
5 [bromeliads/Tillandsia-flexuosa.html](https://entnemdept.ufl.edu/frank/savebromeliads/floridas-bromeliads/Tillandsia-flexuosa.html).
- 6 University of Florida, 2016b. Tillandsia fasciculata. Cardinal Airplant. February 17, 2016.  
7 Accessed May 7, 2024 at [https://entnemdept.ufl.edu/frank/savebromeliads/floridas-](https://entnemdept.ufl.edu/frank/savebromeliads/floridas-bromeliads/Tillandsia-fasciculata.html)  
8 [bromeliads/Tillandsia-fasciculata.html](https://entnemdept.ufl.edu/frank/savebromeliads/floridas-bromeliads/Tillandsia-fasciculata.html).

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**Appendix A**  
**Intergovernmental Coordination, Public and Agency Participation**

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# Intergovernmental Coordination, Public and Agency Participation

The Department of the Air Force (DAF) coordinated with other federal agencies with jurisdiction by law or special expertise over the Proposed Action, as well as state and local agencies relevant to the Region of Interest, to inform the range of issues to be addressed in the Environmental Assessment (EA). Additionally, the DAF offered consultation with federally recognized Tribes that are historically affiliated with the geographic region affected by the Proposed Action, regarding the potential to affect properties of cultural, historical, or religious significance to the Tribes. Early Notification Letters, delivered by mail or email, were sent in June 2023. A sample of these letters, as well as all responses received, is provided in this appendix.

## A.1 Federal, State and Local Agencies Consultation

The DAF coordinated with federal, state, and local agencies and other entities with jurisdiction by law or special expertise over the Proposed Action to inform the range of issues to be addressed in the EA. A sample early notification letter is presented in Exhibit 1. Section A.1.1 contains a list of stakeholders who received an Early Notification Letter. Section A.1.2 provides responses received.

### A.1.1 List of Stakeholders

#### Federal

##### **Federal Aviation Administration Southern Region**

Stacey Zee  
Manager, Operations Support Branch  
Office of Commercial Space Transportation  
800 Independence Ave, SW  
Washington, DC 20591

##### **National Marine Fisheries Service**

Wilber Pace  
Branch Chief  
Habitat Conservation Division, Essential Fish Habitat  
263 13th Ave.  
St. Petersburg, FL 33701-5505

##### **United States Army Corps of Engineers**

John Palmer  
Section Chief  
Cocoa Permits Section  
400 High Point Drive, Suite 600  
Cocoa, FL 32926

**United States Coast Guard**

Laura Springer  
Commander  
Waterways Management Policy Division  
\*Provided via email

**United States Environmental Protection Agency**

Ntale Kajumba  
Chief, NEPA Program Office  
Region 4  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, GA 30303-8960

**United States Fish and Wildlife Service**

Robert Carey  
Division of Environmental Review  
Florida Ecological Services Office  
7915 Bay Meadows Way, Suite 200  
Jacksonville, FL 32256

**State**

**Florida Department of Environmental Protection Central District**

Aaron Watkins  
Director  
3319 Maguire Boulevard  
Orlando, FL 32803

**Florida Department of Transportation**

John Tyler  
District 5 Secretary  
719 South Woodland Boulevard  
DeLand, FL 32720

**Florida Division of Historical Resources**

Alissa Slade Lotane  
State Historic Preservation Officer and Director of Historical Resources  
Bureau of Historic Preservation R.A. Gray Building  
500 South Bronough Street  
Tallahassee, FL 32399

**Florida State Clearinghouse**

Chris Stahl  
Clearinghouse Coordinator

3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, FL 32399

**Local**

**Brevard County**

Frank Abbate  
County Manager  
Viera Government Center  
2725 Judge Fran Jamieson Way  
Building C  
Viera, FL 32940

Amanda Elmore  
Deputy Director, Natural Resources  
Viera Government Center  
2725 Judge Fran Jamieson Way, A-219  
Viera, FL 32940

**City of Cocoa Beach**

Robin Hayes  
City Manager  
1600 Minuteman Causeway  
PO Box 322430  
Cocoa Beach, FL 32931

**City of Melbourne**

Shannon Lewis  
City Manager  
900 E. Strawbridge Ave  
Melbourne, FL 32901

**City of Palm Bay**

Suzanne Sherman  
City Manager  
120 Malabar Road  
Palm Bay, FL 32907

**City of Satellite Beach**

Courtney Barker, AICP  
City Manager  
565 Cassia Blvd  
Satellite Beach, FL 32937

1 Karl Baumann  
2 Community Development Director/Building Official  
3 565 Cassia Blvd  
4 Satellite Beach, FL 32937  
5

6 **East Central Florida Regional Planning Council**

7 Tara McCue, AICP  
8 Executive Director  
9 455 N. Garland Ave  
10 Fourth Floor  
11 Orlando, FL 32801  
12

13 **Space Coast Transportation Planning Organization**

14 Sarah Kraum  
15 Senior Transportation Planner  
16 2725 Judge Fran Jamieson Way  
17 Building B, Room 105, MS #82  
18 Melbourne, FL 32940  
19

20 **St. Johns River Water Management District**

21 Jeff Prather  
22 Division Director, Regulatory Services  
23 525 Community College Parkway, SE  
24 Palm Bay, FL 32909

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## Early Notification Letter Sample



**DEPARTMENT OF THE AIR FORCE  
UNITED STATES SPACE FORCE  
SPACE LAUNCH DELTA 45**

June 5, 2023

Michael Blaylock  
Chief, Environmental Conservation, Patrick Space Force Base  
United States Space Force, Space Launch Delta 45  
1224 Jupiter Street, Mail Stop 9125  
Patrick Space Force Base FL 32925

Ntale Kajumba  
Chief, NEPA Program Office  
U.S. Environmental Protection Agency  
Region 4  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, GA 30303-8960

Dear Ntale Kajumba,

The U.S. Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts associated with the United States Space Force (USSF) decision for Space Launch Delta (SLD) 45 to conduct transient and training missions at Patrick Space Force Base (PSFB), Cape Canaveral Space Force Station (CCSFS), Malabar Transmitter Annex (MTA), the Banana River, Tosohatchee State Reserve (Tosohatchee Wildlife Management Area (WMA)/St. John's River Water Management District (SJRWMD) Conservation Areas), Avon Park Air Force Range (AFR), SJRWMD managed lands, and water training areas (WTAs) in the Atlantic Ocean. All locations are in the state of Florida and a map (Figure 1) is attached for your reference.

The purpose of the Proposed Action is to ensure SLD 45, along with its tenants and transient users, have access to training opportunities and continued support of testing and development for technical capabilities as part of the Major Range and Test Facility Base (MRTFB). The Proposed Action is needed to maintain combat readiness and enable technological advances. Users must conduct training operations in a true setting to maintain combat ready status for missions and rely on technology testing and experiments conducted at these installations to achieve the SLD 45 mission of facilitating safe space launches in the Eastern Range. Many activities are similar to those in the previous 2016 EA (Environmental Assessment for 920th Rescue Wing Training Operations), but there are changes in mission requirements and a need to provide comprehensive NEPA coverage for activities in the future. There is no construction proposed and existing training areas will be utilized. The current and proposed transient and training missions are shown in Table 1, attached.

As part of the DAF Environmental Impact Analysis Process (EIAP), we request your input on the Proposed Action and assistance in identifying any potential areas of environmental impact to be assessed in this analysis. If you have any specific items of interest about this proposal,

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please contact Ms. Rachel Mandel at rachel.mandel.2@spaceforce.mil or via mail at Rachel Mandel, 45 CES/CEIE, 1224 Jupiter Street, Mail Stop 9125, Patrick Space Force Base, Florida 32925 within 30 days of receipt of this letter. Thank you in advance for your assistance in this effort.

Sincerely

BLAYLOCK.MICHAEL  
EL.A.1061700630

Digitally signed by  
BLAYLOCK.MICHAEL.A.1061700630  
Date: 2023.06.05 16:20:40 -0400

MICHAEL BLAYLOCK, NH-03, DAF  
Chief, Environmental Conservation

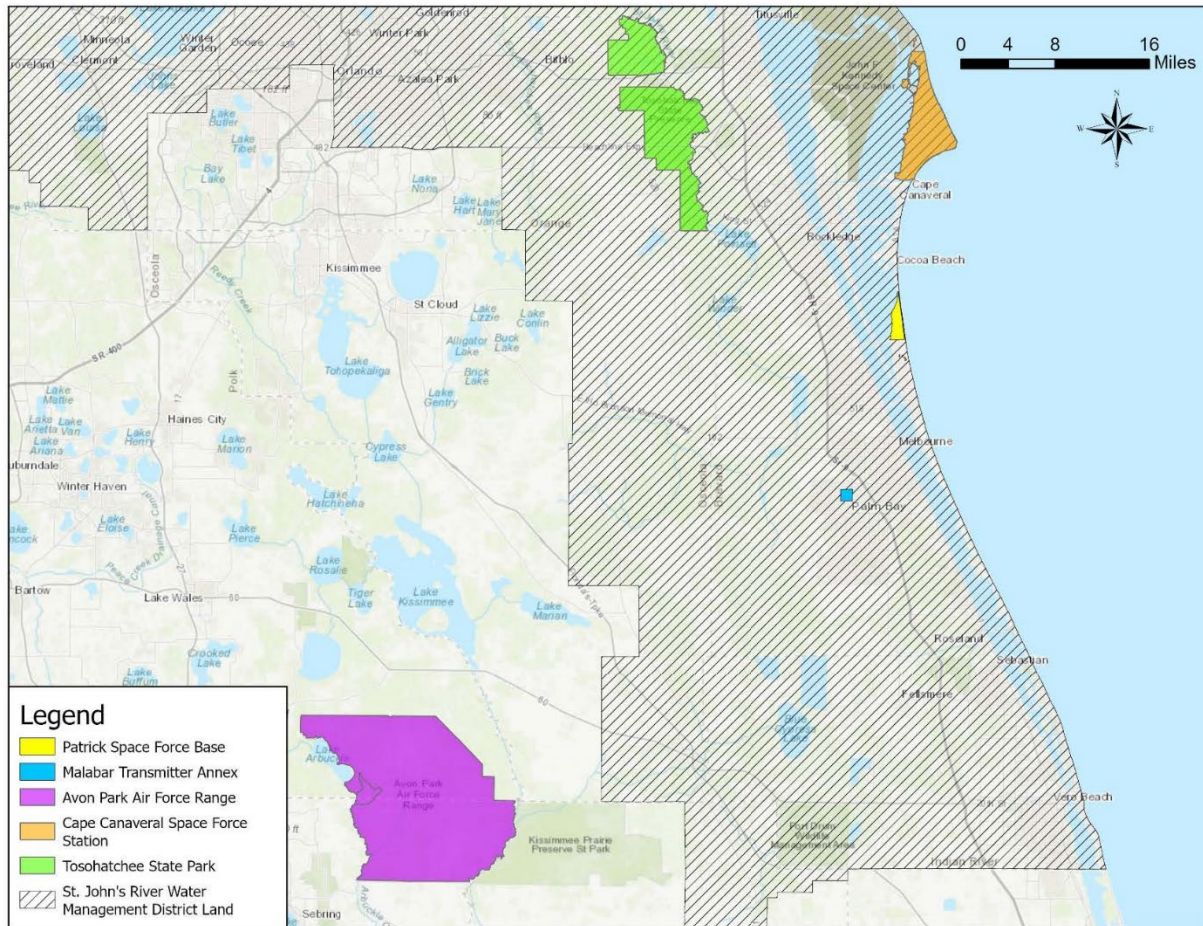
Attachments:

Figure 1. Location Map

Table 1. Current and Proposed Transient and Training Missions

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 **SPACE LAUNCH DELTA 45 EA**  
FIGURE 1. GENERAL SITE LOCATION MAP

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**Table 1. Current and Proposed Transient and Training Missions Overview**

Training Area	Current Training <sup>a</sup>	Proposed Training <sup>b</sup>
PSFB	<ul style="list-style-type: none"> <li>WP-44/DZ Kathy, WTAs Nicholas McCaskill, Rich Smith, Bill Sutton, and Ronnie Cavallo<sup>c</sup></li> <li>WP-45<sup>d</sup></li> <li>LATN Area</li> <li>Mass casualty training</li> <li>Amphibious vehicle route</li> <li>Zodiac beach launch</li> <li>Indoor firing range</li> <li>Munitions training</li> <li>ATV training</li> <li>Sling load training</li> <li>Tactical simulations</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>New Multipurpose Training Tower</li> <li>Expanded wartime readiness training by resident and transient users, including the use of smoke, hot pit refueling, and transient flight training.</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
CCSFS	<ul style="list-style-type: none"> <li>DZ Ferreira</li> <li>Two munitions training (EOD and SWAT)</li> <li>ATV training</li> <li>Zodiac beach landing</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>Helicopter brownout training</li> <li>Expanded training events including advanced medical training, air traffic control, and transient flight training.</li> <li>Use of ground burst simulators/smoke munitions/other pyro techniques.</li> <li>Capsule recovery training (Detachment 3 Rescue Force Qualification Course)</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
MTA	<ul style="list-style-type: none"> <li>Wartime readiness</li> <li>Survival, evasion, resistance and escape training</li> <li>Urban terrain and squad movement security training</li> <li>One or two joint training events per year involving compatible units with similar missions</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>Ground burst simulators/smoke munitions/dye rounds training</li> <li>EOD Improvised Explosive Device training</li> <li>Testing of communications equipment by approved transient groups</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
Banana River	<ul style="list-style-type: none"> <li>WOPs at DZ Judy</li> <li>Amphibious vehicle route</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>
Tosohatchee WMA / SJRWMD	<ul style="list-style-type: none"> <li>Use of existing landing zones</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>
Avon Park AFR	<ul style="list-style-type: none"> <li>Existing landing zones, DZs, munitions training, ATV training, and amphibious vehicle route.</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>

<sup>a</sup> Current training includes operations analyzed in the 2016 EA.

<sup>b</sup> Proposed training includes some activities currently occurring under existing Memoranda of Understanding or are categorically excluded from NEPA.

<sup>c</sup> These DZs and WTAs are located in the Atlantic Ocean and are described in Section 1.2.9.

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## A.1.2. Stakeholder Responses

### Florida Department of Transportation

**From:** [Walsh, William](#)  
**To:** [Katelyn Kopp](#); [Tyler, John](#)  
**Cc:** [Virginia Boone](#); [Robert Naumann](#); [rachel.mandel.2@spaceforce.mil](#); [Blouin, Jesse](#); [Smith, Kellie](#); [Van Gundy, Sarah](#)  
**Subject:** RE: DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions  
**Date:** Wednesday, June 14, 2023 3:28:30 PM  
**Attachments:** [image002.png](#)  
[image003.png](#)  
[SLD 45 IICEP letter 2023 FDOT.pdf](#)

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Hi Katelyn:

Thank you for the opportunity to comment on this important project. Your adherence to NEPA through preparation of an Environmental Assessment will address the relevant environmental considerations concerning this project. The project will not adversely affect any of our facilities.

Best wishes as you pursue this exciting project!

Sincerely,

Bill Walsh.

William G. Walsh  
Environmental Manager  
FDOT, District 5  
386-943-5411 (office)  
386-279-9181 (cell)



## Florida State Clearinghouse

**From:** [State Clearinghouse](#)  
**To:** [Katelyn Kopp](#)  
**Cc:** [Robert Naumann](#); [Virginia Boone](#); [rachel.mandel.2@spaceforce.mil](#)  
**Subject:** RE: DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions  
**Date:** Wednesday, June 7, 2023 2:11:22 PM  
**Attachments:** [image002.png](#)

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While it is covered by EO 12372, the Florida State Clearinghouse does not select the project for review. You may proceed with your project.

Please continue to send future electronic requests directly to the State of Florida Clearinghouse email address, [state.clearinghouse@floridadep.gov](mailto:state.clearinghouse@floridadep.gov)

Good Luck.

Chris Stahl

Chris Stahl, Coordinator  
Florida State Clearinghouse  
Florida Department of Environmental Protection  
3900 Commonwealth Blvd., M.S. 47  
Tallahassee, FL 32399-2400  
ph. (850) 717-9076  
[State.Clearinghouse@floridadep.gov](mailto:State.Clearinghouse@floridadep.gov)

## **National Oceanic and Atmospheric Administration**

**From:** [Pace Wilber - NOAA Federal](#)  
**To:** [Katelyn Kopp](#)  
**Cc:** [Virginia Boone](#); [Robert Naumann](#); [rachel.mandel.2@spaceforce.mil](mailto:rachel.mandel.2@spaceforce.mil); [mary.wunderlich@noaa.gov](mailto:mary.wunderlich@noaa.gov)  
**Subject:** Re: DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions  
**Date:** Friday, June 30, 2023 10:22:30 PM  
**Attachments:** [image001.png](#)  
[SAFMC-EFH-Users-Guide.pdf](#)

Hi Katelyn.

The Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with the NMFS for their activities that may adversely affect essential fish habitat (EFH). The South Atlantic Fishery Management Council designates EFH in the area of Patrick Space Force Base and Cape Canaveral Space Force Station. The Council's [users guide to EFH](#) concisely describes its EFH designations (which I have attached for easy reference). In short, all nearshore coastal waters below Mean High Water are EFH for one or more federally managed fishery species. Mangroves, salt marsh, oysters, seagrass, coral, and hardbottom are most important. Any training occurring with these habitats, including any transit of people or equipment, may adversely affect these habitats and trigger the need for an EFH consultation. 50 CFR 600.920 explains the consultation process. Please let us know if you have any questions about the process or the required content of an EFH Assessment.

Looking at the table in your letter, it's hard for me to spot specific items for me to comment on because of my lack of familiarity with your training practices. I see "Zodiac beach landing" and "amphibious vehicle route" listed for Patrick Space Force Base and Cape Canaveral Space Force Station. Based on our experience with the training activities at Key West Naval Air Station, training involving Zodiac landings and amphibious vehicles may affect EFH, so it would be important to limit the locations of these activities to areas away from the habitats listed above. I don't see water rescue and recovery training in the table. Several years ago, we consulted with the 45th Space Wing on these types of training in the Banana River and Atlantic Ocean. If the training you propose includes water rescue and recovery training, you may want to consider them in an EFH Assessment.

Thank you for the opportunity to provide these comments. Please let us know if you have any questions,  
 Pace Wilber

1 **United States Coast Guard**

**From:** [Conner, Tyrone L CTV USCG D11 \(USA\)](#)  
**To:** [Katelyn Kopp](#)  
**Cc:** [Virginia Boone](#); [Robert Naumann](#); [rachel.mandel.2@spaceforce.mil](#); [Smith, Urdley N LCDR USCG COMDT \(USA\)](#); [Chong, Creighton C LCDR USCG \(USA\)](#); [Gilbert, Ryan A LT USCG D7 \(USA\)](#); [Benggio, Morgan D CTV USCG D7 \(USA\)](#); [Seniuk, Nicholas C CDR USCG D7 \(USA\)](#); [Stone, John M CTV USCG COMDT \(USA\)](#); [Springer, Laura M CDR USCG \(USA\)](#); [Broyles, Kevin A CDR USCG \(USA\)](#)  
**Subject:** RE: DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions  
**Date:** Tuesday, June 13, 2023 1:28:24 PM  
**Attachments:** [image001.png](#)

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Katelyn Kopp,

Good Morning.

Thank you for forwarding DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions.

The Coast Guard is responsible for multiple missions on U.S. Waters to include Navigation Safety and Search and Rescue operations. We value the partnership with Space Force to understand how the increased operations with Space Launch and training out of Delta 45 will potentially and currently have connection with the Coast Guard’s missions and how we may be of assistance to continue to help with communication and support national security.

We would like to schedule a meeting to discuss areas of our operations and how they may overlap with the increased operations tempo and area of operations in this EA.  
We also will review the EA for any comments associated to the marine environment within the Coast Guard’s responsibilities.

Please let me know when you and the team are available to discuss.

Also,  
Request a copy of the Entire EA for review.

Mr. John Stone, Mr. Morgan Benggio, and I will be the primary contacts for this EA.

V/r,

Mr. Tyrone Conner  
U.S. Coast Guard Headquarters  
Office of Waterways & Ocean Policy  
Waterways Policies & Activities Division (CG-WWM-1)  
619-333-9056 (Mobile)

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1 **U.S Fish and Wildlife Service**

**From:** [Katelyn Kopp](#)  
**To:** [Virginia Boone](#)  
**Cc:** [Robert Naumann](#); [MANDEL, RACHEL N NH-03 USSF SSC 45 CES/CEIE](#)  
**Subject:** FW: [EXTERNAL] DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions  
**Date:** Thursday, June 15, 2023 5:35:28 PM  
**Attachments:** [image001.png](#)

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**From:** FLESRegs, FW4 <FW4FLESRegs@fws.gov>  
**Sent:** Thursday, June 15, 2023 2:51 PM  
**To:** Katelyn Kopp <Katelyn.Kopp@phe.com>  
**Cc:** Gillikin, Michael N <michael\_gillikin@fws.gov>  
**Subject:** Re: [EXTERNAL] DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions

This email and document was added to ECOSphere: 2023-0048942

**From:** [Gillikin, Michael N](#)  
**To:** [Katelyn Kopp](#); [FLESRegs, FW4](#)  
**Cc:** [Virginia Boone](#); [Robert Naumann](#); [rachel.mandel.2@spaceforce.mil](#); [Myers, Brendan T](#)  
**Subject:** RE: [EXTERNAL] DAF Environmental Assessment Scoping Letter – Space Launch Delta 45 Transient and Training Missions  
**Date:** Wednesday, June 21, 2023 7:43:37 AM  
**Attachments:** [image001.png](#)

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Good morning Katelyn,

To include everyone in the in-person conversation I had with Rachel this week, the U.S. Fish and Wildlife Service does not have any comments to provide at this time. We look forward to receiving the complete formal consultation package.

If anyone has any questions in the interim, please do not hesitate to reach out.

Thank you,  
Mike

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1 **U.S. Environmental Protection Agency**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
REGION 4  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW  
ATLANTA, GEORGIA 30303-8960

July 7, 2023

Mr. Michael Blaylock  
Chief, Environmental Conservation  
United States Space Force, Space Launch Delta 45  
1224 Jupiter Street, Mail Stop 9125  
Patrick Space Force Base, Florida 32925

Re: EPA Comments on the Letter of Intent to Prepare an Environmental Assessment for Space Launch Delta 45 Transient and Training Missions surrounding Patrick Space Force Base; Brevard, Indian River, Orange, and Osceola Counties, Florida

Dear Mr. Blaylock:

The U.S. Environmental Protection Agency (EPA) has reviewed the referenced document in accordance with Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA). According to the letter, dated June 5, 2023, the U.S. Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts resulting from proposed United States Space Force (USSF) transient and training missions at Patrick Space Force Base, Cape Canaveral Space Force Station, Malabar Transmitter Annex, the Banana River, Tosohatchee State Reserve Avon Park Air Force Range, St. Johns River Watershed Management District managed lands, and water training areas in the Atlantic Ocean.

The letter states that the purpose of the Proposed Action is to ensure Space Launch Delta 45, and its tenants and transient users, have access to testing and training opportunities as part of the Major Range and Test Facility Base. The Proposed Action is needed to maintain combat readiness, enable technological advances, and facilitate safe space launches in the Eastern Range. These activities are similar to those in the previous 2016 Environmental Assessment for 920th Rescue Wing Training Operations, but there are changes in mission requirements and a need to provide comprehensive NEPA analysis for activities in the future. There is no construction proposed and existing training areas will be utilized.

Based on the EPA's review of available information, the following comments are provided for your consideration.

**Air Quality and Climate Change:** The Proposed Action is located in Brevard, Indian River, Orange, and Osceola Counties, Florida which are in attainment with the National Ambient Air Quality Standards. The EPA recommends using tools such as the Air Conformity Applicability Model to determine if, and to what extent, the Proposed Action will produce emissions that contribute toward exceeding local air emissions permits, or otherwise impact air quality or human health. Activities in support of operations such as fueling and consumption of maintenance materials containing volatile organic compounds should be accounted for by the appropriate air emissions model. The EPA also recommends that DAF

quantify greenhouse gas emissions resulting from proposed operations, and complete analysis of resulting social impacts due to climate change.

**Environmental Justice:** The EPA recommends that DAF complete an Environmental Justice (EJ) analysis of the Proposed Action. EJ analysis should extend to all areas that will potentially experience impacts from the Proposed Action, such as those areas near Military Operating Areas and Training Ranges. Areas of impact can be a single block group or span across several block groups and communities. When assessing large geographic areas, consider the individual block groups within the project area in addition to an area wide assessment. Important caveats and uncertainties apply to this screening-level information, especially in rural areas, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Consistent with Executive Order 12898, Federal Actions to Address EJ in Minority Populations and Low-Income Populations, (<https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice>) please ensure protected populations are not disproportionately or adversely impacted by the Proposed Action.

- When conducting the EJ analysis, utilize resources such as the Environmental Justice Interagency Working Group report *Promising Practices for EJ Methodologies in NEPA Reviews*, dated March 2016, which provides guiding principles agencies can consider in identifying disproportionately high and adverse impacts on minority and low-income populations and appropriately engage in meaningful, targeted, community outreach, analyze and minimize community impacts, and advance environmental justice through NEPA implementation.. EJ analysis of the Proposed Action should also be completed in accordance with Executive Order 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, published April 21, 2023.
- The EPA strongly encourages the use of EJScreen (<https://www.epa.gov/ejscreen>), the EPA's nationally consistent EJ screening and mapping tool, when conducting EJ scoping efforts. The tool provides information on environmental and socioeconomic indicators as well as pollution sources, health disparities, critical service gaps, and climate change data. The tool can help identify potential community vulnerabilities by calculating EJ Indexes and displaying other environmental and socioeconomic information in color-coded maps and standard data reports (e.g., pollution sources, health disparities, critical service gaps, climate change data).

**Noise Impacts:** The EPA recommends that the EA evaluate noise generated by proposed aircraft operations. If noise levels from the proposed action have the potential to be elevated near populated areas, as compared to existing operations, noise contours for the Proposed Action should be modeled and included in the EA. It is important to consider the impacts from noise on quality of life, human experience, and health and learning, especially near homes, schools, and daycare centers. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, directs that each federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and shall ensure that its policies, programs, activities, and standards address these risks. The EPA recommends that local DAF and USSF installations monitor noise impacts and coordinate with affected communities to optimize airspace usage to minimize impacts while meeting mission requirements.


**Hazardous Materials and Containment:** For the protection of Waters of the U.S., critical habitats, and as required by the Clean Water Act, the EPA recommends the use of secondary containment where storage and handling of Petroleum, Oils, and Lubricants (POL) will take place, including storage sites of

single wall POL tanks. Where secondary containment is not directly practicable, spill ponds and oil water separators should be constructed downstream of POL related activities. Operations in support of the Proposed Action should ensure that Resource Conservation and Recovery Act regulated solid wastes are disposed of in accordance with federal regulations.

**Biological Resources:** The EPA notes that critical habitat for Loggerhead Sea Turtles and West Indian Manatees exists in the waters on both sides of Cape Canaveral Space Force Station. The EPA principally defers to the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS) regarding compliance with the Marine Mammal Protection Act and Endangered Species Act and recommends early coordination with NMFS and FWS. The EPA recommends that conservation measures identified by NMFS and FWS be included in the EA.

Thank you for the opportunity to provide comments on the Proposed Action. Upon completion of the draft EA, please submit an electronic version to the EPA for review. If you have any questions regarding the EPA's comments, please contact me at [White.Douglas@epa.gov](mailto:White.Douglas@epa.gov) or 404-562-8586.

Sincerely,

Kajumba,  
Ntale   
Ntale Kajumba  
NEPA Section Manager

## **A.2 Native American Consultation**

Consistent with the National Historic Preservation Act (NHPA) of 1966 implementing regulations (36 CFR Part 800), Department of Defense (DoD) Instruction 4710.02, *Interactions with Federally Recognized Tribes*, AFI 90-2002, *Air Force Interaction with Federally Recognized Tribes*, and AFMAN 32- 7003, *Environmental Conservation*, the DAF offered consultation with federally recognized Tribes that are historically affiliated with the geographic region affected by the Proposed Action, regarding the potential to affect properties of cultural, historical, or religious significance to the Tribes. A sample consultation letter is presented in Exhibit 2. Section A.2.1 contains a list of stakeholders who received Early Notification Letters and Section A.2.2 contains responses received.

### **A.2.1 List of Tribal Contacts**

#### **Miccosukee Tribe of Indians of Florida**

Kevin Donaldson  
Environmental Specialist  
Tamiami Station  
PO Box 440021  
Miami, FL 33144

#### **Seminole Nation of Oklahoma**

Ben Yahola  
Tribal Historic Preservation Office  
PO Box 1498  
Wewoka, OK 74884

Juan Cancel  
Tribal Historic Preservation Office Assistant Director  
30290 Josie Billie Highway, PMB 1004  
Clewiston, FL 33440

Danielle Simon  
Compliance Review Supervisor  
30290 Josie Billie Highway, PMB 1004  
Clewiston, FL 33440

Tina Osceola  
Tribal Historic Preservation Officer Director  
30290 Josie Billie Hwy, PMB 1004  
Clewiston, FL 33440

Paul Backhouse, PhD  
Heritage and Environment Resource Office Senior Director  
30290 Josie Billie Highway, PMB 1004  
Clewiston, FL 33440

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**Consultation Letter Sample**



**DEPARTMENT OF THE AIR FORCE  
UNITED STATES SPACE FORCE  
SPACE LAUNCH DELTA 45**

June 5, 2023

Michael Blaylock  
Chief, Environmental Conservation, Patrick Space Force Base  
United States Space Force, Space Launch Delta 45  
1224 Jupiter Street, Mail Stop 9125  
Patrick Space Force Base FL 32925

Kevin Donaldson  
Environmental Specialist  
Miccosukee Tribe of Indians of Florida  
Tamiami Station  
PO Box 440021  
Miami, FL 33144

Dear Kevin Donaldson,

The U.S. Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts associated with the United States Space Force (USSF) decision for Space Launch Delta (SLD) 45 to conduct transient and training missions at Patrick Space Force Base (PSFB), Cape Canaveral Space Force Station (CCSFS), Malabar Transmitter Annex (MTA), the Banana River, Tosohatchee State Reserve (Tosohatchee Wildlife Management Area (WMA)/St. John's River Water Management District (SJRWMD) Conservation Areas), Avon Park Air Force Range (AFR), SJRWMD managed lands, and water training areas (WTAs) in the Atlantic Ocean. All locations are in the state of Florida and a map (Figure 1) is attached for your reference.

The purpose of the Proposed Action is to ensure SLD 45, along with its tenants and transient users, have access to training opportunities and continued support of testing and development for technical capabilities as part of the Major Range and Test Facility Base (MRTFB). The Proposed Action is needed to maintain combat readiness and enable technological advances. Users must conduct training operations in a true setting to maintain combat ready status for missions and rely on technology testing and experiments conducted at these installations to achieve the SLD 45 mission of facilitating safe space launches in the Eastern Range. Many activities are similar to those in the previous 2016 EA (Environmental Assessment for 920th Rescue Wing Training Operations), but there are changes in mission requirements and a need to provide comprehensive NEPA coverage for activities in the future. There is no construction proposed and existing training areas will be utilized. The current and proposed transient and training missions are shown in Table 1, attached.

Per Section 306108 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 Code of Federal Regulations (CFR) Part 800, the DAF is engaging early with tribal governments as the lead federal agency. In accordance with NHPA, DAF would like to initiate government-to-government consultation regarding the

proposed action across SLD 45 properties.

As part of the DAF Environmental Impact Analysis Process (EIAP), we request your input on the Proposed Action and assistance in identifying any potential areas of environmental impact to be assessed in this analysis. If you have any specific items of interest about this proposal, please contact Ms. Rachel Mandel at [rachel.mandel.2@spaceforce.mil](mailto:rachel.mandel.2@spaceforce.mil) or via mail at Rachel Mandel, 45 CES/CEIE, 1224 Jupiter Street, Mail Stop 9125, Patrick Space Force Base, Florida 32925 within 30 days of receipt of this letter. Thank you in advance for your assistance in this effort.

Sincerely

BLAYLOCK.MICHAEL  
ELA.1061700630

Digitally signed by  
BLAYLOCK.MICHAEL.A.1061700630  
Date: 2023.06.05 16:22:44 -0400

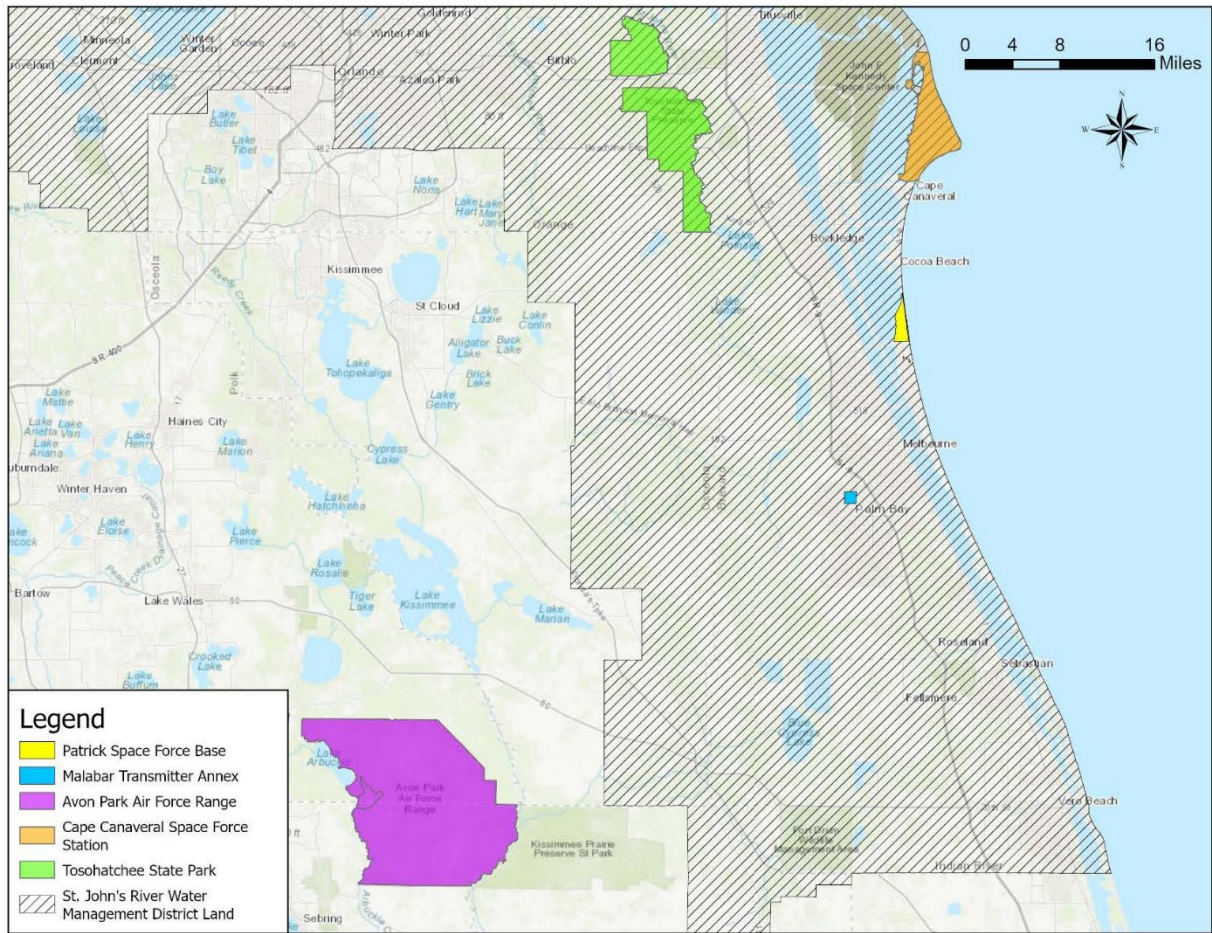
MICHAEL BLAYLOCK, NH-03, DAF  
Chief, Environmental Conservation

Attachments:

Figure 1. Location Map

Table 1. Current and Proposed Transient and Training Missions

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SPACE LAUNCH DELTA 45 EA  
FIGURE 1. GENERAL SITE LOCATION MAP

**Table 1. Current and Proposed Transient and Training Missions Overview**

Training Area	Current Training <sup>a</sup>	Proposed Training <sup>b</sup>
PSFB	<ul style="list-style-type: none"> <li>WP-44/DZ Kathy, WTAs Nicholas McCaskill, Rich Smith, Bill Sutton, and Ronnie Cavallo<sup>c</sup></li> <li>WP-45<sup>d</sup></li> <li>LATN Area</li> <li>Mass casualty training</li> <li>Amphibious vehicle route</li> <li>Zodiac beach launch</li> <li>Indoor firing range</li> <li>Munitions training</li> <li>ATV training</li> <li>Sling load training</li> <li>Tactical simulations</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>New Multipurpose Training Tower</li> <li>Expanded wartime readiness training by resident and transient users, including the use of smoke, hot pit refueling, and transient flight training.</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
CCSFS	<ul style="list-style-type: none"> <li>DZ Ferreira</li> <li>Two munitions training (EOD and SWAT)</li> <li>ATV training</li> <li>Zodiac beach landing</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>Helicopter brownout training</li> <li>Expanded training events including advanced medical training, air traffic control, and transient flight training.</li> <li>Use of ground burst simulators/smoke munitions/other pyro techniques.</li> <li>Capsule recovery training (Detachment 3 Rescue Force Qualification Course)</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
MTA	<ul style="list-style-type: none"> <li>Wartime readiness</li> <li>Survival, evasion, resistance and escape training</li> <li>Urban terrain and squad movement security training</li> <li>One or two joint training events per year involving compatible units with similar missions</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>	<ul style="list-style-type: none"> <li>Ground burst simulators/smoke munitions/dye rounds training</li> <li>EOD Improvised Explosive Device training</li> <li>Testing of communications equipment by approved transient groups</li> <li>Testing and development for technical capabilities as part of MRTFB requirements</li> </ul>
Banana River	<ul style="list-style-type: none"> <li>WOPs at DZ Judy</li> <li>Amphibious vehicle route</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>
Tosohatchee WMA / SJRWMD	<ul style="list-style-type: none"> <li>Use of existing landing zones</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>
Avon Park AFR	<ul style="list-style-type: none"> <li>Existing landing zones, DZs, munitions training, ATV training, and amphibious vehicle route.</li> </ul>	<ul style="list-style-type: none"> <li>No proposed changes to existing activities at this location.</li> </ul>

<sup>a</sup> Current training includes operations analyzed in the 2016 EA.

<sup>b</sup> Proposed training includes some activities currently occurring under existing Memoranda of Understanding or are categorically excluded from NEPA.

<sup>c</sup> These DZs and WTAs are located in the Atlantic Ocean and are described in Section 1.2.9.

## 1 A.2.2 Tribal Responses

**From:** [MANDEL, RACHEL N CIV USSF SSC 45 CES/CEIE](#)  
**To:** [Virginia Boone](#)  
**Cc:** [Robert Naumann](#); [Katelyn Kopp](#)  
**Subject:** FW: USSF - Space Launch Delta 45, Transient and Training Missions EA for Multiple Locations, Florida  
**Date:** Tuesday, June 20, 2023 12:23:23 PM  
**Attachments:** [image001.png](#)

For your files. I will talk to our cultural resources manager and draft a response.

**From:** Bradley Mueller <[bradleymueller@semtribe.com](mailto:bradleymueller@semtribe.com)>  
**Sent:** Tuesday, June 20, 2023 12:15 PM  
**To:** MANDEL, RACHEL N CIV USSF SSC 45 CES/CEIE <[rachel.mandel.2@spaceforce.mil](mailto:rachel.mandel.2@spaceforce.mil)>  
**Subject:** [Non-DoD Source] USSF - Space Launch Delta 45, Transient and Training Missions EA for Multiple Locations, Florida

### SEMINOLE TRIBE OF FLORIDA TRIBAL HISTORIC PRESERVATION OFFICE

TRIBAL HISTORIC  
PRESERVATION OFFICE  
SEMINOLE TRIBE OF FLORIDA  
30290 JOSIE BILLIE HIGHWAY  
PMB 1004  
CLEWISTON, FL 33440  
THPO PHONE: (863) 983-6549  
FAX: (863) 902-1117  
THPO WEBSITE: [WWW.STOFTHPO.COM](http://WWW.STOFTHPO.COM)



TRIBAL OFFICERS  
MARCELLUS W. OSCEOLA JR.  
CHAIRMAN  
MITCHELL CYPRESS  
VICE CHAIRMAN  
LAVONNE ROSE  
SECRETARY  
PETER A. HAHN  
TREASURER

June 20, 2023

Ms. Rachel Mandel  
45 CES/CEIE  
1224 Jupiter Street  
Mail Stop 9125  
Patrick Space Force Base  
Florida 32925  
Email: [rachel.mandel.2@spaceforce.mil](mailto:rachel.mandel.2@spaceforce.mil)

Subject: USSF - Space Launch Delta 45, Transient and Training Missions EA for Multiple Locations, Florida  
THPO Compliance Tracking Number: 0034034

Dear Ms. Mandel

Thank you for contacting the Seminole Tribe of Florida – Tribal Historic Preservation Office (STOF-THPO) Compliance Section regarding the USSF - Space Launch Delta 45, Transient and Training Missions EA for Multiple Locations, Florida. The Tribe appreciates the Department of the Air Forces assistance in protecting cultural resources that it considers important.

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The proposed undertaking does fall within the STOF Area of Interest. We have reviewed the document that you provided and initiated our assessment pursuant to Section 106 of the National Historic Preservation Act and its implementing authority, 36 CFR 800. In response, our office would like to provide the following initial comments or requests for additional information:

- Have all the areas indicated on "Figure 1. General Site Location Map" of Mr. Blaylock's letter dated June 5, 2023 been previously subjected to cultural resource assessment surveys?
- If all of the Figure 1 locations have been surveyed and assessed for possible historic properties, we request that all of those historic properties (if any) be avoided during all activities that might result in ground disturbance or other adverse impacts to the properties.
- If portions of the areas identified in Figure 1 have not been previously surveyed for the presence of cultural resources, we request that those areas be either surveyed or avoided during all activities that might result in ground disturbance or other adverse impacts to possible sites.
- "Figure 1. General Site Location Map", indicates that the boundaries of the Tosohatchee WMA/SJRWMD are expansive. Can you better delineate those areas that could be affected by proposed activities? Would those areas only include the existing landing zones, etc., as listed in "Table 1. Current and Proposed Transient and Training Missions Overview" of the June 5 letter? Lastly,
- All burial resource locations should be avoided.

We look forward to the delivery of the additional information we requested, which will allow us to work towards finalizing our review comments. Feel free to contact us with any questions or concerns.

Respectfully,

*Bradley M. Mueller*

anding

Bradley M. Mueller, MA, Compliance Specialist  
STOF-THPO, Compliance Review Section  
30290 Josie Billie Hwy, PMB 1004  
Clewiston, FL 33440  
Office: 863-983-6549 ext 12245  
Fax: 863-902-1117  
Email: [THPOCompliance@sentrife.com](mailto:THPOCompliance@sentrife.com)

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**Appendix B**  
**Detailed Air Conformity Applicability Model Report**

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## 1. General Information

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### - Action Location

**Base:** PATRICK AFB  
**State:** Florida  
**County(s):** Brevard  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Action Title:** Environmental Assessment for Transient and Training Missions for Space Launch Delta 45

**- Project Number/s (if applicable):**

**- Projected Action Start Date:** 1 / 2024

### - Action Purpose and Need:

The purpose of the Proposed Action is to ensure SLD 45, along with its tenants and transient users, have access to training opportunities and continued support of testing and development for technical capabilities as part of the Major Range and Test Facility Base (MRTFB) requirements. The MRTFB is considered a national asset and is operated primarily for DoD test and evaluation support missions, although it is also available to other users with a valid requirement. The MRTFB constitutes a core set of DoD Test and Evaluation (T&E) infrastructure and associated workforce providing T&E capabilities to support the DoD acquisition system (DoD 2016). The MRTFB classification means that SLD 45 takes liability for safety, making it easier for other DoD agencies to conduct equipment and technology testing at these installations.

The Proposed Action is needed to maintain combat readiness and enable technological advances. Users must conduct training operations in a true setting to maintain combat ready status for missions and rely on technology testing and experiments conducted at these installations to achieve the SLD 45 mission of facilitating safe space launches in the ER.

Although many training activities under the Proposed Action are similar to those described in the previously approved 2016 EA, the need for proposed modifications is driven by changes to mission requirements, and a need to provide comprehensive and streamlined NEPA coverage for these activities in the future.

### - Action Description:

The Proposed Action involves SLD 45 transient and training missions at PSFB, CCSFS, MTA, the Banana River, Tosohatchee State Reserve (Tosohatchee WMA / SJRWMD Conservation Areas), Avon Park AFR, SJRWMD managed lands, and WTAs in the Atlantic Ocean, including existing training presented in the 2016 EA, and the modification and addition of new training not previously captured in that EA. The Proposed Action additionally includes equipment and technology testing by tenant and transient users that occurs at PSFB, CCSFS, and MTA.

Under the Proposed Action, SLD 45 would continue to conduct training activities within designated areas described in the 2016 EA, including WTAs, landing zones (LZs), DZs, air refueling (AR) tracks, All Terrain Vehicle (ATV) training areas, live-fire munitions training areas, and tactical training areas.

Proposed new training, or modifications to existing training operations, would include helicopter brownout training, use of a new multipurpose training tower at PSFB by the 308th RQS, and various expanded wartime readiness trainings.

### - Point of Contact

**Name:** Katelyn Kopp  
**Title:** Environmental Analyst  
**Organization:** Potomac Hudson Engineering, Inc.  
**Email:**  
**Phone Number:**

Report generated with ACAM version: 5.0.23a

**- Activity List:**

Activity Type		Activity Title
2.	Emergency Generator	MTA Generator Use
3.	Personnel	MTA ROTC Training
4.	Personnel	MTA Training for SLD 45 Personnel
5.	Personnel	PSFB Quarterly Training Events
6.	Personnel	CCSFS Quarterly Training Events

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

## 2. Emergency Generator

### 2.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?** Add

**- Activity Location**

**County:** Brevard

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Activity Title:** MTA Generator Use

**- Activity Description:**

**- Activity Start Date**

**Start Month:** 1

**Start Year:** 2024

**- Activity End Date**

**Indefinite:** Yes

**End Month:** N/A

**End Year:** N/A

**- Activity Emissions of Criteria Pollutants:**

Pollutant	Emissions Per Year (TONs)
VOC	0.090396
SO <sub>x</sub>	0.076140
NO <sub>x</sub>	0.372600
CO	0.248832

Pollutant	Emissions Per Year (TONs)
PM 10	0.081324
PM 2.5	0.081324
Pb	0.000000
NH <sub>3</sub>	0.000000

**- Global Scale Activity Emissions of Greenhouse Gasses:**

Pollutant	Emissions Per Year (TONs)
CH <sub>4</sub>	0.001500
N <sub>2</sub> O	0.000300

Pollutant	Emissions Per Year (TONs)
CO <sub>2</sub>	37.260000
CO <sub>2</sub> e	43.092000

### 2.2 Emergency Generator Assumptions

**- Emergency Generator**

**Type of Fuel used in Emergency Generator:** Diesel

Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption

Emergency Generator's Horsepower: 135

Average Operating Hours Per Year (hours): 480

### 2.3 Emergency Generator Emission Factor(s)

- Emergency Generators Criteria Pollutant Emission Factor (lb/hp-hr)

VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251		

- Emergency Generators Greenhouse Gasses Pollutant Emission Factor (lb/hp-hr)

CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CO <sub>2</sub> e
0.000046297	0.000009259	1.15	1.33

### 2.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year

$$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$$

AE<sub>POL</sub>: Activity Emissions (TONs per Year)

NGEN: Number of Emergency Generators

HP: Emergency Generator's Horsepower (hp)

OT: Average Operating Hours Per Year (hours)

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hp-hr)

## 3. Personnel

### 3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Brevard

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MTA ROTC Training

- Activity Description:

- Activity Start Date

Start Month: 1

Start Year: 2024

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.017827
SO <sub>x</sub>	0.000105
NO <sub>x</sub>	0.009859
CO	0.247762

Pollutant	Emissions Per Year (TONs)
PM 10	0.000233
PM 2.5	0.000206
Pb	0.000000
NH <sub>3</sub>	0.002560

**- Global Scale Activity Emissions of Greenhouse Gasses:**

Pollutant	Emissions Per Year (TONs)
CH <sub>4</sub>	0.000947
N <sub>2</sub> O	0.000357

Pollutant	Emissions Per Year (TONs)
CO <sub>2</sub>	20.838814
CO <sub>2</sub> e	20.968456

### 3.2 Personnel Assumptions

**- Number of Personnel**

Active Duty Personnel:	0
Civilian Personnel:	0
Support Contractor Personnel:	0
Air National Guard (ANG) Personnel:	0
Reserve Personnel:	260

**- Default Settings Used:** No

**- Average Personnel Round Trip Commute (mile):** 15

**- Personnel Work Schedule**

Active Duty Personnel:	5 Days Per Week
Civilian Personnel:	5 Days Per Week
Support Contractor Personnel:	5 Days Per Week
Air National Guard (ANG) Personnel:	4 Days Per Week
Reserve Personnel:	1 Days Per Month

### 3.3 Personnel On Road Vehicle Mixture

**- On Road Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

### 3.4 Personnel Emission Factor(s)

**- On Road Vehicle Criteria Pollutant Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	NH <sub>3</sub>
LDGV	0.31287	0.00178	0.15174	4.94075	0.00384	0.00340	0.05485
LDGT	0.27556	0.00220	0.20340	4.45877	0.00436	0.00385	0.04644
HDGV	1.00405	0.00480	0.72186	12.67463	0.02085	0.01845	0.09731
LDDV	0.08501	0.00134	0.14279	6.03046	0.00324	0.00298	0.01679
LDDT	0.20078	0.00154	0.47191	5.96927	0.00587	0.00540	0.01813
HDDV	0.13925	0.00434	2.62491	1.70896	0.06430	0.05916	0.06420
MC	3.23022	0.00193	0.54883	12.80710	0.02290	0.02026	0.05095

**- On Road Vehicle Greenhouse Gasses Emission Factors (grams/mile)**

	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CO <sub>2</sub> e
LDGV	0.01600	0.00544	352.50072	354.51700
LDGT	0.01669	0.00796	436.10061	438.88415
HDGV	0.06154	0.02903	949.67357	959.84346

LDDV	0.04146	0.00073	397.80789	399.06271
LDDT	0.03182	0.00108	454.67599	455.79460
HDDV	0.02052	0.15850	1288.82285	1336.55551
MC	0.11576	0.00333	390.93995	394.82642

### 3.5 Personnel Formula(s)

#### - Personnel Vehicle Miles Travel for Work Days per Year

$$VMT_P = NP * WD * AC$$

VMT<sub>P</sub>: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

#### - Total Vehicle Miles Travel per Year

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

VMT<sub>AD</sub>: Active Duty Personnel Vehicle Miles Travel (miles)

VMT<sub>C</sub>: Civilian Personnel Vehicle Miles Travel (miles)

VMT<sub>SC</sub>: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT<sub>ANG</sub>: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT<sub>AFRC</sub>: Reserve Personnel Vehicle Miles Travel (miles)

#### - Vehicle Emissions per Year

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

## 4. Personnel

### 4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

#### - Activity Location

County: Brevard

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MTA Training for SLD 45 Personnel

#### - Activity Description:

#### - Activity Start Date

Start Month: 1

Start Year: 2024

**- Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

**- Activity Emissions of Criteria Pollutants:**

Pollutant	Emissions Per Year (TONs)
VOC	0.022855
SO <sub>x</sub>	0.000135
NO <sub>x</sub>	0.012640
CO	0.317643

Pollutant	Emissions Per Year (TONs)
PM 10	0.000299
PM 2.5	0.000264
Pb	0.000000
NH <sub>3</sub>	0.003282

**- Global Scale Activity Emissions of Greenhouse Gasses:**

Pollutant	Emissions Per Year (TONs)
CH <sub>4</sub>	0.001214
N <sub>2</sub> O	0.000457

Pollutant	Emissions Per Year (TONs)
CO <sub>2</sub>	26.716428
CO <sub>2</sub> e	26.882637

**4.2 Personnel Assumptions****- Number of Personnel**

**Active Duty Personnel:** 100  
**Civilian Personnel:** 0  
**Support Contractor Personnel:** 0  
**Air National Guard (ANG) Personnel:** 0  
**Reserve Personnel:** 0

**- Default Settings Used:** No

**- Average Personnel Round Trip Commute (mile):** 50

**- Personnel Work Schedule**

**Active Duty Personnel:** 1 Days Per Month  
**Civilian Personnel:** 5 Days Per Week  
**Support Contractor Personnel:** 5 Days Per Week  
**Air National Guard (ANG) Personnel:** 4 Days Per Week  
**Reserve Personnel:** 4 Days Per Month

**4.3 Personnel On Road Vehicle Mixture****- On Road Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

**4.4 Personnel Emission Factor(s)****- On Road Vehicle Criteria Pollutant Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	NH <sub>3</sub>
LDGV	0.31287	0.00178	0.15174	4.94075	0.00384	0.00340	0.05485
LDGT	0.27556	0.00220	0.20340	4.45877	0.00436	0.00385	0.04644
HDGV	1.00405	0.00480	0.72186	12.67463	0.02085	0.01845	0.09731
LDDV	0.08501	0.00134	0.14279	6.03046	0.00324	0.00298	0.01679
LDDT	0.20078	0.00154	0.47191	5.96927	0.00587	0.00540	0.01813
HDDV	0.13925	0.00434	2.62491	1.70896	0.06430	0.05916	0.06420
MC	3.23022	0.00193	0.54883	12.80710	0.02290	0.02026	0.05095

**- On Road Vehicle Greenhouse Gasses Emission Factors (grams/mile)**

	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CO <sub>2</sub> e
LDGV	0.01600	0.00544	352.50072	354.51700
LDGT	0.01669	0.00796	436.10061	438.88415
HDGV	0.06154	0.02903	949.67357	959.84346
LDDV	0.04146	0.00073	397.80789	399.06271
LDDT	0.03182	0.00108	454.67599	455.79460
HDDV	0.02052	0.15850	1288.82285	1336.55551
MC	0.11576	0.00333	390.93995	394.82642

**4.5 Personnel Formula(s)**

**- Personnel Vehicle Miles Travel for Work Days per Year**

$$VMT_P = NP * WD * AC$$

VMT<sub>P</sub>: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

**- Total Vehicle Miles Travel per Year**

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

VMT<sub>AD</sub>: Active Duty Personnel Vehicle Miles Travel (miles)

VMT<sub>C</sub>: Civilian Personnel Vehicle Miles Travel (miles)

VMT<sub>SC</sub>: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT<sub>ANG</sub>: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT<sub>AFRC</sub>: Reserve Personnel Vehicle Miles Travel (miles)

**- Vehicle Emissions per Year**

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

**5. Personnel**

**5.1 General Information & Timeline Assumptions**

**- Add or Remove Activity from Baseline?** Add

**- Activity Location**

**County:** Brevard

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Activity Title:** PSFB Quarterly Training Events

**- Activity Description:**

- Activity Start Date

Start Month: 1  
Start Year: 2024

- Activity End Date

Indefinite: Yes  
End Month: N/A  
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.036568
SO <sub>x</sub>	0.000215
NO <sub>x</sub>	0.020224
CO	0.508229

Pollutant	Emissions Per Year (TONs)
PM 10	0.000478
PM 2.5	0.000423
Pb	0.000000
NH <sub>3</sub>	0.005252

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH <sub>4</sub>	0.001942
N <sub>2</sub> O	0.000731

Pollutant	Emissions Per Year (TONs)
CO <sub>2</sub>	42.746285
CO <sub>2</sub> e	43.012218

## 5.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 400  
Civilian Personnel: 0  
Support Contractor Personnel: 0  
Air National Guard (ANG) Personnel: 0  
Reserve Personnel: 0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 20

- Personnel Work Schedule

Active Duty Personnel: 1 Days Per Month  
Civilian Personnel: 5 Days Per Week  
Support Contractor Personnel: 5 Days Per Week  
Air National Guard (ANG) Personnel: 4 Days Per Week  
Reserve Personnel: 4 Days Per Month

## 5.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

## 5.4 Personnel Emission Factor(s)

- On Road Vehicle Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	NH <sub>3</sub>
LDGV	0.31287	0.00178	0.15174	4.94075	0.00384	0.00340	0.05485
LDGT	0.27556	0.00220	0.20340	4.45877	0.00436	0.00385	0.04644

HDGV	1.00405	0.00480	0.72186	12.67463	0.02085	0.01845	0.09731
LDDV	0.08501	0.00134	0.14279	6.03046	0.00324	0.00298	0.01679
LDDT	0.20078	0.00154	0.47191	5.96927	0.00587	0.00540	0.01813
HDDV	0.13925	0.00434	2.62491	1.70896	0.06430	0.05916	0.06420
MC	3.23022	0.00193	0.54883	12.80710	0.02290	0.02026	0.05095

**- On Road Vehicle Greenhouse Gasses Emission Factors (grams/mile)**

	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CO <sub>2</sub> e
LDGV	0.01600	0.00544	352.50072	354.51700
LDGT	0.01669	0.00796	436.10061	438.88415
HDGV	0.06154	0.02903	949.67357	959.84346
LDDV	0.04146	0.00073	397.80789	399.06271
LDDT	0.03182	0.00108	454.67599	455.79460
HDDV	0.02052	0.15850	1288.82285	1336.55551
MC	0.11576	0.00333	390.93995	394.82642

## 5.5 Personnel Formula(s)

**- Personnel Vehicle Miles Travel for Work Days per Year**

$$VMT_P = NP * WD * AC$$

VMT<sub>P</sub>: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

**- Total Vehicle Miles Travel per Year**

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

VMT<sub>AD</sub>: Active Duty Personnel Vehicle Miles Travel (miles)

VMT<sub>C</sub>: Civilian Personnel Vehicle Miles Travel (miles)

VMT<sub>SC</sub>: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT<sub>ANG</sub>: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT<sub>AFRC</sub>: Reserve Personnel Vehicle Miles Travel (miles)

**- Vehicle Emissions per Year**

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

## 6. Personnel

### 6.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?** Add

**- Activity Location**

County: Brevard

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Activity Title:** CCSFS Quarterly Training Events

**- Activity Description:**

**- Activity Start Date**

**Start Month:** 1  
**Start Year:** 2024

**- Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

**- Activity Emissions of Criteria Pollutants:**

Pollutant	Emissions Per Year (TONs)
VOC	0.009142
SO <sub>x</sub>	0.000054
NO <sub>x</sub>	0.005056
CO	0.127057

Pollutant	Emissions Per Year (TONs)
PM 10	0.000120
PM 2.5	0.000106
Pb	0.000000
NH <sub>3</sub>	0.001313

**- Global Scale Activity Emissions of Greenhouse Gasses:**

Pollutant	Emissions Per Year (TONs)
CH <sub>4</sub>	0.000486
N <sub>2</sub> O	0.000183

Pollutant	Emissions Per Year (TONs)
CO <sub>2</sub>	10.686571
CO <sub>2</sub> e	10.753055

## 6.2 Personnel Assumptions

**- Number of Personnel**

**Active Duty Personnel:** 100  
**Civilian Personnel:** 0  
**Support Contractor Personnel:** 0  
**Air National Guard (ANG) Personnel:** 0  
**Reserve Personnel:** 0

**- Default Settings Used:** No

**- Average Personnel Round Trip Commute (mile):** 20

**- Personnel Work Schedule**

**Active Duty Personnel:** 1 Days Per Month  
**Civilian Personnel:** 5 Days Per Week  
**Support Contractor Personnel:** 5 Days Per Week  
**Air National Guard (ANG) Personnel:** 4 Days Per Week  
**Reserve Personnel:** 4 Days Per Month

## 6.3 Personnel On Road Vehicle Mixture

**- On Road Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

## 6.4 Personnel Emission Factor(s)

### - On Road Vehicle Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	NH <sub>3</sub>
LDGV	0.31287	0.00178	0.15174	4.94075	0.00384	0.00340	0.05485
LDGT	0.27556	0.00220	0.20340	4.45877	0.00436	0.00385	0.04644
HDGV	1.00405	0.00480	0.72186	12.67463	0.02085	0.01845	0.09731
LDDV	0.08501	0.00134	0.14279	6.03046	0.00324	0.00298	0.01679
LDDT	0.20078	0.00154	0.47191	5.96927	0.00587	0.00540	0.01813
HDDV	0.13925	0.00434	2.62491	1.70896	0.06430	0.05916	0.06420
MC	3.23022	0.00193	0.54883	12.80710	0.02290	0.02026	0.05095

### - On Road Vehicle Greenhouse Gasses Emission Factors (grams/mile)

	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CO <sub>2</sub> e
LDGV	0.01600	0.00544	352.50072	354.51700
LDGT	0.01669	0.00796	436.10061	438.88415
HDGV	0.06154	0.02903	949.67357	959.84346
LDDV	0.04146	0.00073	397.80789	399.06271
LDDT	0.03182	0.00108	454.67599	455.79460
HDDV	0.02052	0.15850	1288.82285	1336.55551
MC	0.11576	0.00333	390.93995	394.82642

## 6.5 Personnel Formula(s)

### - Personnel Vehicle Miles Travel for Work Days per Year

$$VMT_P = NP * WD * AC$$

VMT<sub>P</sub>: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

### - Total Vehicle Miles Travel per Year

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

VMT<sub>AD</sub>: Active Duty Personnel Vehicle Miles Travel (miles)

VMT<sub>C</sub>: Civilian Personnel Vehicle Miles Travel (miles)

VMT<sub>SC</sub>: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT<sub>ANG</sub>: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT<sub>AFRC</sub>: Reserve Personnel Vehicle Miles Travel (miles)

### - Vehicle Emissions per Year

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>Total</sub>: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

## RECORD OF AIR ANALYSIS

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

Report generated with ACAM version: 5.0.23a

**a. Action Location:**

**Base:** PATRICK AFB  
**State:** Florida  
**County(s):** Brevard  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Environmental Assessment for Transient and Training Missions for Space Launch Delta 45

**c. Project Number/s (if applicable):**

**d. Projected Action Start Date:** 1 / 2024

**e. Action Description:**

The Proposed Action involves SLD 45 transient and training missions at PSFB, CCSFS, MTA, the Banana River, Tosohatchee State Reserve (Tosohatchee WMA / SJRWMD Conservation Areas), Avon Park AFR, SJRWMD managed lands, and WTAs in the Atlantic Ocean, including existing training presented in the 2016 EA, and the modification and addition of new training not previously captured in that EA. The Proposed Action additionally includes equipment and technology testing by tenant and transient users that occurs at PSFB, CCSFS, and MTA.

Under the Proposed Action, SLD 45 would continue to conduct training activities within designated areas described in the 2016 EA, including WTAs, landing zones (LZs), DZs, air refueling (AR) tracks, All Terrain Vehicle (ATV) training areas, live-fire munitions training areas, and tactical training areas.

Proposed new training, or modifications to existing training operations, would include helicopter brownout training, use of a new multipurpose training tower at PSFB by the 308th RQS, and various expanded wartime readiness trainings.

**f. Point of Contact:**

**Name:** Katelyn Kopp  
**Title:** Environmental Analyst  
**Organization:** Potomac Hudson Engineering, Inc.  
**Email:**  
**Phone Number:**

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the GCR are:

☐ applicable  
☒ not applicable

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (hsba.e., no net gain/loss

in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources*, and the *USAF Air Emissions Guide for Air Force Transitory Sources*.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action's potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (hsba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicators and are summarized below.

**Analysis Summary:**

**2024**

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.177	250	No
NOx	0.420	250	No
CO	1.450	250	No
SOx	0.077	250	No
PM 10	0.082	250	No
PM 2.5	0.082	250	No
Pb	0.000	25	No
NH3	0.012	250	No

**2025 - (Steady State)**

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.177	250	No
NOx	0.420	250	No
CO	1.450	250	No
SOx	0.077	250	No
PM 10	0.082	250	No
PM 2.5	0.082	250	No
Pb	0.000	25	No
NH3	0.012	250	No

None of the estimated annual net emissions associated with this action are above the insignificance indicators; therefore, the action will not cause or contribute to an exceedance of one or more NAAQSs and will have an insignificant impact on air quality. No further air assessment is needed.

Katelyn Kopp, Environmental Analyst

Apr 02 2024

Name, Title

Date

## GREENHOUSE GAS EMISSIONS

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to estimate GHG emissions and assess the theoretical Social Cost of Greenhouse Gases (SC GHG) associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide. This report provides a summary of GHG emissions and SC GHG analysis.

Report generated with ACAM version: 5.0.23a

**a. Action Location:**

**Base:** PATRICK AFB  
**State:** Florida  
**County(s):** Brevard  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Environmental Assessment for Transient and Training Missions for Space Launch Delta 45

**c. Project Number/s (if applicable):**

**d. Projected Action Start Date:** 1 / 2024

**e. Action Description:**

The Proposed Action involves SLD 45 transient and training missions at PSFB, CCSFS, MTA, the Banana River, Tosohatchee State Reserve (Tosohatchee WMA / SJRWMD Conservation Areas), Avon Park AFR, SJRWMD managed lands, and WTAs in the Atlantic Ocean, including existing training presented in the 2016 EA, and the modification and addition of new training not previously captured in that EA. The Proposed Action additionally includes equipment and technology testing by tenant and transient users that occurs at PSFB, CCSFS, and MTA.

Under the Proposed Action, SLD 45 would continue to conduct training activities within designated areas described in the 2016 EA, including WTAs, landing zones (LZs), DZs, air refueling (AR) tracks, All Terrain Vehicle (ATV) training areas, live-fire munitions training areas, and tactical training areas.

Proposed new training, or modifications to existing training operations, would include helicopter brownout training, use of a new multipurpose training tower at PSFB by the 308th RQS, and various expanded wartime readiness trainings.

**f. Point of Contact:**

**Name:** Katelyn Kopp  
**Title:** Environmental Analyst  
**Organization:** Potomac Hudson Engineering, Inc.  
**Email:**  
**Phone Number:**

**2. Analysis:** Total combined direct and indirect GHG emissions associated with the action were estimated through ACAM on a calendar-year basis from the action start through the expected life cycle of the action. The life cycle for Air Force actions with "steady state" emissions (SS, net gain/loss in emission stabilized and the action is fully implemented) is assumed to be 10 years beyond the SS emissions year or 20 years beyond SS emissions year for aircraft operations related actions.

**GHG Emissions Analysis Summary:**

GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (NO<sub>2</sub>). These three GHGs represent more than 97 percent of all U.S. GHG emissions. Emissions of GHGs are typically quantified and regulated in units of CO<sub>2</sub> equivalents (CO<sub>2</sub>e). The CO<sub>2</sub>e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO<sub>2</sub>. All GHG emissions estimates were derived from various emission sources using the methods, algorithms, emission factors, and GWPs from the most current Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and/or Air Emissions Guide for Air Force Transitory Sources.

The Air Force has adopted the Prevention of Significant Deterioration (PSD) threshold for GHG of 75,000 ton per year (ton/yr) of CO<sub>2</sub>e (or 68,039 metric ton per year, mton/yr) as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (de minimis, too trivial or minor to merit consideration). Actions with a net change in GHG (CO<sub>2</sub>e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis. Note that actions with a net change in GHG (CO<sub>2</sub>e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require further assessment to determine if the action poses a significant impact. For further detail on insignificance indicators see Level II, Air Quality Quantitative Assessment, Insignificance Indicators (April 2023).

The following table summarizes the action-related GHG emissions on a calendar-year basis through the projected life cycle of the action.

Action-Related Annual GHG Emissions (mton/yr)						
YEAR	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	Threshold	Exceedance
2024	125	0.0055235	0.00183957	131	68,039	No
2025 [SS Year]	125	0.0055235	0.00183957	131	68,039	No
2026	125	0.0055235	0.00183957	131	68,039	No
2027	125	0.0055235	0.00183957	131	68,039	No
2028	125	0.0055235	0.00183957	131	68,039	No
2029	125	0.0055235	0.00183957	131	68,039	No
2030	125	0.0055235	0.00183957	131	68,039	No
2031	125	0.0055235	0.00183957	131	68,039	No
2032	125	0.0055235	0.00183957	131	68,039	No
2033	125	0.0055235	0.00183957	131	68,039	No
2034	125	0.0055235	0.00183957	131	68,039	No
2035	125	0.0055235	0.00183957	131	68,039	No

The following U.S. and State's GHG emissions estimates (next two tables) are based on a five-year average (2016 through 2020) of individual state-reported GHG emissions (Reference: State Climate Summaries 2022, NOAA National Centers for Environmental Information, National Oceanic and Atmospheric Administration. <https://statesummaries.ncics.org/downloads/>).

State's Annual GHG Emissions (mton/yr)				
YEAR	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
2024	227,404,647	552,428	58,049	228,015,124
2025 [SS Year]	227,404,647	552,428	58,049	228,015,124
2026	227,404,647	552,428	58,049	228,015,124
2027	227,404,647	552,428	58,049	228,015,124
2028	227,404,647	552,428	58,049	228,015,124
2029	227,404,647	552,428	58,049	228,015,124
2030	227,404,647	552,428	58,049	228,015,124
2031	227,404,647	552,428	58,049	228,015,124
2032	227,404,647	552,428	58,049	228,015,124

2033	227,404,647	552,428	58,049	228,015,124
2034	227,404,647	552,428	58,049	228,015,124
2035	227,404,647	552,428	58,049	228,015,124

U.S. Annual GHG Emissions (mton/yr)				
YEAR	CO2	CH4	N2O	CO2e
2024	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2025 [SS Year]	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2026	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2027	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2028	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2029	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2030	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2031	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2032	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2033	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2034	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2035	5,136,454,179	25,626,912	1,500,708	5,163,581,798

#### GHG Relative Significance Assessment:

A Relative Significance Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (yGba.e., global, national, and regional) and the degree (intensity) of the proposed action's effects. The Relative Significance Assessment provides real-world context and allows for a reasoned choice against alternatives through a relative comparison analysis. The analysis weighs each alternative's annual net change in GHG emissions proportionally against (or relative to) global, national, and regional emissions.

The action's surroundings, circumstances, environment, and background (context associated with an action) provide the setting for evaluating the GHG intensity (impact significance). From an air quality perspective, context of an action is the local area's ambient air quality relative to meeting the NAAQSs, expressed as attainment, nonattainment, or maintenance areas (this designation is considered the attainment status). GHGs are non-hazardous to health at normal ambient concentrations and, at a cumulative global scale, action-related GHG emissions can only potentially cause warming of the climatic system. Therefore, the action-related GHGs generally have an insignificant impact to local air quality.

However, the affected area (context) of GHG/climate change is global. Therefore, the intensity or degree of the proposed action's GHG/climate change effects are gauged through the quantity of GHG associated with the action as compared to a baseline of the state, U.S., and global GHG inventories. Each action (or alternative) has significance, based on their annual net change in GHG emissions, in relation to or proportionally to the global, national, and regional annual GHG emissions.

To provide real-world context to the GHG and climate change effects on a global scale, an action's net change in GHG emissions is compared relative to the state (where action will occur) and U.S. annual emissions. The following table provides a relative comparison of an action's net change in GHG emissions vs. state and U.S. projected GHG emissions for the same time period.

Total GHG Relative Significance (mton)					
		CO2	CH4	N2O	CO2e
2024-2035	State Total	2,728,855,764	6,629,133	696,586	2,736,181,483
2024-2035	U.S. Total	61,637,450,148	307,522,940	18,008,492	61,962,981,580
2024-2035	Action	1,505	0.066282	0.022075	1,575
Percent of State Totals		0.00005515%	0.00000100%	0.00000317%	0.00005757%
Percent of U.S. Totals		0.00000244%	0.00000002%	0.00000012%	0.00000254%

From a global context, the action's total GHG percentage of total global GHG for the same time period is: 0.00000034%.\*

\* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, <https://www.c2es.org/content/international-emissions>).

#### Climate Change Assessment (as SC GHG):

On a global scale, the potential climate change effects of an action are indirectly addressed and put into context through providing the theoretical SC GHG associated with an action. The SC GHG is an administrative and theoretical tool intended to provide additional context to a GHG's potential impacts through approximating the long-term monetary damage that may result from GHG emissions affect on climate change. It is important to note that the SC GHG is a monetary quantification, in 2020 U.S. dollars, of the theoretical economic damages that could result from emitting GHGs into the atmosphere.

The SC GHG estimates are derived using the methodology and discount factors in the "Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990," released by the Interagency Working Group on Social Cost of Greenhouse Gases (IWG SC GHGs) in February 2021.

The speciated IWG Annual SC GHG Emission associated with an action (or alternative) are first estimated as annual unit cost (cost per metric ton, \$/mton). Results of the annual IWG Annual SC GHG Emission Assessments are tabulated in the IWG Annual SC GHG Cost per Metric Ton Table below:

IWG SC GHG Discount Factor: 2.5%

IWG Annual SC GHG Cost per Metric Ton (\$/mton [In 2020 \$])			
YEAR	CO2	CH4	N2O
2024	\$82.00	\$2,200.00	\$29,000.00
2025 [SS Year]	\$83.00	\$2,200.00	\$30,000.00
2026	\$84.00	\$2,300.00	\$30,000.00
2027	\$86.00	\$2,300.00	\$31,000.00
2028	\$87.00	\$2,400.00	\$32,000.00
2029	\$88.00	\$2,500.00	\$32,000.00
2030	\$89.00	\$2,500.00	\$33,000.00
2031	\$91.00	\$2,600.00	\$33,000.00
2032	\$92.00	\$2,600.00	\$34,000.00
2033	\$94.00	\$2,700.00	\$35,000.00
2034	\$95.00	\$2,800.00	\$35,000.00
2035	\$96.00	\$2,800.00	\$36,000.00

Action-related SC GHG were estimated by calendar-year for the projected action's lifecycle. Annual estimates were found by multiplying the annual emission for a given year by the corresponding IWG Annual SC GHG Emission value (see table above).

Action-Related Annual SC GHG (\$K/yr [In 2020 \$])				
YEAR	CO2	CH4	N2O	GHG
2024	\$10.28	\$0.01	\$0.05	\$10.35
2025 [SS Year]	\$10.41	\$0.01	\$0.06	\$10.48
2026	\$10.53	\$0.01	\$0.06	\$10.60
2027	\$10.79	\$0.01	\$0.06	\$10.86
2028	\$10.91	\$0.01	\$0.06	\$10.98
2029	\$11.04	\$0.01	\$0.06	\$11.11

2030	\$11.16	\$0.01	\$0.06	\$11.24
2031	\$11.41	\$0.01	\$0.06	\$11.49
2032	\$11.54	\$0.01	\$0.06	\$11.62
2033	\$11.79	\$0.01	\$0.06	\$11.87
2034	\$11.91	\$0.02	\$0.06	\$11.99
2035	\$12.04	\$0.02	\$0.07	\$12.12

The following two tables summarize the U.S. and State's Annual SC GHG by calendar-year. The U.S. and State's Annual SC GHG are in 2020 dollars and were estimated by each year for the projected action lifecycle. Annual SC GHG estimates were found by multiplying the U.S. and State's annual five-year average GHG emissions for a given year by the corresponding IWG Annual SC GHG Cost per Metric Ton value.

State's Annual SC GHG (\$K/yr [In 2020 \$])				
YEAR	CO2	CH4	N2O	GHG
2024	\$18,647,181.06	\$1,215,340.97	\$1,683,417.08	\$21,545,939.11
2025 [SS Year]	\$18,874,585.70	\$1,215,340.97	\$1,741,465.95	\$21,831,392.62
2026	\$19,101,990.35	\$1,270,583.74	\$1,741,465.95	\$22,114,040.04
2027	\$19,556,799.65	\$1,270,583.74	\$1,799,514.81	\$22,626,898.20
2028	\$19,784,204.29	\$1,325,826.51	\$1,857,563.68	\$22,967,594.48
2029	\$20,011,608.94	\$1,381,069.28	\$1,857,563.68	\$23,250,241.90
2030	\$20,239,013.59	\$1,381,069.28	\$1,915,612.54	\$23,535,695.41
2031	\$20,693,822.88	\$1,436,312.06	\$1,915,612.54	\$24,045,747.48
2032	\$20,921,227.53	\$1,436,312.06	\$1,973,661.41	\$24,331,200.99
2033	\$21,376,036.82	\$1,491,554.83	\$2,031,710.27	\$24,899,301.92
2034	\$21,603,441.47	\$1,546,797.60	\$2,031,710.27	\$25,181,949.34
2035	\$21,830,846.12	\$1,546,797.60	\$2,089,759.14	\$25,467,402.85

U.S. Annual SC GHG (\$K/yr [In 2020 \$])				
YEAR	CO2	CH4	N2O	GHG
2024	\$421,189,242.68	\$56,379,205.70	\$43,520,521.44	\$521,088,969.82
2025 [SS Year]	\$426,325,696.86	\$56,379,205.70	\$45,021,229.08	\$527,726,131.63
2026	\$431,462,151.04	\$58,941,896.86	\$45,021,229.08	\$535,425,276.98
2027	\$441,735,059.39	\$58,941,896.86	\$46,521,936.72	\$547,198,892.97
2028	\$446,871,513.57	\$61,504,588.03	\$48,022,644.35	\$556,398,745.96
2029	\$452,007,967.75	\$64,067,279.20	\$48,022,644.35	\$564,097,891.30
2030	\$457,144,421.93	\$64,067,279.20	\$49,523,351.99	\$570,735,053.12
2031	\$467,417,330.29	\$66,629,970.37	\$49,523,351.99	\$583,570,652.65
2032	\$472,553,784.47	\$66,629,970.37	\$51,024,059.62	\$590,207,814.46
2033	\$482,826,692.83	\$69,192,661.54	\$52,524,767.26	\$604,544,121.62
2034	\$487,963,147.01	\$71,755,352.70	\$52,524,767.26	\$612,243,266.97
2035	\$493,099,601.18	\$71,755,352.70	\$54,025,474.90	\$618,880,428.78

#### Relative Comparison of SC GHG:

To provide additional real-world context to the potential climate change impact associate with an action, a Relative Comparison of SC GHG Assessment is also performed. While the SC GHG estimates capture an indirect approximation of global climate damages, the Relative Comparison of SC GHG Assessment provides a better perspective from a regional and global scale.

The Relative Comparison of SC GHG Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (yGba.e., global, national, and regional) and the SC GHG as the degree (intensity) of the proposed action's effects. The Relative Comparison Assessment provides real-world context and allows for a reasoned choice among alternatives through a relative contrast analysis which weighs each alternative's SC GHG proportionally against (or relative to) existing global, national, and regional SC GHG. The below table

provides a relative comparison between an action's SC GHG vs. state and U.S. projected SC GHG for the same time period:

Total SC-GHG (\$K [In 2020 \$])					
		CO2	CH4	N2O	GHG
2024-2035	State Total	\$242,640,758.39	\$16,517,588.64	\$22,639,057.32	\$281,797,404.35
2024-2035	U.S. Total	\$5,480,596,608.99	\$766,244,659.23	\$585,275,978.04	\$6,832,117,246.27
2024-2035	Action	\$133.82	\$0.17	\$0.72	\$134.70
Percent of State Totals		0.00005515%	0.00000100%	0.00000317%	0.00004780%
Percent of U.S. Totals		0.00000244%	0.00000002%	0.00000012%	0.00000197%

From a global context, the action's total SC GHG percentage of total global SC GHG for the same time period is: 0.00000026%.\*

\* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, <https://www.c2es.org/content/international-emissions>).

Katelyn Kopp, Environmental Analyst

Apr 02 2024

Name, Title

Date

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**Appendix C**  
**USFWS IPaC Results within the Respective ROI Locations**

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Patrick Space Force Base



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Florida Ecological Services Field Office

1339 20th Street

Vero Beach, FL 32960-3559

Phone: (772) 562-3909 Fax: (772) 562-4288

Email Address: [fw4flesregs@fws.gov](mailto:fw4flesregs@fws.gov)



In Reply Refer To:

July 07, 2023

Project Code: 2023-0102160

Project Name: Space Launch Delta 45 Transient and Training Missions Environmental Assessment (area 2)

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

#### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

**Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of

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this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Marine Mammals
  - Wetlands
-

## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Florida Ecological Services Field Office**

1339 20th Street

Vero Beach, FL 32960-3559

(772) 562-3909

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## PROJECT SUMMARY

Project Code: 2023-0102160

Project Name: Space Launch Delta 45 Transient and Training Missions Environmental Assessment (area 2)

Project Type: Military Maneuvers

Project Description: Environmental assessment to analyze potential impacts from various transient and training missions.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@28.242070650000002,-80.60925864954446,14z>



Counties: Brevard County, Florida

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## ENDANGERED SPECIES ACT SPECIES

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

NAME	STATUS
West Indian Manatee <i>Trichechus manatus</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. <b><i>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</i></b> Species profile: <a href="https://ecos.fws.gov/ecp/species/4469">https://ecos.fws.gov/ecp/species/4469</a>	Threatened

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## BIRDS

NAME	STATUS
<p>Audubon's Crested Caracara <i>Polyborus plancus audubonii</i></p> <p>Population: FL pop.</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8250">https://ecos.fws.gov/ecp/species/8250</a></p>	Threatened
<p>Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/10477">https://ecos.fws.gov/ecp/species/10477</a></p>	Threatened
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</p> <p>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a></p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>There is <b>proposed</b> critical habitat for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a></p>	Threatened
<p>Wood Stork <i>Mycteria americana</i></p> <p>Population: AL, FL, GA, MS, NC, SC</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8477">https://ecos.fws.gov/ecp/species/8477</a></p> <p>General project design guidelines:</p> <p><a href="https://ipac.ecosphere.fws.gov/project/WMAUL2WOSFGOLGL2ZTHLRTI7BY/documents/generated/6954.pdf">https://ipac.ecosphere.fws.gov/project/WMAUL2WOSFGOLGL2ZTHLRTI7BY/documents/generated/6954.pdf</a></p>	Threatened

## REPTILES

NAME	STATUS
American Crocodile <i>Crocodylus acutus</i> Population: U.S.A. (FL) There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6604">https://ecos.fws.gov/ecp/species/6604</a>	Threatened
Eastern Indigo Snake <i>Drymarchon couperi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/646">https://ecos.fws.gov/ecp/species/646</a>	Threatened
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6199">https://ecos.fws.gov/ecp/species/6199</a>	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3656">https://ecos.fws.gov/ecp/species/3656</a>	Endangered
Leatherback Sea Turtle <i>Dermochelys coriacea</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1493">https://ecos.fws.gov/ecp/species/1493</a>	Endangered
Loggerhead Sea Turtle <i>Caretta caretta</i> Population: Northwest Atlantic Ocean DPS There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1110">https://ecos.fws.gov/ecp/species/1110</a>	Threatened

## FLOWERING PLANTS

NAME	STATUS
Carter's Mustard <i>Warea carteri</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5583">https://ecos.fws.gov/ecp/species/5583</a>	Endangered
Lewton's Polygala <i>Polygala lewtonii</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6688">https://ecos.fws.gov/ecp/species/6688</a>	Endangered

## CRITICAL HABITATS

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Loggerhead Sea Turtle <i>Caretta caretta</i> <a href="https://ecos.fws.gov/ecp/species/1110#crithab">https://ecos.fws.gov/ecp/species/1110#crithab</a>	Final

NAME	STATUS
West Indian Manatee <i>Trichechus manatus</i> <a href="https://ecos.fws.gov/ecp/species/4469#crithab">https://ecos.fws.gov/ecp/species/4469#crithab</a>	Final

## **USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES**

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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# MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9587">https://ecos.fws.gov/ecp/species/9587</a>	Breeds Apr 1 to Aug 31
American Oystercatcher <i>Haematopus palliatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8935">https://ecos.fws.gov/ecp/species/8935</a>	Breeds Apr 15 to Aug 31

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NAME	BREEDING SEASON
<b>Bald Eagle <i>Haliaeetus leucocephalus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
<b>Black Skimmer <i>Rynchops niger</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/5234">https://ecos.fws.gov/ecp/species/5234</a>	Breeds May 20 to Sep 15
<b>Chimney Swift <i>Chaetura pelagica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
<b>Great Blue Heron <i>Ardea herodias occidentalis</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Jan 1 to Dec 31
<b>Gull-billed Tern <i>Gelochelidon nilotica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9501">https://ecos.fws.gov/ecp/species/9501</a>	Breeds May 1 to Jul 31
<b>Lesser Yellowlegs <i>Tringa flavipes</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a>	Breeds elsewhere
<b>Magnificent Frigatebird <i>Fregata magnificens</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Oct 1 to Apr 30
<b>Painted Bunting <i>Passerina ciris</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 15
<b>Prairie Warbler <i>Dendroica discolor</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
<b>Reddish Egret <i>Egretta rufescens</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/7617">https://ecos.fws.gov/ecp/species/7617</a>	Breeds Mar 1 to Sep 15
<b>Ruddy Turnstone <i>Arenaria interpres morinella</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere

NAME	BREEDING SEASON
<b>Short-billed Dowitcher <i>Limnodromus griseus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a>	Breeds elsewhere
<b>Swallow-tailed Kite <i>Elanoides forficatus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8938">https://ecos.fws.gov/ecp/species/8938</a>	Breeds Mar 10 to Jun 30
<b>Willet <i>Tringa semipalmata</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
<b>Wilson's Plover <i>Charadrius wilsonia</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Aug 20

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

## Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

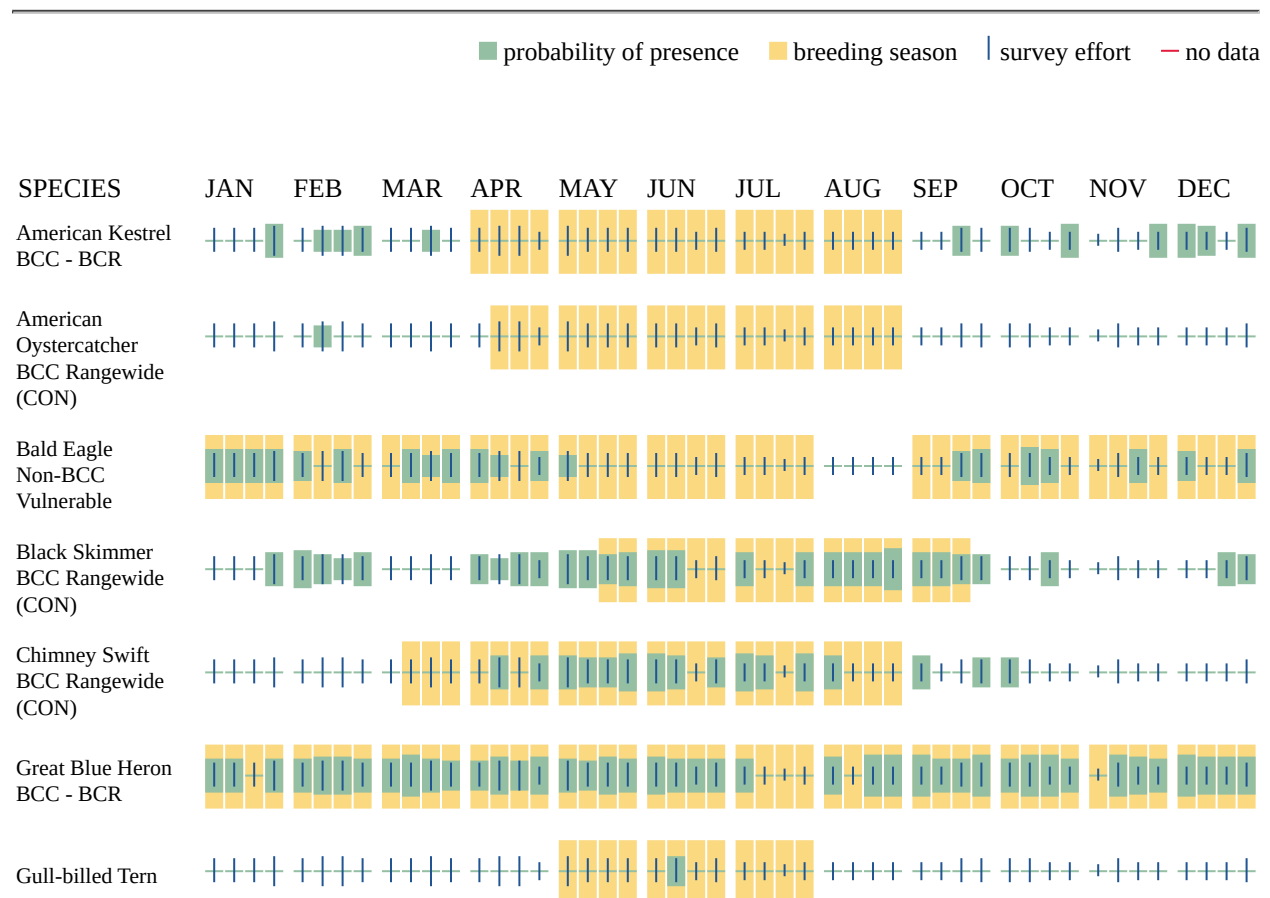
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

**No Data (—)**

A week is marked as having no data if there were no survey events for that week.

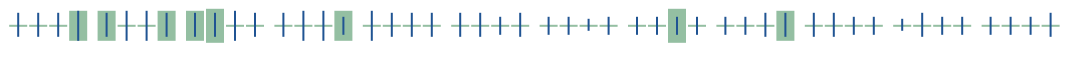
## Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



### BCC Rangewide (CON)

Lesser Yellowlegs  
BCC Rangewide  
(CON)



Magnificent  
Frigatebird  
BCC - BCR



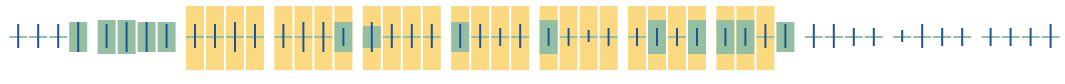
Painted Bunting  
BCC - BCR



Prairie Warbler  
BCC Rangewide  
(CON)

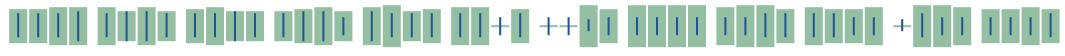


Reddish Egret  
BCC Rangewide  
(CON)



SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Ruddy Turnstone  
BCC - BCR



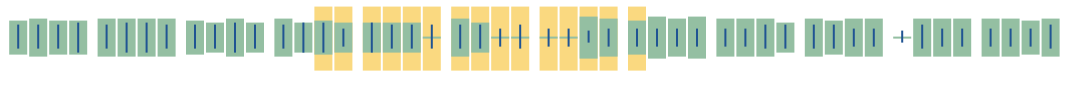
Short-billed  
Dowitcher  
BCC Rangewide  
(CON)



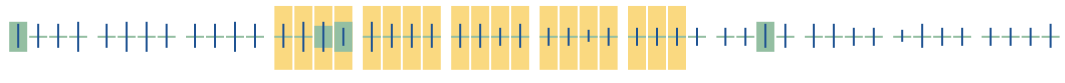
Swallow-tailed Kite  
BCC Rangewide  
(CON)



Willet  
BCC Rangewide  
(CON)



Wilson's Plover  
BCC Rangewide  
(CON)



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## MIGRATORY BIRDS FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

### **What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### **What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

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Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of

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certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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# MARINE MAMMALS

Marine mammals are protected under the [Marine Mammal Protection Act](#). Some are also protected under the Endangered Species Act<sup>1</sup> and the Convention on International Trade in Endangered Species of Wild Fauna and Flora<sup>2</sup>.

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries<sup>3</sup> [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the [Marine Mammals](#) page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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1. The [Endangered Species Act](#) (ESA) of 1973.
  2. The [Convention on International Trade in Endangered Species of Wild Fauna and Flora](#) (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
  3. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NAME

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West Indian Manatee *Trichechus manatus*

Species profile: <https://ecos.fws.gov/ecp/species/4469>

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# WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

## ESTUARINE AND MARINE DEEPWATER

- [E1ABL](#)
- [E1UBLx](#)
- [E1UBL](#)

## RIVERINE

- [R5UBFx](#)
- [R4SBC](#)
- [R2UBHx](#)
- [R5UBH](#)

## FRESHWATER POND

- [PAB4Hx](#)
- [PUBHx](#)

## ESTUARINE AND MARINE WETLAND

- [M2USP](#)
-

**IPAC USER CONTACT INFORMATION**

Agency: Department of Defense  
Name: Joseph Gable  
Address: 4211 West Boy Scout Blvd  
Address Line 2: Suite 500  
City: Tampa  
State: FL  
Zip: 33607  
Email: jaygable2000@yahoo.com  
Phone: 8132838197

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Cape Canaveral Space Force Station



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Florida Ecological Services Field Office

1339 20th Street

Vero Beach, FL 32960-3559

Phone: (772) 562-3909 Fax: (772) 562-4288

Email Address: [fw4flesregs@fws.gov](mailto:fw4flesregs@fws.gov)



In Reply Refer To:

July 08, 2023

Project Code: 2023-0102191

Project Name: Space Launch Delta 45 Transient and Training Missions Environmental Assessment (area 3)

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

#### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

**Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of

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this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Marine Mammals
  - Wetlands
-

## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Florida Ecological Services Field Office**

1339 20th Street

Vero Beach, FL 32960-3559

(772) 562-3909

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## PROJECT SUMMARY

Project Code: 2023-0102191

Project Name: Space Launch Delta 45 Transient and Training Missions Environmental Assessment (area 3)

Project Type: Military Maneuvers

Project Description: Preparation of an Environmental Assessment to analyze potential effect of various transient and training missions at SLD 45.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@28.4986424,-80.56593334722714,14z>



Counties: Brevard County, Florida

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## ENDANGERED SPECIES ACT SPECIES

There is a total of 16 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

NAME	STATUS
Southeastern Beach Mouse <i>Peromyscus polionotus niveiventris</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/3951">https://ecos.fws.gov/ecp/species/3951</a>	Threatened
West Indian Manatee <i>Trichechus manatus</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. <b><i>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</i></b> Species profile: <a href="https://ecos.fws.gov/ecp/species/4469">https://ecos.fws.gov/ecp/species/4469</a>	Threatened

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## BIRDS

NAME	STATUS
<p>Audubon's Crested Caracara <i>Polyborus plancus audubonii</i></p> <p>Population: FL pop.</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8250">https://ecos.fws.gov/ecp/species/8250</a></p>	Threatened
<p>Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/10477">https://ecos.fws.gov/ecp/species/10477</a></p>	Threatened
<p>Florida Scrub-jay <i>Aphelocoma coerulescens</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/6174">https://ecos.fws.gov/ecp/species/6174</a></p>	Threatened
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</p> <p>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a></p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>There is <b>proposed</b> critical habitat for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a></p>	Threatened
<p>Wood Stork <i>Mycteria americana</i></p> <p>Population: AL, FL, GA, MS, NC, SC</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8477">https://ecos.fws.gov/ecp/species/8477</a></p> <p>General project design guidelines:</p> <p><a href="https://ipac.ecosphere.fws.gov/project/TZYS6BJH2ZAQZGXNLV2V2ISWR4/documents/generated/6954.pdf">https://ipac.ecosphere.fws.gov/project/TZYS6BJH2ZAQZGXNLV2V2ISWR4/documents/generated/6954.pdf</a></p>	Threatened

## REPTILES

NAME	STATUS
Eastern Indigo Snake <i>Drymarchon couperi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/646">https://ecos.fws.gov/ecp/species/646</a>	Threatened
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6199">https://ecos.fws.gov/ecp/species/6199</a>	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3656">https://ecos.fws.gov/ecp/species/3656</a>	Endangered
Leatherback Sea Turtle <i>Dermochelys coriacea</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1493">https://ecos.fws.gov/ecp/species/1493</a>	Endangered
Loggerhead Sea Turtle <i>Caretta caretta</i> Population: Northwest Atlantic Ocean DPS There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1110">https://ecos.fws.gov/ecp/species/1110</a>	Threatened

## INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## FLOWERING PLANTS

NAME	STATUS
Carter's Mustard <i>Warea carteri</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5583">https://ecos.fws.gov/ecp/species/5583</a>	Endangered
Lewton's Polygala <i>Polygala lewtonii</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6688">https://ecos.fws.gov/ecp/species/6688</a>	Endangered

## CRITICAL HABITATS

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Loggerhead Sea Turtle <i>Caretta caretta</i> <a href="https://ecos.fws.gov/ecp/species/1110#crithab">https://ecos.fws.gov/ecp/species/1110#crithab</a>	Final
West Indian Manatee <i>Trichechus manatus</i> <a href="https://ecos.fws.gov/ecp/species/4469#crithab">https://ecos.fws.gov/ecp/species/4469#crithab</a>	Final

## USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

The following FWS National Wildlife Refuge Lands and Fish Hatcheries lie fully or partially within your project area:

FACILITY NAME	ACRES
MERRITT ISLAND NATIONAL WILDLIFE REFUGE <a href="https://www.fws.gov/refuges/profiles/index.cfm?id=41570">https://www.fws.gov/refuges/profiles/index.cfm?id=41570</a>	129,277.022

# MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

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1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9587">https://ecos.fws.gov/ecp/species/9587</a>	Breeds Apr 1 to Aug 31
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31

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NAME	BREEDING SEASON
<b>Black Scoter <i>Melanitta nigra</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Black Skimmer <i>Rynchops niger</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/5234">https://ecos.fws.gov/ecp/species/5234</a>	Breeds May 20 to Sep 15
<b>Brown Pelican <i>Pelecanus occidentalis</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 15 to Sep 30
<b>Chimney Swift <i>Chaetura pelagica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
<b>Common Eider <i>Somateria mollissima</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jun 1 to Sep 30
<b>Common Loon <i>gavia immer</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/4464">https://ecos.fws.gov/ecp/species/4464</a>	Breeds Apr 15 to Oct 31
<b>Cory's Shearwater <i>Calonectris diomedea</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
<b>Great Blue Heron <i>Ardea herodias occidentalis</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Jan 1 to Dec 31
<b>Great Shearwater <i>Puffinus gravis</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Gull-billed Tern <i>Gelochelidon nilotica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9501">https://ecos.fws.gov/ecp/species/9501</a>	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
<b>King Rail <i>Rallus elegans</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8936">https://ecos.fws.gov/ecp/species/8936</a>	Breeds May 1 to Sep 5
<b>Lesser Yellowlegs <i>Tringa flavipes</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a>	Breeds elsewhere
<b>Long-tailed Duck <i>Clangula hyemalis</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/7238">https://ecos.fws.gov/ecp/species/7238</a>	Breeds elsewhere
<b>Magnificent Frigatebird <i>Fregata magnificens</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Oct 1 to Apr 30
<b>Painted Bunting <i>Passerina ciris</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 15
<b>Pomarine Jaeger <i>Stercorarius pomarinus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Prairie Warbler <i>Dendroica discolor</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
<b>Razorbill <i>Alca torda</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jun 15 to Sep 10
<b>Red Phalarope <i>Phalaropus fulicarius</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Red-breasted Merganser <i>Mergus serrator</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Red-headed Woodpecker <i>Melanerpes erythrocephalus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

NAME	BREEDING SEASON
<b>Red-necked Phalarope <i>Phalaropus lobatus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Reddish Egret <i>Egretta rufescens</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/7617">https://ecos.fws.gov/ecp/species/7617</a>	Breeds Mar 1 to Sep 15
<b>Ring-billed Gull <i>Larus delawarensis</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Roseate Tern <i>Sterna dougallii</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds May 10 to Aug 31
<b>Royal Tern <i>Thalasseus maximus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 15 to Aug 31
<b>Ruddy Turnstone <i>Arenaria interpres morinella</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Short-billed Dowitcher <i>Limnodromus griseus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a>	Breeds elsewhere
<b>Sooty Tern <i>Onychoprion fuscatus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Mar 10 to Jul 31
<b>Surf Scoter <i>Melanitta perspicillata</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Swallow-tailed Kite <i>Elanoides forficatus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8938">https://ecos.fws.gov/ecp/species/8938</a>	Breeds Mar 10 to Jun 30

NAME	BREEDING SEASON
<b>Thick-billed Murre <i>Uria lomvia</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 15 to Aug 15
<b>White-winged Scoter <i>Melanitta fusca</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Willet <i>Tringa semipalmata</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
<b>Wilson's Plover <i>Charadrius wilsonia</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Aug 20
<b>Wilson's Storm-petrel <i>Oceanites oceanicus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum

probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

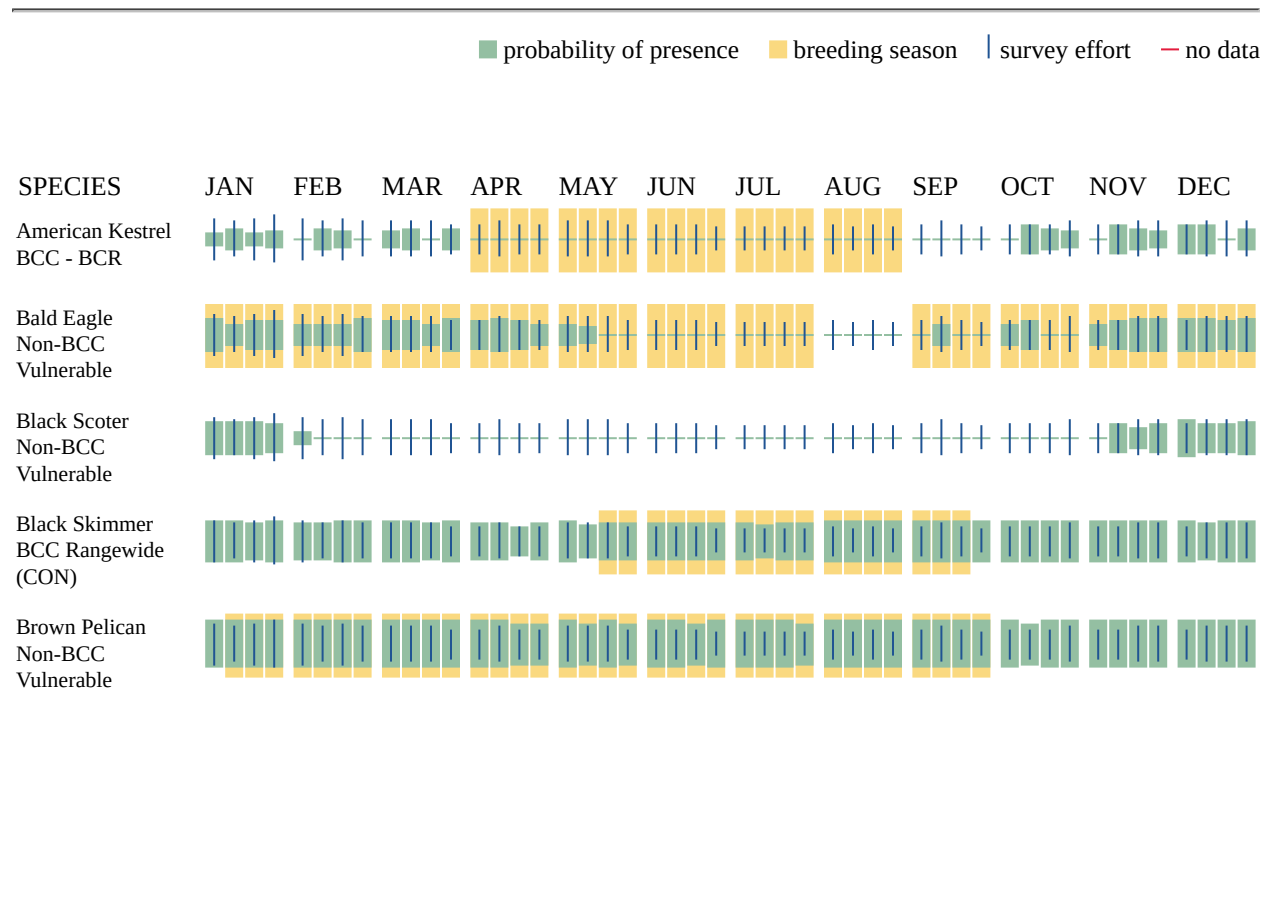
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

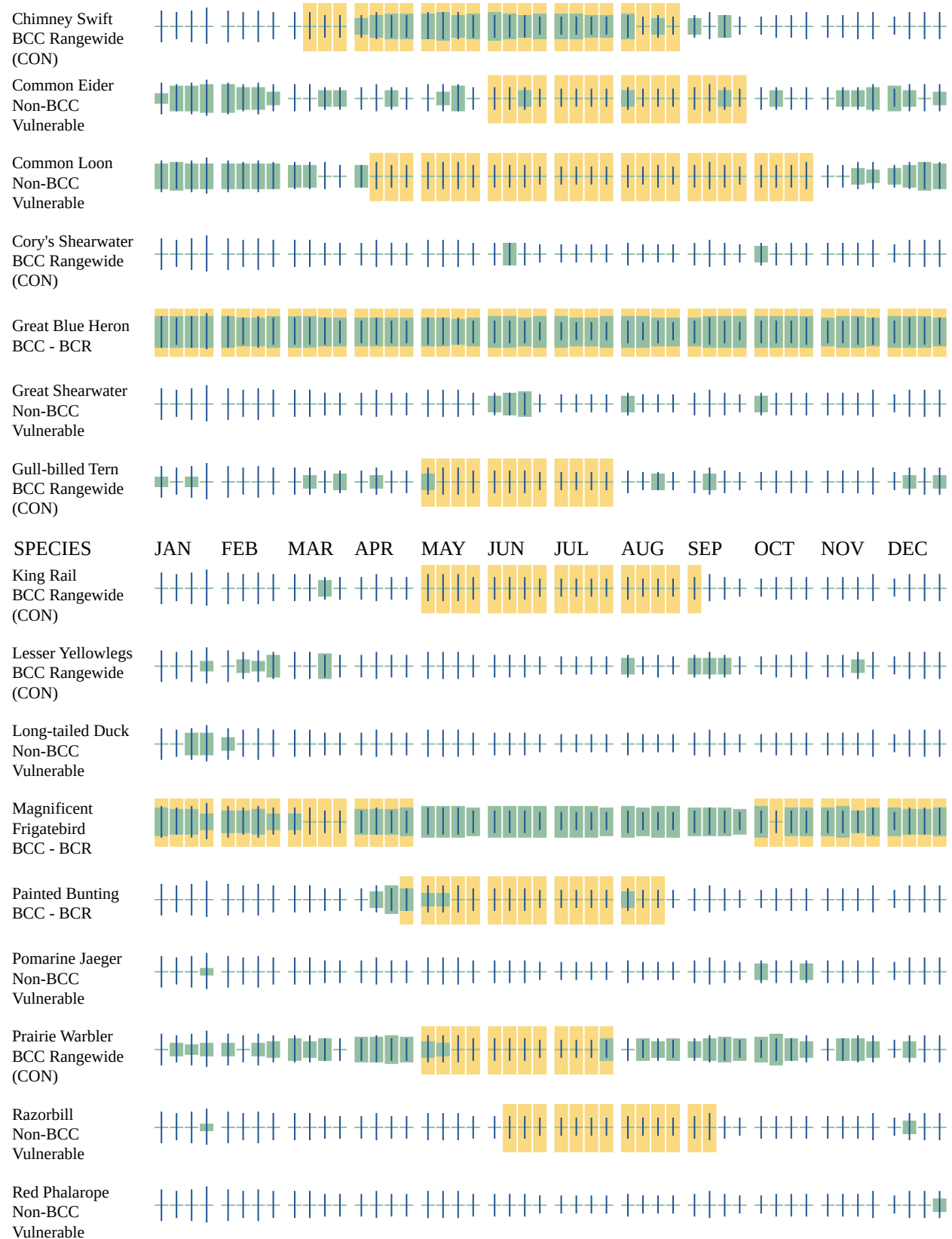
**No Data (—)**

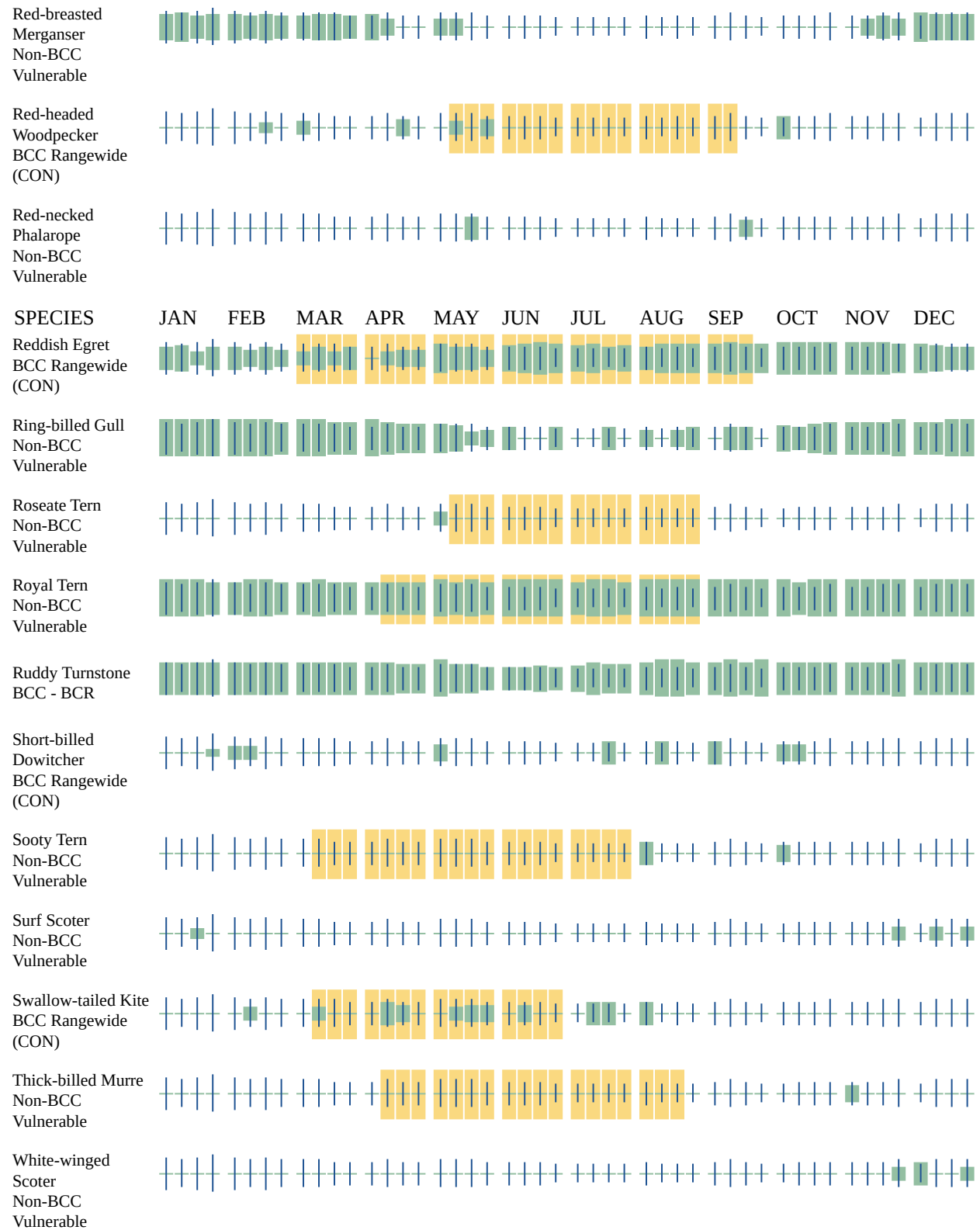
A week is marked as having no data if there were no survey events for that week.

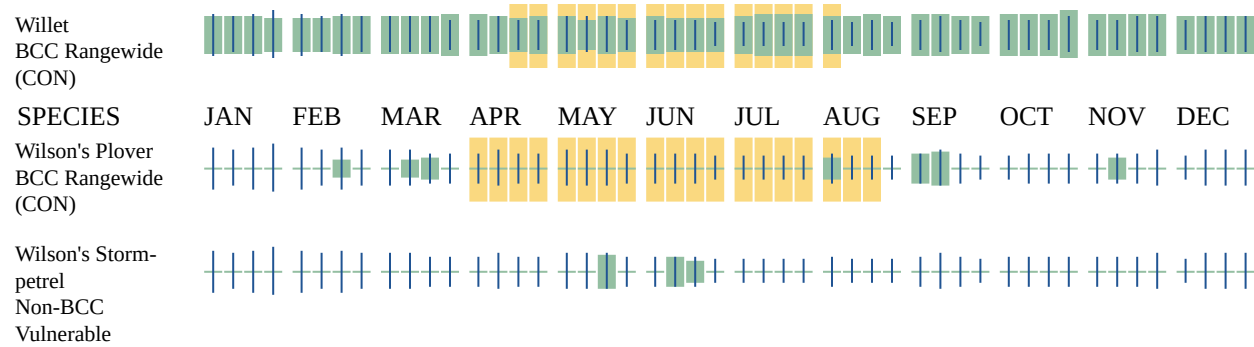
## Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.









Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## MIGRATORY BIRDS FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### **What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides

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birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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# MARINE MAMMALS

Marine mammals are protected under the [Marine Mammal Protection Act](#). Some are also protected under the Endangered Species Act<sup>1</sup> and the Convention on International Trade in Endangered Species of Wild Fauna and Flora<sup>2</sup>.

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries<sup>3</sup> [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the [Marine Mammals](#) page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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1. The [Endangered Species Act](#) (ESA) of 1973.
  2. The [Convention on International Trade in Endangered Species of Wild Fauna and Flora](#) (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
  3. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NAME

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West Indian Manatee *Trichechus manatus*

Species profile: <https://ecos.fws.gov/ecp/species/4469>

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# WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

## ESTUARINE AND MARINE DEEPWATER

- [E1UBL](#)
- [E1UBLx](#)
- [E1UBL6](#)
- [M1UBL](#)
- [E1AB3L](#)
- [E1UBLh](#)
- [E1UBLx6](#)
- [E1ABL](#)

## FRESHWATER EMERGENT WETLAND

- [PEM1F](#)
- [PEM1T](#)
- [PEM1R](#)
- [PEM1/SS1C](#)
- [PEM1Fx](#)
- [PEM1Cd](#)
- [PEM1/SS1F](#)
- [PEM1C](#)

## ESTUARINE AND MARINE WETLAND

- [M2USN](#)
  - [E2SS3P](#)
  - [E2USP6](#)
  - [E2EM1/SS3P6](#)
  - [E2EM1Nx](#)
  - [E2EM1N](#)
  - [E2SS3P6](#)
  - [E2SS3N](#)
-

- [E2EM1Nx6](#)
- [E2SS3Pd](#)
- [E2USM](#)
- [M2USP](#)
- [E2EM1N6](#)
- [E2FO3P](#)
- [E2EM1P](#)
- [E2USN](#)
- [E2SS3/EM1P6](#)
- [E2EM1P6](#)

## RIVERINE

- [R5UBFx](#)
- [R2UBHx](#)
- [R5UBH](#)

## FRESHWATER POND

- [PUBV](#)
- [PUBHx](#)
- [PUBVh](#)

## FRESHWATER FORESTED/SHRUB WETLAND

- [PSS1R](#)
- [PSS3R](#)
- [PSS3/EM1R](#)
- [PSS3C](#)
- [PSS3/EM1Cd](#)
- [PSS1C](#)
- [PSSF](#)
- [PSS3/EM1C](#)
- [PSS3Cd](#)

## LAKE

- [L1UBVx](#)
  - [L1UBV](#)
-

**IPAC USER CONTACT INFORMATION**

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State: FL  
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Email: jaygable2000@yahoo.com  
Phone: 8132838197

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## Malabar Transmitter Annex



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Florida Ecological Services Field Office

1339 20th Street

Vero Beach, FL 32960-3559

Phone: (772) 562-3909 Fax: (772) 562-4288

Email Address: [fw4flesregs@fws.gov](mailto:fw4flesregs@fws.gov)

<https://www.fws.gov/office/florida-ecological-services>



In Reply Refer To:

July 07, 2023

Project Code: 2023-0101830

Project Name: Space Launch Delta 45 Transient and Training Missions Environmental Assessment

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

**Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

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We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Wetlands
-

## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Florida Ecological Services Field Office**

1339 20th Street

Vero Beach, FL 32960-3559

(772) 562-3909

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## ENDANGERED SPECIES ACT SPECIES

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.
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**BIRDS**

NAME	STATUS
Audubon's Crested Caracara <i>Polyborus plancus audubonii</i> Population: FL pop. No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8250">https://ecos.fws.gov/ecp/species/8250</a>	Threatened
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/10477">https://ecos.fws.gov/ecp/species/10477</a>	Threatened
Everglade Snail Kite <i>Rostrhamus sociabilis plumbeus</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7713">https://ecos.fws.gov/ecp/species/7713</a>	Endangered
Red-cockaded Woodpecker <i>Picoides borealis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7614">https://ecos.fws.gov/ecp/species/7614</a>	Endangered
Whooping Crane <i>Grus americana</i> Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/758">https://ecos.fws.gov/ecp/species/758</a>	Experimental Population, Non- Essential
Wood Stork <i>Mycteria americana</i> Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8477">https://ecos.fws.gov/ecp/species/8477</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/AUEF7DFRABBCXIKA24PEXZH77A/documents/generated/6954.pdf">https://ipac.ecosphere.fws.gov/project/AUEF7DFRABBCXIKA24PEXZH77A/documents/generated/6954.pdf</a>	Threatened

## REPTILES

NAME	STATUS
Eastern Indigo Snake <i>Drymarchon couperi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/646">https://ecos.fws.gov/ecp/species/646</a>	Threatened
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6199">https://ecos.fws.gov/ecp/species/6199</a>	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3656">https://ecos.fws.gov/ecp/species/3656</a>	Endangered
Leatherback Sea Turtle <i>Dermochelys coriacea</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1493">https://ecos.fws.gov/ecp/species/1493</a>	Endangered
Loggerhead Sea Turtle <i>Caretta caretta</i> Population: Northwest Atlantic Ocean DPS There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1110">https://ecos.fws.gov/ecp/species/1110</a>	Threatened

## INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## FLOWERING PLANTS

NAME	STATUS
Carter's Mustard <i>Warea carteri</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5583">https://ecos.fws.gov/ecp/species/5583</a>	Endangered
Lewton's Polygala <i>Polygala lewtonii</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6688">https://ecos.fws.gov/ecp/species/6688</a>	Endangered

## CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

## **USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES**

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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# MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9587">https://ecos.fws.gov/ecp/species/9587</a>	Breeds Apr 1 to Aug 31
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31

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NAME	BREEDING SEASON
<b>Black Skimmer <i>Rynchops niger</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/5234">https://ecos.fws.gov/ecp/species/5234</a>	Breeds May 20 to Sep 15
<b>Chimney Swift <i>Chaetura pelagica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
<b>Great Blue Heron <i>Ardea herodias occidentalis</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Jan 1 to Dec 31
<b>Gull-billed Tern <i>Gelochelidon nilotica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9501">https://ecos.fws.gov/ecp/species/9501</a>	Breeds May 1 to Jul 31
<b>Magnificent Frigatebird <i>Fregata magnificens</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Oct 1 to Apr 30
<b>Painted Bunting <i>Passerina ciris</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 15
<b>Prairie Warbler <i>Dendroica discolor</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
<b>Red-headed Woodpecker <i>Melanerpes erythrocephalus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
<b>Reddish Egret <i>Egretta rufescens</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/7617">https://ecos.fws.gov/ecp/species/7617</a>	Breeds Mar 1 to Sep 15
<b>Ruddy Turnstone <i>Arenaria interpres morinella</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Swallow-tailed Kite <i>Elanoides forficatus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8938">https://ecos.fws.gov/ecp/species/8938</a>	Breeds Mar 10 to Jun 30
<b>Willet <i>Tringa semipalmata</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

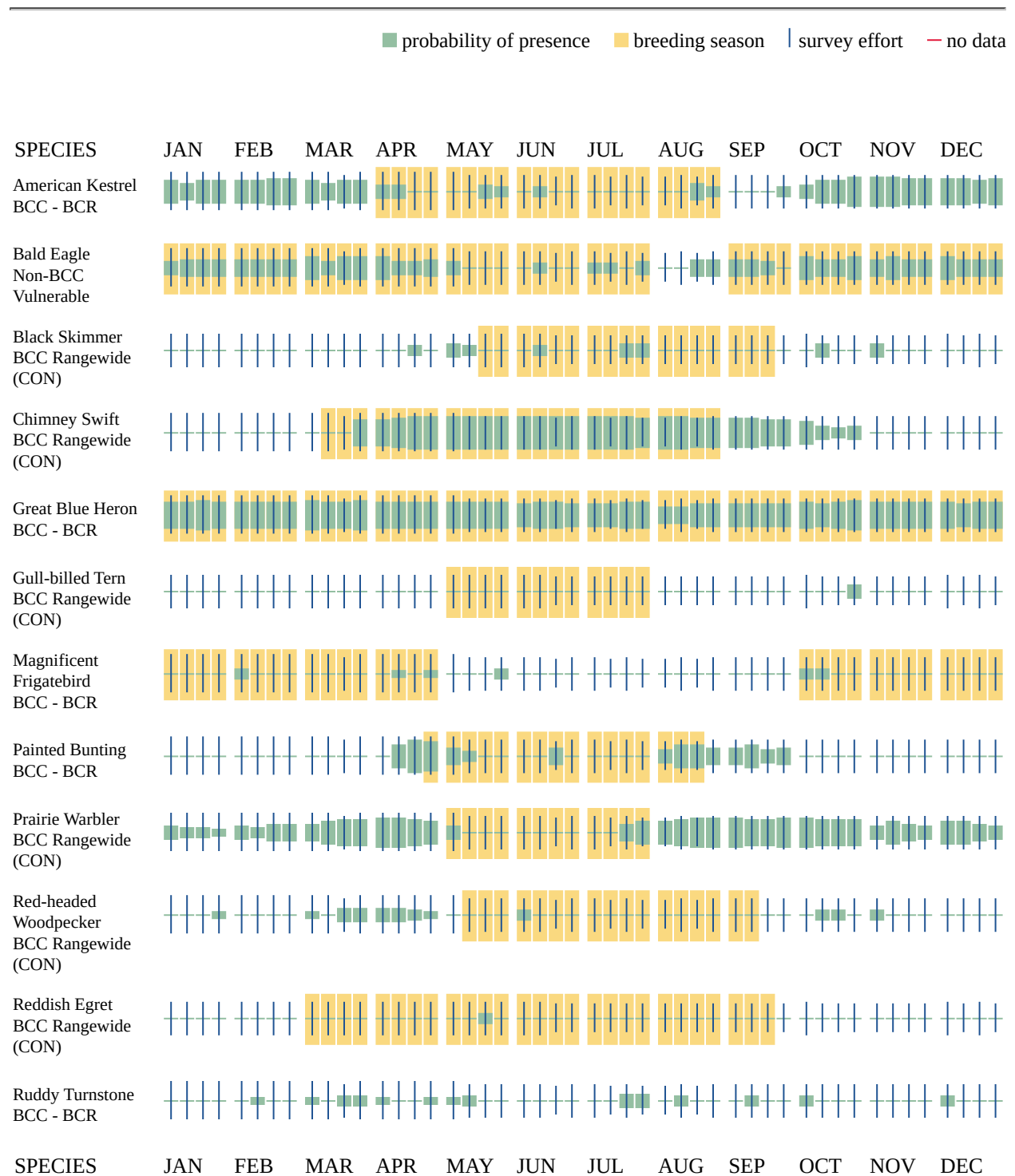
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

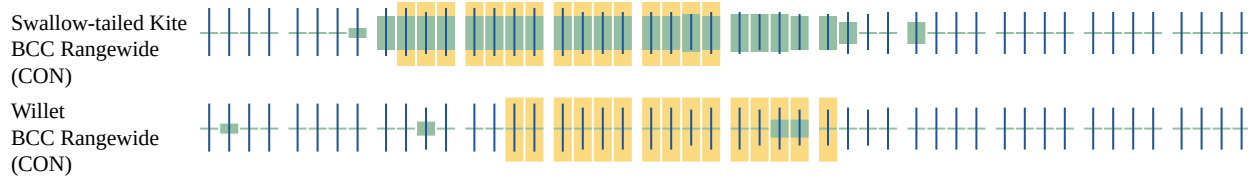
### No Data (—)

A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## MIGRATORY BIRDS FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

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Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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## WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

### RIVERINE

- [R5UBH](#)
- [R5UBFx](#)
- [R2UBHx](#)

### FRESHWATER FORESTED/SHRUB WETLAND

- [PFO4Cd](#)
  - [PSS1Cd](#)
-

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## **Appendix D Noise Study**

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# **Noise Model Operational Data Documentation (100%) for Patrick Space Force Base, FL**

## **Environmental Assessment for Transient and Training Missions for Space Systems Command Space Launch Delta 45**

HMMH Report No. 313890

May 2024

Prepared for:

**Potomac-Hudson Engineering, Inc**

77 Upper Rock Circle, Suite 302

Rockville, MD 20850



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## Executive Summary

The Noise Model Operational Data Documentation (NMODD) presented in this report has been prepared by Harris Miller Miller & Hanson Inc. (HMMH) in support of the Environmental Assessment (EA) for Transient and Training Missions for Space Launch Delta 45. The intent of the project is to conduct the aircraft noise study in support of this EA, and to assist in determining whether flight paths at Patrick Space Force Base (SFB) can be modified. Additionally, the removal of noise abatement restrictions associations for Runway 21 were considered with the goal of increasing usable Class D airspace at Patrick SFB and its environs.

This NMODD (100%) only includes a Baseline (No Action) condition modeling scenario. The No Action involves maintaining existing flight procedures and updating the number of flight operations to 2022 numbers. Operational data from the previous (2018) NMODD was collected, updated, and scaled to reflect 2022 operational levels.

Noise exposure modeling was completed with the Advanced Acoustics Model (AAM) and NMAP programs of the NOISEMAP suite and computed in terms of Day-Night Average Sound Level (DNL) for annual average daily operations. DNL contours of 65, 70, 75 and 80 decibels (dB) are shown in **Figure ES-1**. There are no DNLs equal to or above 85 dB.

The 65 dB DNL contour extends beyond the Patrick SFB boundary at the southern border near the south entrance guard gate and just across Pineda Causeway. This is the only off-base land area exposed to DNL of at least 65 dB to the southwest of Patrick SFB. The northern extent of the 65 dB DNL contour extends into the Atlantic Ocean, with a small segment of SR A1A the only area of off-base land within the 65 dB DNL contour to the northeast of Patrick SFB.

Thirty points of interest (POI) were modeled, with one off-base POI, i.e., Second Light Beach, having a DNL of \_\_\_\_\_, the only POI of the 30 with a DNL of at least 65 dB. The one school in the set of 30, i.e., the on-base Childcare Facility, has a 10-hour  $L_{eq}$  of 47.9, less than the 60 dB screening threshold for classroom learning interference (per DOD guidance). All modeled POI would be exposed to fewer than 1 daytime speech-interfering event per hour, on average. All residential POI would be exposed to fewer than 0.06 nighttime sleep-interfering events per hour, on average.

The primary noise abatement procedures at Patrick SFB include straight out departures from Runway 03 must not turn west until reaching 2.5 Distance Measuring Equipment (DME) and straight-out departures from Runway 21 must not turn east until reaching 2.5 DME. Since the Proposed Action would not include any additional aircraft activity outside of Patrick SFB boundary and therefore would not result in any changes to the No Action DNL contours, any changes to noise abatement flight procedures would occur outside of the 65 dB DNL contours (i.e., receptors would be exposed to DNL less than 65 dB) and would not affect the 65 dB DNL contour.

To determine the effect of changing or eliminating the noise abatement procedures, a specific point analysis was done on the two primary noise abatement flight tracks to determine noise levels beneath these tracks, see Appendix A-1, page 2, tracks 03D2 and 21D1. Additional tracks were developed making the respective turns at 1 DME and noise levels were calculated at three related locations. Analysis showed that while the noise levels at the points under the revised flight tracks would be higher, the DNL would do not surpass 65 dB.

To more broadly evaluate noise exposure under these flight tracks, the Sound Exposure Level (SEL) and Maximum Sound Level ( $L_{max}$ ) were also calculated for these points. The  $L_{max}$  metric is used to determine the possibility of outdoor speech interference and the SEL metric is used in the analysis of sleep disturbance. In neither case does the reference metric surpass the guideline values to trigger additional analysis.

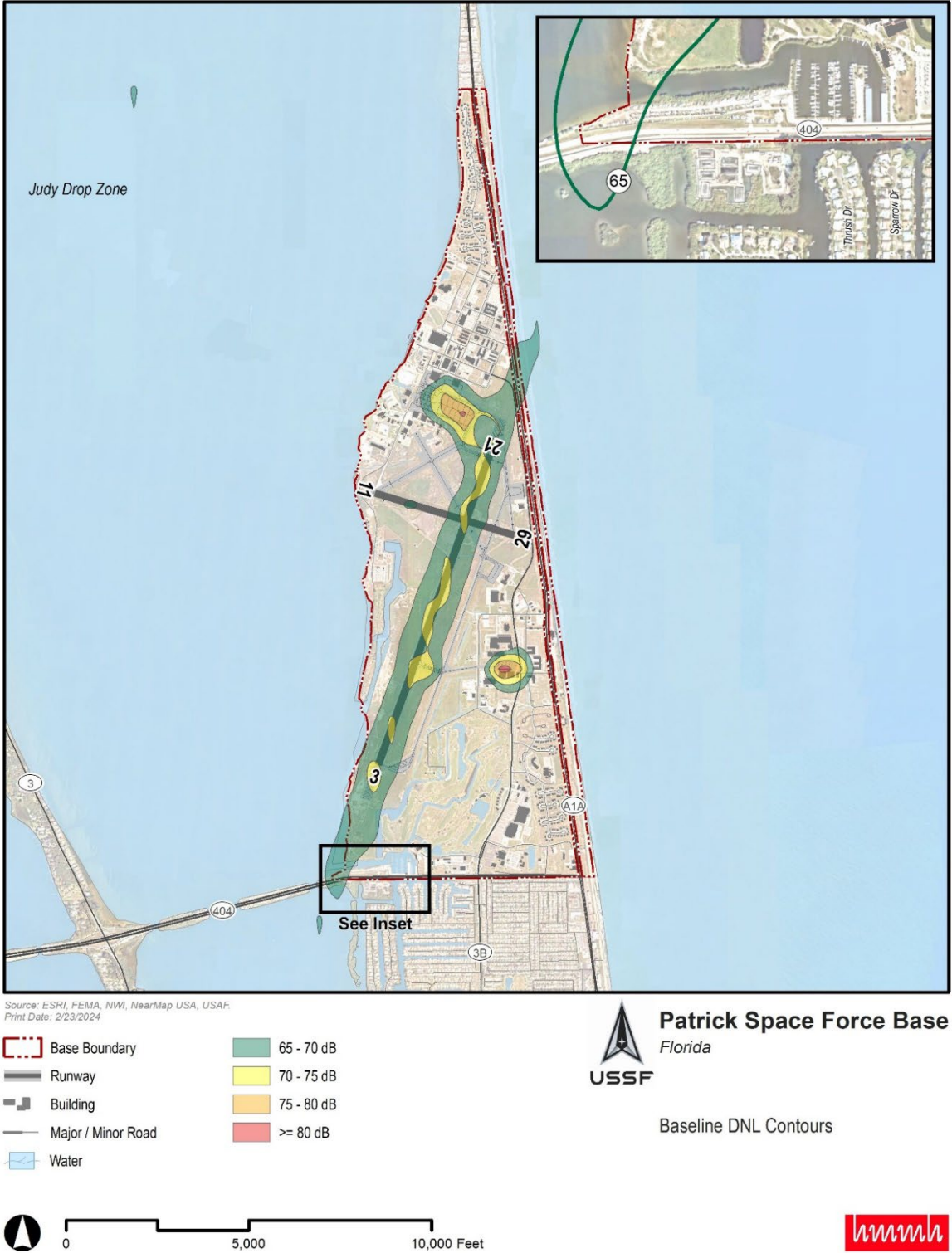


Figure ES-1. DNL Contours for Baseline Scenario at Patrick SFB

# Contents

Executive Summary .....	iii
1 Methodology.....	1
1.1 Study Area.....	1
1.2 Noise Metric and Levels of Significance.....	4
1.3 Noise Model.....	4
1.4 Data Collection and Validation.....	6
2 Noise Modeling Setup and Inputs .....	7
2.1 Noise Grid Setup .....	7
2.2 Ground Elevation and Impedance (Topography).....	7
2.3 Meteorological Data .....	7
2.4 Modeled Points of Interest .....	9
2.5 Airfield Flight Operations .....	13
2.6 Annual Flight Operations Distributions, Average Daily Runway Use and Flight Track Utilization .....	16
2.6.1 Based C-130J.....	16
2.6.2 Based H-60.....	21
2.6.3 Based DOS H-1.....	24
2.6.4 Based DOS S-61.....	26
2.6.5 Transient Aircraft.....	28
2.7 Airfield Flight Tracks.....	31
2.8 Airfield Flight Profiles .....	31
2.9 Static Operations and Maintenance Runups .....	31
2.9.1 Based C-130J.....	31
2.9.2 Based H-60.....	34
2.9.3 DOS H-1 .....	35
2.9.4 DOS S-61 .....	36
3 Noise Modeling Results.....	39
3.1 Noise Exposure.....	39
3.2 Supplemental Metrics .....	43
3.2.1 Classroom Learning Interference .....	43
3.2.2 Speech Interference .....	43
3.2.3 Sleep Disturbance.....	43
3.4 Noise Abatement Procedure Analysis.....	45
4 References.....	49

# Figures

Figure 1-1. Study Area .....	2
Figure 1-2. Patrick SFB (KCOF) Airport Diagram .....	3
Figure 1-3. A-Weighted Day-Night Average Sound Level .....	4
Figure 2-1. Average Daily Temperature and Relative Humidity for Each Month (2013-2022).....	9
Figure 2-2. Modeled Points of Interest Patrick SFB North.....	11

Figure 2-3. Modeled Points of Interest Patrick SFB South .....	12
Figure 2-4. Modeled Runup Pads for Patrick SFB .....	32
Figure 3-1. DNL Contours for Baseline Scenario at Patrick SFB .....	40
Figure 3-2. Comparison of Baseline and 2018 NMODD DNL Contours .....	41
Figure 3-3. Noise Abatement Specific Point Analysis .....	48

## Tables

Table 1-1. Surrogates and Models .....	5
Table 2-1. Modeling Set-up Parameters .....	7
Table 2-2. NMAP and AAM Topography Parameters .....	7
Table 2-3. Average Daily Atmospheric Conditions by Month for 2013-2022 .....	8
Table 2-4. Modeled Points of Interest .....	9
Table 2-5. Point of Interest Categories .....	10
Table 2-6. Annual Airfield Operations Modeled in the 2018 NMODD .....	13
Table 2-7. 2022 ATARS Annual Operations at Patrick SFB .....	13
Table 2-8. Comparison of 2022 ATARS and Prior Modeled Operations .....	14
Table 2-9. Annual Airfield Flight Operations for 2022 .....	15
Table 2-10. Distribution of Departure and Arrival Flight Operations for Based C-130J .....	16
Table 2-11. AAD Departures (excluding Judy DZ) for Based C-130J .....	17
Table 2-12. AAD Departures to Judy DZ for Based C-130J .....	17
Table 2-13. AAD Arrivals (excluding from Judy DZ) for Based C-130J .....	18
Table 2-14. AAD Arrivals from Judy DZ for Based C-130J .....	19
Table 2-15. Distribution of Closed Pattern Flight Operations for Based C-130J .....	19
Table 2-16. AAD VFR Box Patterns for Based C-130J .....	19
Table 2-17. AAD VFR Random Shallow/Steep Patterns for Based C-130J .....	20
Table 2-18. AAD ILS/TACAN (non-circling) Patterns for Based C-130J .....	20
Table 2-19. AAD TACAN to Circle Patterns for Based C-130J .....	20
Table 2-20. AAD Departures for Based H-60 .....	21
Table 2-21. AAD Arrivals for Based H-60 .....	21
Table 2-22. Distribution of Annual Closed Pattern Flight Operations for Based H-60 .....	22
Table 2-23. AAD Non-Cargo Sling Closed Patterns for Based H-60 .....	23
Table 2-24. AAD Cargo Sling and Off-Base Judy DZ Closed Patterns for Based H-60 .....	24
Table 2-25. AAD Departures and Arrivals for Based H-1 .....	24
Table 2-26. AAD Closed Patterns for Based H-1 .....	25
Table 2-27. AAD Departures and Arrivals for Based S-61 .....	26
Table 2-28. AAD Closed Patterns for Based S-61 .....	27
Table 2-29. Runway and Flight Track Utilization for Transient Aircraft .....	28
Table 2-30. AAD Events for F-35A, C-17 and B-757 Transient Aircraft .....	29
Table 2-31. AAD Events for P-8, C-21, and C-12 Transient Aircraft .....	29
Table 2-32. AAD Events for H-60 Transient Aircraft .....	30
Table 2-33. Annual C-130J Pre- and Post-Flight Runup Events .....	33
Table 2-34. C-130J Pre- and Post-Flight Runup Profiles .....	33

Table 2-35. Annual C-130J Maintenance Operations .....	33
Table 2-36. C-130J Maintenance Runup Profiles .....	33
Table 2-37. Annual H-60 Pre and Post Flight Runup Operations .....	34
Table 2-38. H-60 Pre- and Post-Flight Runup Profiles .....	34
Table 2-39. Annual H-60 Maintenance Operations .....	34
Table 2-40. H-60 Maintenance Profiles .....	34
Table 2-41. Annual H-1 Pre- and Post-Flight Runup Operations .....	35
Table 2-42. H-1 Pre- and Post-Flight Runup Profiles .....	35
Table 2-43. Annual H-1 Maintenance Runup Operations.....	35
Table 2-44. H-1 Maintenance Runup Profiles .....	35
Table 2-45. Annual S-61 Pre- and Post-Flight Runup Operations (Normal Flights) .....	36
Table 2-46. S-61 Pre- and Post-Flight Runup Profiles (Normal Flights) .....	36
Table 2-47. Annual S-61 Pre- and Post-Flight Runup Operations (Test Flights).....	36
Table 2-48. S-61 Pre and Post Flight Runup Profiles (Test Flights) .....	37
Table 2-49. Annual S-61 Maintenance Runup Operations .....	37
Table 2-50. S-61 Maintenance Runup Profiles .....	37
Table 3-1. Land Use Assessment (Acres) .....	39
Table 3-2. DNL at Points of Interest.....	42
Table 3-3. Hourly Speech-Interfering Events at Patrick SFB .....	44
Table 3-4. Hourly Sleep Disturbing Events at Night.....	45
Table 3-5. Noise Abatement Procedure Specific Point Analysis (dB DNL) .....	46
Table 3-6. Guideline Values (Outdoor Values).....	46
Table 3-7. Noise Abatement Procedure Outdoor Speech Interference Analysis Number of Events above 75 dB L <sub>max</sub> (15 Hour Day) .....	46
Table 3-8. Noise Abatement Procedure Sleep Disturbance Analysis Number of Events Above 90dB SEL (9 Hour Night).....	47

## Appendices

Appendix A: Flight Tracks .....	A-1
Appendix B: Flight Profiles.....	B-1

## Acronyms and Abbreviations

AAD	Annual Average Day or Annual Average Daily
AAM	Advanced Acoustics Model
AICUZ	Air Installations Compatible Use Zones
AFB	Air Force Base
AFH	Air Force Handbook
AFI	Air Force Instruction
ARP	Airport Reference Point
ATC	Air Traffic Control
DB	Decibel
DME	Distance Measuring Equipment
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DOS	Department of State
EA	Environmental Assessment
HMMH	Harris Miller Miller & Hanson Inc.
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
KCOF	Patrick Space Force Base
kPa-s/m <sup>2</sup>	kilopascal-seconds per square meter
MOA	Military Operating Area
MOCC	Mission Operations Control Center
MSL	Mean Sea Level
MTR	Military Training Route
NMAP	Core Module of the NOISEMAP Suite
NMODD	Noise Model Operational Data Documentation
SFB	Space Force Base
SME	Subject Matter Expert
VFR	Visual Flight Rules

# 1 Methodology

This section includes a description of the study area, a brief explanation of noise metrics, the noise modeling approach, data collection, noise modeling input data and assumptions used in the preparation of the DNL contours. The noise analysis includes a Baseline/No Action scenario (“No Action Alternative” or “Baseline scenario”) that involves maintaining the existing flight procedures without any changes to flight procedures at Patrick SFB (ICAO abbreviation of KCOF), and includes the following:

- Updated numbers of flight and runup operations for all previously modeled based airframes, along with the corresponding runway usage percentages.
- Updated numbers of flight operations for all previously modeled transient airframes, assuming no change to the types of transient aircraft.
- Runway usage percentages and detailed modeling of flight operations for three airframes, based or transient.
- Various aspects, such as usage percentages, flight tracks, track usage percentages, flight profiles, the number of engine maintenance operations, maintenance locations, maintenance location usage, engine maintenance profiles, and any other noise events associated with space flight operations.

The Proposed Action alternative conditions would not include any additional aircraft activity outside of Patrick SFB boundary and therefore do not result in any changes to the No Action DNL contours. Any changes to noise abatement flight procedures would occur outside the 65 dB DNL contours and would not affect this noise analysis.

Sections 1.1 through 1.4 present the study area, the noise metrics and levels of significance, the computer model used to predict the aircraft noise levels and about the data collection/validation efforts, respectively.

## 1.1 Study Area

To adequately capture the effects of noise, this NMODD was developed to encompass an area containing at least the lateral extent of the estimated cumulative noise exposure contour of significance resulting from aircraft flight and ground operations contemplated under the No Action/Baseline condition, with an adequate buffer to accommodate potential contour changes. The area included in the study is shown in **Figure 1-1**.

**Figure 1-2** depicts the KCOF airport diagram (faa.gov). The base’s physical parameters of most importance are the runways and helicopter pads. As the airport diagram shows, KCOF has two intersecting runways, which include four runway ends: 3/21 and 11/29. Helicopters utilize the runways and pads, with the latter being at Taxiway G. Based C-130 access the Judy Drop Zone (DZ) located two miles northwest of the base in the Banana River.



Figure 1-1. Study Area

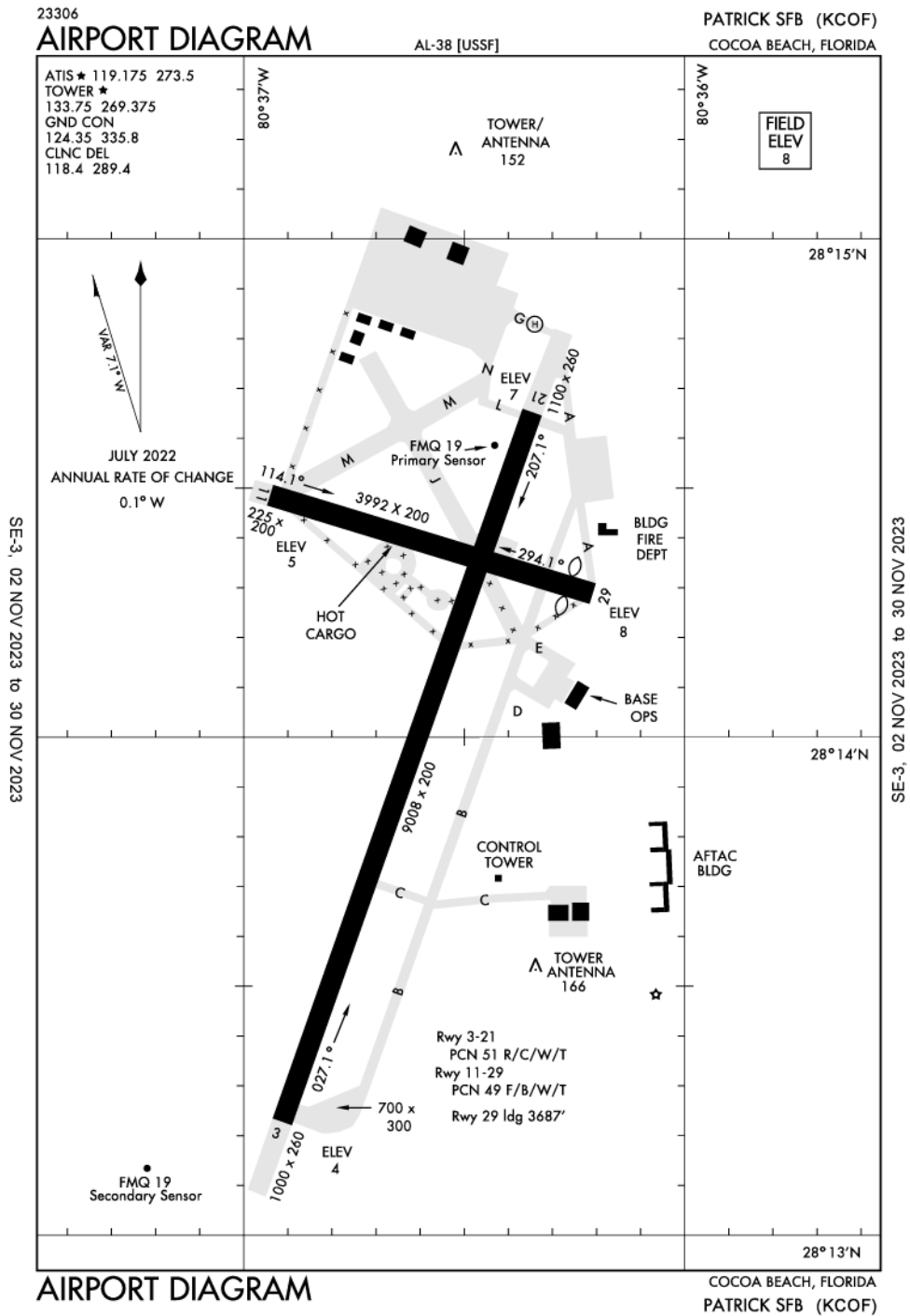


Figure 1-2. Patrick SFB (KCOF) Airport Diagram

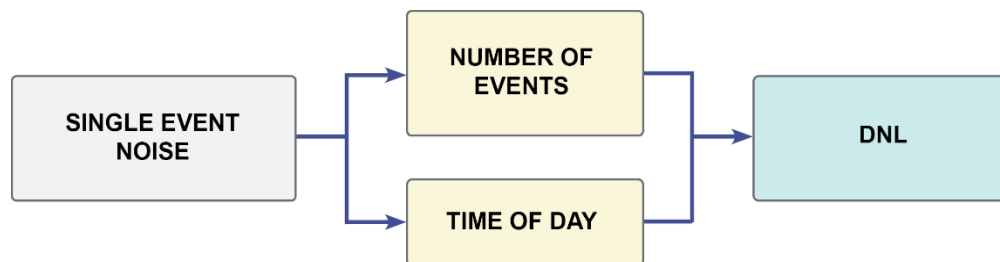
Source: FAA, <https://adip.faa.gov/agis/public/#/public>

## 1.2 Noise Metric and Levels of Significance

The methodology used in this study for aircraft noise contour analysis relies on the Day-Night Average Sound Level (DNL) metric as a comprehensive descriptor of the noise environment. In striving for a standardized approach to noise assessment on a national scale, the U.S. Environmental Protection Agency has adopted DNL as the standard noise descriptor for land use planning.

The DNL metric can be used to describe different types of sounds. Because human hearing picks up noise energy in certain frequency ranges better than others, sound energy in certain frequency bands is emphasized when measuring noise to best predict effects. For aircraft noise and most other types of sound, the frequencies most easily audible to humans are emphasized using a function known as A-weighting. Because A-weighting is prevalent, sounds can be assumed to be A-weighted unless otherwise specified.

Recognizing the importance of considering not only the annoyance of a single noise event but also the impact of repeated occurrences and their timing throughout the day, the DNL metric incorporates corrections or weightings for event frequency and time of day. Given the priority on residential development concerns, nighttime noise events are deemed more bothersome than their daytime counterparts and are accordingly weighted by a factor of 10, equivalent to an addition of 10 decibels. The computation of DNL values involves starting with a single-event noise descriptor and applying corrections or weightings for the number of events and the time of day, as illustrated in **Figure 1-3**.



**Figure 1-3. A-Weighted Day-Night Average Sound Level**

The Air Force relies on the DNL descriptor to gauge exposure levels and as a metric for evaluating community responses to varying degrees of exposure. Planning considerations often involve DNL values at 65, 70, 75, 80, and 85 decibels (dB), forming the basis for land use guidelines that assess compatibility with these noise exposure thresholds. This NMODD presents the findings corresponding to these specified DNL values.

As part of the data collection process, detailed information was obtained from Patrick SFB on the type of aircraft, time of day, and the number of flying operations for each flight track. For aircraft noise exposure calculations using the DNL metric, aircraft operations associated with the annual average day (AAD) are used. The number of annual operations by each aircraft type is divided by 365 to arrive at the AAD by aircraft category. This representation of airport activity may not reflect any day but characterizes operations throughout the year. This information is used in conjunction with single-event noise descriptors to produce DNL values. These values are combined on an energy summation basis to provide single DNL values for the mix of aircraft operations at the base. Equal value points are connected to form the contour lines.

## 1.3 Noise Model

During the noise modeling process, aircraft operational data is compiled and processed, inclusive of track distances, turns, altitudes, airspeeds, power configurations, operational utilization, maintenance specifics, ground runup engine power settings, and the frequency and duration of runups.

NOISEMAP is a suite of predictive computer programs for assessing noise exposure near airfields, arising from diverse aircraft activities including flight, maintenance, and ground runup operations. The integral components of NOISEMAP include:

- **BaseOps:** Serving as the input module, BaseOps facilitates the detailed entry of aircraft flight track and profile, as well as ground maintenance operational data.
- **NOISEFILE:** This extensive database contains measured military and civil aircraft noise data. The legacy part of the database consists of two independent sets of one-third octave band (OTOB sound pressure levels (SPLs): 1) one-dimensional flyover noise levels at the time of maximum noisiness at reference distances and 2) two-dimensional runup noise levels, i.e., OTOB SPL as a function of azimuth angle around the aircraft for reference radii. The relatively newer part of the database consists of OTOB three-dimensional hemispheres, i.e., noise levels as a function of azimuth and elevation angles, for reference radii under and around the vehicle.
- **NMAP** is the legacy core computational module within NOISEMAP. For flight operations, NMAP's algorithms are of the integrating style, using infinite line source theory to model finite line segments. NMAP utilizes the input from BaseOps and leverages the legacy part of the NOISEFILE database to compute noise levels resulting from aircraft events at specified grid points in the airbase vicinity. The output of NMAP comprises georeferenced data points, specific grid point locations, and corresponding noise levels. Version 7.3 of NMAP was used (Czech & Plotkin 1998).
- **AAM** (Advanced Acoustics Model): AAM is a relatively new component of the NOISEMAP suite. AAM will eventually replace NMAP as the core computational module within the suite. AAM is a simulation model, computing noise exposure at discrete time steps. AAM utilizes the input from BaseOps and has its own part of the NOISEFILE database to compute noise levels resulting from aircraft events at specified grid points in the airbase vicinity. Like NMAP, the output of AAM comprises georeferenced data points, specific grid point locations, and corresponding noise levels. Version 1.4.13 of AAM was used for consistency with the 2018 NMODD and because the latest version, Version 3.2.0 (Page et al., 2020), does not correctly compute the  $NA L_{max}$  metric<sup>1</sup>.

**Table 1-1** shows which model and aircraft type was used to model the flight and runup operations at Patrick SFB. Modeled aircraft types not shown in the table were modeled with NMAP. Permission to use the reference acoustic data (spheres) for the SH-60B, CH-53E and AH-1W was provided by the US Navy<sup>2</sup>.

**Table 1-1. Surrogates and Models**

Aircraft Operating at Patrick SFB	Surrogate for Flight Ops	Surrogate for Runup Ops
Based 301 RQS H-60	AAM SH-60B Seahawk	NMAP UH60A
Transient H-60	AAM SH-60B Seahawk	n/a
Based DOS S-61	AAM CH-53E Super Stallion	NMAP CH-53E
Based DOS UH-1	AAM AH-1W Super Cobra	NMAP UH-1M

- **NMPLOT:** This program serves the purpose of viewing and editing sets of georeferenced data points. NMPLOT visualizes the NMAP output through noise contour grids and has the capability to export these contours as files for integration into mapping programs, facilitating in-depth assessment of noise exposure.

<sup>1</sup> Electronic mail from Joseph J. Czech, HMMH, to Aaron Hastings, Volpe, re: AAM 3.2.8 and the NAXxxALM and AMAX metrics, February 13, 2024

<sup>2</sup> Electronic mail from David a. Shizak, CIV USN COMNAVFACSYSCOM, to Joseph J. Czech, HMMH, re: use of Navy spheres for Patrick SFB EA, February 21, 2023

## 1.4 Data Collection and Validation

HMMH reviewed BaseOps data from the 2018 NMODD update<sup>3</sup> to generate inputs for this 2024 NMODD. Base personnel were unavailable for interviews during preparation of this current study, so HMMH confirmed annual operations with PSFB and validated the prior modeling analysis.

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<sup>3</sup> Electronic mail from Karl T. Christiansen, NH-03 USSF SSC 45 CES/CENPL Installation Community Planner to Daniel T Botto, HMMH, PSFB Baseops Files.

## 2 Noise Modeling Setup and Inputs

Sections 2.1 through 2.9 provide amplifying details regarding all facets of noise modeling setup and inputs.

### 2.1 Noise Grid Setup

**Table 2-1** lists the pertinent modeling setup parameters for NMAP and AAM. The airfield modeling uses a local coordinate system with the origin at the Patrick SFB Airfield Reference Point (ARP), which has geographical coordinates of 28.244453° North / 80.605489° West and an elevation of 8 feet above Mean Sea Level (MSL). The current magnetic declination is 7.2° West. All maps in this report depict a north arrow pointing to true north.

**Table 2-1. Modeling Set-up Parameters**

Parameter	Description
Receiver Grid Spacing	500 ft in x and y
Number of days over which flight and runup operations were averaged	365
Magnetic Declination	7.2° West
Reference Point Elevation	8 ft MSL

### 2.2 Ground Elevation and Impedance (Topography)

**Table 2-2** depicts topography parameters for NMAP and AAM. The effect of terrain on noise encompasses both the elevation variations (such as hills and valleys, including blockage of line-of-sight) and the impedance characteristics of the ground (indicating the amount of sound energy absorbed by the surface).

Although the immediate vicinity of Patrick SFB exhibits minimal terrain relief, and the flat topography has a negligible influence on the propagation of sound energy, NMAP and AAM are more accurate in their computations of noise levels with the utilization of terrain than without its utilization. HMMH used elevation data from the U.S. Geological Survey to develop terrain inputs to the model.

Ground impedance is characterized by NMAP with two possible values: acoustically hard or acoustically soft. Although AAM can model variable ground impedance values, NMAP's scheme was maintained for AAM for consistency between the two models. Water areas were uniformly treated as acoustically hard, with a flow resistivity of 1,000,000 kilopascal-seconds per square meter (kPa-s/m<sup>2</sup>), while land areas were treated as acoustically soft, with a flow resistivity of 200 kPa-s/m<sup>2</sup>. Impedance data was modeled on a 250-foot grid. HMMH used National Land Cover Database maps to generate impedance inputs to the model.

**Table 2-2. NMAP and AAM Topography Parameters**

Parameter	Description
Elevation and Impedance Grid Spacing	100 ft in x and y
Flow Resistivity of Land Areas (soft)	200 kPa-s/m <sup>2</sup>
Flow Resistivity of Water Areas (hard)	1,000,000 kPa-s/m <sup>2</sup>

### 2.3 Meteorological Data

Local weather conditions (e.g., temperature, relative humidity, and air pressure) influence the amount of sound absorbed by the atmosphere as it travels outward from its source. This report utilized detailed daily average

weather conditions for each month at Patrick SFB, taken from the National Centers for Environmental Information's Integrated Surface Database. Average daily temperature and relative humidity values for each month for the years 2013 to 2022 are shown in **Table 2-3** and plotted in **Figure 2-1**. The average temperatures for summer months (May to September) and winter months (October to April) are 81 degrees Fahrenheit (°F) and 70°F, respectively, and the average temperature overall is 74°F. The average relative humidities for summer months and winter months are 79.2 percent and 76.6 percent, respectively, and the average relative humidity overall is 77.7 percent.

The NOISEMAP suite's BaseOps program computes absorption coefficients for each month and selects the month with the sixth-smallest coefficient, i.e., the median coefficient, to use in the noise exposure modeling (Lee and Mohlman 1990). The month selected by the BaseOps program was April with a temperature of 74°F and a relative humidity of approximately 72 percent.

**Table 2-3. Average Daily Atmospheric Conditions by Month for 2013-2022**

Month	Temperature (°F)	Relative Humidity (%)	Pressure (in Hg)
January	63.5	77.4	30.1
February	66.8	78.3	30.1
March	69.3	72.2	30.1
April	74.4	72.2	30.0
May	77.7	73.3	30.0
June	80.7	79.8	30.0
July	82.4	81.2	30.1
August	82.7	81.4	30.0
September	81.7	80.6	30.0
October	78.4	77.8	30.0
November	72.2	78.8	30.1
December	63.0	79.6	30.1

Notes:

- 1) Relative humidity computed with NOAA ISD data.
- 2) Modeled condition chosen by BaseOps is highlighted (April).

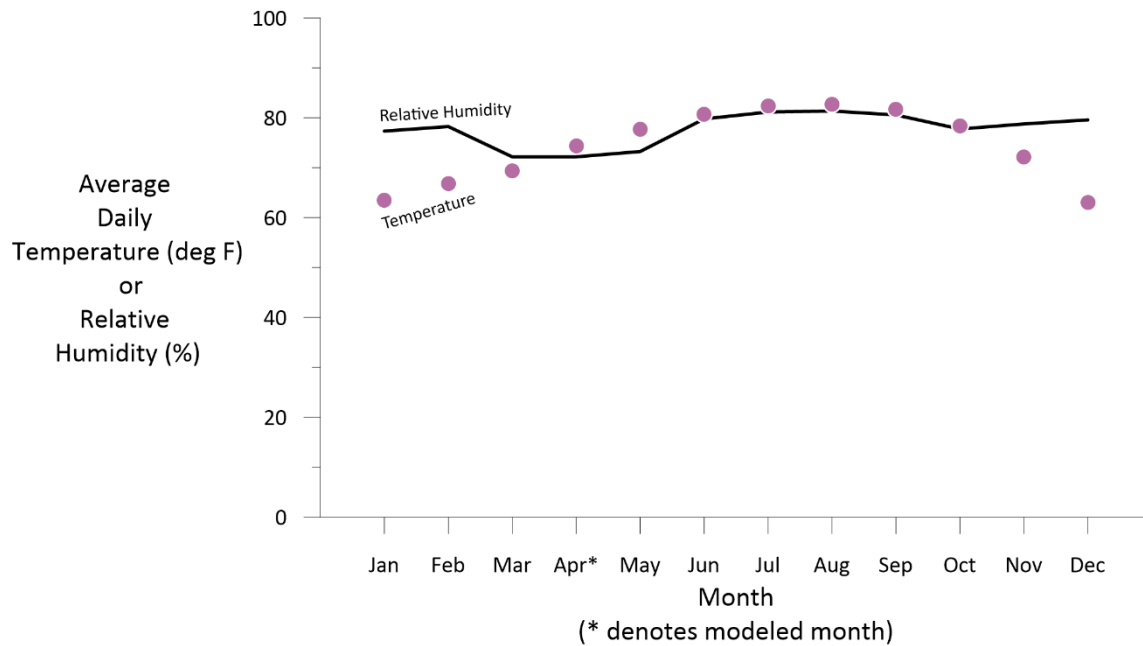


Figure 2-1. Average Daily Temperature and Relative Humidity for Each Month (2013-2022)

## 2.4 Modeled Points of Interest

NMAP and AAM can compute the DNL at specific geographic points of interest, such as hospitals, places of worship, and schools. For this NMODD, 30 points of interest were modeled (PAFB 2018): 15 residential locations, 10 recreational locations, and one of each of the following: library, hospital, chapel, and theater. These points are shown on **Figures 2-2 and 2-3**. **Table 2-4** shows the modeled points of interest along with their latitude and longitude coordinates, in decimal degrees, and **Table 2-5** presents the Points of Interest categories represented by these points.

Table 2-4. Modeled Points of Interest

ID	Long Name	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
H01	Medical Clinic	28.214313	80.604434
L01	Library	28.250891	80.608634
P01	Pineda Beach	28.214611	80.597608
P02	Park	28.239258	80.615652
P03	Outdoor Recreation 1	28.266668	80.605613
P04	Outdoor Recreation 2	28.252185	80.607344
P05	Outdoor Recreation 3	28.254900	80.609956
P06	Outdoor Recreation 4	28.252662	80.612020
P07	Hangar's Beach	28.242700	80.601711
P08	Golf Course 1	28.217182	80.608920
P09	Golf Course 2	28.224026	80.606211
P10	2 <sup>nd</sup> Light Beach	28.252127	80.603255
R01	Residential Area 1	28.211754	80.604688

ID	Long Name	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
R02	Residential Area 2	28.212489	80.600259
R03	Residential Area 3	28.212184	80.610412
R04	Residential Area 4	28.210462	80.615325
R05	Residential Area 5	28.272450	80.607424
R06	Residential Area 6	28.222834	80.601589
R07	Residential Area 7	28.259199	80.606369
R08	Residential Area 8	28.261302	80.606505
R09	Residential Area 9	28.265834	80.607030
R10	Residential Area 10	28.270200	80.607185
R11	Residential Area 11	28.258638	80.608486
R12	Residential Area 12	28.253226	80.607695
R13	Residential Area 13	28.219931	80.602407
Rm01	Campground Facility	28.236431	80.614764
Rt01	Hotel	28.272060	80.607401
S01	Childcare Facility	28.221581	80.601818
T01	Performing Arts Center	28.254126	80.604799
W01	Chapel	28.254549	80.604617

**Table 2-5. Point of Interest Categories**

POI Category	Category Meaning
R	Residential
Rm	Residential – mobile
Rt	Residential – Transient
P	Park, Outdoor Recreation, Beach, Golf Course
T	Theater, Performing Arts Center
H	Hospital/Medical
L	Library
S	School, Childcare Facility
W	Place of Worship

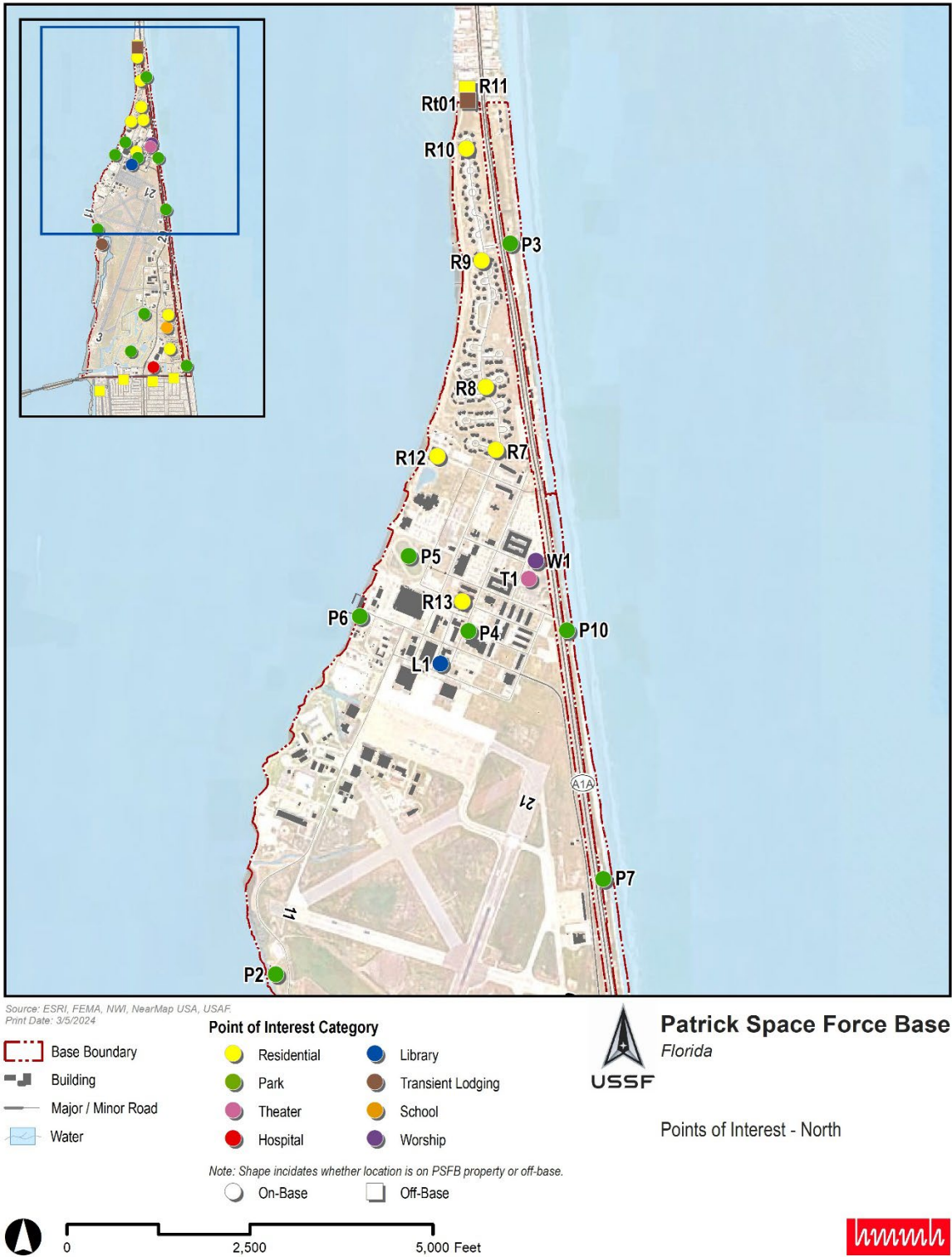


Figure 2-2. Modeled Points of Interest Patrick SFB North

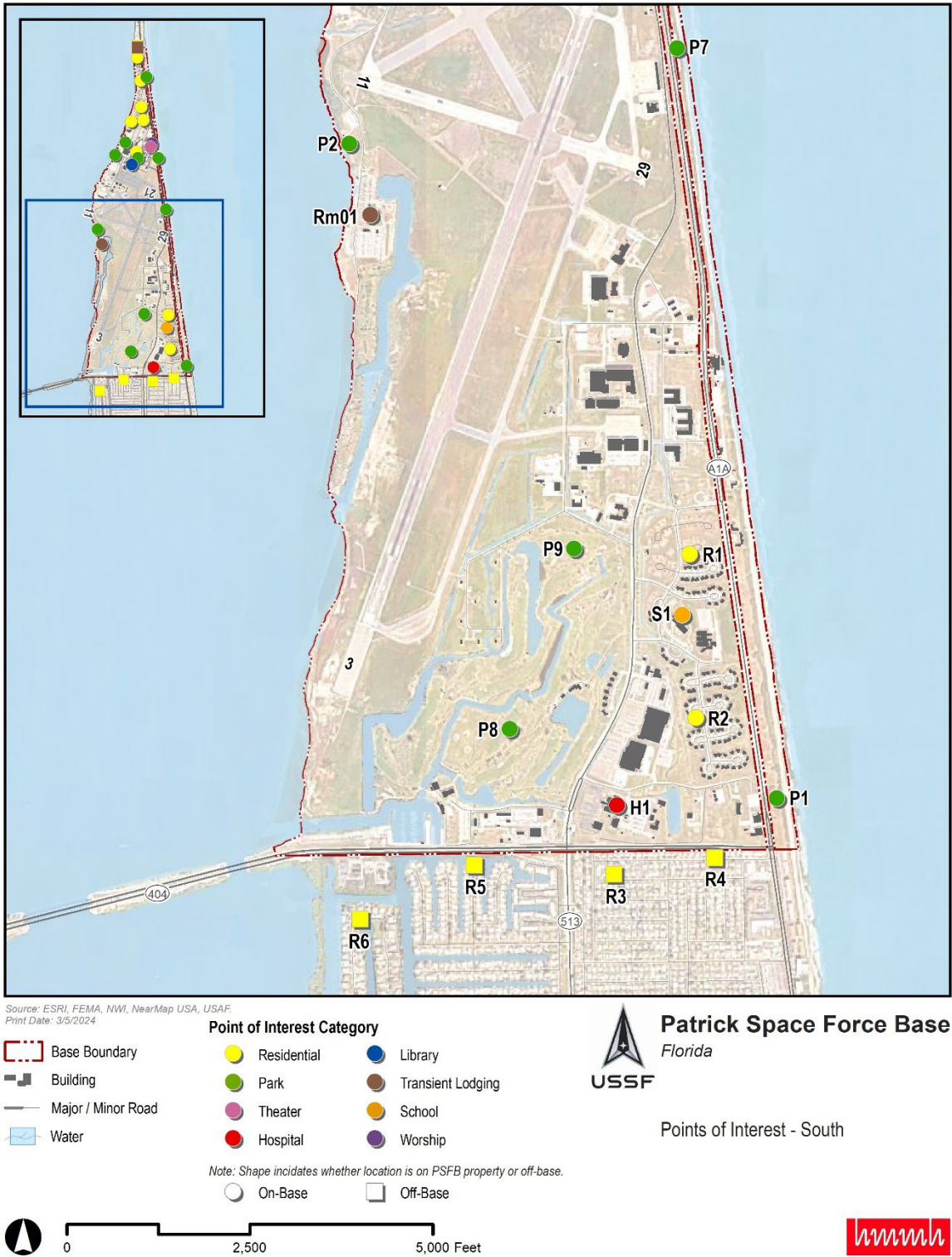


Figure 2-3. Modeled Points of Interest Patrick SFB South

## 2.5 Airfield Flight Operations

**Table 2-6** presents the 2018 annual airfield flight operations. The based aircraft generated approximately 20,100 annual flight operations. There are two based operators at Patrick SFB: the Department of State (DoS) and the United States Air Force (USAF). The DoS operates the H-1 and S-61 helicopters, and the USAF operates the H-60 and C-130J aircraft. DoS CH-46 operations that were part of the 2018 NMODD have been omitted because they no longer operate at Patrick SFB.

**Table 2-6. Annual Airfield Operations Modeled in the 2018 NMODD**

Aircraft Group	Airfield Operations	Note
Based USAF C-130	3,360	
Based USAF H-60	8,512	
Based DOS H-1	2,700	
Based DOS H-46	2,700	(1)
Based DOS S-61	2,160	
Transient	640	(2)
Total	20,072	
Total without DOS H-46	17,372	
Notes: 1. Conversations with Patrick SFB indicated H-46 helicopters are no longer based at Patrick SFB 2. 2018 modeling included 208 fewer transient operations than stated in the 2018 NMODD		

HMMH used the 2018 NMODD's BaseOps file (**Table 2-6**) and calendar year 2022 logs from Patrick SFB's Air Traffic Advisory and Resolution System (ATARS)<sup>4</sup> to design forecasts for the Baseline scenario. The counts in **Table 2-6** differ from the 2018 NMODD document by 208 operations due to the document overstating transient closed patterns compared to what was modeled for 2018. Additionally, conversations with the Patrick SFB indicated that H-46 helicopters were no longer based at Patrick SFB; HMMH removed these operations from the 2018 modeled operations before scaling.

**Table 2-7** shows the 2022 ATARS data that HMMH received from Patrick SFB. According to Patrick SFB, Air Carrier/Taxi operations were mostly overflights, and therefore removed from the airfield operations count when performing the scaling. This meant HMMH started the scaling process with a baseline of 17,372 annual operations with a desired goal of 18,379 annual operations.

**Table 2-7. 2022 ATARS Annual Operations at Patrick SFB**

Category	Time of day				TOTAL	Note
	0000 0600	0600 1200	1200 1800	1800 2400		
Military	1	1,108	2,080	1,522	4,711	
General Aviation	2	2,878	4,029	1,540	8,449	
Air Carrier/Taxi *	0	384	518	460	1,362	(1)
Helo	30	1,041	2,603	1,545	5,219	
Total	33	5,411	9,230	5,067	19,741	
Total without Air Carrier/Taxi	33	5,027	8,712	4,607	18,379	
1. Conversations with Patrick SFB indicated that Air Carrier/Taxi operations were overflights and should be excluded from the scaling process.						

<sup>4</sup> Email FW:SLD 45 EA – Noise Data Request with attachment *ATARS FY2019-2022 Patrick AFB.xlsx*

**Table 2-8** shows the ATARS categories used, which modeled group each category was mapped to, and the factor used to scale annual operations from the prior 2018 model to 2022 numbers. For example, 8,449 annual operations were categorized as General Aviation in the 2022 ATARS data. HMMH mapped these operations to based DOS aircraft and scaled the number of DOS H-1 and S-61 annual operations in the 2018 NMODD modeling by a factor of 1.7385.

**Table 2-8. Comparison of 2022 ATARS and Prior Modeled Operations**

ATARS Category	Representative Group	2018 NMODD Annual Operations	2022 ATARS Annual Operations	Scale Factor
Military	Based C-130J and Transient Aircraft	4,000	4,711	1.1778
General Aviation	Based Department of State Aircraft*	4,860	8,449	1.7385
Helo	Based H-60 Aircraft	8,512	5,219	0.6131
Total		17,372	18,379	n/a
Note: * 2,700 annual H-46 operations were excluded from the 2018 NMODD count since they no longer operate at Patrick SFB				

Prior modeling also included 12,684 H-60 closed pattern operations off-base at the Judy Drop Zone in the middle of the Banana River.<sup>5</sup> HMMH applied the same based H-60 scaling factor of 0.6131 to these operations for a total of 7,777 annual closed pattern operations at the Judy Drop Zone. These patterns are included in the counts shown in **Table 2-9**.

**Table 2-9** presents the modeled annual airfield flight operations for the Baseline scenario. The based aircraft generated approximately 25,000 annual flight operations, with approximately 14 percent occurring in the DNL nighttime period (10:00 PM to 7:00 AM). The transient aircraft comprise 716 annual flight operations, with less than 2 percent occurring in the DNL nighttime period. Many different types of aircraft visit Patrick SFB, i.e., categorized as transient aircraft. For modeling purposes, transient aircraft were grouped into categories and modeled with a representative aircraft type supported by the noise model's database and usually the most frequent aircraft type, or the noisiest on a single-event basis, in each group. Except for the P-8 grouping, all groupings from the 2018 NMODD were maintained for this 2024 NMODD.

The 2018 NMODD modeled the P-8 group with NMAP's Boeing B-737-D17(Q) – a 1970s-era airframe/engine combination with low-bypass jet engines. P-8 are 2010-era Boeing B-737-800 aircraft with high bypass jet engines. The P-8 grouping was updated to be modeled with NMAP's Boeing 737-700 which is the closest surrogate to the -800 in NMAP's database.

Annual average daily operations are calculated in accordance with the DoD and Air Force guidance in DoD Instruction 4165.57 and AFI 32-7063.

<sup>5</sup> Latitude and longitude coordinates of 28.271502 degrees and -80.635676 degrees, respectively.

**Table 2-9. Annual Airfield Flight Operations for 2022**

Disposition	Unit/ Grouping	Modeled Aircraft Type	Departure			Arrival			Closed Pattern			Grand Total		
			Day (0700 2200)	Night (2200 0700)	Total	Day (0700 2200)	Night (2200 0700)	Total	Day (0700 2200)	Night (2200 0700)	Total	Day (0700 2200)	Night (2200 0700)	Total
Based	920 RQW, 39 RQS	C-130J	471	-	471	287	184	471	1,835	1,180	3,015	2,593	1,364	3,957
	920 RQW, 301 RQS	SH-60B	452	14	466	360	106	466	10,968	1,096	12,064	11,780	1,216	12,996
	DOS CH-46	n/a	-	-	-	-	-	-	-	-	-	-	-	-
	DOS S-61	CH-53E	183	26	209	209	-	209	2,921	417	3,338	3,313	443	3,756
	DOS H-1	AH-1W	261	-	261	228	33	261	3,651	522	4,173	4,140	555	4,695
Transient	T-38, F/A- 18	F-35A	12	-	12	12	-	12	-	-	-	24	-	24
	C-17	C-17	56	2	58	56	2	58	29	1	30	141	5	146
	Civilian Transport Jet (B7xx), KC-135, KC- 10, C-32	B-757-200-PW	79	1	80	79	1	80	40	-	40	198	2	200
	P-8	B-737-700	24	-	24	24	-	24	165	-	165	213	-	213
	Learjet, Gulfstream	C-21A	15	1	16	15	1	16	9	1	10	39	3	42
	P-3, C-12, T- 6, E-9	C-12	36	1	37	38	-	38	19	-	19	93	1	94
	Helicopter	SH-60B	12	1	13	13	-	13	7	-	7	32	1	33
	Subtotal Based		1,367	40	1,407	1,084	323	1,407	19,375	3,215	22,590	21,826	3,578	25,404
	Subtotal Transient		234	6	240	237	4	241	269	2	271	740	12	752
	Grand Total		1,601	46	1,647	1,321	327	1,648	19,644	3,217	22,861	22,566	3,590	26,156

## 2.6 Annual Flight Operations Distributions, Average Daily Runway Use and Flight Track Utilization

The types of annual flight operations shown in **Table 2-9** in Section 2.5 are relatively generic. The following five subsections provide breakouts, or distributions of the annual flight operations to more specific types associated with each aircraft type, in addition to showing how those operations were spread or distributed to the runways/pads and modeled flight tracks and profiles, for purposes of modeling average daily activity.

All tracks are labeled with the modeled identification number consisting of the runway, a character for the type of operation and a consecutive number, e.g., "03A1".

All percentages are identical to those in the 2018 NMODD, except for those for the based H-60 aircraft and transients, as discussed in their respective subsections.

### 2.6.1 Based C-130J

**Table 2-10** shows the distribution of based C-130J departures and arrivals. Based C-130J utilize the Judy DZ, northwest of Patrick SFB in Banana River for 175 of their sorties.

**Table 2-10. Distribution of Departure and Arrival Flight Operations for Based C-130J**

Destination/ Origin	Departure from Patrick SFB to Destination			Arrival to Patrick SFB from Origin		
	Day (0700 2200)	Night (2200 0700)	Total	Day (0700 2200)	Night (2200 0700)	Total
Judy DZ	184	0	175	107	68	175
Other	287	0	273	166	107	273

**Tables 2-11 and 2-12** contain the runway and flight track utilization percentages and resultant average daily operations for based C-130J departures. For departures other than to the Judy DZ (**Table 2-11**), based C-130J only utilize the main runway (03/21) and evenly split in both directions. When on either runway, based C-130J use the "Ocean4" routing for 40 percent of their departures and River4 for 60 percent of their departures. Departures to Judy DZ (**Table 2-12**) are split evenly between Runways 03 and 21.

**Table 2-11. AAD Departures (excluding Judy DZ) for Based C-130J**

Runway Pair	Runway Pair %	Runway ID	Runway %	Route	Route % on Runway	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
Main	100%	3	50%	OCEAN4	40%	03D1	C130DB	0.1496	-
Main	100%	3	50%	RIVER4	60%	03D2	C130DG	0.2244	-
Main	100%	21	50%	OCEAN4	40%	21D1	C130DF	0.1496	-
Main	100%	21	50%	RIVER4	60%	21D2	C130DC	0.2244	-
Crosswind	0% (1)	n/a							
Notes: 1. Rare usage; not modeled									

**Table 2-12. AAD Departures to Judy DZ for Based C-130J**

Runway Pair	Runway Pair %	Runway ID	Runway %	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
Main	100%	3	50%	03DJDZ	C130DD	0.2397	-
Main	100%	21	50%	21DJDZ	C130DE	0.2397	-
Crosswind	0% (1)	n/a					
Notes: 1. rare usage; not modeled							

**Tables 2-13 and 2-14** contain the runway and flight track utilization percentages and resultant average daily operations for based C-130J arrivals. Arrivals excluding those from Judy DZ (**Table 2-11**) utilize the main runway (Runway 03/21) for 88 percent of the arrivals; 12 percent to crosswind Runway 11/29. When either on main or crosswind runways, utilization is even in both directions. Seventy percent of the arrivals to Runway 03/21 are VFR and 30 percent are IFR. Various routing percentages while on each runway are listed in the table. Only VFR arrivals are conducted on the crosswind runway. Consistent with the non-Judy DZ arrivals, arrivals from Judy DZ (**Table 2-12**) utilize only the main runway (Runway 03/21), with even distribution between the two directions.

**Table 2-13. AAD Arrivals (excluding from Judy DZ) for Based C-130J**

Runway Pair	Runway Pair %	Runway ID	Runway %	Type	Type %	Route	Route % on Runway	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
Main	88%	3	50%	VFR	70%	from east then join pattern to land	100%	03A4	C130AE	0.1401	0.0903
Main	88%	21	50%	VFR	70%	from south	70%	21A4	C130AS	0.0981	0.0632
Main	88%	21	50%	VFR	70%	from north	20%	21A3	C130AT	0.0280	0.0181
Main	88%	21	50%	VFR	70%	from west	10%	21ARSAB	C130AV	0.0140	0.0090
Main	88%	3	50%	IFR	30%	ILS	50%	03A1	C130AA	0.0300	0.0193
Main	88%	3	50%	IFR	30%	TACAN	50%	03A5	C130AQ	0.0300	0.0193
Main	88%	21	50%	IFR	30%	ILS	50%	21A1	C130AD	0.0300	0.0193
Main	88%	21	50%	IFR	30%	TACAN	50%	21A5	C130AR	0.0300	0.0193
Crosswind	12%	11	50%	VFR to random shallow teardrop	100%	n/a	100%	11ARST	C130AJ	0.0273	0.0176
Crosswind	12%	29	50%	VFR from south	100%	n/a	100%	29ARSC	C130AU	0.0273	0.0176

**Table 2-14. AAD Arrivals from Judy DZ for Based C-130J**

Runway Pair	Runway Pair %	Runway ID	Runway %	Type %	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
Main	100%	3	50%	100%	03AJDZ	C130AK	0.1466	0.0932
Main	100%	21	50%	100%	21AJDZ	C130AL	0.1466	0.0932
Crosswind	0%	n/a	n/a					

**Table 2-15** shows the distribution of based C-130J closed pattern flight operations, showing the split between VFR and IFR patterns operations. VFR closed patterns account for approximately 72 percent of the closed patterns. Thirty-nine percent of VFR and IFR closed patterns are conducted during the DNL nighttime (2200-0700).

**Table 2-15. Distribution of Closed Pattern Flight Operations for Based C-130J**

Closed Pattern Family	Type within Family	Day (0700 2200)	Night (2200 0700)	Total
VFR	VFR Box	1,123	722	1,845
VFR	Random Steep/Shallow	142	91	233
IFR	ILS/TACAN	408	263	671
IFR	TACAN to circle	72	46	118

**Tables 2-16 through 2-19** contain the runway and flight track utilization percentages and resultant average daily events for the types of closed patterns listed in **Table 2-15**. Unlike **Tables 2-7 and 2-15**, **Tables 2-16 through 2-19** count each circuit or pattern as one event, for purposes of data entry into the BaseOps program. Consistent with the based C-130J arrivals (**Table 2-11**), 88 percent of the VFR Box patterns (**Table 2-16**) utilize the main runway (Runway 03/21) and 12 percent utilize the crosswind runway (Runway 11/29). When on either runway, the directional or runway utilization is split evenly to both directions. The VFR Random Shallow/Steep Patterns (**Table 2-17**) and IFR patterns (**Table 2-18**) are only conducted on the main runway, with even split to both directions, for ILS/non-circling TACAN patterns. Operations split evenly between ILS and non-circling TACAN patterns. TACAN to Circle patterns have an initial approach to Runway 03 but circle to Runway 21 (**Table 2-19**).

**Table 2-16. AAD VFR Box Patterns for Based C-130J**

Runway Pair	Runway Pair %	Runway ID	Runway %	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
Main	88%	3	50%	03C6	C130CB	0.6769	0.4352
Main	88%	21	50%	21C6	C130CF	0.6769	0.4352
Crosswind	12%	11	50%	11C1	C130CJ	0.0923	0.0593
Crosswind	12%	29	50%	29C6	C130CM	0.0923	0.0593

**Table 2-17. AAD VFR Random Shallow/Steep Patterns for Based C-130J**

Runway Pair	Runway Pair %	Runway ID	Runway %	Type	Route	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
Main	100%	3	50%	VFR	Random Shallow	03C13	C130CK	0.0973	0.0623
Main	100%	21	50%	VFR	Random Steep	21C4	C130CL	0.0973	0.0623
Crosswind	0%	n/a	n/a						

**Table 2-18. AAD ILS/TACAN (non-circling) Patterns for Based C-130J**

Runway Pair	Runway Pair %	Runway ID	Runway %	Route	Route %	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
Main	100%	3	50%	ILS	50%	03C1	C130CD	0.1397	0.0901
Main	100%	3	50%	TACAN	50%	03C3	C130CE	0.1397	0.0901
Main	100%	21	50%	ILS	50%	21C1	C130CG	0.1397	0.0901
Main	100%	21	50%	TACAN	50%	21C3	C130CH	0.1397	0.0901
Crosswind	0%	n/a	n/a						

**Table 2-19. AAD TACAN to Circle Patterns for Based C-130J**

Runway ID	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
21	21C2	C130CI	0.0986	0.063

## 2.6.2 Based H-60

**Tables 2-20 and 2-21** contain the distributions of departures and arrivals for based H-60 aircraft, respectively. Consistent with the fixed-wing aircraft, the based H-60 aircraft departures are split evenly in the direction of Runways 03 and 21, whereas the 2018 NMODD had used 53 percent for Runway 03 and 47 percent for Runway 21 for departures. Specific destination and routing percentages are listed in **Table 2-20**. Twenty percent of the based H-60 arrivals are IFR, and 80 percent are VFR (**Table 2-21**). The runway use for IFR arrivals is 40 percent, 35 percent, and 25 percent for Runways 03, 21 and 11, respectively. VFR arrivals from the south are split evenly between Runways 03 and 21, as are VFR arrivals from an LZ. The 2018 NMODD had used 53 percent for Runway 03 and 47 percent for Runway 21 for VFR arrivals from the south.

**Table 2-20. AAD Departures for Based H-60**

Pad ID (Initial Heading)	Initial Heading %	Destination	Destination %	Route	Route %	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
G (030)	50%	North to the Cape	10%	Direct	100%	03GD1	H60DA	0.0619	0.0019
G (030)	50%	Landing Zone	30%	Direct	100%	03GD2	H60DB	0.1858	0.0058
G (030)	50%	Causeway	60%	Right Turn	40%	03GD4	H60DC	0.1486	0.0046
G (030)	50%	Causeway	60%	Left Turn	60%	03GD3	H60DD	0.2229	0.0069
G (210)	50%	North to the Cape	10%	Direct	100%	21GD1	H60DE	0.0619	0.0019
G (210)	50%	Landing Zone	30%	Direct	100%	21GD3	H60DF	0.1858	0.0058
G (210)	50%	Causeway	60%	Direct	100%	21GD4	H60DG	0.3715	0.0115

**Table 2-21. AAD Arrivals for Based H-60**

IFR/VFR	IFR/VFR %	Origin (1)	Origin %	Runway ID / Pad (Final Heading)	Runway / Pad / Heading %	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
IFR	20%	IAF	100%	3	40%	03A3	H60AA	0.0789	0.0232
IFR	20%	IAF	100%	21	35%	21A1	H60AB	0.0690	0.0203
IFR (2)	20%	IAF	100%	11	25%	11A2	H60AC	0.0493	0.0145
VFR (3)	80%	Pineda	60%	MxZ (030)	100%	03MZA4	H60AE	0.4734	0.1394
VFR (3)	80%	From North	10%	MxZ (210)	100%	21MZA1	H60AD	0.0789	0.0232
VFR (3)	80%	From South	5%	MxZ (030)	50%	03MZA3	H60AG	0.0197	0.0058
VFR (3)	80%	From South	5%	MxZ (210)	50%	21MZA2	H60AH	0.0197	0.0058
VFR (3)	80%	From LZ	25%	MxZ (030)	50%	03MZA5	H60AI	0.0986	0.0290
VFR (3)	80%	From LZ	25%	MxZ (210)	50%	21MZA3	H60AK	0.0986	0.0290

Notes:

1. IAF = Initial Approach Fix

2. Self-contained ILS

3. "Mike Zulu" intersection often used for landings; denoted as "MxZ"

**Table 2-22** breaks out the based H-60's closed pattern flight operations from **Table 2-9**. Closed patterns at the Judy DZ comprise 64 percent of the based H-60 closed patterns. Based H-60 conduct 14 percent of the Judy DZ closed patterns in the DNL nighttime period (2200-0700). On-based closed patterns are comprised of Cargo Sling and other closed patterns. Cargo Sling closed patterns sum to 29 for the year with only 4 of these during the DNL nighttime period. None of the other on-base closed pattern operations are conducted during the DNL nighttime period.

**Table 2-22. Distribution of Annual Closed Pattern Flight Operations for Based H-60**

Closed Pattern	Day (0700 2200)	Night (2200 0700)	Total
On-base, non-Cargo Sling	4,287	-	4,287
On-base, Cargo Sling	25	4	29
Off-base (Judy DZ)	6,656	1,092	7,748

**Tables 2-23 and 2-24** show the runway and flight track utilization for based H-60 closed patterns. **Table 2-23** addresses on-base non-cargo sling activity, and **Table 2-24** addresses Judy DZ and Cargo Sling activity. Consistent with the fixed-wing aircraft, based H-60 aircraft utilize the main (Runway 03/21) and crosswind (Runway 11/29) runways for 88 percent and 12 percent of their standard VFR non-Cargo Sling closed patterns, respectively (**Table 2-23**). Between Runways 03 and 21, an even split was modeled for these closed patterns. Short VFR closed patterns were only modeled on Runways 03 and 21. We modeled an even split between those two runways whereas the 2018 NMODD modeled 53 percent on Runway 03 and 47 percent on Runway 21.

**Table 2-23. AAD Non-Cargo Sling Closed Patterns for Based H-60**

Runway Pair	Runway Pair %	Pattern Type	Pattern Type %	Runway ID	Runway %	Direction	Direction %	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
Main	88%	Standard VFR	50%	3	50%	West	55%	03C10	H60CA	0.7106	-
Main	88%	Standard VFR	50%	3	50%	East	45%	03C9	H60CB	0.5814	-
Main	88%	Standard VFR	50%	21	50%	West	45%	21C9	H60CE	0.5814	-
Main	88%	Standard VFR	50%	21	50%	East	55%	21C10	H60CF	0.7106	-
Crosswind	12%	Standard VFR	50%	11	50%	North	55%	11C6	H60CC	0.0969	-
Crosswind	12%	Standard VFR	50%	11	50%	South	45%	11C7	H60CD	0.0793	-
Crosswind	12%	Standard VFR	50%	29	50%	South	55%	29C7	H60CG	0.0969	-
Crosswind	12%	Standard VFR	50%	29	50%	North	45%	29C8	H60CH	0.0793	-
Main	100%	Short VFR	50%	3	50%	East	45%	03C11	H60CI	0.6607	-
Main	100%	Short VFR	50%	3	50%	West	55%	03C12	H60CJ	0.8075	-
Main	100%	Short VFR	50%	21	50%	West	55%	21C11	H60CK	0.8075	-
Main	100%	Short VFR	50%	21	50%	East	45%	21C12	H60CL	0.6607	-

**Table 2-24. AAD Cargo Sling and Off-Base Judy DZ Closed Patterns for Based H-60**

On/Off Base	Pattern Type	Pattern Type %	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
On Base	Cargo Sling	100%	11HC02	H60CO	0.0342	0.0055
Off base	Judy DZ	57%	JDCP1	H60CM	5.1972	0.8527
Off base	Judy DZ Hold	43%	JDCP2	H60CN	3.9207	0.6432

### 2.6.3 Based DOS H-1

**Table 2-25** contains the annual average daily departures and arrivals for the based DOS H-1 aircraft. **Table 2-26** shows the H-1's distribution of types of closed patterns, runway use, track utilization and resultant annual average daily closed pattern events. As shown in **Table 2-26**, 75 percent of the DOS H-1 closed patterns are VFR and 25 percent are IFR. IFR patterns are only conducted on Runway 03 and only in a lefthand pattern. VFR patterns are split between the main (Runway 03/21) and crosswind runway (Runway 11/29) consistent with the fixed-wing aircraft, i.e., 88 percent on Runway 03/21 and 12 percent on Runway 11/29. Events are split evenly between Runways 03 and 21 and between Runways 11 and 29. Except for Runway 03, VFR patterns are split between autorotation and non-autorotation (or "VFR closed") profiles with 5 percent and 95 percent, respectively. For Runway 03, VFR patterns are split between autorotation (5 percent), "VFR extended" (10 percent) and "VFR closed" (85 percent). While performing each of those patterns, the left/right split is even.

**Table 2-25. AAD Departures and Arrivals for Based H-1**

Operation Type	Route	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
Departure	To Pineda	21CD01	H1DA	0.7151	-
Arrival	From Pineda	03A2	H1AA	0.6247	0.0904

**Table 2-26. AAD Closed Patterns for Based H-1**

VFR/ IFR	VFR/IFR %	Runway Pair	Runway Pair %	Runway ID	Runway %	Profile	Profile %	Track	Track %	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
VFR	75%	Main	88%	3	50%	VFR closed	85%	left	50%	03C8	H1CA	0.7014	0.1003
VFR	75%	Main	88%	3	50%	VFR closed	85%	right	50%	03C7	H1CB	0.7014	0.1003
VFR	75%	Main	88%	3	50%	VFR extended	10%	right	100%	03C14	H1CC	0.1650	0.0236
VFR	75%	Main	88%	3	50%	autorotation	5%	left	50%	03C8	H1CD	0.0413	0.0059
VFR	75%	Main	88%	3	50%	autorotation	5%	right	50%	03C7	H1CE	0.0413	0.0059
VFR	75%	Main	88%	21	50%	VFR closed	95%	left	50%	21C14	H1CF	0.7840	0.1121
VFR	75%	Main	88%	21	50%	VFR closed	95%	right	50%	21C15	H1CG	0.7840	0.1121
VFR	75%	Main	88%	21	50%	autorotation	5%	left	50%	21C14	H1CH	0.0413	0.0059
VFR	75%	Main	88%	21	50%	autorotation	5%	right	50%	21C15	H1CI	0.0413	0.0059
VFR	75%	Crosswind	12%	11	50%	VFR closed	95%	left	50%	11C6	H1CJ	0.1069	0.0153
VFR	75%	Crosswind	12%	11	50%	VFR closed	95%	right	50%	11C7	H1CK	0.1069	0.0153
VFR	75%	Crosswind	12%	11	50%	autorotation	5%	left	50%	11C6	H1CL	0.0056	0.0008
VFR	75%	Crosswind	12%	11	50%	autorotation	5%	right	50%	11C7	H1CM	0.0056	0.0008
VFR	75%	Crosswind	12%	29	50%	VFR closed	95%	left	50%	29C7	H1CN	0.1069	0.0153
VFR	75%	Crosswind	12%	29	50%	VFR closed	95%	right	50%	29C8	H1CO	0.1069	0.0153
VFR	75%	Crosswind	12%	29	50%	autorotation	5%	left	50%	29C7	H1CP	0.0056	0.0008
VFR	75%	Crosswind	12%	29	50%	autorotation	5%	right	50%	29C8	H1CQ	0.0056	0.0008
IFR	25%	Main	100%	3	100%	ILS	100%	left	100%	03C15	H1CR	1.2503	0.1788

## 2.6.4 Based DOS S-61

**Table 2-27** lists the annual average daily departures and arrivals for the based DOS S-61 aircraft. **Table 2-28** shows the S-61's distribution of types of closed patterns, runway use, track utilization and resultant annual average daily closed pattern events. Based DOS S-61 closed patterns (**Table 2-28**) were modeled with percentages shared by the based DOS H-1 (Section 2.6.3), except for the IFR patterns. For the based DOS S-61, IFR patterns are conducted to both Runway 03 and 21, with a 10/90 split.

**Table 2-27. AAD Departures and Arrivals for Based S-61**

Operation Type	Route	Track ID	Profile ID	Day (0700 2200) Ops	Night (2200 0700) Ops
Departure	To Pineda	21CD01	S61DA	0.5014	0.0712
Arrival	From Pineda	03A2	S61AA	0.5726	-

**Table 2-28. AAD Closed Patterns for Based S-61**

VFR/IFR	VFR/IFR %	Runway Pair	Runway Pair %	Runway ID	Runway %	Profile	Profile %	Track	Track %	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
VFR	75%	Main	88%	3	50%	VFR closed	85%	left	50%	03C8	S61CA	0.5612	0.0801
VFR	75%	Main	88%	3	50%	VFR closed	85%	right	50%	03C7	S61CB	0.5612	0.0801
VFR	75%	Main	88%	3	50%	VFR extended	10%	right	100%	03C14	S61CC	0.1320	0.0189
VFR	75%	Main	88%	3	50%	autorotation	5%	left	50%	03C8	S61CD	0.0330	0.0047
VFR	75%	Main	88%	3	50%	autorotation	5%	right	50%	03C7	S61CE	0.0330	0.0047
VFR	75%	Main	88%	21	50%	VFR closed	95%	left	50%	21C14	S61CF	0.6272	0.0895
VFR	75%	Main	88%	21	50%	VFR closed	95%	right	50%	21C15	S61CG	0.6272	0.0895
VFR	75%	Main	88%	21	50%	autorotation	5%	left	50%	21C14	S61CH	0.0330	0.0047
VFR	75%	Main	88%	21	50%	autorotation	5%	right	50%	21C15	S61CI	0.0330	0.0047
VFR	75%	Crosswind	12%	11	50%	VFR closed	95%	left	50%	11C6	S61CJ	0.0855	0.0122
VFR	75%	Crosswind	12%	11	50%	VFR closed	95%	right	50%	11C7	S61CK	0.0855	0.0122
VFR	75%	Crosswind	12%	11	50%	autorotation	5%	left	50%	11C6	S61CL	0.0045	0.0006
VFR	75%	Crosswind	12%	11	50%	autorotation	5%	right	50%	11C7	S61CM	0.0045	0.0006
VFR	75%	Crosswind	12%	29	50%	VFR closed	95%	left	50%	29C7	S61CN	0.0855	0.0122
VFR	75%	Crosswind	12%	29	50%	VFR closed	95%	right	50%	29C8	S61CO	0.0855	0.0122
VFR	75%	Crosswind	12%	29	50%	autorotation	5%	left	50%	29C7	S61CP	0.0045	0.0006
VFR	75%	Crosswind	12%	29	50%	autorotation	5%	right	50%	29C8	S61CQ	0.0045	0.0006
IFR	25%	Main	100%	3	10%	ILS	100%	left	100%	03C15	S61CR	0.1000	0.0143
IFR	25%	Main	100%	21	90%	ILS	100%	left	100%	21C13	S61CS	0.9003	0.1285

## 2.6.5 Transient Aircraft

**Table 2-29** shows the runway and flight track utilization applied to all transient aircraft. Consistent with based fixed-wing aircraft, the transient aircraft arrivals and departures were modeled with the same runway utilization percentages, i.e., 50 percent on Runway 03 and 50 percent on Runway 21. The 2018 NMODD had modeled 53 percent on Runway 03 and 47 percent on Runway 21. VFR patterns for based fixed-wing aircraft were split between the main and crosswind runways whereas transient aircraft were only modeled on the main runway, with a 50/50 split in each direction. Like the arrivals and departures, the 2018 NMODD had modeled the transient VFR patterns with a 53/47 split in each direction. HMMH corrected a flight profile for C-21 closed patterns (TC21CB) which was on the same track as the other C-21 flight profile.

**Table 2-29. Runway and Flight Track Utilization for Transient Aircraft**

Operation Type	Runway Pair	Runway Pair %	Runway	Runway %	Route	Route %	Track ID
Departure	Main	100%	3	50%	Ocean4	50%	03D2
	Main	100%	3	50%	River4	50%	03D1
	Main	100%	21	50%	Ocean4	50%	21D1
	Main	100%	21	50%	River4	50%	21D2
Arrival	Main	100%	3	50%	ILS	100%	03A1
	Main	100%	21	50%	ILS	100%	21A1
Closed Pattern	Main	100%	3	50%	VFR	100%	03C6
	Main	100%	21	50%	VFR	100%	21C6

Applying the percentages in **Table 2-29** to the operations in **Table 2-9**, dividing by 365 and dividing closed patterns by 2, **Tables 2-30 through 2-32** show the resultant annual average daily events for the transient aircraft.

**Table 2-30. AAD Events for F-35A, C-17 and B-757 Transient Aircraft**

				F 35A			C 17			B 757 200 PW		
Operation Type	Runway	Route	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
Departure	3	Ocean4	03D2	TF35D1	0.0082	-	TC17DA	0.0384	0.0014	TB757D1	0.0541	0.0007
	3	River4	03D1	TF35D2	0.0082	-	TC17DC	0.0384	0.0014	TB757D2	0.0541	0.0007
	21	Ocean4	21D1	TF35D3	0.0082	-	TC17DB	0.0384	0.0014	TB757D3	0.0541	0.0007
	21	River4	21D2	TF35D4	0.0082	-	TC17DD	0.0384	0.0014	TB757D4	0.0541	0.0007
Arrival	3	ILS	03A1	TF35A1	0.0164	-	TC17AA	0.0767	0.0027	TB757A1	0.1082	0.0014
	21	ILS	21A1	TF35A2	0.0164	-	TC17AB	0.0767	0.0027	TB757A2	0.1082	0.0014
Closed Pattern	3	VFR	03C6				TC17CA	0.0199	0.0007	TB757C1	0.0274	-
	21	VFR	21C6				TC17CB	0.0199	0.0007	TB757C2	0.0274	-

**Table 2-31. AAD Events for P-8, C-21, and C-12 Transient Aircraft**

				P 8			C 21A			C 12		
Operation Type	Runway	Route	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
Departure	3	Ocean4	03D2	TP8D1	0.0164	-	TC21DA	0.0103	0.0007	TC12DA	0.0247	0.0007
	3	River4	03D1	TP8D2	0.0164	-	TC21DB	0.0103	0.0007	TC12DB	0.0247	0.0007
	21	Ocean4	21D1	TP8D3	0.0164	-	TC21DC	0.0103	0.0007	TC12DC	0.0247	0.0007
	21	River4	21D2	TP8D4	0.0164	-	TC21DE	0.0103	0.0007	TC12DD	0.0247	0.0007
Arrival	3	ILS	03A1	TP8A1	0.0329	-	TC21AA	0.0205	0.0014	TC12AA	0.0521	-
	21	ILS	21A1	TP8A2	0.0329	-	TC21AB	0.0205	0.0014	TC12AB	0.0521	-
Closed Pattern	3	VFR	03C6	TP8C1	0.1130	-	TC21CA	0.0062	0.0007	TC12CA	0.013	-
	21	VFR	21C6	TP8C2	0.1130	-	TC21CB	0.0062	0.0007	TC12CB	0.013	-

**Table 2-32. AAD Events for H-60 Transient Aircraft**

Operation Type	Runway	Route	Track ID	Profile ID	Day (0700 2200) Events	Night (2200 0700) Events
Departure	3	Ocean4	03D2	TUH60D01	0.0082	0.0007
	3	River4	03D1	TUH60D02	0.0082	0.0007
	21	Ocean4	21D1	TUH60D03	0.0082	0.0007
	21	River4	21D2	TUH60D04	0.0082	0.0007
Arrival	3	ILS	03A1	TUH60A01	0.0178	-
	21	ILS	21A1	TUH60A02	0.0178	-
Closed Pattern	3	VFR	03C6	TUH60C01	0.0048	-
	21	VFR	21C6	TUH60C02	0.0048	-

## 2.7 Airfield Flight Tracks

The flight tracks shown in **Appendix A** represent the modeled ground paths followed by aircraft flying to and from Patrick SFB runways. It is fully recognized that flying operations, particularly when conducted under Visual Flight Rules (VFR), vary from one operation to the next even when conducting the same procedure. Variations may be a result of winds, other air traffic, pilot preference, or a multitude of other factors. Instrument Landing System (ILS) and Instrument Flight Rule (IFR) operations have less variability.

The background maps for the flight track maps are the aeronautical sectional chart and/or an aerial photograph. Both types of background maps are geo-referenced.

## 2.8 Airfield Flight Profiles

Modeled flight profiles for all modeled based and transient aircraft types and operations are shown in **Appendix B**.

## 2.9 Static Operations and Maintenance Runups

Flight squadrons conduct static operations such as pre- and post-flight runups conducted at locations other than the start of takeoff roll. Maintenance groups perform maintenance-style runup operations. **Figure 2-4** shows the pads/locations at which the maintenance activity is conducted and was modeled. Sections 2.9.1 through 2.9.4 list the modeled runups for the four based units derived from Mission Operations Control Center (MOCC) records. Run durations were based on unit estimates of time spent with engines running.

No static or maintenance runups were modeled for transient aircraft.

### 2.9.1 Based C-130J

**Table 2-33 and 2-34** list the types, locations, and headings of based C-130J pre- and post-flight runups. C-130J aircraft perform runups before and after every sortie on static pads A-1, A-3, and A-5 at a heading of 30 degrees from magnetic north. The numbers of events and DNL period in which they are modeled are consistent with the flight operations in **Table 2-9**. These runups are performed at idle power, or around 1,500 horsepower per engine, for up to 10 minutes per event, with all four engines running.

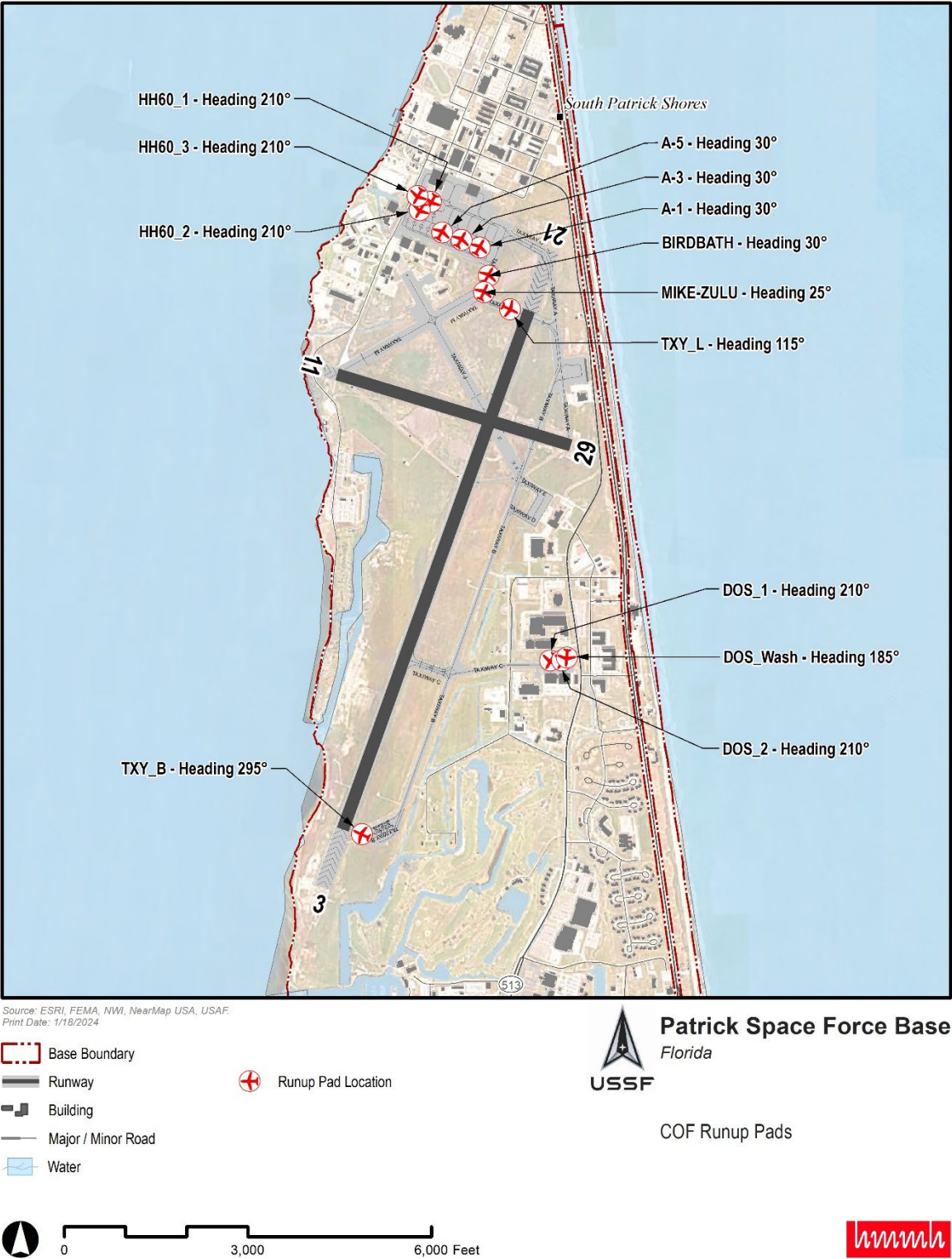


Figure 2-4. Modeled Runup Pads for Patrick SFB

**Table 2-33. Annual C-130J Pre- and Post-Flight Runup Events**

Type	Day Events (0700 2200)	Night Events (2200 0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Pre-Flight	448	-	448	Equal split on pads A-1, A-3, and A-5; 30 degrees
Hold For Departure	448	-	448	50% on Txy_B, 50% on Txy_L
Post Flight	273	175	448	Equal split on pads A-1, A-3, and A-5; 30 degrees

**Table 2-34. C-130J Pre- and Post-Flight Runup Profiles**

Type	Power (HP) Per Engine	Duration of Each Event (minutes)	Number of Engines Running
Pre-flight	1,500	10	4
Hold for Departure	1,500	5	4
Post-flight	1,500	4	4

Tables 2-35 and 2-36 list the types, locations, and headings of C-130J maintenance runups. Except for Rinse operations, maintenance runups are conducted during the DNL daytime period (Table 2-35). Approximately 39 percent of Rinse operations are conducted during the DNL nighttime period. The Post-ISO and High-Power runs utilize power settings other than idle, i.e., up to 4,500 horsepower per engine (Table 2-36), with two or four engines running for 5 minutes per event.

**Table 2-35. Annual C-130J Maintenance Operations**

Type	Day Events (0700 2200)	Night Events (2200 0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Rinse	46	29	75	Birdbath at 30 degrees
Post-ISO	24	-	24	Pad A-1 at 30 degrees
High-Power Runs	17	-	17	Pad A-1 at 30 degrees
Idle Runs	81	-	81	Equal split on pads A-1, A-3, and A-5; 30 degrees

**Table 2-36. C-130J Maintenance Runup Profiles**

Type	Power (HP) Per Engine	Duration of Each Event (minutes)	Number of Engines Running
Rinse	1,500	5	4
Post-ISO Part 1	1,500	75	2
Post-ISO Part 2	2,500	70	2
Post-ISO Part 3	4,500	5	2
High-Power Runs Part 1	1,500	60	3
High-Power Runs Part 2	4,500	5	4
Idle Runs	1,500	5	2

## 2.9.2 Based H-60

**Tables 2-37 and 2-38** list the types, locations, and headings of based H-60 pre- and post-flight runups. H-60 aircraft perform runups before and after every sortie on static pads HH60\_1 through \_3 at a heading of 210 degrees from magnetic north. The numbers of events and DNL period in which they are modeled are consistent with the flight operations in **Table 2-9**. Each of these runups are modeled with In-Ground Effect (IGE) power for 20 minutes with both engines running.

**Table 2-37. Annual H-60 Pre and Post Flight Runup Operations**

Type	Day Events (0700 2200)	Night Events (2200 0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Pre-Flight	452	14	466	Equal split on pads HH60_1, HH60_2, and HH60_3; 210 degrees
Post Flight	360	106	466	Equal split on pads HH60_1, HH60_2, and HH60_3; 210 degrees

**Table 2-38. H-60 Pre- and Post-Flight Runup Profiles**

Type	Power Setting	Duration of Each Event (minutes)	Number of Engines Running
Pre-flight	IGE Lite	20	2
Post-flight	IGE Lite	20	2

**Tables 2-39 and 2-40** list the types, locations, and headings of based H-60 maintenance runups. Approximately 25 percent of Compressor Wash and Rinse operations are conducted during the DNL nighttime period. Approximately 5 percent of “Misc. Maintenance” operations are conducted during the DNL nighttime period. All maintenance runups were modeled at IGE power setting with both engines running. As shown in **Table 2-40**, event durations range from 2.5 to 10 minutes, except for the Break-in Run which is 20 minutes.

**Table 2-39. Annual H-60 Maintenance Operations**

Type	Day Events (0700 2200)	Night Events (2200 0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Compressor Wash	49	16	65	Birdbath at 30 degrees
Rinse	85	28	113	Equal split on pads HH60_1, HH60_2, and HH60_3; 210 degrees
Misc. Maintenance	150	5	155	Equal split on pads HH60_1, HH60_2, and HH60_3; 210 degrees
Break-in Run	20	-	20	Pad MIKE-ZULU at 25 degrees

**Table 2-40. H-60 Maintenance Profiles**

Type	Power Setting	Duration of Each Event (minutes)	Number of Engines Running
Compressor Wash	IGE Lite	2.5	2
Rinse	IGE Lite	10	2
Misc. Maintenance	IGE Lite	5	2
Break-in Run	IGE Lite	120	2

### 2.9.3 DOS H-1

**Tables 2-41 and 2-42** list the types, locations, and headings of based H-1 pre- and post-flight runups. H-1 aircraft perform runups before and after every sortie on static pads DOS\_1 and \_2 at a heading of 210 degrees from magnetic north. The numbers of events and DNL period in which they are modeled are consistent with the flight operations in **Table 2-9**. Each of these runups are modeled with Out-of-Ground Effect (OGE) power for 5 minutes.

**Table 2-41. Annual H-1 Pre- and Post-Flight Runup Operations**

Type	Day Events (0700 2200)	Night Events (2200 0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Pre-flight	261	-	261	Split evenly on pads DOS_1 and DOS_2; 210 degrees
Post-flight	228	33	261	Split evenly on pads DOS_1 and DOS_2; 210 degrees

**Table 2-42. H-1 Pre- and Post-Flight Runup Profiles**

Type	Power Setting	Duration of Each Event (minutes)
Pre-flight	OGE Lite	5
Post-flight	OGE Lite	5

**Table 2-43 and 2-44** list the types, locations, and headings of based H-1 maintenance runups. None are conducted during the DNL nighttime period. All maintenance runups were modeled at OGE power setting. As shown in **Table 2-44**, event durations range from 5 to 10 minutes.

**Table 2-43. Annual H-1 Maintenance Runup Operations**

Type	Day Events (0700 2200)	Night Events (2200 0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Post-engine change	1	-	1	210 degrees at pad DOS_1
Leak check	12	-	12	Split evenly on pads DOS_1 and DOS_2; 210 degrees
Compressor Wash	6	-	6	185 degrees on pad DOS_Wash
De-Salination Rinse	6	-	6	Split evenly on pads DOS_1 and DOS_2; 185 degrees

**Table 2-44. H-1 Maintenance Runup Profiles**

Type	Power Setting	Duration of Each Event (minutes)	Number of Engines Running
Post-engine change	OGE Lite	10	1
Leak check	OGE Lite	5	1
Compressor Wash	OGE Lite	5	1
De-Salination Rinse	OGE Lite	5	1

## 2.9.4 DOS S-61

**Tables 2-45 and 2-46** list the types, locations, and headings of based S-61 pre- and post-flight runups for normal arrivals and departures. S-61 aircraft perform runups before and after every sortie on static pads DOS\_1 and \_2 at a heading of 210 degrees from magnetic north. The numbers of events and DNL period in which they are modeled are consistent with the flight operations in **Table 2-9**. As shown in **Table 2-46**, each of these runups are modeled at Ground (GND) Idle and GND Max power settings, for up to 60 minutes with 1 engine running.

**Table 2-45. Annual S-61 Pre- and Post-Flight Runup Operations (Normal Flights)**

Type	Day Events (0700-2200)	Night Events (2200-0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Pre-flight	183	26	209	Split evenly between DOS_1 and DOS_2; 210 degrees
Post-flight	209	-	209	Split evenly between DOS_1 and DOS_2; 210 degrees

**Table 2-46. S-61 Pre- and Post-Flight Runup Profiles (Normal Flights)**

Type	Power Setting (%QBPAP)	Power Description	Duration of Each Event (minutes)	Number of Engines Running
pre-flight warmup	21%	GND Max	45	1
pre-flight warmup	7%	GND Idle	45	1
post-flight cooldown	21%	GND Max	60	1
post-flight cooldown	7%	GND Idle	60	1

Test flight runups refer to runups conducted following an engine replacement. **Tables 2-47 and 2-48** list the types, locations, and headings of based S-61 pre- and post-flight runups for Test flight runups. Per **Table 2-47**, 10 engine replacements are conducted annually necessitating a pre-flight warmup and a post-flight cooldown at the DOS\_Wash pad at a heading of 185 degrees from magnetic north. Pre-flight warmups are conducted only during DNL daytime but 10 percent of the Test flight runups are conducted during the DNL nighttime period (2200-0700). Identical to the normal pre- and post-flight runups, **Table 2-48** shows each of these runups are modeled at GND Idle and GND Max power settings, for up to 60 minutes with one engine running.

**Table 2-47. Annual S-61 Pre- and Post-Flight Runup Operations (Test Flights)**

Type	Day Events (0700-2200)	Night Events (2200-0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
pre-flight warmup	10	-	10	185 degrees at DOS_Wash
post-flight cooldown	9	1	10	185 degrees at DOS_Wash

**Table 2-48. S-61 Pre and Post Flight Runup Profiles (Test Flights)**

Type	Power Setting (%QQBPA)	Power Description	Duration of Each Event (minutes)	Number of Engines Running
pre-flight warmup	21%	GND Max	45	1
pre-flight warmup	7%	GND Idle	45	1
post-flight cooldown	21%	GND Max	60	1
post-flight cooldown	7%	GND Idle	60	1

**Tables 2-49 and 2-50** list the three types, locations, and headings of based S-61 maintenance runups. None are conducted during the DNL nighttime period. Each type of maintenance runup was modeled with GND Max and GND Idle power settings, either 5 or 12 minutes at each setting, with one engine running, as shown in **Table 2-50**.

**Table 2-49. Annual S-61 Maintenance Runup Operations**

Type	Day Events (0700 2200)	Night Events (2200 0700)	Total Events	Magnetic Heading or Location (Pad ID) Distribution
Engine Wash (scheduled)	12	-	12	185 degrees at DOS_Wash
Ops/ Leak Check (scheduled and un-scheduled)	21	-	21	Split evenly between DOS_1 and DOS_2; 210 degrees
De-Salination	120	-	120	185 degrees at DOS_Wash

**Table 2-50. S-61 Maintenance Runup Profiles**

Type	Power Setting (%QQBPA)	Power Description	Duration of Each Event (minutes)	Number of Engines Running
Engine Wash (scheduled)	21%	GND Max	5	1
Engine Wash (scheduled)	7%	GND Idle	5	1
Ops/ Leak Check (scheduled and un-scheduled)	21%	GND Max	12	1
Ops/ Leak Check (scheduled and un-scheduled)	7%	GND Idle	12	1
De-Salination	21%	GND Max	5	1
De-Salination	7%	GND Idle	5	1

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## 3 Noise Modeling Results

Section 3.1 includes the resulting DNL contours and associated noise impact assessments for the Baseline scenario. Section 3.2 includes supplemental metrics to elaborate on the noise environment around Patrick SFB.

### 3.1 Noise Exposure

**Figure 3-1** shows shaded DNL contours for the Baseline scenario for Patrick SFB. The existing 65 dB DNL contour at Patrick SFB extends just over 3,730 feet from the Runway 03/21 endpoint in the southwest direction and 4,000 feet from Runway 03/21 in the northeast direction. The contour extends roughly 550 feet south of the airfield fence. The bands of DNL of 70-75 dB along the runway are wavy because of the grid spacing (500 ft per Section 2.1); a denser grid would likely smooth/straighten the wavy bands.

**Figure 3-2** compares the baseline contours to the 2018 NMODD contours. The two contours are different shapes for the following four reasons:

1. Flight operations were scaled by aircraft type, and aircraft types were not equally scaled (see **Table 2-9**).
2. The 2018 modeling used AAM version 1.4.13 and NMAP version 7.0. **Figure 3-1** used AAM version 1.4.13 and NMAP version 7.3, as stated in Section 1.3.
3. Runway and flight track utilizations were slightly adjusted for consistency (see Sections 2.6.2 and 2.6.5).
4. Different elevation and ground impedance data was used (see Section 2.2).

**Table 3-1** provides the existing land acreage exposed to DNL of 65 dB or greater for the 2024 NMODD. There are nearly 40 off-installation acres and approximately 401 on-installation acres exposed to a DNL of at least 65 dB. The off-installation acreage land use does not include residential or noise sensitive land uses. These parcels are highlighted in the inset on **Table 3-1**.

**Table 3-1. Land Use Assessment (Acres)**

DNL Contour Band (exclusive of upper bound)	Total Area	Patrick SFB Area	Residential Area	Vacant Area	Water Area
65-70 dB	346.6	306.7	-	6.5	33.4
70-75 dB	76.1	76.1	-	-	-
75-80 dB	16.5	16.5	-	-	-
≥ 80 dB	1.4	1.4	-	-	-
<b>Total</b>	<b>440.6</b>	<b>400.7</b>	-	<b>6.5</b>	<b>33.4</b>

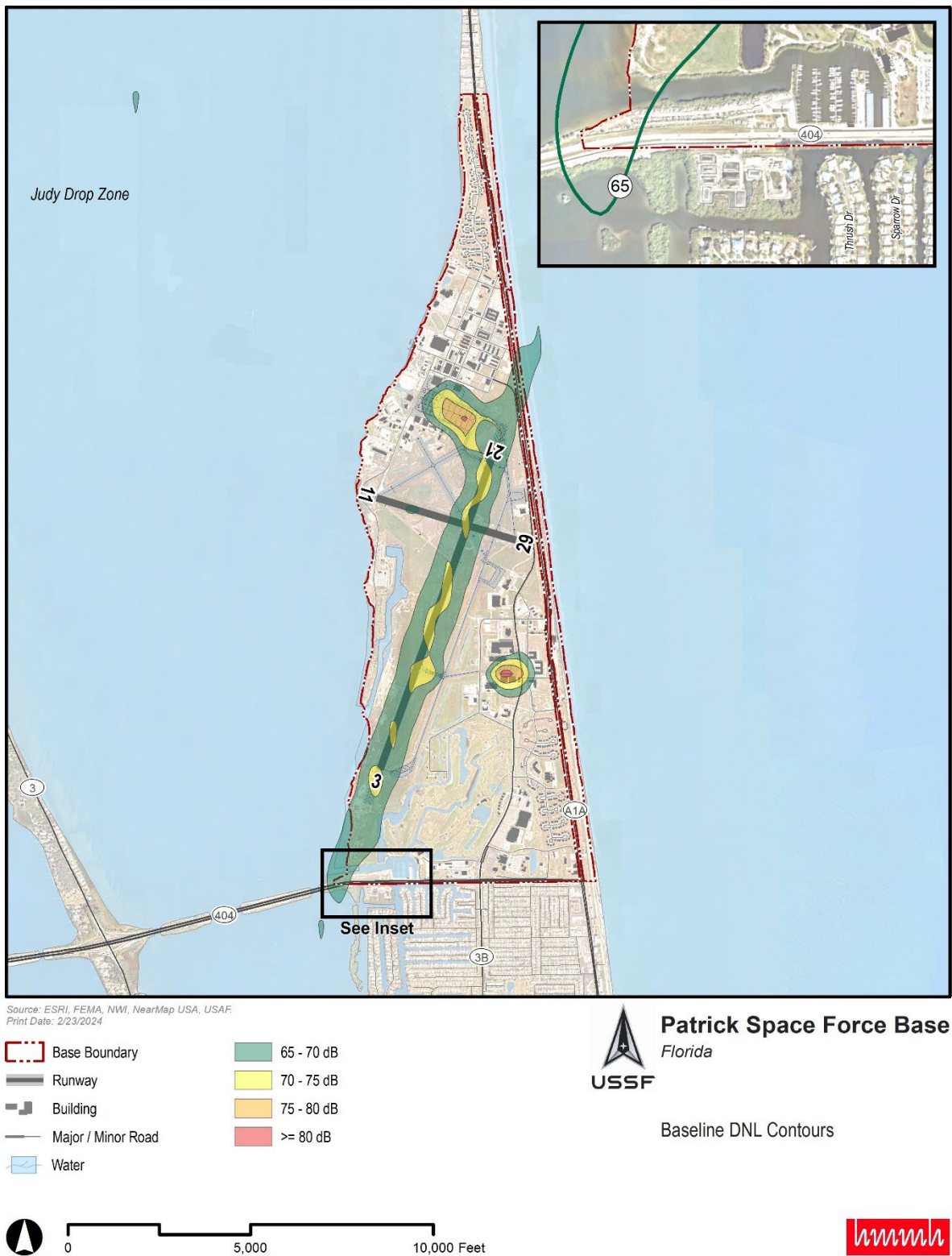


Figure 3-1. DNL Contours for Baseline Scenario at Patrick SFB

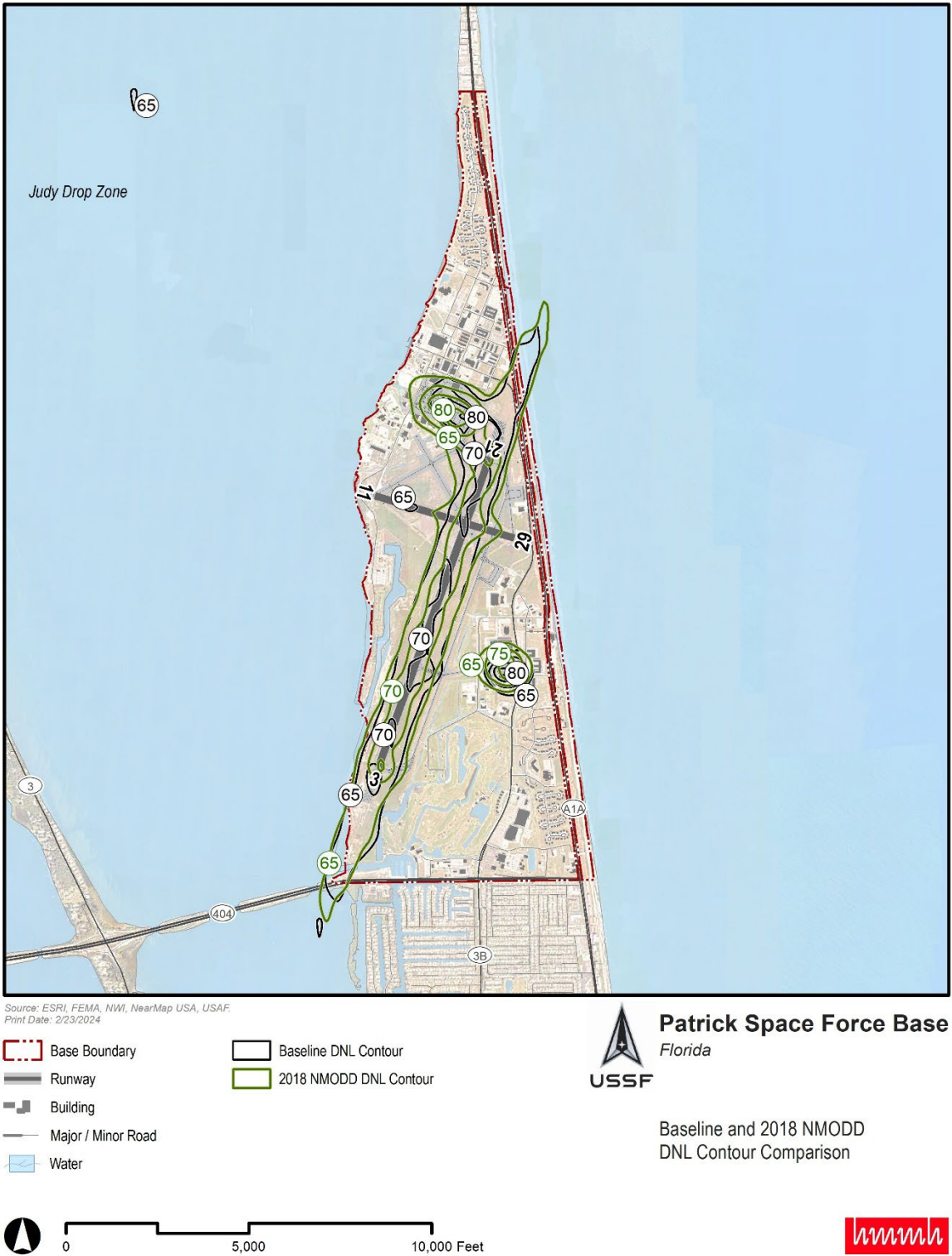


Figure 3-2. Comparison of Baseline and 2018 NMODD DNL Contours

The DNL at each POI at Patrick SFB for the Baseline scenario are provided in **Table 3-2**. The POI were mapped in **Figures 2-2 and 2-3**. The DNL of POIs having DNL greater than or equal to 65 dB are indicated in bold text. The only POI of the 30 applicable POIs having a DNL greater than or equal to 65 dB was 2nd Light Beach (P10). P10's DNL is primarily due to S-61 closed pattern operations on flight track 21C14. All other POI have DNL less than 65 dB DNL.

**Table 3-2. DNL at Points of Interest**

Point	Long Name	Total DNL
H01	Medical Clinic	53.3
L01	Library	61.4
P01	Pineda Beach	53.9
P02	Park	55.8
P03	Outdoor Recreation 1	47.8
P04	Outdoor Recreation 2	58.1
P05	Outdoor Recreation 3	53.6
P06	Outdoor Recreation 4	54.3
P07	Hangar's Beach	58.4
P08	Golf Course 1	53.9
P09	Golf Course 2	54.4
P10	2nd Light Beach	<b>65.0</b>
R01	Residential Area 1	55.2
R02	Residential Area 2	55.2
R03	Residential Area 3	58.2
R04	Residential Area 4	57.6
R05	Residential Area 5	45.5
R06	Residential Area 6	52.0
R07	Residential Area 7	52.4
R08	Residential Area 8	50.6
R09	Residential Area 9	47.7
R10	Residential Area 10	45.8
R11	Residential Area 11	53.8
R12	Residential Area 12	56.4
R13	Residential Area 13	51.1
Rm01	Campground Facility	56.0
Rt01	Hotel	45.5
S01	Childcare Facility	51.4
T01	Performing Arts Center	59.0
W01	Chapel	59.6

Note: **Bold** indicates greater than 65 dB DNL.

The Proposed Action does not include any additional aircraft activity occurring outside of the Patrick SFB perimeter and would not affect the No Action DNL contours. Any proposed changes to the noise abatement flight procedures occur significantly outside of the range of the 65 dB DNL contours and would not affect the contours or result in any noticeable changes to the Patrick SFB noise environment.

## 3.2 Supplemental Metrics

HMMH examined three supplemental metric analyses for this NMODD using guidance from the Defense Noise Working Group's (DNWG) *Using Supplemental Metrics* guide published in November 2009, i.e., the potentials for classroom learning interference, speech interference and sleep disturbance, in the following three subsections.

### 3.2.1 Classroom Learning Interference

There is one school on-base, the Childcare Facility (S01). It is open for 10 hours, from 7:00 AM to 5:00 PM. HMMH screened the school for potential for learning interference by calculating the 10-hour Time-Equivalent Sound Level, or  $L_{eq}(10h)$  at the Childcare Facility and determined that it was 47.9 dB, under the 60 dB screening threshold for classroom learning interference.

### 3.2.2 Speech Interference

As shown in **Table 3-3**, HMMH used NMAP and AAM to calculate annual average daily daytime speech interference with the Number of Events above a Maximum Sound Level of 75 dB, or  $NA75L_{max}$  metric. Residential Area 4 (R04) has the greatest number of hourly speech-interfering events (0.91) on an average daily basis.

### 3.2.3 Sleep Disturbance

As shown in **Table 3-4**, HMMH used NMAP and AAM to calculate the number of annual average daily nighttime events exceeding 90 dB SEL to estimate sleep disturbance for relevant points of interest around Patrick SFB. Residential Area 2 (R02) has the greatest number of hourly sleep-interfering events (0.06 on an average daily basis).

**Table 3-3. Hourly Speech-Interfering Events at Patrick SFB**

<b>Point ID</b>	<b>Long Name</b>	<b>Hourly Speech Interfering Events</b>
H01	Medical Clinic	<b>0.30</b>
L01	Library	<b>0.50</b>
P01	Pineda Beach	<b>0.37</b>
P02	Park	<b>0.28</b>
P03	Outdoor Recreation 1	<b>&lt;0.05</b>
P04	Outdoor Recreation 2	<b>0.45</b>
P05	Outdoor Recreation 3	<b>0.16</b>
P06	Outdoor Recreation 4	<b>0.11</b>
P07	Hangar's Beach	<b>0.68</b>
P08	Golf Course 1	<b>0.06</b>
P09	Golf Course 2	<b>&lt;0.05</b>
P10	2nd Light Beach	<b>0.72</b>
R01	Residential Area 1	<b>0.31</b>
R02	Residential Area 2	<b>0.39</b>
R03	Residential Area 3	<b>0.35</b>
R04	Residential Area 4	<b>0.91</b>
R05	Residential Area 5	<b>0.05</b>
R06	Residential Area 6	<b>0.07</b>
R07	Residential Area 7	<b>0.16</b>
R08	Residential Area 8	<b>0.08</b>
R09	Residential Area 9	<b>&lt;0.05</b>
R10	Residential Area 10	<b>&lt;0.05</b>
R11	Residential Area 11	<b>0.28</b>
R12	Residential Area 12	<b>0.47</b>
R13	Residential Area 13	<b>0.07</b>
Rm01	Campground Facility	<b>0.60</b>
Rt01	Hotel	<b>0.05</b>
S01	Childcare Facility	<b>0.07</b>
T01	Performing Arts Center	<b>0.61</b>
W01	Chapel	<b>0.61</b>

**Table 3-4. Hourly Sleep Disturbing Events at Night**

Point	Long Name	Hourly Sleep Interfering Events
H01	Medical Clinic	<0.05
R01	Residential Area 1	<0.05
R02	Residential Area 2	0.06
R03	Residential Area 3	<0.05
R04	Residential Area 4	<0.05
R05	Residential Area 5	-
R06	Residential Area 6	<0.05
R07	Residential Area 7	<0.05
R08	Residential Area 8	-
R09	Residential Area 9	-
R10	Residential Area 10	-
R11	Residential Area 11	<0.05
R12	Residential Area 12	<0.05
R13	Residential Area 13	<0.05
Rm01	Campground Facility	<0.05
Rt01	Hotel	-

### 3.4 Noise Abatement Procedure Analysis

There are two primary noise abatement flight procedures in place at Patrick SFB. These procedures apply to fixed wing aircraft departures from Runways 03 and 21. These procedures require all fixed wing departures to fly runway heading until they reach 2.5 DME before making a left turn. This turn is to the west when departing Runway 03 and to the east when departing Runway 21.

Since any changes to the noise abatement flight procedures will occur outside the 65 dB DNL contour, a specific point analysis was prepared for the existing flight tracks (IDs 03D2 and 21D1). These tracks were then replicated using a 1-mile DME turn instead of the 2.5-mile DME turn as required by the noise abatement procedure. These flight tracks are shown in **Figure 3-3**; the revised flight tracks have IDs of 03D2.2 and 21D1.2. **Table 3-5** provides the results of the specific point analysis for the existing noise abatement flight tracks and the representative tracks without the noise abatement requirement. As shown, the noise under the flight tracks would increase but would not reach levels over noise sensitive land uses resulting in noncompatible land uses.

With the noise abatement tracks outside of the 65 dB DNL contours, supplemental metrics were used to evaluate noise exposure relating to the potential for additional noise effects, specifically sleep disturbance and speech interference. The DNWG (2009) guidelines for the use of supplemental metrics were used to identify appropriate metrics and their thresholds. **Table 3-6** shows the relevant metrics and thresholds for this EA, based on DNWG guidelines.

**Table 3-7** provides the results of the speech interference analysis, and **Table 3-8** contains the results of the sleep disturbance analysis for the same six points along the existing and representative non-noise abatement flight tracks shown on **Figure 3-3**. Fewer than 0.05 daily speech-interfering events occur at any of the designated locations under any of the modeled noise abatement tracks. The sleep disturbance analysis indicates even fewer nightly events, with no point under either the existing track or the representative track experiencing more than 0.001 events per night.

Therefore, the removal of the mandatory noise abatement procedures would not result in non-compatible land use resulting from fixed wing aircraft operations at Patrick SFB.

**Table 3-5. Noise Abatement Procedure Specific Point Analysis (dB DNL)**

Track ID	Point ID	Point ID	Point ID
	<b>03P1</b>	<b>03P2</b>	<b>03P3</b>
03D2	38.3	34.7	32.3
	<b>03P4</b>	<b>03P5</b>	<b>03P6</b>
03D2.2	54.6	37.0	35.8
	<b>21P1</b>	<b>21P2</b>	<b>21P3</b>
21D1	46.7	38.5	35.0
	<b>21P4</b>	<b>21P5</b>	<b>21P6</b>
21D1.2	50.0	50.0	45.1

**Table 3-6. Guideline Values (Outdoor Values)**

Application	Metric	Unit	Time Period	Recommended Outdoor Thresholds for Reporting Purposes
Speech Interference	NA	Number of Events	15-hr day (DNL daytime)	75 dB L <sub>max</sub>
Sleep Disturbance	NA	Number of Events	9-hr night (DNL nighttime)	90 dB SEL

**Table 3-7. Noise Abatement Procedure Outdoor Speech Interference Analysis Number of Events above 75 dB L<sub>max</sub> (15 Hour Day)**

Point ID	Baseline	Proposed
03P1	0.047	0.008
03P2	0.008	0.008
03P3	0.008	0.008
03P4	0.016	0.047
03P5	0.008	0.008
03P6	0.000	0.008
21P1	0.047	0.019
21P2	0.008	0.008
21P3	0.008	0.008
21P4	0.016	0.047
21P5	0.008	0.047
21P6	0.000	0.047

**Table 3-8. Noise Abatement Procedure Sleep Disturbance Analysis Number of Events Above 90dB SEL (9 Hour Night)**

Point ID	Baseline	Proposed
03P1	0	0
03P2	0	0
03P3	0	0
03P4	0	0.001
03P5	0	0.001
03P6	0	0
21P1	0.001	0
21P2	0	0
21P3	0	0.001
21P4	0	0.001
21P5	0	0
21P6	0	0

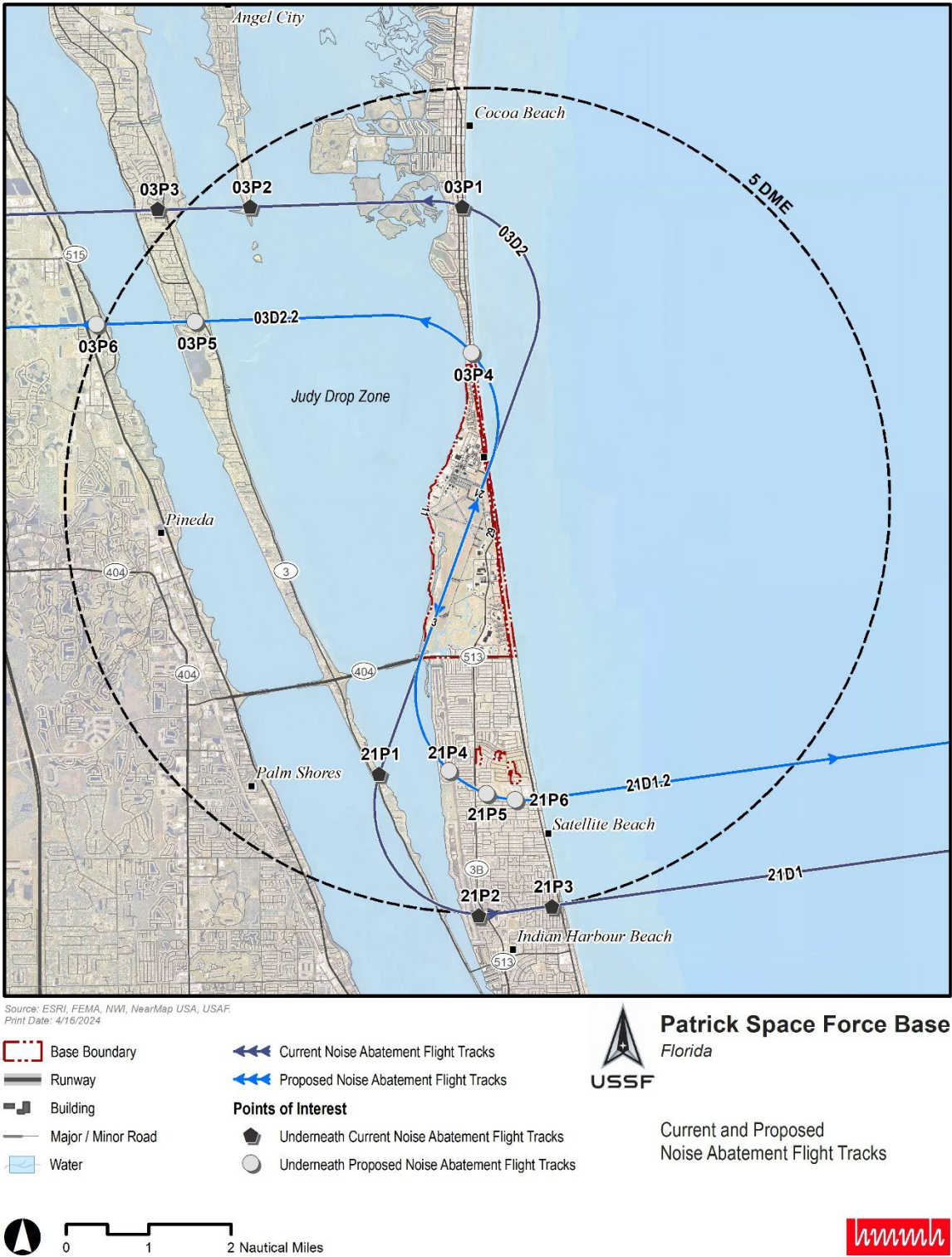


Figure 3-3. Noise Abatement Specific Point Analysis

## 4 References

- Czech, J. J. & Plotkin, K. J. (1998). *Wyle Research Report, NMAP 7.0 User's Manual* (WR 98-13). Wyle Laboratories.
- Department of Defense (DoD) Noise Working Group. 2009. Technical bulletin, "Using Supplemental Noise Metrics and Analysis Tools." November.
- Department of Defense (DoD). 2011. Department of Defense Instruction 4165.57: DoD Air Installations Compatible Use Zones (AICUZ). May 2.
- Department of Defense (DoD) Noise Working Group. 2013. Technical bulletin, "Noise – Induced Hearing Impairment." December.
- Department of Defense (DoD). 2020. Department of Defense Instruction 4715.13: DoD Operational Noise Program. January 28.
- Lee, Robert A., and Henry T. Mohlman. 1990. *Air Force Procedure for Predicting Aircraft Noise Around Airbases: Airbase Operations Program (BaseOps) Description*, Report No. AAMRL-TR-90-012. Wright-Patterson Air Force Base, Ohio: U.S. Air Force.
- National Center for Environmental Information's Integrated Surface Database.  
<https://www.ncei.noaa.gov/products/land-based-station/integrated-surface-database>
- Page, J. A., Rapoza, A., Oberg, A., Hastings, A., Baker, G., & Shumway, M. (2020). *Advanced Acoustic Model (AAA) Technical Reference and User's Guide*. U.S. Department of Transportation.
- Patrick Air Force Base (PAFB), 2018. *Noise Modeling Operational Data Documentation*. July.
- US Air Force (USAF) 2015. *Air Force Instruction AFI 32-7063: Air Installations Compatible Use Zones (AICUZ) Program*, December 15.
- US Air Force (USAF) 2017. *Air Force Handbook AFI 32-7063: AICUZ Program Manager's Guide*. November 2.

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## Appendix A. Flight Tracks

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## Appendix B. Flight Profiles

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