Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex, WA

Volume 1: Main Body of the EIS

September 2018

Prepared for:

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Prepared by:

United States Department of the Navy

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Abstract

Designation:	Environmental Impact Statement
Title of Proposed Action:	Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex
Project Location:	Naval Air Station Whidbey Island, Washington
Lead Agency for the EIS:	Department of the Navy
Affected Region:	Island County Region, Washington
Action Proponent:	United States Fleet Forces, Department of the Navy
Point of Contact:	Naval Facilities Engineering Command Atlantic Attn: Code EV21/SS 6506 Hampton Boulevard Norfolk, VA 23508
Date:	September 2018

The Department of the Navy has prepared this Environmental Impact Statement in accordance with the National Environmental Policy Act, as implemented by the Council on Environmental Quality regulations and Navy regulations for implementing the National Environmental Policy Act. The Proposed Action would:

- continue and expand existing Growler operations at the Naval Air Station Whidbey Island complex, which includes field carrier landing practice by Growler aircraft that occurs at Ault Field and Outlying Landing Field Coupeville
- increase electronic attack capabilities by adding 35 or 36 aircraft to support an expanded U.S. Department of Defense mission for identifying, tracking, and targeting in a complex electronic warfare environment
- construct and renovate facilities at Ault Field to accommodate additional Growler aircraft
- station additional personnel and their family members at the Naval Air Station Whidbey Island complex and in the surrounding community

In addition, the Navy will continue all flight operations of other aircraft at the Naval Air Station Whidbey Island complex. This Environmental Impact Statement evaluates the potential environmental impacts associated with a No Action Alternative (per Council on Environmental Quality regulations) and three action alternatives. The three alternatives consider options for increasing the number of additional Growler aircraft, as appropriated by Congress, at the Naval Air Station Whidbey Island complex. Each alternative contains further analysis of five operational scenarios that involve different distributions of annual field carrier landing practice airfield operations between Ault Field and Outlying Landing Field Coupeville. Each alternative evaluates the effects resulting from each of these five operational scenarios. The Environmental Impact Statement evaluates the potential environmental impacts associated with the following resource areas: airspace, noise, safety, air quality, land use, cultural resources, American Indian traditional resources, biological resources, water resources, socioeconomics, environmental justice, transportation, infrastructure, geological resources, hazardous materials and wastes, climate change and greenhouse gases, as well as the cumulative impacts of the Proposed Action and other local projects.

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EXECUTIVE SUMMARY

Proposed Action

Beginning as early as 2018, the United States (U.S.) Department of the Navy (Navy), as the lead agency, proposes to:

- continue and expand existing Growler operations at the Naval Air Station (NAS) Whidbey Island complex, which includes field carrier landing practice (FCLP) by Growler aircraft that occurs at Ault Field and Outlying Landing Field (OLF) Coupeville
- increase electronic attack capabilities by adding 35 or 36 aircraft to support an expanded U.S. Department of Defense mission for identifying, tracking, and targeting in a complex electronic warfare environment
- construct and renovate facilities at Ault Field to accommodate additional Growler aircraft
- station additional personnel and their family members at the NAS Whidbey Island complex and in the surrounding community

In addition, the Navy would continue all flight operations of other aircraft at the NAS Whidbey Island complex.

The NAS Whidbey Island complex is located in Island County, Washington, on Whidbey Island, in the northern Puget Sound region. The main air station (Ault Field) is located in the north-central part of the island, adjacent to the City of Oak Harbor. OLF Coupeville is located approximately 10 miles south of Ault Field and is dedicated primarily to FCLP. The NAS Whidbey Island complex includes two additional areas, the Seaplane Base and Lake Hancock. The Seaplane Base is included in this analysis because it contains housing and support facilities that would be used by personnel and their dependents. Section 2.3.2 provides a description of the squadrons and aircraft under consideration for the Proposed Action. The Proposed Action would not impact resources at Lake Hancock; therefore, Lake Hancock will not be discussed further in this analysis.

Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to augment the Navy's existing Electronic Attack community at NAS Whidbey Island by operating additional Growler aircraft as appropriated by Congress. The Navy needs to effectively and efficiently increase electronic attack capabilities in order to counter increasingly sophisticated threats and provide more aircraft per squadron in order to give operational commanders more flexibility in addressing future threats and missions. The need for the Proposed Action is to maintain and expand Growler operational readiness to support national defense requirements under Title 10, United States Code, Section 5062.

Alternatives Considered

In developing the proposed range of alternatives that meet the purpose of and need for the Proposed Action, the Navy reviewed requirements for Growler squadrons and unit-level squadron training in light of Title 10 responsibilities, existing training requirements and regulations, existing Navy infrastructure, and Chief of Naval Operations guidance to support operating naval forces. Operational factors, including incorporation of Precision Landing Mode and a reduced number of pilots, have been factored into the analysis and reduce FCLP requirements at the NAS Whidbey Island complex when compared to projections in

the Draft Environmental Impact Statement (EIS) (see Section 1.13 for more details). The Navy also reviewed comments received through the public commenting process. Considerations included:

- the NAS Whidbey Island complex is home to the Navy's Electronic Attack mission, including the training squadron, all U.S.-based squadrons, and substantial infrastructure and training ranges that have been established during the past 45-plus years
- location of suitable airfields that provide for the most realistic training environment
- distance aircraft would have to travel to accomplish training
- expense of duplicating capabilities that already exist at the NAS Whidbey Island complex
- operational readiness and synergy of the small Growler community
- access to training ranges, Special Use Airspace, and military training routes
- effective use of existing infrastructure
- management of aircraft inventories, simulators, maintenance equipment, and logistical support
- effective use of personnel to improve operational responsiveness and readiness
- existing land use and public health and safety concerns

Based on the considerations mentioned above, the Navy is analyzing three alternatives, each of which has five operational scenarios that meet the purpose and need for the Proposed Action, as well as a No Action Alternative, per Council on Environmental Quality regulations. The alternatives consist of force structure and operational changes to support an expanded Department of Defense capacity and include variations of the following factors:

- total number of operational aircraft to be flown
- number of aircraft assigned per squadron
- number of expeditionary squadrons
- number of personnel
- distribution of Growler FCLP operations at Ault Field and OLF Coupeville

Alternatives considered but not carried forward for detailed analysis in this EIS because they did not meet the purpose of and need for the project are described in detail in Section 2.4 (Alternatives Considered but Not Carried Forward for Further Analysis).

Preferred Alternative

The Navy did not identify a Preferred Alternative prior to publication of the Draft EIS in November 2016 because it was evaluating operational and environmental considerations necessary to make that determination. The Navy announced the Preferred Alternative on June 25, 2018, prior to release of the Final EIS, in order to provide timely information to the public once the Preferred Alternative had been identified. Alternative 2, adding 36 Growler aircraft to the NAS Whidbey Island complex, has been identified as the Preferred Alternative. This alternative best meets operational demands by both establishing two new expeditionary squadrons and adding two aircraft to each squadron that operates off aircraft carriers. Further, Scenario A has been identified as the preferred scenario under Alternative 2 for FCLP distribution because it results in the least disruption of other operations at Ault Field, provides the best training for Navy pilots, and impacts the fewest number of residents living in the community. No final decision has yet been made. The ultimate decision with respect to force structure and FCLP

distribution will be made by the Secretary of the Navy or his representative and announced in a Record of Decision no earlier than 30 days following the public release of the Final EIS. For more details on the Preferred Alternative, see Section 2.4.

No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur; this means the Navy would not operate additional Growler aircraft and would not add additional personnel at Ault Field, and no construction associated with the Proposed Action would occur. The No Action Alternative would not meet the purpose of or need for the Proposed Action; however, the conditions associated with the No Action Alternative serve as reference points for describing and quantifying the potential impacts associated with the proposed alternatives. For this EIS, the Navy is using the year 2021 as representative of the No Action Alternative because it represents the conditions when projected events at Ault Field affecting aircraft loading, facility and infrastructure assets, personnel levels, and number of aircraft are expected to be fully implemented and complete from previous aircraft home basing, retirement, and other related decisions. Therefore, with these other actions complete, the analysis clearly reflects the impacts of this Proposed Action of adding additional Growler aircraft and personnel and associated construction.

Alternative 1

Alternative 1 would expand carrier capabilities by adding three additional aircraft and additional squadron personnel to each of the existing nine carrier squadrons and augmenting the Fleet Replacement Squadron (FRS) with eight additional aircraft and additional squadron personnel (a net increase of 35 aircraft). Alternative 1 would add 335 Navy personnel and 459 dependents to the region.

Alternative 2

Alternative 2 would expand expeditionary and carrier capabilities by establishing two new expeditionary squadrons, adding two additional aircraft and additional squadron personnel to each of the nine existing carrier squadrons, and augmenting the FRS with eight additional aircraft and additional squadron personnel (a net increase of 36 aircraft). Alternative 2 would add 628 Navy personnel and 860 dependents to the region.

Alternative 3

Alternative 3 would expand expeditionary and carrier capabilities by adding three additional aircraft and additional squadron personnel to each of the three existing expeditionary squadrons, adding two additional aircraft and additional squadron personnel to each of the nine existing carrier squadrons, and augmenting the FRS with nine additional aircraft and additional squadron personnel (a net increase of 36 aircraft). Alternative 3 would add 341 Navy personnel and 467 dependents to the region.

In order to determine how the distribution of Growler FCLP operations may affect noise impacts at OLF Coupeville and Ault Field, this EIS evaluates the following five sub-alternatives, which are operational scenarios (analyzing varying distribution of Growler FCLP operations between Ault Field and OLF Coupeville) for each alternative listed above. The percentages depicted are used for general description

of the scenarios. The proposed level of activity for each alternative and associated scenario is quantified in Table 2.3-2.

Scenario A

Twenty percent of all FCLPs would be conducted at Ault Field, and 80 percent of all FCLPs would be conducted at OLF Coupeville.

Scenario B

Fifty percent of all FCLPs would be conducted at Ault Field, and 50 percent of all FCLPs would be conducted at OLF Coupeville.

Scenario C

Eighty percent of all FCLPs would be conducted at Ault Field, and 20 percent of all FCLPs would be conducted at OLF Coupeville.

Scenario D

Thirty percent of all FCLPs would be conducted at Ault Field, and 70 percent of all FCLPs would be conducted at OLF Coupeville.

Scenario E

Seventy percent of all FCLPs would be conducted at Ault Field, and 30 percent of all FCLPs would be conducted at OLF Coupeville.

The above five scenarios (A, B, C, D, and E), in combination with the alternatives, provide a total of 15 alternatives that are fully evaluated in this EIS analysis. The Secretary of the Navy's office will be able to select a final alternative/scenario combination from the range of 15 analyzed in this EIS.

Scenarios are based on the distribution of Growler FCLP between Ault Field and OLF Coupeville. The FCLP percentages for each scenario that are expressed in this analysis are intended to analyze levels of total aircraft operations. FCLPs are not expected to exceed those analyzed in this document. The percentages are not intended to provide a firm division of FCLPs between airfields. The percentages are used for general description of the scenarios; the distribution of FCLPs will be based on the level of activity presented in Table 2.3-2. From a purely operational perspective, the Navy would prefer to use OLF Coupeville for all FCLPs because it more closely replicates the pattern and conditions at sea and therefore provides superior training. However, because the Navy recognizes that noise impacts to the community are an unavoidable adverse effect of the Proposed Action, this EIS analyzes five operational scenarios at the expense of ideal training.

Summary of Environmental Resources Evaluated in the EIS

The National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Navy regulations for implementing NEPA specify that an EIS should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. This EIS assesses the potential environmental effects of continuing and expanding the existing Growler operations at the NAS Whidbey Island complex, and it analyzes aircraft operations conducted in the vicinity of Ault Field and OLF Coupeville, including the effects of additional military personnel and their families who would move to the area. The following topics are evaluated in this EIS:

- Airspace and Airfield Operations
- Noise Associated with Aircraft Operations (Noise)
- Public Health and Safety
- Air Quality
- Land Use
- Cultural Resources
- American Indian Traditional Resources
- Biological Resources
- Water Resources
- Socioeconomics
- Environmental Justice
- Transportation
- Infrastructure
- Geological Resources
- Hazardous Materials and Wastes
- Climate Change and Greenhouse Gases

Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions

Airspace and Airfield Operations. Alternative 1 proposes a net increase of 35 Growler aircraft, while Alternatives 2 and 3 propose a net increase of 36 Growler aircraft. Annual airfield operations at the NAS Whidbey Island complex would increase up to 33 percent (depending on alternative and scenario selected) over the No Action Alternative to support the addition of 35 or 36 new aircraft assigned to Ault Field. The total annual airfield operations at the NAS Whidbey Island complex would range from an increase of approximately 24,500 (Alternative 3, Scenario C) to 27,900 (Alternative 1, Scenario A). The total annual airfield operations at Ault Field would range from an increase of 9,100 (Alternative 1, Scenario A) to 25,000 (Alternatives 1 and 2, Scenario C). The total annual airfield operations at OLF Coupeville would range from a decrease of 200 (Alternatives 2 and 3, Scenario C) to an increase of 18,800 (Alternative 1, Scenario A). Airfield operations may include aircraft arrival and departure, interfacility flights, and closed-loop flights (such as FCLP). These operational levels would be similar to historic flight operations experienced in the 1970s, 1980s, and 1990s for the NAS Whidbey Island complex, as indicated in Section 1.4. Ault Field and OLF Coupeville meet all the operational requirements and have sufficient capacity under routine operating conditions to support the airfield operations of the additional Growler aircraft proposed under each alternative and scenario. Airfield operations at Ault Field would experience scheduling difficulty under Scenario C and Scenario E of all three of the alternatives because approximately 80 percent and 70 percent of FCLPs would be conducted at Ault Field under those scenarios, respectively. When more FCLPs are flown at Ault Field, other flights and aircraft training operations occurring at Ault Field are restricted or delayed. This would cause more people off base to be affected because training is extended later into the night, and more aircraft are held in larger or extended flight patterns while FCLP is conducted. For more information on airspace and airfield operations, see Sections 3.1 and 4.1.

Noise Associated with Aircraft Operations. The U.S. Department of Defense recommends land use controls beginning at the 65 decibel (dB) day-night average sound level (DNL). This level has been identified in both the Federal Aviation Administration's Part 150 Program and the Department of Defense's Air Installations Compatible Use Zones (AICUZ) Program (including the individual Air Force and Navy programs) as a threshold for land use recommendations. Research has indicated that about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (FICUN [Federal Interagency Committee on Urban Noise], 1980). Most people are exposed to sound levels of 50 to 55 dB DNL or higher on a daily basis. Therefore, the 65 dB DNL contour is used to help determine compatibility of local land use with military aircraft operations, particularly for land use associated with airfields. There would be new areas that would be located within the 65 dB DNL noise contour that are not currently within the 65 dB DNL noise contour generated by Navy aircraft operations under all alternatives and scenarios. Although some of these areas are over water, others are over land and would therefore result in additional people living within the 65 dB DNL noise contour.

The number of additional people who are estimated to be within the 65 dB DNL noise contour ranges from a high of 1,879 (Alternative 1, Scenario E) to a low of 1,312 (Alternative 3, Scenario A) for the entire NAS Whidbey Island complex. When examining community impacts by individual airfield, Ault Field would have the largest increase of individuals within the 65 dB DNL noise contour under Scenario C, up to 1,312 people (Alternative 1, Scenario C), while the lowest increase would be 109 individuals under Alternative 3, Scenario A . For OLF Coupeville, the largest increase of individuals within the 65 dB DNL noise contour would be under Scenario A, with up to 1,236 people (Alternative 1, Scenario A), while the lowest increase would be 489 individuals under Alternative 2, Scenario C. Therefore, the Proposed Action would have a significant impact on the noise environment as it relates to aircraft operations at the NAS Whidbey Island complex.

Additionally, supplemental metrics were used to identify potential impacts from noise exposure that could be realized under the alternatives. These include additional events of indoor and outdoor speech interference, an increase in the number of events causing classroom/learning interference, an increase in the probability of awakening, and an increase in the population that may be vulnerable to a potential hearing loss of 5 dB or more.

It is NAS Whidbey Island Commanding Officer's policy to conduct required training and operational flights with as minimal impact as possible, including noise, on surrounding communities. All aircrews using NAS Whidbey Island are responsible for the safe conduct of their mission while complying with published course rules, established noise-abatement procedures, and good common sense. Each aircrew must be familiar with the noise profiles of its aircraft and is expected to minimize noise impacts without compromising operational and safety requirements. Specific noise-abatement procedures and policy are outlined in Sections 3.2 and 4.2, and Appendix H, with procedures listed in NAS Whidbey Island's Air Operations Manual. The NAS Whidbey Island Air Operations Manual is periodically reviewed and updated as necessary to reflect changes to procedures and operations. For more information on noise from aircraft operations, see Sections 3.2 and 4.2.

Public Health and Safety. Increased operations increase the potential for flight incidents and bird-animal aircraft strike hazard, but existing management strategies would manage risk. Scenarios with high numbers of operations at OLF Coupeville may require the development of Accident Potential Zones (APZs) through the AICUZ update process, including Alternative 1, Scenario A; Alternative 1, Scenario B; Alternative 1, Scenario D; Alternative 2, Scenario A; Alternative 2, Scenario B; Alternative 2, Scenario D;

Alternative 3, Scenario A; Alternative 3, Scenario B; and Alternative 3, Scenario D. Conceptual APZs are presented for the purpose of analyzing potential land use impacts of the Proposed Action (see Section 4.3.2.3). At this time, no decision has been made with regard to additional APZs. The Navy will perform an AICUZ Update upon completion of this EIS and share official recommendations with the community.

Under Executive Order 13045, Environmental Health Risks and Safety Risks to Children, the Navy identifies that there would be an increase in the number of children (19 years of age and younger) within the noise contours under all alternatives and scenarios; the increase in the number of children likely to be affected by the greater than 65 dB DNL contours would range from a low of 230 children under Alternative 3, Scenario A, to a high of 440 children under Alternative 1, Scenario C, under the average year. Based on the limited scientific literature available, there is no proven positive correlation between noise-related events and physiological changes in children. Additionally, the aircraft noise associated with the alternatives is intermittent; therefore, the Navy does not anticipate any significant, disproportionate health impacts to children caused by aircraft noise. Unless there is a place where children congregate within an APZ, such as a school, there is not a disproportionate safety risk to children residing in that APZ. There are no schools located within the existing or conceptual APZs at Ault Field and OLF Coupeville under any of the alternatives or scenarios; therefore, there is no disproportionate environmental health and safety risk to children as a result of possible aircraft mishaps. For more information on public health and safety, see Sections 3.3 and 4.3.

Air Quality. Potential impacts to air quality from implementation of the Proposed Action when compared to the No Action Alternative would be similar between all three action alternatives and five scenarios but greatest under Alternative 2, Scenario A. For air emissions, the difference in aircraft emissions between the scenarios within each alternative is more distinctive than the differences in aircraft emissions between the alternatives. For all three alternatives, Scenario A, the option to conduct 80 percent of FCLPs at OLF Coupeville and 20 percent of FCLPs at Ault Field, would result in the greatest increase in emissions.

Construction impacts would be minor and temporary, and would not result in significant impacts on air quality. Operations would result in an increase in stationary and mobile emissions sources. Increased stationary sources would be covered under the existing NAS Whidbey Island air operating permit and would have no significant impact. Changes in mobile emissions are not subject to permit requirements or emission thresholds; however, these emissions contribute to regional emission totals and may affect compliance with National Ambient Air Quality Standards. The region is currently in attainment for all National Ambient Air Quality Standards, and the Northwest Clean Air Agency continues to monitor ambient air emission levels to confirm continued compliance. For more information on air quality, see Sections 3.4 and 4.4.

Land Use. Each of the alternatives would result in an increase in the land area within the projected greater than 65 dB DNL noise contours (range of 9 percent to 18 percent). There would be an increase in residential land use within the greater than 65 dB DNL noise contour as compared to the No Action Alternative, ranging from an increase of 5 percent to 11 percent at Ault Field to an increase of 22 to 51 percent at OLF Coupeville.

Under all alternatives and scenarios, the Proposed Action would have no impact to on-station land use, on-station land use controls, or regional land use, but it would have an impact on regional land use controls. Land within the conceptual APZs at OLF Coupeville would increase under Scenarios A, B, and D of each alternative. Conceptual APZs at OLF Coupeville would impact 503 acres of residential land under

Scenarios A, B, and D under all three alternatives, if adopted by the local municipality with authority regarding land use controls. If warranted and depending upon the alternative and scenario selected, the APZs could be updated by completing an AICUZ Update and coordinating with local communities to provide appropriate new land use recommendations as necessary, which could impact regional land-use controls.

Implementation of the Proposed Action would result in moderate impacts on wilderness recreation and management at Williamson Rocks, an uninhabited rock formation closed to the public that is included in the San Juan Island Wilderness, part of the San Juan Island National Wildlife Refuge. Williamson Rocks is in proximity to a busy marina and Rosario Strait, which is a U.S. Coast Guard Regulated Navigation Area due to the amount of vessel traffic through this passage. Implementation of the Proposed Action would increase average annual noise levels at Williamson Rocks under all alternatives and would result in reduced opportunities for visitors by boat to experience natural soundscapes associated with the rocks and surrounding waters. The Proposed Action also may impact the U.S. Fish and Wildlife Service's ability to manage Williamson Rocks to protect wilderness values. Although visitors are currently exposed to noise from existing aircraft operations, the proposed increase in Growler operations would increase the occurrence of intrusive noise at and near this area, which would result in fewer or limited opportunities for visitors to experience solitude and primitive recreational activities and would likely negatively affect visitors' perceptions of these areas as retaining their primeval, natural character. Impacts to visitor experience and wilderness character would be intermittent over the long term, occurring only when aircraft are operating in the area.

Overall, implementation of the Proposed Action at NAS Whidbey Island would result in localized significant impacts to recreation as a result of increased noise exposure at Ebey's Landing National Historical Reserve, various county and municipal parks and recreational areas, and private recreational facilities under some alternatives and scenarios when aircraft are operating in the area. Impacts on other parks and recreational areas would predominantly be long term and minor or moderate at individual locations as a result of varying degrees of increased noise exposure. Depending on the location of the park, different scenarios may result in few to no noise impacts as a result of the number of Growler operations occurring at either Ault Field or OLF Coupeville. Noise impacts would be intermittent over the long term, occurring only when aircraft are operating in the area. The Proposed Action may result in increased demand for parks and recreation areas as a result of personnel and their families moving into the region; however, impacts resulting from this increased demand would be minor.

Cultural Resources. Archaeological resources, architectural resources, cemeteries, and traditional cultural properties were evaluated with regard to direct and indirect effects under NEPA and Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA). Direct effects were considered within areas on the installation where cultural resources could be affected by ground disturbance, demolition, or alteration. Indirect effects were considered for on- and off-station[1] areas within the 65 dB DNL noise contours and within the Ebey's Landing National Historical Reserve. Indirect effects constitute those that result from construction (on station) at Ault Field or from aircraft operations (on and off station) occurring at both Ault Field and OLF Coupeville. They include effects from

[1] "On station" refers to those areas within Ault Field and OLF Coupeville. "Off station" refers to those resources located outside these areas and, for the cultural resources discussion, that also are within the area of potential effects.

the introduction of visual, atmospheric, and/or auditory (noise and vibration) elements that occur during construction or when aircraft are seen or heard flying in the vicinity of a resource.

As evaluated under NEPA, minimal to no direct or indirect impacts would result to known or intact archaeological resources during construction and operation. With regard to architectural resources, moderate to no direct and indirect impacts would occur. Direct impacts during construction would occur to and in proximity to Building 2737 (Hangar 12) and the taxiways, and for the demolition of Building 115; however, the hangar, taxiways, and Building 115 have been determined not eligible for listing in the National Register of Historic Places (NRHP). Indirect impacts, including visual, atmospheric, and/or auditory impacts, may be experienced in the immediate proximity of construction activities on Ault Field and in those areas on and off station within the 65 dB DNL noise contours and within Ebey's Landing National Historical Reserve during aircraft operations. Minimal indirect impacts are anticipated to occur with the operation of the additional Growler aircraft or from the new construction and expansion of facilities on station.

Minimal to moderate indirect impacts are anticipated to occur to off-station historic resources during aircraft operations. Under Scenario A (for all alternatives), resources that are closer to OLF Coupeville may experience a higher level of visual, atmospheric, and/or auditory impact and more frequent occurrences of aircraft appearances, noise, and vibration than those located elsewhere due to the increased FCLPs at OLF Coupeville for this scenario as compared to Scenarios B, C, D, and E. Under Scenario B, resources that are closer to both Ault Field and OLF Coupeville may experience a higher level of impact. Under Scenario C, resources that are closer to Ault Field (and not OLF Coupeville) may experience a higher level of impact and OLF Coupeville a lower level of impact. Under Scenario D, resources that are closer to OLF Coupeville (and not Ault Field) may experience a higher level of impact and Ault Field a lower level of impact. Under Scenario E, resources that are closer to Ault Field (and not OLF Coupeville) may experience a higher level of impact and OLF Coupeville a lower level of impact.

No known cemeteries or human burial grounds are located within Ault Field; therefore, no direct impacts would occur. Off-station cemeteries would be indirectly impacted in a manner similar to architectural resources. No known traditional cultural properties have been identified within the areas evaluated for this analysis; therefore, no impacts would occur to these cultural resources.

Under NEPA, no significant impacts would occur to cultural resources, including archaeological sites, architectural buildings and structures, cemeteries, and traditional cultural properties.

In accordance with Section 106 of the NHPA, the Navy has determined that the proposed undertaking will result in "Historic Properties Adversely Affected." The increased frequency of noise exposure results in adverse indirect effects to characteristics of the Central Whidbey Island Historic District that currently make it eligible for the NRHP. Although the effects are intermittent, the proposed undertaking would result in an increased occurrence of noise exposure affecting certain cultural landscape components in the historic district—specifically, the perceptual qualities of five locations that contribute to the significance of the landscapes. The Navy finds no other adverse effects to historic properties from the proposed undertaking. The Navy is consulting with the Washington State Historic Preservation Office, Advisory Council on Historic Preservation, tribes, and consulting parties regarding the development of a Memorandum of Agreement to mitigate adverse effects. A full list of consulting parties is provided in Section 3.6.2.6. For more information on cultural resources, see Sections 3.6 and 4.6.

American Indian Traditional Resources. The implementation of the Proposed Action at NAS Whidbey Island should not result in significant impacts to known American Indian traditional resources because there would be no change to current tribal access and no additional potential to impact known traditional resources in the study area. In accordance with executive orders and U.S. Department of Defense and Navy policies, the Navy invited government-to-government consultation with the following federally recognized tribes that could potentially be affected by the Proposed Action and evaluated whether such consultation was desired:

- Jamestown S'Klallam Tribe
- Lummi Tribe of the Lummi Reservation
- Samish Indian Nation
- Stillaguamish Tribe of Indians of Washington
- Suquamish Indian Tribe of the Port Madison Reservation
- Swinomish Indian Tribal Community
- Tulalip Tribes of Washington
- Upper Skagit Indian Tribe

The Swinomish Indian Tribal Community requested government-to-government consultation on the Proposed Action on December 13, 2016. The Navy responded to the Swinomish Indian Tribal Community via email on December 20, 2016, and via letter on December 21, 2016. Additional correspondence occurred in June of 2017. The Swinomish Indian Tribal Community subsequently withdrew its request on September 27, 2017. No other requests for government-to-government consultation were received. For more information on American Indian traditional resources, see Sections 3.7 and 4.7.

Biological Resources. Minimal habitat loss from construction activities would not significantly impact terrestrial wildlife because construction is within the urban/industrial area of the installation and has habitat of poor quality and would not impact marine habitat. Animals in the study area are already exposed to high levels of aircraft operations and other human disturbances, and the Proposed Action would result in some additional sensory disturbance impacts, particularly from noise. Wildlife inhabiting the study area throughout the year increase the risk of a strike, but with the continued implementation of a bird-animal aircraft strike hazard plan, the Proposed Action would not significantly impact local wildlife populations. For Endangered Species Act listed species, the Proposed Action may affect, but is not likely to adversely affect, the bull trout, green sturgeon, eulachon, Chinook salmon, Hood Canal summer-run chum, steelhead, bocaccio rockfish, yelloweye rockfish, Southern Resident killer whale, and humpback whale. The National Marine Fisheries Service concurred with the finding that the Proposed Action is not likely to adversely affect endangered or threatened marine mammals and fish, respectively, on July 20, 2017, and April 23, 2018. The U.S. Fish and Wildlife Service (USFWS) concluded in its June 14, 2018, Biological Opinion that the Proposed Action is not likely to jeopardize the continued existence of the marbled murrelet (*Brachyramphus marmoratus*) and may affect but is not likely to adversely affect the bull trout (*Salvelinus confluentus*). As required by the terms and conditions associated with the Incidental Take Statement, the Navy will submit an annual report to the USFWS describing Growler flight operations from the previous year. For Migratory Bird Treaty Act (MBTA)-protected species, U.S. Department of Defense installations are not exempt from "take"; however, under the MBTA regulations applicable to military readiness activities (50 CFR Part 21), the impacts of stressors from the Proposed Action would not result in a significant adverse effect on migratory bird populations. During

construction, there would be no adverse effects of the Proposed Action on Migratory Bird Treaty Act-protected species because birds would be largely avoided and any effects minimized such that they would not rise to the level of take. For more information on biological resources, see Sections 3.8 and 4.8. Pursuant to the Marine Mammal Protection Act, the Proposed Action would not result in the unintentional taking (e.g., harassment) of marine mammals incidental to the activity.

Water Resources. There would be no significant impacts on water resources from construction activities or operation of new aircraft. No construction would extend to a depth that may impact groundwater resources, and there would be a minimal increase in demand for groundwater. Although fuel or other chemicals could be spilled during construction, implementation of best management practices (BMPs), such as immediate cleanup of these spills, would prevent any infiltration into the underlying groundwater. There would be no direct impact on water quality because construction would not be occurring within resource areas. Potential indirect impacts on water quality due to 2 acres of new impervious surface at Ault Field (a 1-percent increase over existing conditions) would slightly increase stormwater flow. Impacts would be minimized and avoided through implementation of BMPs. For more information on water resources, see Sections 3.9 and 4.9.

Socioeconomics. The Proposed Action would have minor impacts on the local and regional population, ranging from a net increase of 794 people under Alternative 1 to 1,488 people under Alternative 2. Construction impacts would result in temporary and positive impacts to the local economy. There would be up to $122.5 million in direct construction expenditures, up to 839 projected short-term employment positions from construction activities, and an additional 335 (Alternative 1) to 628 (Alternative 2) personnel and their households in the region spending money. An additional $12.2 million (Alternative 1) to $21.4 million (Alternative 2) in payroll would also be injected into the regional economy from military members' salaries. The increase in local government tax receipts would range from $222,000 in Island County and $96,000 in Skagit County under Alternative 1 to $415,000 in Island County and $181,000 in Skagit County under Alternative 2. Between 335 (Alternative 1) and 628 (Alternative 2) households would relocate to the area. In 2017, a housing study completed for the NAS Whidbey Island complex found that there was a surplus of 54 acceptable family housing units in the area but a deficit of 914 unaccompanied personnel housing units. Under all three alternatives, the regional housing supply may not have sufficient vacancies to handle the influx of personnel (requiring 335 to 628 housing units), causing an impact on the housing market. Housing affordability would also be negatively affected. Under all three alternatives, local school districts, particularly the Oak Harbor School District, would experience an increase in enrollment. The projected increase in enrollment ranges from 121 students under Alternative 1 to 226 students under Alternative 2. The increased enrollment at the Oak Harbor School District would further exacerbate the existing overcrowding problem and have a significant adverse impact on the district. Minimal to no impact is expected on medical, police, and fire services under all three alternatives. For more information on socioeconomics, see Sections 3.10 and 4.10.

Environmental Justice. Under all alternatives and scenarios, there are minority populations and low-income populations living within the affected environment. The Navy has concluded that there are environmental justice communities within the affected area and there are significant impacts outlined within the EIS to populations living within the affected area (noise impacts to those living within the 65 dB DNL noise contours and overcrowding at Oak Harbor School District schools). However, the Navy has determined that there will be no disproportionate high and adverse human health or environmental effects from noise, Clear Zones/Accident Potential Zones, or school overcrowding on minority populations or low-income populations. The Navy has, however, concluded that impacts on housing

availability and housing affordability could have the potential to have a disproportionately high and adverse impact on low-income communities. The Navy further acknowledges that the increase in the cost of housing and the decrease in available properties may have a negative impact on low-income residents, who typically spend a larger proportion of their income on housing than the general population. For more information on environmental justice, see Sections 3.11 and 4.11.

Transportation. Construction impacts would result in increased traffic on and off the installation, but roadways would be able to handle the increase. An increase in personnel and dependents would result in an increase in traffic on local roads. New trips per weekday would be lowest under Alternative 1 and highest under Alternative 2, regardless of the scenario selected. Under Alternative 1, there would be an estimated 122 to 2,051 new trips per weekday on major roadways off base, and under Alternative 2, there would be an estimated 229 to 3,845 new trips per weekday on major roadways off base. Traffic would be spread throughout roads in Island and Skagit Counties, and, although there would be some degradation of service, it would not be expected to result in level of service falling below established level of service standards. An area of concern at the intersection of State Route 20 and Banta Road would see an increase of between 238 daily trips under Alternative 1 and 445 daily trips under Alternative 2; however, the Washington State Department of Transportation will implement intersection improvements by 2019. An increase in gate traffic of approximately 3 percent to 6 percent over No Action Alternative traffic volumes entering and exiting the installation may result in queuing of vehicles, but this would be limited to peak hours. No significant increase in use of transit, pedestrian, and bicycle facilities would occur because the majority of new traffic would be car based. For more information on transportation, see Sections 3.12 and 4.12.

Infrastructure. Increased consumption or demand would occur for water, wastewater, stormwater, solid waste management, energy, and communications systems from the increase in population that would be spread throughout Island and Skagit Counties. Existing and future capacity is expected to handle the increases in demand; therefore, no significant impacts are expected. Increased consumption or demand is lowest under Alternative 1 (335 additional households in the region) and highest under Alternative 2 (628 additional households in the region) for all types of infrastructure analyzed. New facilities under each alternative would also result in increased demand for infrastructure resources on station. For more information on infrastructure, see Sections 3.13 and 4.13.

Geological Resources. Construction would not include clearing or blasting of earth or rock, and only minor grading activities would occur; therefore, no significant impacts on geologic resources would occur. There would be no impact on resistance to seismic events because all buildings constructed under the Proposed Action would be designed to conform to the seismic provisions of the Washington State Building Code, and a Spill Prevention, Control, and Countermeasure plan would be in place during construction. Impacts to soils during construction could include compaction and rutting from vehicle traffic and an increase in erosion, but impacts would be minimized through the use of BMPs. No significant impacts would occur. BMPs would be implemented to further reduce or eliminate any potential impacts. For more information on geological resources, see Sections 3.14 and 4.14.

Hazardous Waste and Materials. No significant impacts related to hazardous waste and materials would occur due to construction activities or from the addition and operation of additional Growler aircraft. Hazardous materials and wastes would increase in quantity but would be managed under existing law and Navy regulation and management practices. Impacts under Alternatives 2 and 3 would be negligibly higher (36 aircraft) than under Alternative 1 (35 aircraft). The existing practices and strategies would

successfully manage the use and disposal of these materials. No proposed construction activities would occur within or in proximity to any Defense Environmental Restoration Program sites; therefore ongoing remedial programs would not be impacted. For more information on hazardous waste and materials, see Sections 3.15 and 4.15.

Climate Change and Greenhouse Gases. Climate change will continue to occur, resulting in global impacts affecting Whidbey Island and Puget Sound and the Navy's priorities and mission. Federal, state, and local agencies, including the U.S. Department of Defense, will continue to assess impacts and define adaptation and mitigation strategies to address them.

The increase in greenhouse gas (GHG) emissions from the Proposed Action equates to less than 1 percent of all aircraft GHG emissions in Washington. Therefore, the GHG emissions from the Proposed Action should not have a significant impact on Washington's GHG emission goals. Stationary GHG emissions would increase by 4 percent under the alternatives when compared to the No Action Alternative. Mobile GHG emissions would increase by between 25 percent (Scenario C under Alternatives 1 and 3) and 40 percent (Scenario A under all three alternatives) under the alternatives when compared to the No Action Alternative. For more information on climate change and GHGs, see Sections 3.16 and 4.16.

Summary of Potential Impacts by Resource Area

Table 4.17-1 (Summary of Potential Impacts to Resource Areas) provides a tabular summary of the potential impacts to the resources associated with each of the alternatives analyzed. This EIS does not identify any new mitigation measures considering the degree of environmental impacts for the implementation of alternatives but does identify measures that could be taken to develop suggested mitigation techniques, including, but not limited to, stormwater retention practices. During the NEPA process, through comments received during public and regulatory agency review of the EIS, there is the potential to identify and develop new mitigation measures. Appendix H (Noise Mitigation) provides an overview of existing, voluntary noise-mitigation measures that are in place at the NAS Whidbey Island complex. Appendix H also describes potential noise-mitigation measures that are being evaluated for potential future implementation as the Navy takes a proactive approach to noise mitigation and addressing community concerns. Under the Section 106 process, further consultation and development of a Memorandum of Agreement to address adverse effects on historic resources is ongoing. The Navy is consulting with the Washington State Historic Preservation Office, the Advisory Council on Historic Preservation, tribes, and consulting parties regarding the Memorandum of Agreement. If additional mitigation measures are identified during this process, they would be identified in the Record of Decision. These measures would be funded, and efforts to ensure their successful completion or implementation would be treated as compliance requirements.

Public Involvement

The Navy solicited public, tribal, and state and federal agency comments during two scoping periods and during the Draft EIS review period:

Public Scoping Comment Periods:

1. September 5, 2013, to January 3, 2014, and reopened from January 13 to January 31, 2014
2. October 8, 2014, through January 9, 2015

Public Scoping meetings were held on:

- December 3, 2013, in Coupeville, Washington
- December 4, 2013, in Oak Harbor, Washington
- December 5, 2013, in Anacortes, Washington
- October 28, 2014, in Coupeville, Washington
- October 29, 2014, in Oak Harbor, Washington
- October 30, 2014, in Anacortes, Washington
- December 3, 2014, on Lopez Island, Washington
- December 4, 2014, in Port Townsend, Washington

Draft EIS Review Comment Period:

1. November 10, 2016, to February 24, 2017

Public open house meetings for the Draft EIS were held on:

- December 5, 2016, in Port Townsend, Washington
- December 6, 2016, in Oak Harbor, Washington
- December 7, 2016, on Lopez Island, Washington
- December 8, 2016, in Anacortes, Washington
- December 9, 2016, in Coupeville, Washington

Comments received during the two scoping periods were considered in preparing the Draft EIS. Comments received during the Draft EIS review period were considered in preparing the Final EIS. Specifically, the Navy solicited comments from elected officials, agencies, tribes, and the general public to determine the scope and refine the analysis for this EIS.

Noise and Health Reader's Guide

This guide is intended to assist readers in locating information within the Environmental Impact Statement (EIS) related to potential health effects of noise. This list is organized by topic and includes where to find information on the latest science related to noise and health, standards the Navy uses to assess potential impacts, and potential impacts of the Proposed Action.

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vi. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Sections A.1.2 and A.1.3 ..... A1-16, A1-21
vii. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo Scenarios A7-1

4. Speech Interference (Indoor)

a. General discussion of the science and standards used to assess annoyance and, specifically, speech interference, can be found in the following EIS sections:
   i. 3.2.3.1 Annoyance 3-20
   ii. 3.2.3.2 Speech Interference (Indoor) 3-20
   iii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.2 ..... A1-28

b. Discussion of the existing environment and potential impacts of the Proposed Action can be found in the following sections:
   i. 3.2.4.3.2 Speech Interference (Indoor) (No Action Alternative) 3-44
   ii. 4.2.2.2.2 Speech Interference (Indoor), Alternative 1 4-55
   iii. 4.2.3.2.2 Speech Interference (Indoor), Alternative 2 4-101
   iv. 4.2.4.2.2 Speech Interference (Indoor), Alternative 3 4-145
   v. Appendix A - Aircraft Noise Study, Section 5.4.4, 6.4.4, 7.4.4, and 8.4.4 ..... A-67, A-112, A-161, A-211
   vi. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo Scenarios A7-1

5. Classroom/Learning Interference

a. General discussion of the science and standards used to assess classroom/learning interference can be found in the following EIS sections:
   i. 3.2.3.3 Classroom/Learning Interference 3-20
   ii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.7.1 ..... A1-50
   iii. Appendix I - Community Health and Learning I-1

b. Discussion of the existing environment and potential impacts of the Proposed Action can be found in the following sections:
   i. 3.2.4.3.3 Classroom/Learning Interference (No Action Alternative) 3-46
   ii. 4.2.2.2.3 Classroom/Learning Interference, Alternative 1 4-59
   iii. 4.2.3.2.3 Classroom/Learning Interference, Alternative 2 4-105
   iv. 4.2.4.2.3 Classroom/Learning Interference, Alternative 3 4-149
   v. Appendix A - Aircraft Noise Study, Section 5.4.5, 6.4.5, 7.4.5, and 8.4.5 ..... A-69, A-115, A-164, A-214
   vi. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo Scenarios A7-1

c. Presentation of local school district test scores and graduation rates can be found in the following appendix:
   i. Appendix I - Community Health and Learning (Section 3, Local School District Test Scores and Graduation Rates) I-8

6. Sleep Disturbance

a. General discussion of the science and standards used to assess sleep disturbance can be found in the following EIS sections:

11. Noise Impacts to Specific Populations

a. Executive Order 13045, Environmental Health Risks and Safety Risks to Children, requires each federal agency to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Environmental health risks and safety risks to children are discussed in the following EIS sections:

b. Environmental Justice

12. Noise Mitigation

a. General discussion of existing, future, and potential mitigation measures at NAS Whidbey Island

b. Alternatives Considered: It should be noted that the Navy considered many alternatives to the Proposed Action; however, most would result in relocating noise and other environmental impacts from one community to another.

13. Agency Coordination and Public Participation

a. The following sections are related to agency coordination and public participation in the EIS:

14. Other Noise and Health-related Sections Contained in the EIS

15. Conclusions Regarding Noise-related Topics

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Overview of the Environmental Impact Statement

This Environmental Impact Statement (EIS) is for EA-18G "Growler" Airfield Operations at the Naval Air Station Whidbey Island complex. It evaluates the potential environmental impacts associated with a No Action Alternative and three action alternatives. The three alternatives consider options for increasing the number of additional Growler aircraft at the NAS Whidbey Island complex. Each alternative contains further analysis of five operational scenarios that involve different distributions of annual field carrier landing practice airfield operations between Ault Field and Outlying Landing Field Coupeville.

Chapter 1 provides background information related to the Proposed Action and describes the purpose of and need for the Proposed Action. Chapter 2 describes the Proposed Action, the process for selecting the range of alternatives, and the alternatives carried forward or eliminated from further analysis. Chapter 3 provides a description of the existing environmental resource areas and existing conditions that could be affected from implementing any of the alternatives. Chapter 4 presents an analysis of the potential direct and indirect effects of each alternative on the affected environment. This EIS evaluates the potential environmental impacts associated with 16 resource areas, as well as the cumulative impacts of the Proposed Action and other local projects. Each of the 16 resource areas is discussed in Chapter 3 (Affected Environment) and Chapter 4 (Environmental Consequences). Below is a list of the key sections in this document (for a full Table of Contents, go to page i).

Environmental Impact Statement for EA-18G "Growler" Airfield Operations at the Naval Air Station Whidbey Island Complex

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Abbreviations and Acronyms

Acronym	Definition
AAM	Advanced Acoustic Model
AAD	Average Annual Day
AB	Afterburner
ABD	Average Busy Day
ACHP	Advisory Council on Historic Preservation
ACRP	Aircraft Cooperative Research Program
ADT	Average Daily Traffic
AEMR	Annual Energy Management Report
AESO	Aircraft Environmental Support Office
AFFF	aqueous film-forming foam
AGL	above ground level
AICUZ	Air Installations Compatible Use Zones
ANSI	American National Standards Institute
AOP	air operating permit
APE	Area of Potential Effects
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
ATC	air traffic control
ATCAA	Air Traffic Controlled Assigned Airspace
ATFP	Anti-Terrorist Force Protection
BASH	Bird/Animal Aircraft Strike Hazard
BCC	Bird of Conservation Concern
BCR	Bird Conservation Region

Acronym	Definition
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
BO	Biological Opinion
CAA	Clean Air Act
CCA	Carrier Controlled Approach
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CI	confidence interval
CNG	Cascade Natural Gas Corporation
CNEL	Community Noise Equivalent Level
CNO	Chief of Naval Operations
CO	carbon monoxide
COER	Citizens of Ebey's Reserve
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CWA	Clean Water Act
CY	Calendar Year
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted sound level
dBC	C-weighted sound level
DEIS	Draft Environmental Impact Statement

Acronym	Definition
DERP	Defense Environmental Restoration Program
DNL	day-night average sound level (also known as L_{dn})
DNWG	U.S. Department of Defense Noise Working Group
DoD	U.S. Department of Defense
DoDI	United States Department of Defense Instruction
DPS	Distinct Population Segment
EA	Environmental Assessment
e.g.	for example
EIS	Environmental Impact Statement
EMS	emergency medical service
EO	Executive Order
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FAA	Federal Aviation Administration
FCLP	field carrier landing practice
FEMA	Federal Emergency Management Agency
FICON	Federal Interagency Committee on Noise
FICUN	Federal Interagency Committee on Urban Noise
FMR	Fair Market Rent
FONSI	Finding of No Significant Impact
FRS	Fleet Replacement Squadron
FWHCAs	Fish and Wildlife Habitat Conservation Areas

Acronym	Definition
FY	Fiscal Year
GCA	Ground Controlled Approach
GHG	greenhouse gas
HAP	hazardous air pollutant
Hz	hertz
IBA	Important Bird Area
ICRMP	Integrated Cultural Resources Management Plan
IFLOLS	Improved Fresnel Lens Optical Landing System
IFR	Instrument Flight Rule
in/sec	inches per second
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Conservation
IR	Instrument Flight Rules Military Training Route
ISO	International Organization for Standardization
JLUS	joint land use study
lbf	pound-force
L_{dn}	day-night average sound level (also known as DNL)
L_{eq}	Equivalent Sound Level
$L_{eq(8)}$	8-hour Equivalent Sound Level
$L_{eq(24)}$	24-hour Equivalent Sound Level
L_{max}	maximum A-weighted sound level
LID	low-impact development
LOS	level of service

Acronym	Definition
LSO	Landing Signal Officer
LTO	landing and takeoff operation
MAGIC CARPET	Maritime Augmented Guidance with Integrated Controls for Carrier Approach and Recovery Precision Enabling Technologies (now known as Precision Landing Mode [PLM])
MBTA	Migratory Bird Treaty Act
MCAS	Marine Corps Air Station
µPa	Micropascal
mgd	million gallons per day
MLS	Multiple Listings Service
MMPA	Marine Mammal Protection Act
MOVES	Motor Vehicle Emission Simulator
mph	miles per hour
MoA	Memorandum of Agreement
MOA	Military Operations Area
MSAT	Mobile Source Air Toxics
MSL	mean sea level
MT	metric ton
$MTCO_2e$	metric tons carbon dioxide equivalent
MTR	military training route
NA	number of events above (a specific sound level)
NAAQS	National Ambient Air Quality Standards
NAF	Naval Air Facility
NAS	Naval Air Station

Acronym	Definition
Navy	U.S. Department of the Navy
NAWS	Naval Air Weapons Station
NDI	Noise Depreciation Index
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIPTS	Noise Induced Permanent Threshold Shift
nm	nautical miles
nm^2	square nautical miles
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NRNW F&ES	Navy Region Northwest Fire and Emergency Services
N_2O	nitrous oxide
NWCAA	Northwest Clean Air Agency
NWR	National Wildlife Refuge
NWSTF	Naval Weapons Systems Training Facility
NWTRC	Northwest Training Range Complex
NWTT	Northwest Training and Testing
OEIS	Overseas Environmental Impact Statement

Acronym	Definition
OLF	outlying landing field
OPNAVINST	Office of the Chief of Naval Operations Instruction
OU	Operable Unit
PFAS	per- and polyfluoroalkyl substances
PFC	perfluorinated compound
PFOA	perfluorooctanic acid
PFOS	perfluorooctane sulfanate
PHL	Potential Hearing Loss
PLM	Precision Landing Mode (aka MAGIC CARPET)
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PM_{10}	particulate matter less than or equal to 10 microns in diameter
POI	point of interest
POV	Personally Owned Vehicles
PSD	Prevention of Significant Deterioration
PSE	Puget Sound Energy
PUD	Public Utility District
RCW	Revised Code of Washington
RDT&E	Research, Development, Test, and Evaluation
REPI	Readiness and Environmental Protection Integration
ROD	Record of Decision
RTIP	Regional Transportation Improvement Program

Acronym	Definition
RTPO	Regional Transportation Planning Organization
SAR	search and rescue
SCOG	Skagit Council of Governments
SDZ	Surface Danger Zone
SEL	sound exposure level
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPBHD	Seaplane Base Historic District
SPCC	Spill Prevention Control and Countermeasures
SPL	Sound Pressure Level
SR	State Route
STIP	Statewide Transportation Improvement Program
SUA	Special Use Airspace
TCP	traditional cultural property
T&G	touch-and-go
TACAN	Tactical Air Navigation
U&A	usual and accustomed
UFC	Unified Facility Criteria
UIC	Underground Injection Control
U.S.C.	United States Code
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency

Acronym	Definition
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VFR	Visual Flight Rules
VOC	volatile organic compound
VQ	Fleet Air Reconnaissance
VR	Visual Flight Rules Military Training Route

Acronym	Definition
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WGMA	Washington State Growth Management Act
WHO	World Health Organization
WSDOT	Washington State Department of Transportation

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