

## 5.0 CUMULATIVE EFFECTS

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Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) require that the cumulative impacts of a proposed action be assessed. A cumulative impact is defined as the following:

*“...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 Code of Federal Regulations [CFR] § 1508.7)*

CEQ’s guidance for considering cumulative effects states that NEPA documents “should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant” (CEQ 1997). The first step in assessing cumulative effects therefore, involves identifying and defining the scope of other actions and determining their interrelationship with the proposed action. The scope must consider whether other projects coincide with the location and timetable of the proposed action and other actions. Past, present, and reasonably foreseeable future actions were examined, including both military actions in the region as well as other federal and non-federal actions to determine if they interact with the Proposed Action Alternative. After examining these actions, the analysis determined the nature of the interaction. An analysis of how the impacts of the defined actions might affect or be affected by those resulting from the proposed action for each of the environmental resources discussed in this Environmental Impact Study (EIS) are provided for Eielson Air Force Base (AFB).

To ensure a rigorous assessment of potential cumulative impacts, this analysis sought information on military actions, other federal actions, and non-federal actions in the Fairbanks North Star Borough (FNSB). Public documents prepared by federal, state, and local governments formed the primary source for defining actions. Scoping also provided an opportunity to gain insight into such actions. Documents used to define these other actions included notices of intent, EISs, and environmental assessments, management and land use plans, ordinances, other NEPA studies, and economic and demographic projections.

At Eielson Air Force Base (AFB), information was gathered from base planners, environmental managers, and operations staff. Community representatives and state and federal land managers provided information on actions outside the base in the surrounding areas. For the ranges and airspace, primary sources of information consisted of the managing and scheduling entities, as well as federal and state agencies with lands underlying the Joint Pacific Alaska Range Complex (JPARC) airspace.

Eielson AFB is an active military installation that undergoes changes in missions and training requirements in response to defense policies, current threats, and tactical and technological advances. The base, like any other major institution (e.g., university, industrial complex), requires new construction, facility improvements, infrastructure upgrades, and maintenance and repairs. In addition, tenant organizations may occupy portions of the base, conduct aircraft operations, and maintain facilities. All of these actions (i.e., mission changes, facility improvements, and tenant use) would continue to occur before, during, and after the Proposed Action Alternative is implemented. For purposes of this analysis, the timeframe bounding the cumulative analysis spans from 2016 (when facility construction supporting

the F-35A beddown would begin) and ends in 2021, when both F-35A squadrons would be fully operational.

## **5.1 Past and Present Actions Relevant to the Proposed Action Alternative**

This EIS provides decision makers with the cumulative effects of the Proposed Action Alternative; as well as, the incremental contribution of past, present, and reasonably foreseeable actions. Recent past and ongoing military action in the region were considered as part of the baseline or existing conditions in Chapter 3. As they impacted the F-35 Beddown at Eielson AFB, these actions were analyzed in Chapter 4.

### **5.1.1 Department of Defense Actions**

There are only two other military actions ongoing which could impact the F-35 Beddown analysis: Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System and Stationing (or Gray Eagle) and Army 2020 Force Structure Realignment at Fort Wainwright.

*Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System (or Gray Eagle):*

The Army is evaluating two alternatives for operating the Gray Eagle Unmanned Aerial Vehicles (UAVs): operating them out of Fort Wainwright or out of Eielson AFB. The proposed action would bring about 130 military personnel to Fort Wainwright. If the second alternative were chosen, construction of hangar facilities on the north end of Eielson AFB's flight line would take place between fiscal year 2016 (FY16) and FY19 (U.S. Army 2015). About 6 acres of land would be developed to support the UAV mission. The impacts of locating this Army mission on Eielson are being analyzed in a separate NEPA document.

*Army Force Structure Realignment:*

In early July 2015, the Army announced troop reductions at Fort Wainwright, which were substantially lower than estimates of 5,800 military personnel reduction made in 2014. The announcement identified that only 73 military positions would be eliminated. This reduction would have only a negligible impact on the socioeconomics of the Fairbanks North Star Borough, and would not introduce any adverse cumulative impacts when considered with the Proposed Action Alternative to base and operate F-35A aircraft at Eielson AFB.

### **5.1.2 Non-Department of Defense Actions**

The cities of Fairbanks and North Pole have three reasonably foreseeable infrastructure projects that are planned or underway in the local area, with impacts that would only affect soils, air quality, and recreation (Table 5.1-1). None of these actions would change the analysis of impacts for the F-35 Beddown, or lead to significant cumulative impacts.

**Table 5.1-1. Fairbanks and North Pole Current and Reasonably Foreseeable Actions**

<b>Project Name/Description</b>	<b>Planned Year of Implementation</b>	<b>Resources Potentially Affected</b>	<b>Magnitude of Impact</b>
Richardson Highway: MP 353-357, Safety/Access Improvements	2015-2020	Air Quality, Soils	Minor
Richardson Highway MP 359 Railroad Overpass	2015-2020	Air Quality, Soils	Minor
Plack Road Bike/Pedestrian Facility: North Pole	2015-2020	Air Quality, Soils, and Recreation	Minor

Because these projects primarily involve construction, their impacts would be localized and of short duration. There impacts would be similar to those analyzed in this EIS, which were found to be minor.

## **5.2 Analysis of Cumulative Effects**

The following analysis first considered whether these reasonable foreseeable actions could affect, or be affected by those resulting from the Proposed Action Alternative at Eielson AFB. Second, an evaluation was made to determine whether such a relationship would result in potentially additive impacts not identified when the Proposed Action Alternative is considered alone.

### **5.2.1 Cumulative Impacts with other Department of Defense Actions in the Region**

The Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System (or Gray Eagle) proposal would beddown Unmanned Aircraft Vehicles (UAVs) at Eielson AFB. In the event that the Air Force agrees to the Army's Aviation Company proposal, the predominant cumulative impacts would be in the resource areas of Airfield and Airspace Operations and Management, Acoustic Environment, and Air Quality. No other actions were identified that could interact in a cumulative nature with the Proposed Action Alternative.

#### *5.2.1.1 Airfield and Airspace Operations and Management*

##### *Airfield*

With the increase in airfield operations anticipated when the F-35s become fully operational at Eielson AFB, close coordination would be required between Army aviation personnel and Eielson AFB Airfield Operations to ensure UAV operations are safely integrated into the operations schedules. Initial discussions between the Air Force and Army identified this as an issue that must be worked out prior to any decision on the beddown location. Sharing airfield operations could have some impacts, however, scheduling and adherence to local airfield rules and regulation would introduce less than significant impacts when considered cumulatively with this Proposed Action Alternative.

##### *Airspace*

The Army UAV beddown at either Fort Wainwright or Eielson AFB may increase the use of restricted airspace over Army training areas. Transit through civilian airspace would follow protocols set by FAA to maintain safety for all pilots, both military and civilian. Sharing airfield operations could have some impacts, however, scheduling and adherence to local airfield rules and regulation would introduce less than significant impacts when considered cumulatively with this Proposed Action Alternative.

### 5.2.1.2 Acoustic Environment

Noise generated during operations should not appreciably increase the noise environment at or around Eielson AFB airfield, or in northern JPARC airspace. Fighter jet-generated noise would continue to dominate sound levels at the airfield and in the training airspace. No cumulative impacts are anticipated when considered with the Proposed Action Alternative.

### 5.2.1.3 Air Quality

Under the Proposed Action Alternative, criteria pollutants would not be adversely affected, as presented in Table 5.2-1 cumulatively, criteria pollutants generated by UAV and F-35A operations would not exceed levels to deteriorate regional air quality at Eielson AFB.

**Table 5.2-1. Cumulative Pollutant Emissions**

<i>Pollutant of Concern</i>	<i>UAV emissions<sup>1</sup></i>	<i>F-35 emissions</i>	<i>Total</i>
Carbon Monoxide (CO)	13.61	236.1	<b>249.71</b>
Sulfur Dioxide (SO <sub>2</sub> )	0.26	12.3	<b>12.56</b>
Nitrogen Oxide (NO <sub>x</sub> )	5.65	118.1	<b>123.75</b>
Particulate Matter 2.5 (PM <sub>2.5</sub> )	0.26	17.5	<b>17.76</b>

Note: <sup>1</sup>From Table 3-2 of the Gray Eagle EA (U.S. Army 2015).

### 5.2.2 Cumulative Impacts with other Regional Actions

No actions by other state, local, or regional entities were identified that would have the potential to interact cumulatively with the Proposed Action Alternative. Identification of other cumulative impacts will continue throughout the process of completing the NEPA analysis, particularly during ongoing consultations with state and federal agencies and additional information will be added if other actions are found.

### 5.2.3 Cumulative Impacts with Actions outside of the Region

The only resource with potential for cumulative impacts outside the affected environment of the airspace is air quality. The potential effects of proposed greenhouse gas (GHG) emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global (i.e., extra-regional) scale.

Currently, there are no formally adopted or published NEPA thresholds of significance for GHG emissions. The estimated F-35A carbon dioxide (CO<sub>2</sub>) emissions were 15,526 metric tons/year for each squadron. This would be 31,052 metric tons at beddown of both squadrons, or 0.927 percent of the existing CO<sub>2</sub> emissions for FNSB. When considered cumulatively with the 1,562 metric tons per year of CO<sub>2</sub> generated by the UAV emissions (U.S. Army 2015), GHGs would be significantly lower than regional and global GHG emissions; thus, there would be no significant impact from increased cumulative GHG emissions from the Proposed Action Alternative and the UAV beddown.

Additionally, the high latitudes of the earth may experience an increase of 5 to 8 degrees Fahrenheit over the next century, with the projected climate change impact of an increase in aridity, as documented in Global Climate Change Impacts in the United States from the U.S. Global Climate Change Research Program (USGCRP 2014). This report predicts that permafrost temperatures in Alaska are rising,

producing a thawing trend that is expected to continue, causing multiple vulnerabilities through drier landscapes, more wildfire, altered wildlife habitat, increased cost of maintaining infrastructure, and the release of heat-trapping gases that increase climate warming. While operations at Eielson AFB have already adapted to higher temperatures and an increase in smoke from wildfires, exacerbation of climate conditions in the future may increase the cost of proposed operations and could impede operations during extreme events. Additional measures could be needed to mitigate such impacts over the operational life expectancy of the F-35A.

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