Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System

ENVIRONMENTAL ASSESSMENT

AUGUST 2015

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APPROVED BY:

Wesley D. Potter **Deputy to the Garrison Commander**	**Date**

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DRAFT FINDING OF NO SIGNIFICANT IMPACT

The National Environmental Policy Act of 1969 (NEPA) (42 United States Code §4321 et seq.) requires federal agencies to consider the potential environmental impacts prior to undertaking a course of action. Within the United States (U.S.) Department of the Army (Army), NEPA is implemented through regulations promulgated by the Council on Environmental Quality (40 Code of Federal Regulations (CFR) §§1500–1508) with supplemental requirements provided under 32 CFR §651, *Environmental Analysis of Army Actions*, and Army regulations. In adherence with NEPA, 40 CFR §§1500–1508, and 32 CFR §651, the United States (U.S.) Army Garrison Fort Wainwright, Alaska (USAG FWA) prepared an environmental assessment (EA) to assess the potential environmental impacts from providing the necessary infrastructure and operational support for Company D of the 25th Aviation Regiment Gray Eagle (25th Avn Rgt CO D) in Interior Alaska, with its Company Headquarters located at Fort Wainwright.

Purpose for the Action

The purpose of the Proposed Action is to provide the necessary airfield and support facilities for the 25th Avn Rgt CO D to operate the Gray Eagle Unmanned Aircraft System (UAS) in Interior Alaska within existing restricted airspace. The Proposed Action is needed to comply with the Chief of Staff of the Army's directive to station a Gray Eagle UAS Company in each of the 10 Army Divisions and the decision to station the 25th Infantry Division's UAS Company in Alaska, as well as to provide the necessary training environment to Soldiers to ensure mission success.

Description of the Proposed Action

To support the 25th Avn Rgt CO D operating in Interior Alaska, with its Company Headquarters located at Fort Wainwright, the USAG FWA proposes to construct a 58,017-square foot (ft^2) permanent hangar with an integrated Company Operations Facility, an approximately 144,000-ft^2 (3.3-acre) organizational vehicle parking area, and a 56,700-ft^2 (1.3-acre) privately owned vehicle parking area with 123 parking spaces. Construction of the hangar would occur at either Fort Wainwright or Eielson Air Force Base (AFB), while construction of the organizational vehicle parking area would occur at Fort Wainwright. Construction is anticipated to begin in Fiscal Year (FY) 2017 and would be completed by FY 2019. Since the 25th Avn Rgt CO D is scheduled to become active in February 2016, the Army is also proposing an interim solution where the 25th Avn Rgt CO D would share existing airfield facilities at Fort Wainwright and temporarily operate out of Hangar 1 on the north side of the airfield to support aircraft operations until the permanent facilities that meet the Gray Eagle UAS hangar design specifications are completed. The Gray Eagle UAS would operate in existing restricted airspace, transiting the National Airspace System between military installations and restricted airspace, where necessary, via the use of Federal

Aviation Administration (FAA) approved certificates of authorization (COAs).[1] Allen Army Airfield at Fort Greely would also be a location from which additional UAS training operations could occur.

Alternatives Considered

The Army considered a range of potential alternatives for supporting the 25th Avn Rgt CO D and used a screening process to evaluate the viability of an installation in Interior Alaska to accommodate the Company. U.S. Army Alaska (USARAK) used screening criteria to evaluate the operational environment at Fort Wainwright, Eielson AFB, and Fort Greely, and their ability to accommodate the Company personnel, i.e., supporting infrastructure, operations, funding requirements, and Command and Control. Of the three installations, only Fort Greely was determined not to be a viable option. It was found to lack the necessary infrastructure to support troop functions, and it was estimated that the cost to construct the necessary facilities at that location would far surpass the allocated dollar amount associated with Gray Eagle UAS stationing. As a result, the Army carried the following two alternatives forward for analysis and final consideration:

- Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska, in the Interim and Permanent Periods
- Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and from Eielson Air Force Base for the Permanent Period

In addition, per Council on Environmental Quality regulations (40 CFR §1502.14), the USAG FWA considered the No Action Alternative where the decision-maker would elect to not construct the necessary infrastructure to support operating the 25th Avn Rgt CO D in Interior Alaska. Because there are no existing hangar facilities at Fort Wainwright or Eielson AFB that meet the design standards for the Gray Eagle UAS and no COAs are in place for the Gray Eagle UAS to transit the National Airspace System to restricted airspace for training operations, operations associated with the stationing of the 25th Avn Rgt CO D at Fort Wainwright could not occur. Subsequently, the 25th Avn Rgt CO D would neither be stationed nor operate in Interior Alaska.

Preferred Alternative

The Army's preferred alternative is implementing Alternative 1—Operate the Gray Eagle UAS from Fort Wainwright, Alaska, in the Interim and Permanent Periods.

Discussion of Anticipated Environmental Effects

In the EA, which is attached and incorporated by reference into this Finding of No Significant Impact (FNSI), the potential effects from implementing the Proposed Action under Alternative 1, Alternative 2,

[1] The COA process requires filing an application with the FAA that outlines the flight path(s), altitudes, takeoff and landing locations, etc. After an application is submitted, the FAA conducts a comprehensive operational and technical review and, if necessary, imposes provisions or limitations as part of the approval to ensure the UAS can operate safely with other airspace users. The COAs do not require additional NEPA documentation.

and the No Action Alternative were fully analyzed for the following seven resources: air space, cultural resources, energy demand and utilities, hazardous materials/hazardous waste, health and safety, water, and socioeconomics and environmental justice. Table FNSI-1 summarizes the environmental impacts associated with each alternative for each resource evaluated in the EA. A summary of proposed mitigation measures and best management practices (BMPs) is provided after the table.

Table FNSI-1: Summary of Environmental Impacts

Resource Area	Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska for the Interim and Permanent Period	Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and from Eielson Air Force Base for the Permanent Period	No Action
Air Space	Short term: no impact. Long term and minor: increased Gray Eagle UAS training operations could cause impacts to air traffic flow.	Short term: no impact. Long term: increased Gray Eagle UAS training operations could cause impacts to air traffic flow.	No impact
Cultural Resources	Short term: no impact. Long term and minor: impacts from introducing new elements into the Ladd Field NHL and Cold War Historic District.	Short term: no impact. Long term: no impact.	No impact
Energy Demand and Utilities	Short term and minor: physically connecting to utility services. Long term and minor: utility needs for new facilities and demand for energy, water, sewer, and telecommunications increased with additional Soldiers. Slight increase in demand for aviation grade JP-8 fuel for Gray Eagle UAS operations.	Short term and minor: physically connecting to utility services. Long term and minor: operation of the hangar facility would increase Eielson AFB's demand for energy, water, sewer, and telecommunications, and slightly increase demand for aviation grade JP-8 fuel for Gray Eagle UAS operations. Additional Soldiers would increase energy and utility demand at Fort Wainwright	No impact
Hazardous Materials/ Hazardous Waste	Short term and minor: increased hazardous material and waste production during construction of the UAS hangar. Long term and minor: impacts from risk of aviation grade JP-8 fuel spillage and use of hazardous materials and waste for aircraft maintenance.	Short term and minor: increased hazardous material and waste production during construction of the UAS hangar. Long term and minor: impacts from risk of aviation grade JP-8 fuel spillage and use of hazardous materials and waste for aircraft maintenance.	No impact

Resource Area	Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska for the Interim and Permanent Period	Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and from Eielson Air Force Base for the Permanent Period	No Action
Health and Safety	Short term and minor: risks associated with heavy construction equipment and activities. Long term and minor: adhering to existing airspace management and scheduling operations would minimize potential impacts to human health and safety; furthermore, the Gray Eagle UAS would not be allowed to fly unassisted in non-military owned airspace.	Short term and minor: risks associated with heavy construction equipment and activities. Long term and minor: adhering to existing airspace management and scheduling operations would minimize potential impacts to human health and safety; furthermore, the Gray Eagle UAS would not be allowed to fly unassisted in non-military owned airspace.	No Impact
Water	Short term and minor: clearing, grading, and other construction activities would disturb and expose soil resulting in increased potential for soil erosion, sedimentation of surrounding water resources. Long term and minor: from increased impervious surfaces, possible use of deicing chemicals, and possible disturbance of wetlands.	Short term and minor: clearing, grading, and other construction activities would disturb and expose soil resulting in increased potential for soil erosion, sedimentation of surrounding water resources. Long term and minor: from increased impervious surfaces, and possible disturbance of wetlands.	No impact
Socioeconomics and Environmental Justice	Long term: no impact on environmental justice and protection of children; housing; Economic Impact Forecast System. Long term and minor: government and emergency services; population. Long term and beneficial: employment.	Long term: no impact on environmental justice and protection of children; housing; Economic Impact Forecast System. Long term and minor: government and emergency services; population. Long term and beneficial: employment.	No impact

Notes: AFB – Air Force Base, Cold War Historic District – Ladd Air Force Base Cold War Historic District, Ladd Field NHL – Ladd Field National Historic Landmark, UAS – unmanned aircraft system

The Proposed Action would not result in significant impacts to any of the resource areas; however, dependent on the resource area, some mitigation measures would be needed as a result of minor impacts. For example, if siting of the organizational vehicle parking area on Fort Wainwright were to result in minor, adverse impacts on wetlands, mitigation measures would be required to offset the impacts and replace the lost functions and values of the wetlands. Specific mitigation measures would be determined during the Clean Water Act 404 permitting process. Additionally, because Alternative 1, if selected, would result in minor, adverse impacts to the Ladd Field National Historic Landmark (Ladd Field NHL) and Ladd Air Force Base Cold War Historic District (Cold War Historic District), the USAG FWA would initiate consultation per Section 106 of the National Historic Preservation Act to determine what mitigation is necessary for the adverse effect on the Ladd Field NHL and Cold War Historic District.

Though the Proposed Action would not require mitigation measures other than potentially for cultural resources and wetlands, a number of standard measures, including BMPs, would be employed where appropriate to reduce or minimize potential impacts. In recent years, both the USAG FWA and the USARAK have produced a variety of NEPA analyses evaluating several actions, including Army force transformation efforts, the addition of Soldiers and new equipment, a general increased use of training lands, and range development projects throughout USARAK ranges. These documents have also identified many regulations, policies, management programs, BMPs, and specific mitigation measures used to avoid, minimize, and mitigate various adverse impacts to the affected environment at Fort Wainwright. The BMPs and mitigation measures discussed in the following documents are ongoing and will continue as part of the baseline management employed by the USAG FWA and the Army in Alaska on Army-owned and controlled lands, including during the construction and operation of Gray Eagle UAS facilities as a part of the current Proposed Action:

- *Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex in Alaska Final Environmental Impact Statement* (EIS), August 2013
- *Transformation of U.S. Army Alaska* Final EIS, May 2004
- *Stationing and Training of Increased Aviation Assets within U.S. Army Alaska Final EIS*, August 2009
- *U.S. Army Pacific Supplemental Programmatic EIS for Army Growth and Force Structure Realignment*, 2008
- *USAG Alaska Grow the Army Force Structure Realignment* EA, 2008
- *Integrated Natural Resource Management Plan (INRMP)*, 2013; *2007 INRMP EA*; and *2013 INRMP Update Record of Environmental Consideration*
- *Integrated Cultural Resource Management Plan (ICRMP)*, 2013; *2000 ICRMP EA*, and *2012 ICRMP Update Record of Environmental Consideration*
- *Integrated Training Area Management (ITAM) Plan and ITAM* EA, October 2005 and June 2005, respectively
- Department of Army Pamphlet (PAM) 350-38, *Standards in Training Commission*
- Army Regulation (AR) 385-63, *Range Safety*
- PAM 385-63, *Range Safety*
- AR 385-64, *U.S. Army Explosives Safety Program*
- PAM 385–64, *Ammunition and Explosives Safety Standards*
- AR 350-2, *Training*

Cumulative Effects Analysis

The Army conducted a cumulative impact assessment to determine whether the combined effects of each alternative along with other projects in the region might be significant. After review of past, present, and reasonably foreseeable future actions occurring in the same region of influence as the Proposed Action, the Army determined that none of the alternatives would result in cumulative impacts that were significant for any of the resource areas.

Public Comment

The EA and draft FNSI were made available for review and comment for 30 days. The EA and draft FNSI were available for review at: http://www.wainwright.army.mil/env/Current.html; Noel Wien Public Library 1215 Cowles Street, Fairbanks, Alaska; FNSB Public Library North Pole Branch 565 NPHS Boulevard, North Pole, Alaska; and Delta Community Library 2291 Deborah Street, Delta Junction, Alaska.

Conclusion

Based on the review of the information contained in the EA, the USAG FWA has determined through this FNSI that implementing the Proposed Action under either of the two action alternatives would not significantly affect the quality of the environment within the meaning of NEPA Section 102(2)(C). The preparation of an environmental impact statement for the Proposed Action is not required.

Point of Contact

For further information, please direct requests to Mr. Matthew Sprau, Directorate of Public Works, ATTN: IMFW-PWE (M. Sprau), 1060 Gaffney Road #4500, Fort Wainwright, AK 99703-4500. The EA and draft FNSI are available at: http://www.wainwright.army.mil/env/Current.html.

APPROVED BY:

Sean C. Williams **Colonel, U. S. Army** **Commanding**	**Date**

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1.0 PURPOSE, NEED AND SCOPE

1.1 Introduction

In 2012, the Chief of Staff of the United States (U.S.) Army directed his staff to develop a strategy to station an MQ-1C Gray Eagle Unmanned Aircraft System (UAS) Company in each of the 10 Active Army Divisions (Freedberg, 2012; Odierno, 2012, as cited in U.S. Army, 2013b). The intent of integrating the Gray Eagle UAS into active divisions is to provide organic armed reconnaissance, surveillance, target acquisition, and command and control in support of the Division Commander's priorities. One of the 10 divisions to receive a Gray Eagle UAS Company is the 25th Infantry Division (ID) headquartered at Schofield Barracks in Hawaii. After a programmatic environmental analysis was conducted by the Army to determine which installations that exercise mission control over 25th ID units could best support the Gray Eagle UAS mission, the decision was made to permanently station the 25th ID's Gray Eagle UAS Company with the U.S. Army Alaska's (USARAK) Aviation Task Force (ATF) headquartered at Fort Wainwright, Alaska (U.S. Army, 2014). The Gray Eagle UAS Company has been designated as Company D of the 25th Aviation Regiment Gray Eagle (25th Avn Rgt CO D).

USARAK exercises mission command over attached Title 10 Army assets in Alaska. These units include the 1st Stryker Brigade Combat Team (SBCT), 25th Infantry Division (1-25th SBCT); USARAK Aviation Task Force (UATF); and Northern Warfare Training Center at Fort Wainwright and the 4th Infantry Brigade Combat Team Airborne, 25th Infantry Division, and the 2nd Engineer Brigade Combat Team at Joint Base Elmendorf-Richardson. The mission of USARAK is to provide trained, ready forces capable of rapid deployment from Alaska in the conduct of contingency operations worldwide as directed. Units in Alaska are anchored in the North Pacific and strategically positioned for worldwide deployment. With a large, varied, and tough training environment, USARAK has developed a highly capable, combat-ready force.

USARAK Soldiers use training lands and facilities managed together by the USARAK G3/5/7, Joint Base Elmendorf Richardson, Alaska, and U.S. Army Garrison Fort Wainwright, Alaska (USAG FWA). Fort Wainwright, which is located in Interior Alaska, north of the Alaska Range in the Tanana River Valley, is situated within the Joint Pacific Alaska Range Complex (JPARC), a vast area composed of military training lands and special use airspace (SUA). Specifically, Fort Wainwright consists of the Main Post, Tanana Flats Training Area (TFTA), Yukon Training Area (YTA), Donnelly Training Area (DTA)–East and –West, Gerstle River Training Area, Black Rapids Training Area, and Whistler Creek Rock Climbing

Area. At approximately 1.6 million acres, Fort Wainwright's combined training areas make it the fourth largest Army training area in the U.S.

The mission of the Gray Eagle UAS is to provide real-time response capability to conduct long-dwell, persistent stare, extended range reconnaissance, surveillance, target acquisition, communications relay, and attack missions. Fort Wainwright was selected to receive the Gray Eagle UAS mission because it fulfilled the Army's stationing action screening criteria, which included an existing Combat Aviation Brigade (CAB);[2] heavy troop concentrations to facilitate maneuver training; an operating runway with a length of at least 4,500 feet and slope less than or equal to 1.5 degrees; access to restricted airspace; and space available for facilities construction (U.S. Army Corps of Engineers, 2013).

The Gray Eagle UAS is a medium-sized aircraft powered by a heavy fuel (aviation grade JP-8), turbocharged piston engine (Figure 1-1). It has a wingspan of 56.3 feet and can travel at a maximum airspeed of 150 knots (172 miles per hour [mph]). The Gray Eagle UAS is operated remotely from ground control stations (GCSs) via satellite links, but can also operate from pre-programmed routes. Its range with relay equipment is approximately 500 kilometers (310 miles) while its range with satellite communications is approximately 1,200 kilometers (745 miles). The aircraft is able to remain in the air for up to 24 hours at altitudes upward of 25,000 feet above ground level (AGL). The maximum takeoff weight is 3,600 pounds with full fuel and a payload of reconnaissance equipment and/or four Hellfire missiles. Gray Eagle UAS flights are constrained by the following wind speeds: they cannot operate in headwinds exceeding 26 knots (30 mph), crosswinds exceeding 22 knots (25 mph), tailwinds exceeding 8 knots (9 mph), or gusts exceeding 10 knots (12 mph).

Figure 1-1: Gray Eagle Unmanned Aircraft System

[2] It should be noted that in 2012, the 6th Squadron, 17th Calvary Regiment stationed at Fort Wainwright was re-designated as the UATF. For the purposes of this environmental assessment and Army-wide screening criteria, the CAB terminology is synonymous with UATF.

One Gray Eagle UAS company consists of the following personnel and support equipment (see Figure 1-2 for ground support equipment):

- 133 personnel (128 Active Duty Soldiers, 5 contractors)
- 9 aircraft (4 fully assembled, 5 containerized) (12 when deployed)[3]
- 6 GCSs
- 2 portable GCSs
- 6 tactical common data link (TCDL), ground data terminals (GDTs)
- 2 portable, TCDL GDT
- 6 automatic takeoff and landing systems (TALS)
- 55 vehicles[4]
- 42 truck trailers

When the Gray Eagle UAS is operating beyond the reach of the GCS system at the airfield, the GCS system would be mounted on a high mobility, multipurpose, wheeled vehicle (HMMWV [HUMVEE]), to continue to serve as a communications link with the Gray Eagle UAS. This configuration is a mobile ground control station (MGCS).

Figure 1-2: Gray Eagle UAS Ground Support Equipment

[3] When deployed, the additional three aircraft will come from other Department of Defense assets.

[4] Vehicle types include HUMVEEs, light/medium tactical vehicles (or LMTV/MTV), van expand MTV, truck tractor MTV, heavy expanded mobility tactical truck (HEMTT), tanker HEMTT, HEMTT wrecker, and 10,000 pound forklift.

1.2 Purpose and Need

The purpose of the Proposed Action is to provide the necessary airfield and support facilities for the 25th Avn Rgt CO D to operate the Gray Eagle UAS in Interior Alaska within existing restricted airspace. The need for the Proposed Action is to comply with the Chief of Staff of the Army's directive to station a Gray Eagle UAS Company in each of the 10 Army Divisions and the decision to station the 25th ID's UAS Company in Alaska, as well as to provide the necessary training environment to Soldiers to ensure mission success.

Recent successes of UAS support for ground troops survivability, gathering of intelligence, and elimination of opposing units before they can engage U.S. and allied Soldiers point to the need for a robust and trained UAS force. The operation of the 25th Avn Rgt CO D in Interior Alaska would further enhance training integration of the UATF with Brigade Combat Teams (BCTs) training within the JPARC. The new unit would train alongside rotations going through Fort Wainwright by expanding training requirements to include supplementing combat units with integrated UAS components in theater to support Overseas Contingency Operations. The Gray Eagle UAS would provide real-time battlefield intelligence gathering and unmanned aerial attack capabilities to ground units at the division level.

To support operating the 25th Avn Rgt CO D in Interior Alaska, the Army proposes to construct a 58,017-square-foot (ft^2) permanent hangar with an integrated Company Operations Facility (COF) and an approximately 144,000-ft^2 (3.3 acres) organizational vehicle parking area. Construction of the hangar would occur at either Fort Wainwright or Eielson Air Force Base (AFB), while construction of the organizational vehicle parking area would occur at Fort Wainwright. Construction is anticipated to begin in Fiscal Year (FY) 2017 and be completed by FY 2019. Since the 25th Avn Rgt CO D is scheduled to become active in February 2016, the Army is also proposing an interim solution where the 25th Avn Rgt CO D would share existing airfield facilities at Fort Wainwright to support aircraft operations until the permanent facilities are completed. The Gray Eagle UAS would operate in existing restricted airspace, transiting the National Airspace System (NAS) between military installations and restricted airspace, where necessary, via the use of Federal Aviation Administration (FAA)-approved certificates of authorization (COAs). The COA process requires filing an application with the FAA that outlines the flight path(s), altitudes, and takeoff and landing locations. Procedures for a lost communication link (i.e., lost link) between the Gray Eagle UAS and the GCS or MGCS would also be outlined in the application. After a complete application is submitted, the FAA conducts a comprehensive operational and technical review and, if necessary, imposes provisions or limitations as part of the approval to ensure the UAS can

operate safely with other airspace users.[5] Under all alternatives, Allen Army Airfield at Fort Greely would be a location from which additional UAS training operations could occur.

1.3 Scope of Environmental Analysis

The USAG FWA has prepared this environmental assessment (EA) to assess the potential environmental impacts of its proposal to construct the necessary support facilities to operate the Gray Eagle UAS in Interior Alaska. This EA has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA) [42 United States Code (U.S.C.) § 4321 et seq.]; NEPA implementing regulations issued by the President's Council on Environmental Quality (CEQ) (40 Code of Federal Regulations (CFR) §§1500–1508); and the Army's NEPA implementing regulations (32 CFR §651, *Environmental Analysis of Army Actions*, and Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*). The scope of this EA encompasses the following major components of Army activity required to support the new unit for both interim and permanent periods:

1. Construction, renovation, and maintenance of standard facilities to support the training operations of the 25th Avn Rgt CO D
2. Operations and training of the Gray Eagle UAS in Interior Alaska within the NAS by the use of COAs and SUAs

This EA considers relevant resource areas in the context of valued environmental components (VECs), which are the resources, ecosystems, and human communities of concern that could be affected by the Proposed Action. The VECs evaluated in this EA are identified in Chapter 3.0. The scope of this EA includes the geographic area potentially influenced by the Proposed Action as well as the area of potential environmental effect, which varies by resource. The main study area encompasses the Fort Wainwright Main Post and training lands, as well as Eielson AFB. However, for some VECs, such as for air quality and socioeconomic impacts, the study area expands to a regional area. The geographic scope for each resource area is identified in Chapter 3.0 within the discussion for each resource topic.

This EA incorporates by reference the documents listed below. Specific references to applicable portions of the documents are provided, as appropriate and where relevant, in the analysis portion of this EA.

- *Final Life Cycle Environmental Assessment for the Extended Range/Multi-Purpose Unmanned Aerial Vehicle System*, for which a Finding of No Significant Impact (FNSI) was signed in

[5] COAs do not require NEPA documentation.

December 2004 (U.S. Army, 2004). This document analyzed the entire Gray Eagle UAS program.

- *Unmanned Aerial Systems: Training and Testing at U.S. Army Installations Programmatic Environmental Assessment* (U.S. Army, 2010a). This document also analyzed the entire Gray Eagle UAS program.

- *Record of Environmental Consideration for the Stationing of MQ-1C Gray Eagle Unmanned Aircraft System (UAS)*, signed in May 2011 (U.S. Army, 2011a). This document analyzed stationing Gray Eagle UAS companies within CABs throughout the U.S.

- *Aviation Force Structure Realignment Record of Environmental Consideration* was prepared and signed by Headquarters Department of the Army (HQDA) in July 2014 (U.S. Army, 2014). This document supplemented the above Record of Environmental Consideration and analyzed the stationing of the Gray Eagle UAS at several installations not previously analyzed, including in Alaska at either Fort Wainwright and/or Eielson AFB.

- *Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex in Alaska. Environmental Impact Statement* (EIS) and Record of Decision, dated August 2013 (U.S. Army, 2013a). This document analyzed the operations of the Gray Eagle UAS within Interior Alaska airspace.

- *Stationing and Training of Increased Aviation Assets within U.S. Army Alaska EIS*, dated August 2009 (USARAK, 2009). This document analyzed the stationing and training of the current UATF in Alaska.

- *Transformation of U.S. Army Alaska EIS*, dated February 2004 (USARAK, 2004). The use of UASs (Stryker and Shadow) by USARAK was first analyzed in this document. The document analyzed impacts to USARAK lands, surrounding communities, and land users associated with the transformation of the 172nd Infantry Brigade in the 1-25th SBCT.

1.4 Decision to be Made

This EA provides public officials, citizens, and Army leadership with the information necessary to evaluate the potential extent of environmental, cultural, and socioeconomic impacts associated with the Proposed Action and whether those impacts (direct, indirect, and cumulative) are significant. This EA will help the Army's leadership make a decision that is based on an understanding of the environmental consequences and take action to protect, restore, and enhance the environment. It also provides a record

of public, tribal, and agency comments received on the Proposed Action and the environmental analysis presented in the EA and draft FNSI.

The decision to be made is to select an alternative for implementing that supports the operation of the Gray Eagle UAS in Interior Alaska. If no significant environmental impacts are determined based on the evaluation of impacts in this EA, a FNSI will be signed by the USAG FWA Garrison Commander no earlier than 30 days from public notification of the availability of the EA/draft FNSI. The draft FNSI will explain the proposed decision and identify any mitigation measures that the Army will include to lessen environmental, cultural, and socioeconomic impacts. If it is determined that the Proposed Action will have significant environmental impacts that cannot be mitigated to less than significant, a notice of intent to prepare an EIS will be published in the *Federal Register*. As part of the decision-making process, the USAG FWA Garrison Commander will consider all relevant environmental information and stakeholder issues of concern raised as part of the EA process.

1.5 Agency and Public Involvement

In accordance with 32 CFR §651, the U.S. Army provides opportunities for the public to participate in the NEPA process to promote open communication and to improve the decision-making process. All persons and organizations having potential interest in the Proposed Action are encouraged to participate in the environmental analysis process. The formal opportunity to comment involves a 30-day period of public review of the EA and draft FNSI. A Notice of Availability of the EA and draft FNSI will be published in the *Fairbanks Daily News-Miner* and the *Delta Wind*, and copies of the documents will be distributed to local libraries, agencies, organizations, and individuals who expressed interest in the project. The EA and draft FNSI will be made available on the USAG FWA NEPA website at: http://www.wainwright.army.mil/env/NEPA/Current.html. Upon request, copies will be mailed to interested individuals, organizations, Alaska Native organizations, and government agencies. Additionally, the Army will offer consultation to Alaska Native tribes in accordance with the requirements of Department of Defense (DoD) Instruction 4710.02, *DoD Interactions with Federally-recognized Tribes* (DoD, 2006); Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*; the DoD American Indian and Alaska Native Policy (DoD, 1998) and Alaska Implementation Guidance (DoD, 2001); and the Department of the Army American Indian and Alaska Native Policy (U.S. Army, 2012a). The Army will review and consider all comments received during the public comment period. At the conclusion of the public comment period, once comments have been considered and resolved if necessary, the Army may execute the FNSI and proceed with the Proposed Action.

1.6 Cooperating Agencies

NEPA mandates that federal agencies responsible for preparing NEPA analyses and documentation do so "in cooperation with State and local governments" and other agencies with jurisdiction by law or special expertise (42 U.S.C. §§4331(a), 4332(2)). The CEQ regulations addressing cooperating agency status (40 CFR §§1501.6 and 1508.5) allow federal agencies (as lead agencies) to invite tribal, state, and local governments, as well as other federal agencies, to serve as cooperating agencies in the preparation of EAs. The benefits of enhanced cooperating agency participation in the preparation of NEPA analyses include: disclosing relevant information early in the analytical process; applying available technical expertise and staff support; avoiding duplication with other federal, state, tribal, and local procedures; and establishing a mechanism for addressing intergovernmental trust (e.g., partnerships at the community level) and a common understanding and appreciation for various governmental roles in the NEPA process, as well as enhancing agencies' ability to adopt environmental documentation.

Because the Army's Proposed Action could involve operating the Gray Eagle UAS from Eielson AFB, USAG FWA invited this organization to become a cooperating agency on this EA. A formal cooperating agency request memorandum was sent to Eielson AFB on October 1, 2014. No formal response was received from Eielson AFB for participating as a cooperating agency; however, staff members at Eielson AFB did participate in an internal scoping meeting on December 10, 2014.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

This section describes the Army's Proposed Action, alternatives screening criteria, alternatives considered for evaluation in this assessment, and alternatives that were eliminated from detailed consideration.

2.2 Proposed Action

The USAG FWA proposes to construct the necessary infrastructure to support operating the 25th Avn Rgt CO D in Interior Alaska, with its Company Headquarters (HQ) located at Fort Wainwright. The Proposed Action includes constructing a 58,017-ft^2 hangar with an integrated COF, an approximately 144,000-ft^2 (3.3 acres) organizational vehicle parking area, temporary renovations to Hangar 1 so the 25th Avn Rgt CO D can operate out of Hangar 1 until the new hangar facilities are completed. The Proposed Action also includes operating the Gray Eagle UAS in restricted airspace and transiting the NAS between military installations and restricted airspace via the use of FAA-approved COAs.

2.3 Alternatives Screening Criteria

In compliance with the Army and CEQ regulations implementing NEPA, the Army must consider reasonable alternatives to the Proposed Action. Only those alternatives determined to be reasonable relative to their ability to fulfill the purpose and need for the Proposed Action warrant detailed analysis. To be considered reasonable, an alternative must fulfill the purpose and need for the action, as well as be technically and fiscally feasible. This section presents the criteria used to determine whether alternatives were considered to be reasonable and, therefore, should be carried forward for analysis.

The Army established five screening criteria to identify appropriate installations for stationing the Gray Eagle UAS Company and supporting equipment (U.S. Army, 2011a). The screening criteria are based on balancing sustainment of the Garrison for training with maximizing troop readiness. An installation must have:

- An existing CAB or like structure
- Heavy troop concentrations to facilitate air integration with ground maneuver training
- An operating military airfield with a runway length of at least 4,500 feet and a runway slope less than or equal to 1.5 degrees

- Access to restricted airspace
- Space available for facilities (e.g., barracks, hangars with controlled access, Company HQ, and motor pool)

It should be noted that in 2012, the 6th Squadron, 17th Calvary Regiment (6-17 CAV) stationed at Fort Wainwright was re-designated as the UATF. For the purposes of this EA and Army-wide screening criteria, the CAB terminology is synonymous with UATF.

In addition to the overall Army-wide stationing criteria, USARAK evaluated aspects of the operational environment at Fort Wainwright and Eielson AFB in July 2012 and May 2014, respectively, in regard to Gray Eagle UAS Company operations. These installations were evaluated on their ability to accommodate the Company personnel; i.e., supporting infrastructure, operations, funding requirements, and Command and Control. Fort Greely was evaluated as well, but was determined not to be a viable option because the costs to accommodate operations and troop support functions at that location would far surpass the allocated dollar amount associated with Gray Eagle UAS stationing (see Section 2.6, *Alternatives Eliminated from Further Consideration*). The following aspects were evaluated:

Supporting Infrastructure:

- Hangar space availability
- Fuel availability
- Warm storage availability
- Base services
- Family housing availability
- Motor pool availability
- Soldier billeting
- Privately owned vehicle (POV) parking availability

Operations:

- Distance to restricted airspace
- Airfield weapons capabilities
- Risk assessment
- Emergency operations
- Weather patterns
- Air Traffic Control (ATC) availability
- Runway(s) length and direction
- Operational frequencies
- Population encroachment

Funding Requirements:

- Costs for operations and maintenance
- Costs for military construction
- Costs for Company support (i.e., chase plane)
- Non-participating persons risk assessment

Command and Control:

- Company HQ support
- UATF support

During the site evaluations, it was determined that currently no hangar facilities at Fort Wainwright or Eielson AFB meet the design specifications in the Department of the Army Facilities Standardization Program *Unmanned Aircraft System (UAS) Hangar Standard Design*, March 2014. Because the current legacy structures do not meet the long-term operational requirements of the technologically advanced system, the hangar space currently available would need to be reconfigured. However, reconfiguration of existing facilities without adding on would not provide for the full Company configuration which includes: space for four aircraft, maintenance tools and test kits, and flight and maintenance personnel. The long-term solution required for the efficient operations and maintenance of the UAS aircraft in Interior Alaska is to construct a permanent hangar with an integrated COF at Fort Wainwright or Eielson AFB, Alaska, per the design specifications for a UAS hangar put forth by the Department of the Army Facilities Standardization Program. Construction of a new hangar would begin in FY 2017.

2.4 Proposed Action Alternatives

The 25th Avn Rgt CO D, which consists of 128 Soldiers and 5 contract personnel, is being stationed at Fort Wainwright, Alaska, and the installation will serve as the Company HQ (U.S. Army, 2014). The 25th Avn Rgt CO D will become operational in February 2016. Including Family members, the total increase in population will be approximately 300 people. Under all action alternatives, the Soldiers would be housed either in existing barracks or privatized Army housing on Fort Wainwright or in housing off the installation. The arrival of 128 Soldiers associated with the 25th Avn Rgt CO D will increase the total population of Soldiers at Fort Wainwright to approximately 6,500. The difference between alternatives is the location of where the permanent hangar would be constructed for Gray Eagle UAS operations. Under Alternative 1, the UAS aircraft would be permanently housed and operated from Fort Wainwright, while under Alternative 2, the UAS aircraft would be permanently housed and operated from Eielson AFB. Under all action alternatives, personnel associated with the 25th Avn Rgt CO D would be stationed at Fort Wainwright. Additionally, given the time it takes to receive funding, design, and build new facilities, construction of a new hangar that fully meets the hangar design specifications for the Gray Eagle UAS would not be completed until approximately FY 2019. As a result, during the interim period between when the 25th Avn Rgt CO D becomes operational (February 2016) and when the permanent UAS hangar is completed, Gray Eagle UAS operations and daily tasks would be conducted out of Hangar 1 on the north side of Ladd Army Airfield, the only available hangar space suitable without having to make extensive renovations, though some minor, temporary renovations would be required. This interim solution would occur under all action alternatives.

2.4.1 Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska, in the Interim and Permanent Periods

Under Alternative 1, the 25th Avn Rgt CO D would be headquartered at Fort Wainwright and operations would primarily occur from Ladd Army Airfield. Upon arrival in February 2016, Company D would share existing facility space with other units to perform operations and conduct administrative tasks. This alternative includes temporarily using Hangar 1 on the north side of Ladd Army Field for Gray Eagle UAS operations until a permanent UAS specific hangar can be constructed.

2.4.1.1 Construction and Maintenance of Facilities to Support Training Operations of the 25th Avn Rgt CO D

Facilities Construction

As noted above, during the interim period the 25th Avn Rgt CO D would use Hangar 1 on the north side of Ladd Army Airfield to store, operate, and maintain the aircraft (see Figure 2-1). Company D personnel would also share existing facility space with other units to conduct administrative tasks. Minor, temporary renovations would be needed to use Hangar 1. These renovations include installing temporary walls in the hangar bay, extending electrical lines to needed areas via 2-inch conduit in the building's interior, and adding electrical outlets to the building's exterior. For the supporting equipment, existing hardstands around the airfield would be used during UAS operations during this time period.

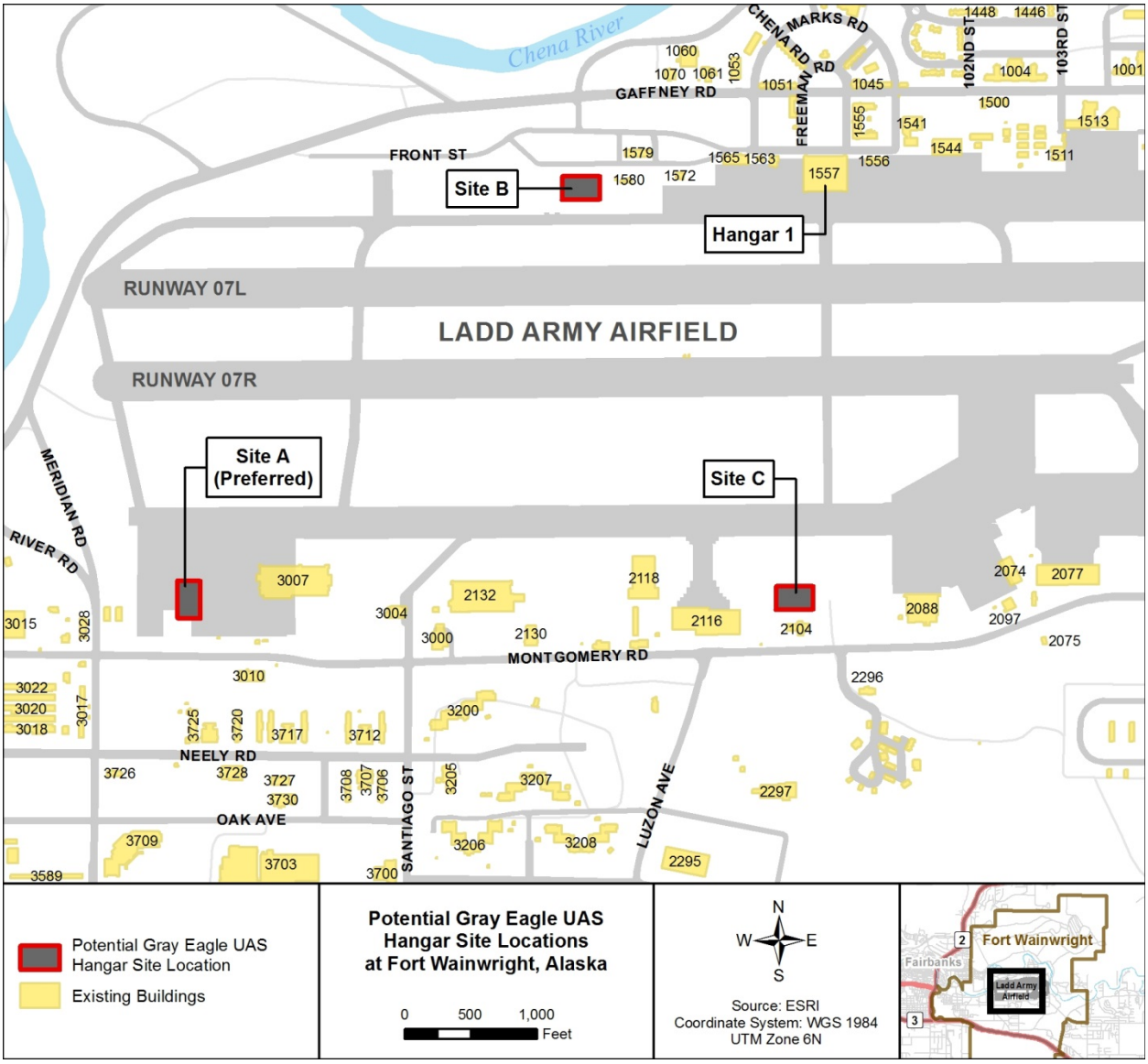
As a long-term solution for Gray Eagle UAS operations, the USAG FWA proposes to construct a Gray Eagle UAS hangar with integrated COF at the former location of Hangars 2 and 3 in the southwestern corner of Ladd Army Airfield (Site A on Figure 2-1).

USAG FWA staff evaluated three potential locations within Ladd Army Airfield for constructing the permanent Gray Eagle UAS hangar and associated facilities (Figure 2-1). Of the three potential hangar locations, Site A, located in the southwest corner of the airfield, was selected as the preferred location and is carried forward for analysis. It is preferred because it is compatible with the current aviation activities located along the southern side of the airfield, and its location near the end of the runway would better meet the operational needs of the Gray Eagle UAS for taxiing and takeoff.

Site B is located on the north side of the runway and is a less ideal location for meeting the operational needs of the Gray Eagle UAS for taxiing and takeoff as it is farther away from the end of the runway and would also increase fuel consumption. It is also much further away from where the organizational vehicle parking area would be located in the existing motor pool/industrial area of the installation. While Site C is located along the south side of the runway and would be compatible with other aviation activities at this

location, similar to Site B, it is a less than ideal location for meeting the operational needs of the Gray Eagle UAS for taxiing and takeoff because it is not located near the end of the runway.

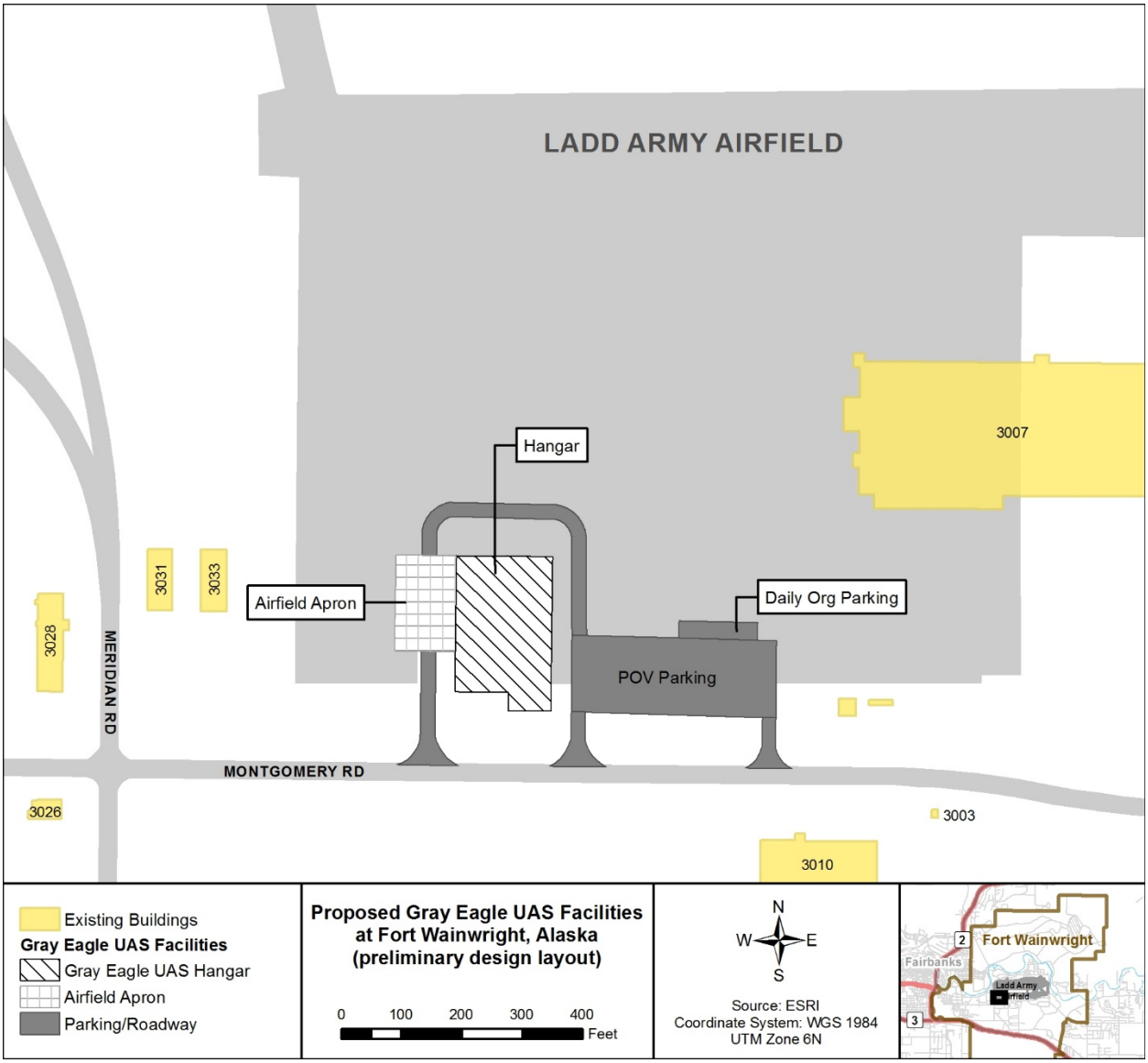
Figure 2-1: Gray Eagle UAS Hangar Locations Considered at Ladd Army Airfield, Fort Wainwright, Alaska



Construction of the facilities at Site A would require site improvements that include grading and installing storm drainage systems. Hangar construction would be accompanied by the construction of a concrete apron, taxiway, POV and a small organizational vehicle parking area for vehicles being used daily (e.g., heavy expanded mobility tactical truck (HEMTT) for fueling the Gray Eagle UAS and government pick-up trucks), and the installation of Gray Eagle UAS ground support equipment. The facility would also include an enclosed aircraft container storage area for five containerized Gray Eagle aircraft; a

petroleum, oil, and lubricant (POL) building; a hazardous waste storage building; security fencing; security lighting; sewer, water, fiber-optic, electric, and heating utilities. The total area of disturbance expected at Fort Wainwright would be approximately 5.7 acres. A preliminary conceptual layout of facilities at Site A is shown in Figure 2-2.

Figure 2-2: Conceptual Layout of Gray Eagle UAS Facilities at the Former Hangars 2 and 3 Location



All Gray Eagle UAS facilities would be constructed in accordance with Department of the Army Facilities Standardization Program *Unmanned Aircraft System (UAS) Hangar Standard Design*, March 2014. This design has been slightly modified to account for the unique climate and existing airfield and infrastructure configurations of Interior Alaska, including:

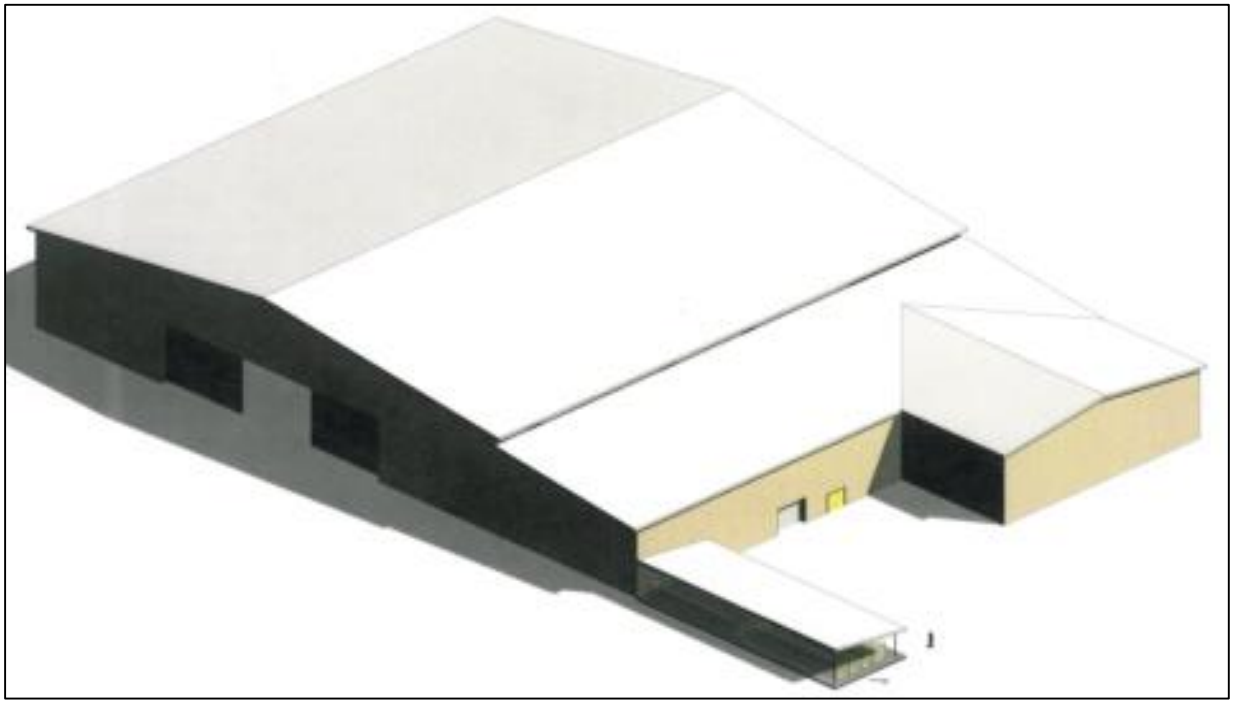
- 58,017 ft^2 hangar with COF
- 4,770 ft^2 fixed wing taxiway
- 55,800 ft^2 concrete airfield apron
- 2,800 ft^2 enclosed aircraft container storage area
- 180 ft^2 POL storage building
- 120 ft^2 hazardous waste storage building
- 144,000 ft^2(3.3 acres) organizational vehicle parking area for 55 vehicles and 42 trailers
- 56,700 ft^2 (1.3 acres) POV parking area for 123 vehicles

Utilities for the hangar (i.e., electrical, fiber optic, sewer, water, and gas) would be provided via connections to existing systems located nearby. The hangar would have fire protection and alarm systems, as well as intrusion protection, including security lighting and detection systems conforming to the latest DoD anti-terrorism measures for this type of facility. A security fence would be constructed and tied into the existing airfield fence to prevent unauthorized access. A conceptual design of the hangar with an integrated COF is shown in Figure 2-3.

Organizational Vehicle Parking

In addition to the small daily use organizational vehicle parking area co-located with the Gray Eagle UAS hangar, an approximately 144,000-ft^2 (3.3-acre) organizational vehicle parking area would be constructed in proximity to other organizational vehicle parking areas and the motor pool/industrial area of Fort Wainwright in accordance with Fort Wainwright's *Vision Plan* and *Master Plan* (see Figure 2-4); the exact site for the organizational vehicle parking area with in this location has not been determined yet.

Figure 2-3: Gray Eagle UAS Hangar with Integrated COF Conceptual Design



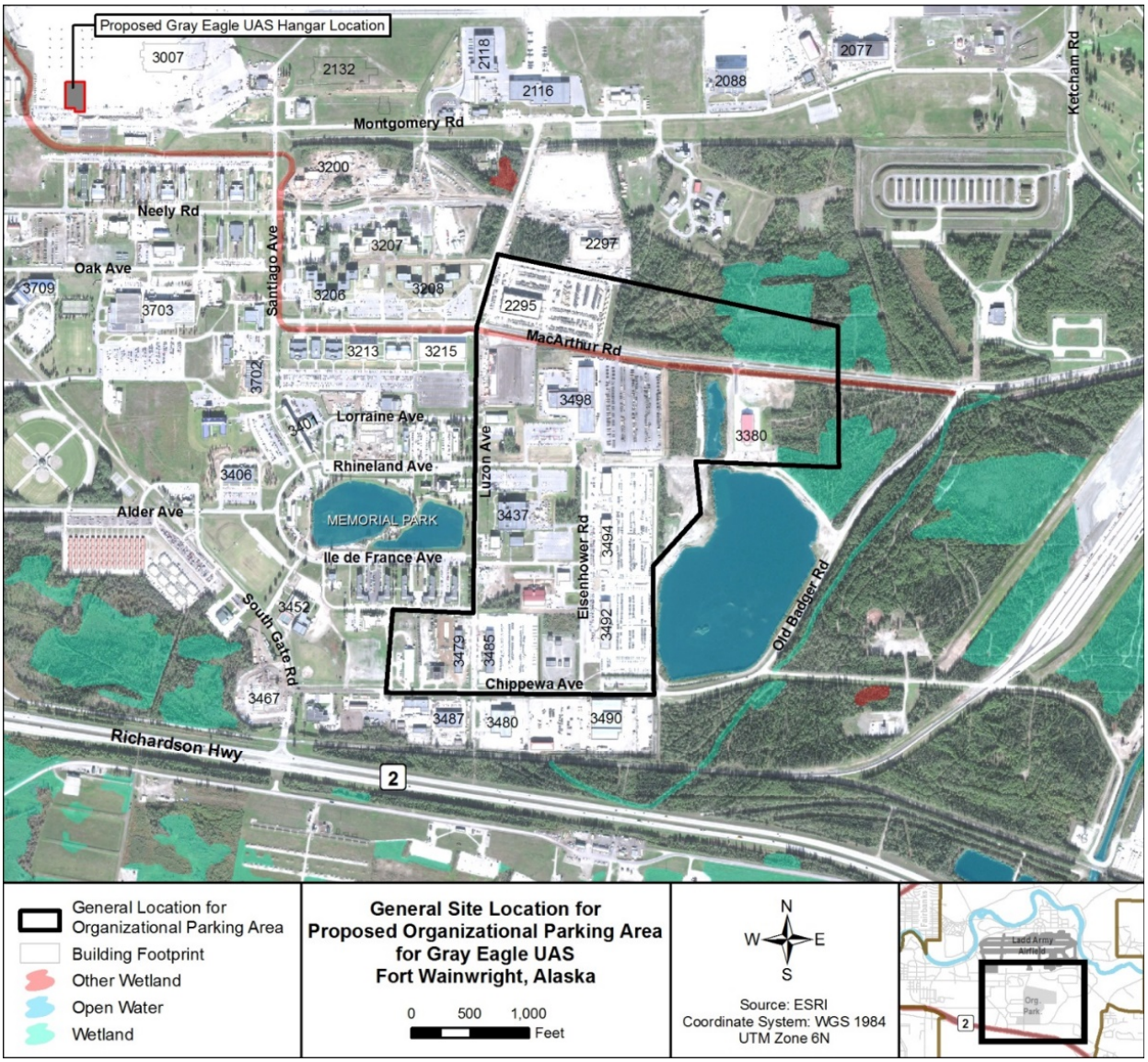
Supporting Communications Equipment

Systems design would be required for placing support equipment at various locations around the Ladd Army Airfield to accommodate site clearances and siting requirements to the extent practicable. Additionally, while the supporting equipment is self-sufficient and can be run off generators, which is what occurs when deployed, it is preferable to run the equipment off shore power (i.e., permanent power supplied by buried electrical lines) when not in a deployed status to minimize unnecessary wear and tear on the generators. Supporting communication systems for the Gray Eagle UAS include the following:

- Six GCS with each requiring a 221-ft^2 concrete pad with 120/208-volts alternating current (VAC), 3-phase, 100-ampere (A) power service, as well as grounding points. Three of these stations would be located adjacent to the hangar apron to provide line of sight to the airfield, and three would remain in storage.
- Six GDT towers, each situated with a GCS to provide line of sight to the UAS and equipped with 120-VAC, 1-phase, 50-A power service at each location.
- One TALS antenna on a 2-foot-diameter concrete pad equipped with 120-VAC, 1-phase, 30-A power service.
- Six automatic TALS, each requiring a 256-ft^2 concrete pad equipped with power.

- Seven TCDL GDTs, each requiring a 30-foot-diameter concrete pad equipped with power and cable connection to the corresponding GCS.
- Three satellite GDTs, each requiring a 1,050-ft^2 concrete pad equipped with 120/208-VAC, 3-phase, 10-A power service and cable connections to the corresponding GCS and grounding points.

Figure 2-4: General Site Location for Organizational Vehicle Parking Area



2.4.1.2 Flight Operations, Training, and Maintenance of the Gray Eagle UAS

Operations, Training and Maintenance

Under Alternative 1, the 25th Avn Rgt CO D would use Ladd Army Airfield as the main runway for conducting operations and would primarily train in the YTA, the TFTA, and the DTA–East and –West. All flights would be conducted in accordance with applicable COA(s) authorized by the FAA. Company D personnel would be responsible for manning flight operations, collecting data, preparing the units for flight, and conducting general maintenance of the aircraft. As discussed below, repairs other than general maintenance would be done by the original equipment manufacturer.

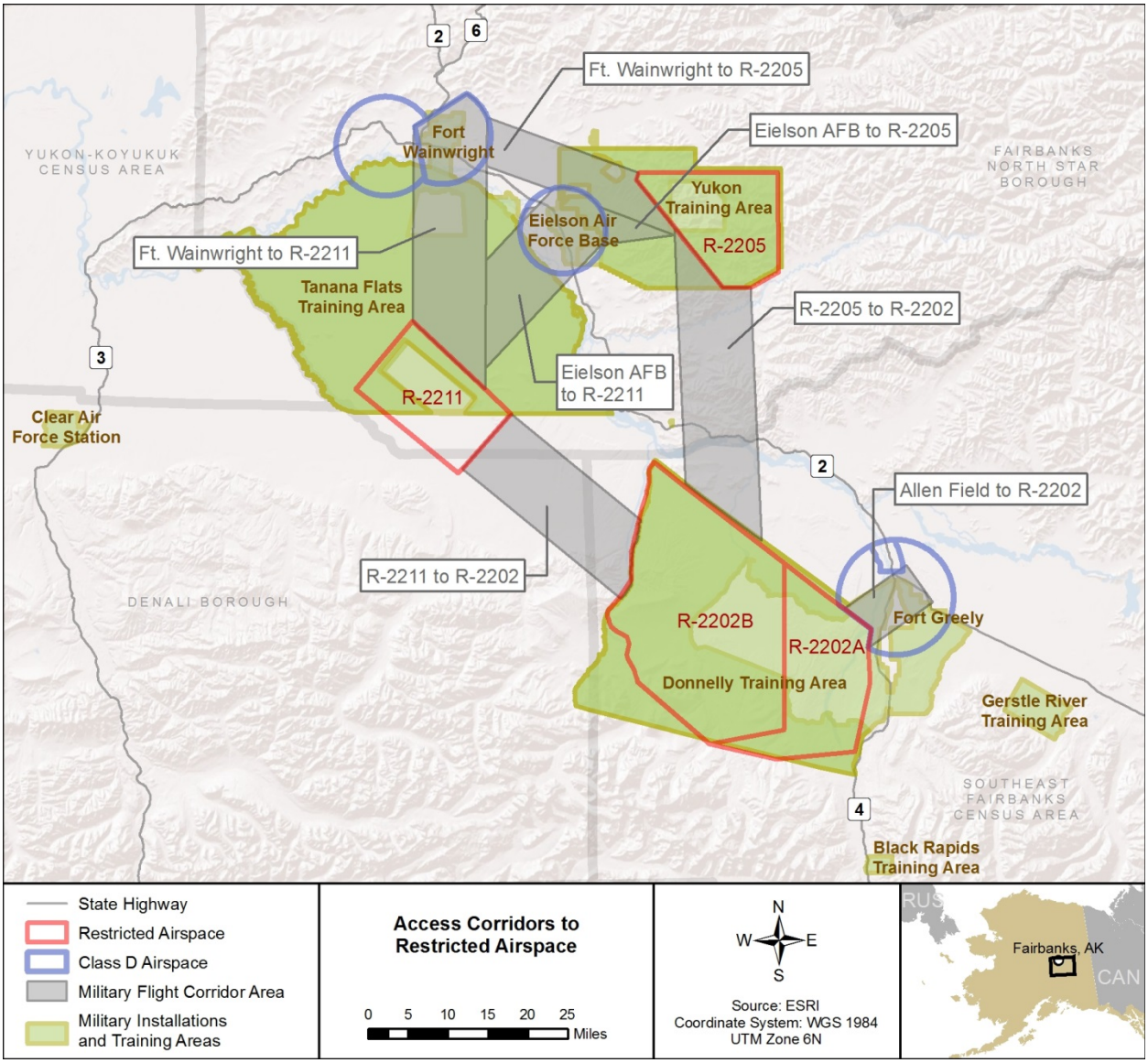
It is estimated that approximately two to five Gray Eagle UAS sorties (i.e., individual training operations) would be conducted daily for 5 days per week with a surge to 7 days per week, if needed. Gray Eagle UAS training operations would primarily occur from 7:00 a.m. to 7:00 p.m., though some nighttime operations could occur with approval in appropriate COAs and times stipulated by a Notice to Airmen. The Gray Eagle UAS would operate at normal cruise speeds that are estimated to average 120 knots and would operate between 1,200 feet AGL to 17,999 feet mean sea level (MSL). The aircraft is outfitted with a Mode-C transponder and lighting required for operations in the NAS. Mission training would be conducted in restricted air space with the UAS transitioning in the NAS to other training areas via approved COAs.

All Gray Eagle UAS flights would occur within the requirements outlined in a COA. Because UAS flight operations are not yet fully integrated into the NAS, all UAS flights are required to operate under a COA. As a result, the Gray Eagle UAS would transit the NAS to restricted airspace as required using a ground observer, a chase aircraft, or an approved Ground Based Sense and Avoid (GBSAA) system.[6] These measures are necessary to fulfill the see and avoid requirements of 14 CFR §91.113. Once the aircraft reaches restricted airspace, it would operate without the assistance of a ground observer, chase aircraft, or GBSAA system. Upon exiting the restricted airspace, the same see and avoid measures would be applied as required to return to the installation, airfield, or point of landing. The general flight route to restricted

[6] The GBSAA system is a warning system designed to operate with the UAS in NAS and consists of towers with fixed radar sensors at locations that meet the needs for communicating with the aircraft during flight. If the GBSAA system is used, there is a possibility that additional construction would be required if there are no suitable available towers located within the appropriate areas. This proposal, however, is not currently "ripe for decision" and therefore not covered under this EA. Subsequent supplemental documentation in accordance with NEPA will be conducted when more details are available for this proposal.

airspace R-2205 in the YTA and to restricted airspace R-2211 in the TFTA from Fort Wainwright is approximately 20 nautical miles (NM). The aircraft may also transit between restricted airspaces, as indicated in Figure 2-5, to increase the joint training opportunities, Air Ground Integration (AGI), and Manned Un-manned Teaming. These flight paths would occur within the requirements outlined in a COA.

Figure 2-5: General Flight Paths to Restricted Airspace



In the event the Gray Eagle UAS encounters a lost link with the GCS or MGCS, the aircraft can be preprogrammed to either loiter at a specific location within the restricted airspace or return to the airfield from which it is launched. If it is not able to link up with the ground support personnel, an additional aircraft would be deployed to locate the Gray Eagle UAS aircraft and remain with it until a

communications link is reestablished. Procedures would be established for lost link, lost communication, and other emergency scenarios for all mission profiles and by each location and specified parameters and included in the appropriate COAs. The planning of these procedures would be conducted in cooperation with the FAA Centers and Approach controls, ATC towers, system operators, and appropriate officials as required for safe operation.

The Gray Eagle UAS uses aviation grade JP-8 as its fuel; however, aviation grade JP-8 is not currently stored or provided at Fort Wainwright. Therefore, the Army would use a HEMTT with a 2,400-gallon fuel capacity to transport fuel from Eielson AFB to Fort Wainwright to fuel the Gray Eagle UAS. To meet the operational needs of the 25th Avn Rgt CO D, approximately one trip per week would be required of the HEMTT. Fueling operations of the aircraft would be conducted similarly to other aircraft fueling operations at Fort Wainwright and would be conducted in accordance with U.S. Army Field Manual 10-67-1, *Concepts and Equipment of Petroleum Operations*, as well as the USAG FWA's Spill Prevention Plan.

During times of snow and ice (approximately October through April) Gray Eagle UAS operations would require measures to maintain an acceptable airfield runway condition reading (RCR)[7] of 8 to ensure safe landing conditions. Currently, the USAG FWA maintains RCR through mechanical methods to clear snow and ice and does not have runway deicing capabilities. Mechanical methods would continue to be used and would be increased as required to maintain the necessary RCR for Gray Eagle operations. If in the future, mechanical measures are found to be insufficient to maintain the necessary RCR, the USAG FWA would implement runway deicing measures, including means of collecting and treating deicing chemicals to prevent discharge to the Chena River and other waters of the U.S. Potential means of collecting and treating deicing chemicals could include removal of deicing chemicals with a collection system (e.g., a vacuum system or collection truck), directing runoff into vegetated swales, collection in wet ponds, or storage of runoff. Runoff contaminated with deicing chemicals would eventually be trucked or sent via the Fort Wainwright sanitary sewer to Golden Heart Utilities Wastewater Treatment Plant for treatment.

No new intermediate unit level maintenance shop or flight line support facilities would be required because these tasks would be accomplished in existing facilities. The Gray Eagle UAS was developed as a two-level (organizational and depot) weapons system. Under this alternative, routine maintenance

[7] RCR is a friction coefficient used to define the braking characteristics for various runway surface conditions.

activities and minor inspections would be performed at Fort Wainwright, while defective items requiring more than just routine servicing or upkeep (including the aircraft) would be returned to the original equipment manufacturer.

To conduct aircraft gunnery training, the Gray Eagle UAS can be loaded with Hellfire missiles. However, the Army has indicated there is no current intent to conduct live fire training from Fort Wainwright, meaning no munitions would be built up (placed in final configuration for deployment, e.g., add the detonator) or loaded on the Gray Eagle UAS at Fort Wainwright. Instead, missile training would be conducted using an inert "house-mouse" missile that electronically simulates the firing of live missiles but never leaves the aircraft. If, in the future, circumstances change and the decision is made to conduct live fire training, this activity would be subject to NEPA analysis, and a separate evaluation of the potential environmental and socioeconomic impacts would be conducted at that time.

Hellfire missiles to be used when the 25th Avn Rgt CO D deploys to combat would be stored at Fort Wainwright in existing storage facilities. The missiles, along with the Gray Eagle UAS, would be transported via truck convoy to Eielson AFB for deployment.

2.4.1.3 Evaluation of Alternative 1 against Screening Criteria

This section evaluates the Proposed Action alternative against the screening criteria presented in Section 2.3. Under Alternative 1, operations of the Gray Eagle UAS would primarily occur from Ladd Army Airfield. This alternative supports the purpose and need of the Proposed Action and meets the screening criteria established by the Army to support operations of the Gray Eagle UAS. There is an existing UATF and heavy troop concentrations to facilitate AGI within the JPARC. Ladd Army Airfield has a paved runway with a length of 8,575 feet and slope less than or equal to 1.5 degrees, making it adequate to accommodate Gray Eagle UAS flights. Restricted airspace is approximately 20 NM from Fort Wainwright and is still considered accessible due to the distances at which the Gray Eagle UAS can fly, as well as the ability to use a chase aircraft or GBSAA system to meet the 14 CFR §91.113, see and avoid requirement. This alternative also meets the last screening criteria because Fort Wainwright provides for the use of an existing airfield and Soldier-support facilities (e.g., barracks, dining facility, and medical facility) even during the interim period. For the long-term solution, operations space has already been identified along the southern portion of the Ladd Army Airfield, and this space is suitable for a new hangar, apron, taxiway, and organizational vehicle parking. Because this alternative can fulfill all screening criteria and has met the purpose and need of the Proposed Action, it is considered reasonable and will receive full analysis in this EA.

2.4.2 Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and at Eielson Air Force Base for the Permanent Period

Under Alternative 2, Soldiers associated with the 25th Avn Rgt CO D would be headquartered and housed at Fort Wainwright beginning February 2016. During the interim period between when Company D becomes operational and construction of a permanent hangar is completed (approximately FY 2019), the 25th Avn Rgt CO D would operate out of Hangar 1 located on Fort Wainwright. However, the difference in this alternative is that the permanent Gray Eagle UAS hangar would be constructed on Eielson AFB.

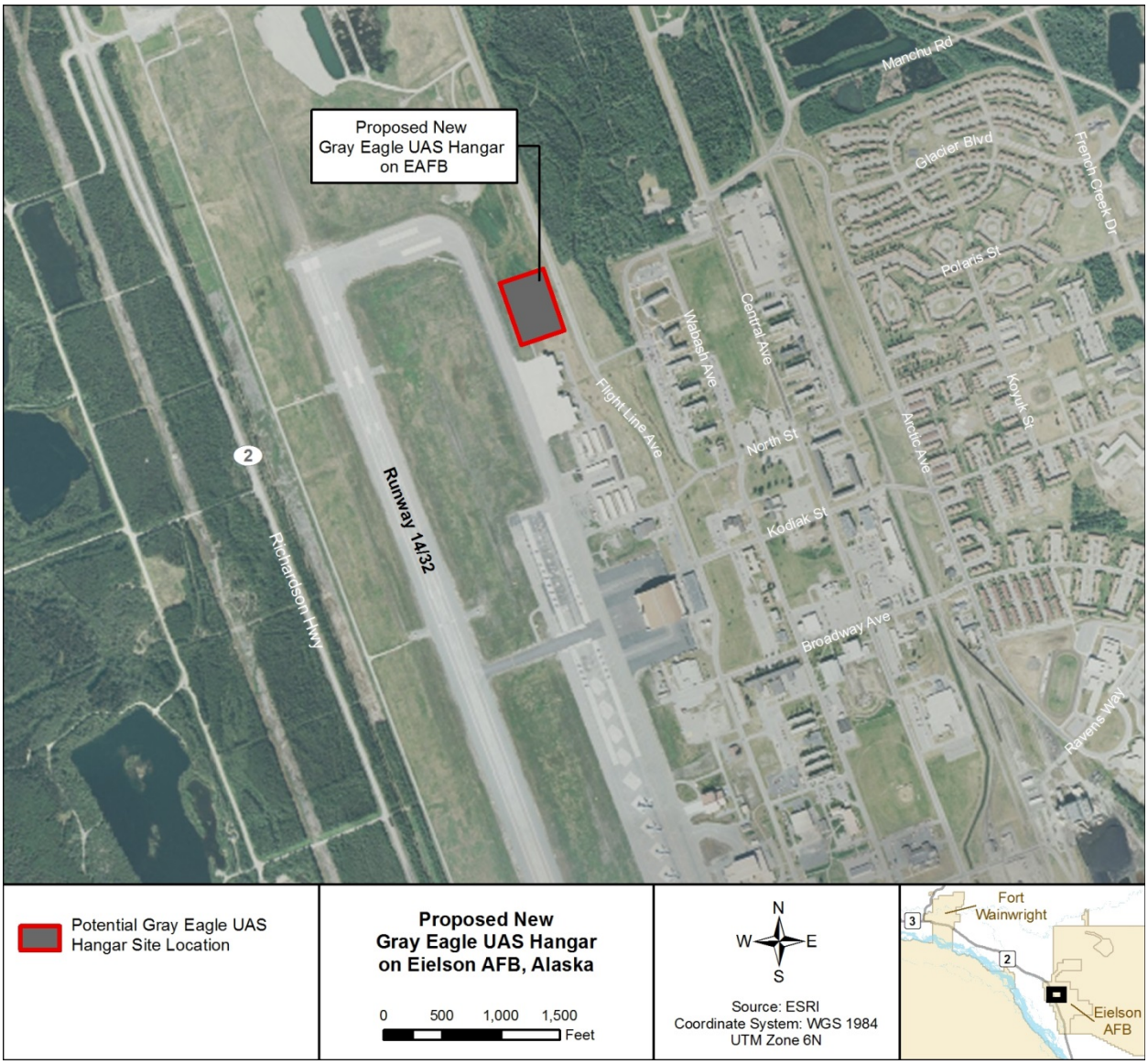
2.4.2.1 Construction and Maintenance of Facilities to Support Training Operations of the 25th Avn Rgt CO D

Facilities Construction

As noted above, during the interim period, the 25th Avn Rgt CO D would operate out of Hangar 1 on the north side of Ladd Army Airfield on Fort Wainwright. Similar to Alternative 1, minor, temporary renovations to Hangar 1 would be needed, including installing temporary walls in the hangar bay, extending electrical lines to needed areas via 2-inch conduit in the building's interior, and adding electrical outlets to the building's exterior. Additionally, existing hardstands around the airfield would be used for the supporting equipment during UAS operations.

Permanent hangar facilities for the Gray Eagle UAS, including supporting equipment, would be constructed on Eielson AFB along the northeast corner of the airfield (Figure 2-6). The proposed location was chosen during a preliminary site visit in May 2014 for basing the 25th Avn Rgt Co D operations because of its undeveloped character and its location at the end of the runway, which better meets the operational needs of the Gray Eagle UAS for taxiing and takeoff. In addition, if the Air Force makes the decision to station two F-35A squadrons at Eielson AFB, initial scoping documents indicate that extensive construction on the opposite end of the runway would likely occur (U.S. Air Force, no date), so the proposed location of the Gray Eagle UAS hangar in the northeast corner of the airfield would provide a physical separation of Army and Air Force training activities and help de-conflict missions. The proposed construction site for the Gray Eagle UAS hangar has not been formally approved and is contingent on the needs of the units stationed at Eielson AFB.

Figure 2-6: Location of Proposed Permanent Gray Eagle UAS Hangar on Eielson AFB, Alaska



The new UAS facility would consist of a hangar with an integrated COF, POV parking, taxiway, and supporting equipment. Because the hangar would be constructed from a standard design modified for the Interior Alaska climate, the description for hangar construction at Fort Wainwright under Alternative 1 is similar to what would occur on Eielson AFB. The existing runway at Eielson AFB meets all of the original objectives for the stationing of a Gray Eagle UAS Company; therefore, no upgrades to the runway would be required. Additionally, Eielson AFB currently employs chemical deicing measures for the runway, so they would be able to maintain the necessary RCR for the Gray Eagle UAS.

Organizational Vehicle Parking

Under Alternative 2, the 25th Avn Rgt CO D would house and maintain organizational vehicles at Fort Wainwright. This parking area would be the same as described for Alternative 1 and located in the same area, in proximity to the existing motor pool/industrial area of Fort Wainwright (see Section 2.4.1.1 and Figure 2-4).

Supporting Communications Equipment

Supporting equipment for the Gray Eagle UAS operations, as described for Alternative 1, would be sited in a manner that does not conflict with Air Force or RED FLAG-Alaska[8] operations or require airfield obstruction waivers issued by Pacific Air Force (PACAF) for the takeoff and landing systems. Because generators are not allowed on the airfield, all supporting equipment would require permanent shore power.

2.4.2.2 Flight Operations, Training, and Maintenance of the Gray Eagle UAS

Under Alternative 2, personnel associated with the 25th Avn Rgt CO D would use the Eielson AFB airfield as the primary runway for conducting operations and would train in the YTA, TFTA, and DTA–East and –West. The Company would be responsible for maintaining, training, and daily operations associated with the requirements of the Gray Eagle UAS. Approximately 35 to 40 personnel assigned to the 25th Avn Rgt CO D may be working in or around the hangar facility at any given time. The remaining Company personnel would be performing other tasks at Fort Wainwright within existing facilities. Although stationed at Fort Wainwright, Soldiers and personnel would work in shifts at the Eielson AFB airfield to conduct training exercises. On a daily basis, they would travel using either organizational vehicles or POVs along the Richardson Highway from Fort Wainwright to Eielson AFB. All Army operations would continue to follow USARAK Regulation 55-2, *Transportation Operations and Planning in Alaska*, which establishes policies and procedures for USARAK units and agencies using transportation resources in support of Army operations.

Operations, Training and Maintenance

Under Alternative 2, training flight operations would be the same as described for Alternative 1; however, as part of this alternative, local flying procedures and Air Force Instructions would be revised as needed in coordination with the Air Force. The Gray Eagle UAS would operate with the airfield configured to

[8] RED FLAG-Alaska is a series of Pacific Air Forces commanded-directed field training exercises for U.S. Forces conducted at Eielson AFB.

support fighter operations from the 354th Fighter Wing and the 3rd Wing. If further requirements are identified, they would be captured in an Intra-Services Support Agreement between the Army and the Air Force. During the Air Force's normal F-16 operations, the primary method of separation between the Gray Eagle UAS and the F-16s would be time de-confliction. Time de-confliction would be accomplished through a 1- to 2-hour departure/recovery window in the a.m. and p.m. outside the 354th Fighter Wings' quiet hours/closure and primary local fly windows, in accordance with the Memorandum of Agreement 040 between USARAK and 11th Air Force, or until the Memorandum of Agreement is altered or rescinded. In addition, the Gray Eagle UAS would not fly from Eielson AFB during PACAF directed exercises, such as RED-FLAG Alaska, until the aircraft is integrated through PACAF exercise staff. Each exercise no-fly period equates to approximately 2 weeks.

Although restricted airspace is adjacent to Eielson AFB, a ground observer, chase aircraft, or GBSAA system may be required. Similar to Alternative 1, the aircraft may also transit between restricted airspaces, as indicated in Figure 2-5, to increase the joint training opportunities, AGI, and Manned Un-manned Teaming. These flight paths would occur within the requirements outlined in a COA. Additionally, similar to Alternative 1, procedures would be established for lost-link and incorporated into appropriate COAs.

Aviation grade JP-8 fuel is stored and used at Eielson AFB. The Army would use a 600-gallon fuel truck (approximately four aircraft refuels) to transport fuel to/from a forward refueling point to accomplish Gray Eagle fueling operations separate from the Air Force operations.

Operations and routine maintenance activities and minor inspections for the aircraft would take place in the Gray Eagle UAS hangar; therefore, a Maintenance Squadron shop or flight line support facilities would not be required by the Army on Eielson AFB. Similar to Alternative 1, defective items requiring more than just routine servicing or upkeep (including the aircraft) would be returned to the original equipment manufacturer. During routine maintenance activities, any hazardous materials required or hazardous waste generated would be supplied/disposed of using existing facilities at Eielson AFB.

Similar to Alternative 1, the Army has indicated that there is no current intent to conduct live fire training from Eielson AFB, meaning no live munitions would be built-up, or loaded on the Gray Eagle UAS at Eielson AFB. Instead, missile training would be conducted using an inert "house-mouse" missile that electronically simulates the firing of live missiles but never leaves the aircraft. If in the future, circumstances change and the decision is made to conduct live fire training, this activity would be subject to NEPA analysis, and a separate evaluation of the potential environmental and socioeconomic impacts would be conducted at that time.

2.4.2.3 Evaluation of Alternative 2 against Screening Criteria

This section evaluates the Proposed Action alternative against the screening criteria presented in Section 2.3. Under Alternative 2, the 25th Avn Rgt CO D would be stationed at Fort Wainwright, and operations of the Gray Eagle UAS would occur from Eielson AFB. This alternative meets the screening criteria established by the Army because there is an existing CAB-like structure and there are troop concentrations to facilitate training at Fort Wainwright. Eielson AFB has a paved runway with length of 14,000 feet and slopes less than or equal to 1.5 degrees, making it adequate to accommodate Gray Eagle UAS flights. Restricted airspace R-2205 is approximately 5 NM away from Eielson AFB and is considered accessible due to the distances at which the Gray Eagle UAS can fly, as well as the ability to use a chase aircraft to assist the UAS transit through the NAS. A location has also been chosen on Eielson AFB for the construction of a hangar, apron, and taxiway. In addition, this alternative supports the purpose and need of the Proposed Action by providing the necessary facilities needed to support operating the 25th Avn Rgt CO D in Interior Alaska. Because this alternative can fulfill all screening criteria and has met the purpose and need of the Proposed Action, it is considered reasonable and will receive full analysis in this EA.

2.5 No Action Alternative

Under this alternative, the necessary infrastructure to support operating the 25th Avn Rgt CO D in Interior Alaska would not be provided. Since there are no existing hangar facilities at Fort Wainwright or Eielson AFB that meet the design standards for the Gray Eagle UAS and no COAs are in place for the Gray Eagle UAS to transit the NAS, operations associated with the stationing of the 25th Avn Rgt CO D at Fort Wainwright cannot occur. Therefore, the 25th Avn Rgt CO D would neither be stationed in Alaska nor operate from either Fort Wainwright or Eielson AFB. Consequently, the 25th ID and USARAK would not be in compliance with Army HQ's directives. Soldiers assigned to the 1-25th SBCT would not receive the required Gray Eagle UAS operations training, and would not be certified to deploy and operate within theater operations. Uncertified crews would significantly affect mission readiness to provide support to ground combat units with "eye-in-the-sky" unmanned aircraft and live fire support. This potentially places Soldiers in compromising positions and impedes the unit's ability to meet U.S. Code Title 10 requirements to train their Soldiers. Although the No Action Alternative does not meet the purpose and need of the Proposed Action, it is carried forward for analysis through the Draft EA as required by the CEQ regulations (40 CFR §1502.14). It serves as a baseline against which the impacts of the action alternatives can be measured.

2.6 Alternatives Eliminated from Further Consideration

2.6.1 Interim Support Facilities at Eielson Air Force Base, Alaska

Under this alternative, instead of using existing airfield facilities at Fort Wainwright during the interim period to support Gray Eagle UAS operations until the permanent facilities are completed, the 25th Avn Rgt CO D would use existing facilities at Eielson AFB. This alternative would involve renovating the Nose Dock Hangar 2, Building 2116, located on Eielson AFB along the northeastern tip of the airfield.

Renovating Nose Dock Hangar 2 to meet the requirements of the 25th Avn Rgt CO D would include fire alarms, sprinkler system, fire station (extinguishers and hose), and hangar foam system upgrades; communications upgrades, including fiber installation, utility drops, and additional receptacles; and alterations to the roof access stairs, hatch, and handrails. Additional renovations would include replacing all exterior and interior doors, frames, and hardware; replacing existing windows; replacing interior office and hangar bay lighting; renovating the restroom, and general cleaning of the hangar. These tasks would be required to provide compliant systems in accordance with all applicable regulations, as well as a secure facility that affords the Soldiers and personnel an environment that attains the goals of health and welfare, life safety, and mission success.

While this interim solution meets the screening criteria, it was not carried forward for analysis because obtaining the required permits and conducting the necessary renovations, including asbestos and lead-based paint abatement, could not be completed in time to accommodate the February 2016 time frame for the arrival of the Soldiers, aircraft, and supporting equipment.

2.6.2 Operate the Gray Eagle UAS from Fort Greely, Alaska

An alternative of operating the Gray Eagle UAS from Fort Greely, similar to the means of operating from Eielson AFB under Alternative 2, was considered. Under this alternative, the 25th Avn Rgt CO D would be stationed at Fort Wainwright and operations of the Gray Eagle UAS would primarily occur from Allen Army Airfield at Fort Greely. This alternative meets four of the five screening criteria necessary to be considered a viable alternative. It meets the existing CAB and heavy troop concentration due to the troops being stationed at Fort Wainwright. Allen Army Airfield at Fort Greely has three runways that all meet the airfield requirements of 4,500-foot runway length and runway slope of less than or equal to 1.5 degrees and restricted airspace could be accessed. Fort Greely does not, however, meet the criteria requiring space available for facilities. It does not contain a motor pool, vehicle parking with headbolt heaters, necessary base services for Soldiers (e.g., dining facilities and barracks), or adequate warm storage, and the estimated cost associated with constructing these facilities to support the 25th Avn Rgt

CO D exceeded the available military construction funding for stationing of the 25th Avn Rgt CO D. Being located 100 miles away from Fort Wainwright, it is also too far from Fort Wainwright for practical daily commuting for Soldiers. Because this alternative does not meet all five selection criteria, it is not deemed a viable alternative for operating the Gray Eagle UAS in Interior Alaska on an interim or permanent basis and is, therefore, not carried forward for full evaluation in this EA.

2.7 Summary of Environmental Consequences

Table 2-1 provides a summary of environmental consequences for each resource area analyzed for each alternative carried forward for evaluation in Chapter 3.0. A summary of proposed mitigation measures and best management practices (BMPs) is provided after the table.

Table 2-1: Summary of Environmental Impacts

Resource Area	Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska for the Interim and Permanent Period	Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and from Eielson Air Force Base for the Permanent Period	No Action
Air Space	Short term: no impact. Long term and minor: increased Gray Eagle UAS training operations could cause impacts to air traffic flow.	Short term: no impact. Long term: increased Gray Eagle UAS training operations could cause impacts to air traffic flow.	No impact
Cultural Resources	Short term: no impact. Long term and minor: impacts from introducing new elements into the Ladd Field NHL and Cold War Historic District.	Short term: no impact. Long term: no impact.	No impact
Energy Demand and Utilities	Short term and minor: physically connecting to utility services. Long term and minor: utility needs for new facilities and demand for energy, water, sewer, and telecommunications increased with additional Soldiers. Slight increase in demand for aviation grade JP-8 fuel for Gray Eagle UAS operations.	Short term and minor: physically connecting to utility services. Long term and minor: operation of the hangar facility would increase Eielson AFB's demand for energy, water, sewer, and telecommunications, and slightly increase demand for aviation grade JP-8 fuel for Gray Eagle UAS operations. Additional Soldiers would increase energy and utility demand at Fort Wainwright	No impact

Resource Area	Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska for the Interim and Permanent Period	Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and from Eielson Air Force Base for the Permanent Period	No Action
Hazardous Materials/ Hazardous Waste	Short term and minor: increased hazardous material and waste production during construction of the UAS hangar. Long term and minor: impacts from risk of aviation grade JP-8 fuel spillage and use of hazardous materials and waste for aircraft maintenance.	Short term and minor: increased hazardous material and waste production during construction of the UAS hangar. Long term and minor: impacts from risk of aviation grade JP-8 fuel spillage and use of hazardous materials and waste for aircraft maintenance.	No impact
Health and Safety	Short term and minor: risks associated with heavy construction equipment and activities. Long term and minor: adhering to existing airspace management and scheduling operations would minimize potential impacts to human health and safety; furthermore, the Gray Eagle UAS would not be allowed to fly unassisted in non-military owned airspace.	Short term and minor: risks associated with heavy construction equipment and activities. Long term and minor: adhering to existing airspace management and scheduling operations would minimize potential impacts to human health and safety; furthermore, the Gray Eagle UAS would not be allowed to fly unassisted in non-military owned airspace.	No Impact
Water	Short term and minor: clearing, grading, and other construction activities would disturb and expose soil resulting in increased potential for soil erosion, sedimentation of surrounding water resources. Long term and minor: from increased impervious surfaces, possible use of deicing chemicals, and possible disturbance of wetlands.	Short term and minor: clearing, grading, and other construction activities would disturb and expose soil resulting in increased potential for soil erosion, sedimentation of surrounding water resources. Long term and minor: from increased impervious surfaces, and possible disturbance of wetlands.	No impact
Socioeconomics and Environmental Justice	Long term: no impact on environmental justice and protection of children; housing; Economic Impact Forecast System. Long term and minor: government and emergency services; population. Long term and beneficial: employment.	Long term: no impact on environmental justice and protection of children; housing; Economic Impact Forecast System. Long term and minor: government and emergency services; population. Long term and beneficial: employment.	No impact

Notes: AFB – Air Force Base, Cold War Historic District – Ladd Air Force Base Cold War Historic District, Ladd Field NHL – Ladd Field National Historic Landmark, UAS – unmanned aircraft system

The Proposed Action would not result in significant impacts to any of the resource areas; however, dependent on the resource area, some mitigation measures would be needed as a result of minor impacts. For example, if siting of the organizational vehicle parking area on Fort Wainwright were to result in minor, adverse impacts on wetlands, mitigation measures would be required to offset the impacts and replace the lost functions and values of the wetlands. Specific mitigation measures would be determined during the Clean Water Act 404 permitting process. Additionally, because Alternative 1, if selected, would result in minor, adverse impacts to the Ladd Field National Historic Landmark (Ladd Field NHL) and the Ladd Air Force Base Cold War Historic District (Cold War Historic District), the USAG FWA would initiate consultation per Section 106 of the National Historic Preservation Act (NHPA) to determine what mitigation is necessary for the adverse effect on the Ladd Field NHL and Cold War Historic District.

Though the Proposed Action would not require mitigation measures other than potentially for cultural resources and wetlands, a number of standard measures, including BMPs, would be employed where appropriate to reduce or minimize potential impacts. In recent years, both the USAG FWA and USARAK have produced a variety of NEPA analyses evaluating several actions, including Army force transformation efforts, the addition of Soldiers and new equipment, a general increased use of training lands, and range development projects throughout USARAK ranges. These documents have also identified many regulations, policies, management programs, BMPs, and specific mitigation measures used to avoid, minimize and mitigate various adverse impacts to the affected environment at Fort Wainwright. The following documents (incorporated by reference) provide a synopsis of previous environmental analysis of the USARAK and USAG FWA transformation, stationing actions, and evolution of day-to-day operations. The BMPs and mitigation measures discussed in these documents are ongoing and will continue as part of the baseline management employed by the USAG FWA and the Army in Alaska on Army-owned and controlled lands, including during the construction and operation of Gray Eagle UAS facilities as a part of the current Proposed Action.

Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex in Alaska. Final EIS, August 2013. This document analyzes the impacts to USARAK lands including ranges; training areas; restricted areas; and Military Operations Areas associated with Fort Greely, Fort Wainwright, Joint Base Elmendorf-Richardson, Eielson AFB, and Donnelly, Tanana Flats, Yukon, Gerstle River, and Black Rapids Training Areas from implementing 18 different actions under the JPARC Master Plan, including UAS access to JPARC training ranges and restricted airspace.

Transformation of U.S. Army Alaska Final EIS, May 2004. This document analyzes the impacts to USARAK lands and surrounding communities and land users associated with the transformation of the 172nd Infantry Brigade (Separate) at Fort Wainwright and Joint Base Elmendorf-Richardson into the 1-25 SBCT.

Stationing and Training of Increased Aviation Assets within U.S. Army Alaska Final EIS, August 2009. That EIS analyzes the impact of stationing a task force-sized aviation unit at Fort Wainwright. In addition, the impacts of helicopter training on Army lands was evaluated, including the identification of several mitigation measures to lessen the adverse impact on various resource areas.

U.S. Army Pacific Supplemental *Programmatic EIS for Army Growth and Force Structure Realignment, 2008*. This document evaluates the effects associated with growing and realigning the Army's force structure to support military operations in the Pacific Theater, including the addition of approximately 2,200 new Soldiers in Alaska.

USAG Alaska Grow the Army Force Structure Realignment EA, 2008. Tiering off the above EIS, this document evaluates the effects associated with facility construction and training actions to accommodate new military units to be stationed in Alaska. The EA analyzes site-specific facility and range construction as well as increased training that will be necessary to support incoming Soldiers and their Families.

Integrated Natural Resource Management Plan (INRMP) dated 2013, 2007 INRMP EA, and 2013 INRMP Update Record of Environmental Consideration. These documents describe standard policies and procedures for managing natural resources to ensure sustainability of USAG FWA lands.

Integrated Cultural Resource Management Plan (ICRMP) dated 2013, 2000 ICRMP EA, and 2012 ICRMP Update Record of Environmental Consideration. This document outlines treatment for and management of cultural resources on USAG FWA lands.

Integrated Training Area Management (ITAM) Plan and ITAM EA, October 2005 and June 2005, respectively. These documents focus on managing sustainable use of training areas and provide recommended measures to achieve sustainability and rehabilitation of lands impacted by training.

Department of Army Pamphlet (PAM) 350-38, *Standards in Training Commission.* This regulation establishes Army policy and responsibilities for the use and maintenance of training aids, devices, simulators, and simulations, including tactical engagement simulations, targets, targetry, combat training center and range instrumentation, and training-unique ammunition. In addition, this regulation sets forth

the policies and procedures for the identification, approval, prioritization, development, and fielding of graphic training aids to support Army-wide requirements.

AR 385-63, *Range Safety*. This regulation prescribes HQDA range safety policies and responsibilities for firing ammunition, lasers, guided missiles, and rockets and provides guidance for the application of risk management in range operations.

PAM 385-63, *Range Safety*. This pamphlet provides implementation guidance for the Army Range Safety Programs prescribed in AR 385–63. It provides standards and procedures for the safe firing of ammunition, demolitions, lasers, guided missiles, and rockets for training, target practice, and to the extent practicable, combat.

AR 385-64, *U.S. Army Explosives Safety Program*. This regulation prescribes Army safety policy, standards, responsibilities, and procedures for implementing and maintaining the U.S. Army Explosives Safety Program. It sets explosives safety standards to protect Soldiers, Army civilian employees, Family members, contractors, the general public, and the environment.

PAM 385–64, *Ammunition and Explosives Safety Standards*. This pamphlet explains the Army's safety criteria and standards for operations involving ammunition and explosives prescribed by AR 385–64, for the Army and contractor operations on government property.

USARAK Regulation 350-2, *Training*. This regulation provides procedures for planning, requesting, and operating ranges and training areas within USARAK. It mandates specific safety policies for munitions use as required by Army regulations. Highlights include the range safety certification program, environmental considerations, and guidelines for medical support, demolitions training, and laser operations. Specific chapters provide procedures for scheduling, ammunition handling, direct fire, indirect fire, special ranges, airspace, nonfiring ranges, and training areas.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter describes the affected environment of Fort Wainwright and Eielson Air Force Base (AFB), Alaska, and the surrounding areas, as well as the environmental impacts associated with each alternative. The affected environment consists of areas and the resources within those areas that may experience environmental effects resulting from implementing the alternatives described in Chapter 2.0. Immediately following the Affected Environment section for each resource is the presentation of Environmental Consequences sections, which detail the environmental impacts associated with each alternative. The No Action Alternative is presented first followed by the analyses of Alternative 1 and Alternative 2. Any mitigation measures identified to reduce or eliminate the impact of an alternative on a resource are identified within the analysis for that resource area. In addition to identifying the direct and indirect environmental impacts associated with each alternative, the cumulative impacts of the alternatives with other past, present, and reasonably foreseeable future actions for each resource area are discussed in Section 3.9.

3.1.1 Presentation of Resource Areas

Analysis of the environmental consequences of the Proposed Action focuses on those areas of concern identified during scoping. Environmental consequences associated with the Proposed Action include direct, indirect, short-term, and long-term impacts; cumulative impacts; and any irreversible or irretrievable commitments of resources.

In accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing the NEPA, the analysis of environmental conditions only addresses those areas and environmental resources with the potential to be affected by the alternatives. More specifically, this environmental assessment (EA) examines the potential for direct, indirect, adverse, or beneficial impacts.

The CEQ defines direct effects as those caused by the Proposed Action and those that occur at the same time and place, whereas indirect effects are caused by the Proposed Action and are later in time or farther removed in distance but are still reasonably foreseeable (40 Code of Federal Regulations [CFR] §1508.8). Beneficial impacts are those that would result in a positive change in the condition or appearance of the resource or a change that would move the resource toward a desired condition. Adverse impacts are those

that would result in a negative change to the appearance or condition of the resource. Short-term impacts are those that would be temporary and associated with the construction phase, but they would no longer be perceptible once construction is completed or shortly thereafter. Long-term impacts are those that would be permanent or would persist for the operational life of the project.

Although further adapted to address the unique characteristics of each resource category carried forward for analysis in this chapter, the qualitative terms used to assess the anticipated impacts associated with each of the alternatives are generally defined as:

- None—No measureable impacts are expected to occur.
- Minor—Adverse impacts are expected to occur; impacts would be measureable and may have a slight effect on the resource.
- Moderate—Adverse impacts are expected to occur; impacts would be noticeable and would have a measureable effect on the resource.
- Severe—Adverse impacts are expected to occur; impacts would be obvious, would be significant, and would have serious consequences on the resource.
- Beneficial—Only beneficial impacts are expected to occur.

The CEQ guidelines indicate the significance of an impact is determined by the intensity and the context of the impact. Intensity refers to the severity or extent of an impact (i.e., none, minor, moderate, or severe) and context relates to the environmental circumstances at the location of the impact. Significance criteria were developed in consideration of CEQ's guidance for determining significance (40 CFR §1508.27). For this analysis, the first three qualitative impact categories (none, minor, and moderate) are considered not significant. The next category (severe) is considered significant. The "none, minor, and moderate" qualitative impact categories could be a result of avoidance, minimization, or mitigation of adverse impacts. The significance criteria are described for each resource area at the beginning of each Environmental Consequences section, and the terms impact and effect are used interchangeably throughout this document.

3.1.1.1 Resource Areas Carried Forward for Analysis

After consideration of the anticipated impacts associated with the proposed alternatives, the following resource areas were selected to be carried forward for detailed analysis in this EA:

- Air Space
- Cultural Resources
- Energy Demand and Utilities
- Hazardous Materials/Hazardous Waste
- Health and Safety
- Water Resources
- Socioeconomics and Environmental Justice

3.1.1.2 Resource Areas Dismissed From Further Analysis

After considering information gathered, factors used to evaluate the context and intensity of a potential impact, and the anticipated impacts associated with the proposed alternatives, it was determined the following resources would not experience a measureable impact as a result of any of the alternatives. Consequently, they were dismissed from further analysis for the reasons described below:

- Air Quality—Fort Wainwright's influence on local air quality is largely managed through air quality operating permits issued by the Alaska Department of Environmental Conservation (Alaska DEC). These permits regulate emissions from a diverse set of industrial and commercial activity on the installation. Current operating permits are available for review.[9] Potential air pollutant emission increases associated with changes to a permitted facility often trigger the applicability of new requirements, requiring existing permits to be modified. Changes to a permitted facility that do not increase emissions, generally do not trigger permitting efforts. The Environmental Division at Fort Wainwright reviewed the scope of the proposed basing action to identify potential permitting efforts associated with the Gray Eagle basing decision. No permitting efforts were identified. This basing decision will not alter emissions already authorized through the installation's existing permits.

[9] Operating permits are currently available on Alaska DEC's website. Find link titled *Air Permits, Approvals, & Public Notices* on www.alaska.gov/dec/air and enter the search criteria.

Fort Wainwright's influence on local air quality is also managed by adherence to the General Conformity Rule (40 CFR 93 Subpart B). The rule is designed to ensure that federal actions do not impede local efforts to maintain or improve air quality. Emissions from federal actions that have been accounted for in the relevant State Implementation Plan (SIP) are presumed to conform.[10] The Environmental Division at Fort Wainwright evaluated the Gray Eagle unmanned aircraft system (UAS) basing decision for conformity and determined that while the Gray Eagle UAS and other recent basing decisions restructure aviation assets at the installation, there is no change in emissions from the baseline levels already present in the relevant SIP. The evaluation has been documented in accordance with Army Regulation (AR) and policy (AR 200-1, Chapter 4-1 *Air Resources*).[11] Per AR 200-1, the analysis and conclusion have been documented in a Record of Non-Applicability (Appendix A).

Alternative 2 is not subject to general conformity regulations because Eielson AFB is located in an attainment area for all criteria pollutants. Similar to Fort Wainwright, Eielson AFB operates under air quality permits and the minimal changes in emissions associated with the Gray Eagle UAS program would be unlikely to trigger additional permitting requirements. The potential to emit for Eielson AFB is 666.3 tons of nitrogen oxide, 217 tons of carbon monoxide, 30.2 tons of particulate matter with a diameter less than or equal to a nominal 10 micrometers, 455.2 tons of sulfur dioxide, 59.0 tons of volatile organic compounds, and 11 tons of hazardous air pollutants (Alaska DEC, 2013). Based on the attainment status of the Eielson AFB location, existence of air quality permits controlling emissions, and the minimal change in emissions associated with the Gray Eagle operations, further air quality analysis is not necessary for Alternative 2.

- Biological Resources—No threatened or endangered species would be affected because none occur on Fort Wainwright (USFWS, 2011) or on Eielson AFB (Eielson AFB, 2012). At Fort Wainwright, the area of and surrounding the proposed location of the permanent hangar facilities

[10] A portion of the Fairbanks North Star Borough is designated as being in nonattainment with respect to the National Ambient Air Quality Standard (NAAQS) for fine particulate matter (24-hour averaging time). The area is considered as being in attainment with respect to all other NAAQS. Please note that prior to 2003, a portion of the Fairbanks North Star Borough was considered to be in nonattainment with respect to the NAAQS for carbon monoxide (8-hour averaging time). The relevant SIP is currently available on Alaska DEC's website. Find the link titled *Final PM2.5 Regulations & SIP with Effective Dates*, available at: www.alaska.gov/air.

[11] Note current Alaska policies and practices regarding the General Conformity Rule are available on Alaska DEC's website. Find the link titled *Conformity* under the heading *Programs & Activities*, available at: www.alaska.gov/air.

under Alternative 1 is heavily developed, being either paved or maintained as improved grounds with no functional ecosystem to maintain flora or fauna. This is also the case at Eielson AFB where the area of the proposed location of the permanent hangar facilities under Alternative 2 and the surrounding area are heavily developed, being either paved or maintained as improved grounds with no functional ecosystem to maintain flora or fauna. The organizational vehicle parking area under both Alternatives 1 and 2 would be located at Fort Wainwright in proximity to other organizational vehicle parking areas and the motor pool/industrial area of the installation (see Figure 2-4). Most of this area is heavily developed and previously disturbed with no functional ecosystem to maintain flora or fauna. However, some areas north and south of MacArthur Road are forested and/or contain wetlands. Wetlands would be avoided in siting the organizational vehicle parking area to the extent possible. Potential impacts to wetlands are addressed in the Water Resources section (see Section 3.7). The forested, non-wetland habitat consists primarily of secondary growth of balsam poplar and spruce trees with alders. This habitat is not unique and is a relatively small area given the habitat areas surrounding the installation. Therefore, if the organizational vehicle parking area is located in these areas, removal of the trees would result in only negligible, adverse impacts. To avoid affecting birds protected under the Migratory Bird Treaty Act, prior to and during tree clearing activities, the United States Army Garrison Fort Wainwright, Alaska (USAG FWA) would require the contractor conducting the work to monitor the area for nest building activities by birds and remove any nests found prior to them becoming active. If active nests are found, all activities that could affect the nests would cease until the nest is abandoned. As a result, migratory birds would not be affected.

- Geology/Topography—The proposed locations for construction activities on Fort Wainwright and Eielson AFB are flat and the construction of the permanent Gray Eagle UAS hangar facilities would not change the geology or topography of the sites. Therefore, geology and topography would not be affected.
- Land Use—Land use would not be affected because implementing the Proposed Action would not change existing airfield land use designations at either Fort Wainwright or Eielson AFB and would be compatible with an active airfield. In addition, for operations out of Ladd Army Airfield (Fort Wainwright), during wildfire season, the Bureau of Land Management–Alaska Fire Service mission on the airfield would take priority during emergencies for combating wildfires. U.S. Army Alaska (USARAK) aviation training during these emergency situations would be scheduled accordingly to de-conflict uses.

- Noise—Implementing the Proposed Action under either alternative would have only minimal impacts to the noise environment. During the interim period under both Alternatives 1 and 2, use of Hangar 1 would only require minor, temporary renovations and no new construction, and construction of the permanent hangar facilities for the Gray Eagle UAS under both alternatives would occur adjacent to active runways and away from sensitive noise receptors. Additionally, noise from truck traffic during construction would occur along main roads. Therefore, construction noise would result in only minimal impacts that would be temporary in nature, lasting only during the construction phase of the project. Impacts would also be minimized by following the appropriate noise plans for each installation. Operating the Gray Eagle UAS would not change the current noise zones at the airfields on Fort Wainwright, Eielson AFB, or Fort Greely, resulting in no appreciable alterations in the noise environment at these locations. Training operations would occur in restricted air space and would not impact sensitive noise receptors. Noise generated by the Gray Eagle UAS is essentially inaudible once the UAS reaches an altitude of 2,000 feet above ground level (AGL) (U.S. Army, 2012c), and noise is one of the factors that would be taken into consideration when determining flight altitudes and routes to be approved in certificates of authorization (COAs) for transiting from Class D airspace over the installations though the National Airspace System (NAS) to restricted airspace. Therefore, the operation of the Gray Eagle UAS would only have minimal impacts on noise.
- Radio Frequency/Spectrum Use—Communication systems interference includes negative impacts on radar and navigation aids and interference with military radio frequencies. Radar interference occurs when objects are placed too close to a radar antenna and reflect or block the transmissions of signals between the antenna and receiver. Impacts on navigation aids occur when beacon signals used by aircraft cause unintended navigation errors for other aircraft. With implementation of the Proposed Action, radio frequency interference could occur due to malfunctions of ground or aircraft communications systems in UAS operations; however, that possibility is remote. All UAS communications would use frequencies that are approved for that purpose (MIL-STD-461F), that do not interfere with other military or civilian air traffic frequencies, and, thus, would cause no disruption (DoD, 2007).
- Soils—Soils in the vicinity and within the footprints of the potential hangar locations on Fort Wainwright and Eielson AFB and the potential organizational vehicle parking area under Alternative 2 to be located on Fort Wainwright have been previously disturbed, so no new impacts to soils would occur. While soils may be contaminated from previous activities, impacts

from potential disturbance of contaminated soils during demolition activities are addressed in Section 3.5.2, *Hazardous Materials/Hazardous Waste*.

- Subsistence—No impacts to subsistence would occur. Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as: "the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal, or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade." Under Alaska State law, subsistence uses are defined as: "the noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption, such as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade, barter, or sharing for personal or family consumption" (Alaska Statute 16.05.940[33]). The proposed site of permanent hangar facilities, including the organizational vehicle parking area, on Fort Wainwright and Eielson AFB are heavily developed and contain no wild renewable resources as defined by the Alaska National Interest Lands Conservation Act or as defined under Alaska State law that would allow for subsistence use.
- Visual—The construction of new hangar facilities at either Fort Wainwright or Eielson AFB would be consistent with the visual context of an active Army/Air Force airfield and the surrounding resources of the Fort Wainwright and Eielson AFB installations, so visual resources would not be affected.
- Transportation—Direct traffic impacts associated with the two action alternatives are anticipated to be minimal, because it is expected that the existing infrastructure would be able to accommodate the increased traffic. Traffic impacts primarily would be related to the increase in population on Fort Wainwright, estimated to be 300 people, including Soldiers, contractors, and their Families; a small number of personnel (35 to 40 Soldiers) commuting to Eielson AFB from Fort Wainwright under Alternative 2; and periodic convoys to outlying training areas (Alternatives 1 and 2), as well as to Eielson AFB for operational deployments (Alternative 1). Transporting fuel for the Gray Eagle UAS under Alternative 1 and Alternative 2 (during interim period) would only require one fuel truck trip per week and would have no impact on traffic.

  Recent roadway and intersection improvements on Fort Wainwright resulting from recommendations made in a 2009 traffic study (USKH Inc., 2009), including recent upgrades to

Montgomery Road, which services the proposed Gray Eagle UAS hangar location, would allow the transportation network to accommodate the increased installation population resulting from the Proposed Action with minimal impacts.

Under Alternative 2, 35 to 40 Soldiers would commute daily between Fort Wainwright and Eielson AFB via Fort Wainwright's Badger Gate and Richardson Highway, a distance of approximately 18 miles. Impacts to Richardson Highway and Eielson AFB traffic and transportation systems would be minimal with 35 to 40 new trips added to the system, some of these new trips may be carpools or bus due to the nature of the commute, thus reducing the number of new trips traveling between Fort Wainwright and Eielson AFB.

Under both alternatives, organizational vehicles would be stored at Fort Wainwright. Convoys would occur from Fort Wainwright to Eielson AFB for deployments. Other convoys would occur from Fort Wainwright to Fort Greely (approximately 100 miles southeast of Fort Wainwright) on an approximately quarterly basis to conduct 2-week training exercises. Army convoys are subject to an Alaska Department of Transportation and Public Facilities permitting process. Convoys associated with Gray Eagle UAS training operations and deployments would be expected to follow the permitting process. The Army would also continue to follow Army regulations and other practices to manage potential traffic and transportation system effects, including continuing to notify the public about imminent convoy activity, make USARAK long-term training and convoy schedules available to the public, segment large convoys, and stagger convoy departure times to reduce impacts to traffic on the public roads.

3.2 Air Space

3.2.1 Affected Environment

The region of influence (ROI) for the airspace analysis is the airspace over and surrounding Fort Wainwright, Eielson AFB, and Fort Greely and the associated training areas where the Gray Eagle UAS would operate. It also includes the NAS the Gray Eagle UAS would transit to arrive at the training areas.

The Department of Defense (DoD) and the Army manage airspace delegated to them by the Federal Aviation Administration (FAA) in accordance with the processes and procedures outlined in DoD Directive 5030.19, *DoD Responsibilities on Federal Aviation and National Airspace System Matters* (DoD, 1997) and implemented by AR 95-2, *Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control, and Navigation Aids* (U.S. Army, 2008a). DoD and the Army collaborate with the FAA to

ascertain the minimum requirement for airspace, evaluating any environmental consequences of proposed airspace designations in compliance with both FAA and DoD's NEPA implementing regulations.

The two categories of airspace or airspace areas are regulatory and non-regulatory. Within these two categories, four types of airspace include controlled airspace, special use airspace (SUA), other, and uncontrolled airspace. Controlled airspace is airspace of defined dimensions within which air traffic control service is provided to Instrument Flight Rules, or IFR, flights and to Visual Flight Rules, or VFR, flights in accordance with the airspace classification (FAA, 2008). Controlled airspace is categorized into five separate classes: Classes A through E. These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place to place. The classes also dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace. Uncontrolled airspace is designated Class G airspace.

The FAA has designated the majority of airspace within Fort Wainwright and Eielson AFB and the associated training areas as restricted airspace for activities associated with Ladd Army Airfield and Eielson AFB activities (see Figure 2-5). Ladd Army Airfield has one active runway, several ancillary taxiways, and hangars. In addition to Ladd Army Airfield's use as a military airfield, the Bureau of Land Management–Alaska Fire Service has permitted access to the airfield for basing firefighting aircraft and retardant mixing and loading operations. During the summer wildfire season, the Bureau of Land Management—Alaska Fire Service aircraft are stationed at the airfield, and during emergencies for combating wildfires, these operations take precedence over military training operations.

The airspace surrounding Ladd Army Airfield is classified as Class D, which refers to airspace restricted from the surface to a ceiling of 2,900 feet mean sea level (MSL). The USAG FWA operates its Small Arms Ranges in the SUA called Controlled Fire Areas that are considered "Non-Rulemaking," which is non-regulatory in nature and designed to contain activities that, if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft. Currently, five Military Operations Areas (MOAs) span from south of Delta Junction to north of Fairbanks and extend to varying degrees from 100 feet AGL, 300 AGL, and 500 AGL to 17,999 feet MSL. MOAs refer to airspace that is designed for routine military training and testing maneuvers of a nature that justify limitations on outside aircraft not participating in those operations; however, live firing does not occur in these areas.

Restricted areas are those identified areas in which live firing has the potential to occur (Bothe, 2010). Restricted airspace R-2205 (see Figure 2-5), which extends from the surface to 20,000 MSL when active, is located in the southeastern portion of the Yukon Training Area (YTA) MOA and the Stuart Creek

Impact Area. Restrictions associated with R-2205 are only applicable from 7:00 a.m. through 7:00 p.m., Monday through Friday and during other times as required by the USAG FWA and Eielson AFB. In instances when the restricted airspace is needed outside an identified period, a Notice to Airmen is required to be filed with the FAA in order for the restrictions to be activated and to alert pilots of restrictions and potential hazards within the area. Similarly, restricted airspace R-2211 overlays the southern portion of the Tanana Flats Training Area (TFTA) (see Figure 2-5). R-2211 restricts airspace from the surface to flight level (FL) 31,000 feet (FL310). Controlled Fire Areas are also located at the Donnelly Training Area (DTA) Small Arms Ranges. Most of DTA–West is within the Restricted Area R-2202 A, B and C with an altitude from the surface to FL310. These restricted areas are closed to all non-participating aircraft during periods of scheduled activity. Nearby Allen Army Airfield at Fort Greely is capable of supporting C5/C17 aircraft and is also defined as Class D airspace (U.S. Army, 2013c). To transit unrestricted airspace between Fort Wainwright and the different training areas the DoD would need to apply for a COA with the FAA in which flight path(s), altitudes, and takeoff and landing locations would be detailed to ensure operation safety with other airspace users.

Several commercial and private airports are located nearby Fort Wainwright and Eielson AFB. Locally, this includes Fairbanks International Airport, as well as numerous smaller airfields. Designated SUAs reduce the likelihood of interaction between military aircraft and public, private, or commercial aircraft. Training is currently conducted within designated SUAs and restricted operating zones to allow unencumbered training flights to meet mission essential training goals. The Fairbanks North Star Borough is working to establish policies of planning and zoning to limit residential or commercial activities that may conflict with military activities. In addition, a 2006 Joint Land Use Study conducted by the Fairbanks North Star Borough in partnership with the Army and Air Force recommended adopting encroachment prevention measures around both Fort Wainwright and Eielson AFB, and the partnership is continuing to work towards implementing these measures (ASCG Incorporated of Alaska, 2006).

3.2.2 Environmental Consequences

3.2.2.1 Significance Criteria

For purposes of assessing the significance of impacts related to airspace the following impact thresholds were developed:

- **None**—No measurable impacts are expected to occur. Airspace classifications and use would not change.

- **Minor to Moderate (not significant)**—The degree to which activities would result in measureable changes to the current frequency and type of use of existing airspace. Changes to airspace classifications, operations and movement would not occur.
- **Severe (significant)—**Airspace impacts could be considered significant if they:
  - Substantially restrict movement of other air traffic in the area
  - Create substantial conflicts with air traffic control in the region
  - Change operations within airspace already designated for other purposes
  - Result in a need to designate controlled airspace where none previously existed
  - Result in a reclassification of restricted airspace from a less restrictive to a more restrictive classification.

3.2.2.2 Alternative 1

Prior to the completion of permanent hangar facilities at Fort Wainwright, the 25th Avn Rgt CO D would temporarily operate out of Hangar 1 on the north side of Ladd Army Airfield on Fort Wainwright. During this interim period, no new construction would occur, and only minor, temporary renovations to Hangar 1 would be required. As a result, no impacts to airspace are anticipated other than those identified below as a result of Gray Eagle UAS operations.

Construction of permanent facilities at Fort Wainwright for the Gray Eagle UAS (hangar and privately owned vehicle [POV] and organizational vehicle parking areas) would not affect existing airspace use and classifications and, therefore, would result in no adverse impacts to airspace. Supporting communications equipment for Gray Eagle UAS operations such as the takeoff and landing system (TALS) and ground data terminals (GDTs) would be placed at various locations around Ladd Army Airfield. While in proximity to existing runways, the equipment would be sited to meet not only Gray Eagle UAS requirements but also airfield and airspace siting and safety requirements. Therefore, the placement and use of the supporting equipment is not anticipated to affect existing airspace operations or classifications, resulting in no impacts.

Gray Eagle UAS training would occur primarily over the YTA and TFTA. Training occurring over DTA–East and –West would generally originate from Allen Army Airfield at Fort Greely. Gray Eagle UAS training operations would primarily occur from 7:00 a.m. to 7:00 p.m., though some nighttime operations could occur to provide maximum joint training flexibility with approval in appropriate COAs and times stipulated in a Notice to Airmen. It is estimated that Gray Eagle UAS operations would be conducted 2 to

5 times a day for 5 days per week, with an increase to 7 days per week if needed. While representing an increase in use, the number of aircraft using the SUA would not change substantially from the existing condition and additional airspace would not be required to support the additional UAS training operations; however, implementation of the Proposed Action would result in an increase in scheduling, activation, and use of the existing SUA. Rescue and emergency response flight operations including wild fire and life flights would continue to take priority over training activities for scheduling and airspace use. During these emergency operations, the SUA would be closed. All Gray Eagle training operations would occur within existing restricted airspace. However, to transit from Fort Wainwright (Class D airspace) to restricted airspace training areas, the Army would obtain appropriate COAs from the FAA that detail flight path(s), altitudes, takeoff and landing locations, and lost-link procedures. Obtaining a COA and abiding by any additional provisions or limitations imposed by the FAA as part of the COA approval would ensure the Gray Eagle UAS can operate safely with other airspace users. In addition, when a Gray Eagle UAS is transiting from general airspace to restricted airspace a ground observer, chase aircraft, or an approved Ground Based Sense and Avoid (GBSAA) system would be used to ensure public safety through see and avoid requirements per 14 CFR §91.113. Increased operations resulting from Gray Eagle UAS training evolutions could cause some minor, adverse impacts to air traffic flow within the national airspace in the Fort Wainwright area. Impacts could range from potentially causing some civilian flight delays or requiring the routing of civilian air traffic around the restricted airspace when it is active. However, adhering to airspace management and scheduling operations would minimize potential conflicts, resulting in only minor impacts.

In the event the Gray Eagle UAS encounters a lost link, the aircraft can be programmed to either loiter at a specific location within the restricted airspace or return to the airfield from which it is launched. If it is not able to link up with the ground support personnel, an additional aircraft would be deployed to locate the Gray Eagle UAS aircraft and remain with it until a communications connection has been reestablished. In the event a lost link occurs, minor impacts to airspace could occur as a result of its prolonged use of the airspace.

3.2.2.3 Alternative 2

Under Alternative 2, prior to the construction of the new hangar facilities at Eielson AFB being completed, the 25th Avn Rgt CO D would operate out of Hangar 1 on the north side of Ladd Army Airfield at Fort Wainwright. Impacts during the interim period under Alternative 2 would be the same as those discussed above for Alternative 1. Also similar to Alternative 1, under Alternative 2, construction of the new hangar at Eielson AFB would result in no impacts to airspace, as siting of the new hangar would occur in a manner consistent with existing operations and airspace use and classifications. Impacts, as

discussed below, would only occur during Gray Eagle UAS operations once the hangar at Eielson AFB is completed.

Impacts as a result of Gray Eagle UAS operations would be similar to those presented under Alternative 1. The incorporation of Gray Eagle UAS operations, while placing a greater load on existing airspace management, would not require additional airspace for training, would not require changes to current airspace classifications and restrictions, and would not affect existing flight activity in the area, resulting in minor, adverse impacts. To ensure there is no conflict during the Air Force's normal F-16 operations out of Eielson AFB, the primary method of separation between the Gray Eagle UAS and the F-16s would be time de-confliction accomplished through a 1- to 2-hour departure/recovery window in the a.m. and p.m. outside the 354th Fighter Wings' quiet hours/closure and primary local fly windows. With the time separation, no impacts are anticipated to occur.

3.2.2.4 No Action Alternative

Under the No Action Alternative, no impacts to airspace are anticipated. Under this Alternative, the 25th Avn Rgt CO D would not be stationed at Fort Wainwright or Eielson AFB; therefore, airspace classifications and use would remain unchanged.

3.3 Cultural Resources

Cultural resources consist of prehistoric and historic buildings, sites, structures, artifacts, objects, and districts. A number of statutes and regulations that have been enacted at the local, state, and federal levels protect cultural resources and must be considered during the NEPA process. Reference Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9 of the Joint Pacific Alaska Range Complex (JPARC) EIS, June 2013 and Section 3.3 of the *Final Environmental Impact Statement for Disposition of Hangars 2 and 3 at Fort Wainwright, AK*, November 2013.

Operation, maintenance, and development of historic properties at Eielson AFB are governed by a Programmatic Agreement between Eielson AFB, the Alaska State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation. This Programmatic Agreement governs both the treatment of historic properties and new construction at Eielson AFB. New construction that does not conform to the *Architectural Compatibility Plan* and *Treatment Guidelines* is subject to Alaska SHPO review under Section 106. Eielson AFB developed the *Architectural Compatibility Plan* to define specific design standards for buildings, site development, and streetscapes that serve to integrate the visual character throughout the base.

The USAG FWA has considered the applicability of other federal laws and regulations concerning the management of cultural resources and the impact of the Proposed Action. Federal regulations concerning archaeological sites are not applicable to the Proposed Action because previous construction activities have disturbed the ground in the proposed location for the new hangar, and no known archaeological resources have been identified in the vicinity. General operations, maintenance, and development of historic properties at Fort Wainwright are governed by a Programmatic Agreement signed with the Alaska SHPO in 2010. New construction within the boundaries of the Ladd Field National Historic Landmark (Ladd Field NHL) is subject to review through consultation with the SHPO, the Advisory Council on Historic Preservation, and the National Park Service.

3.3.1 Affected Environment

The ROI for cultural resources is the area within which an option to implement the Proposed Action could potentially affect existing cultural resources. For the Proposed Action, the ROI for cultural resources is defined as Fort Wainwright, Fort Greely, and Eielson AFB.

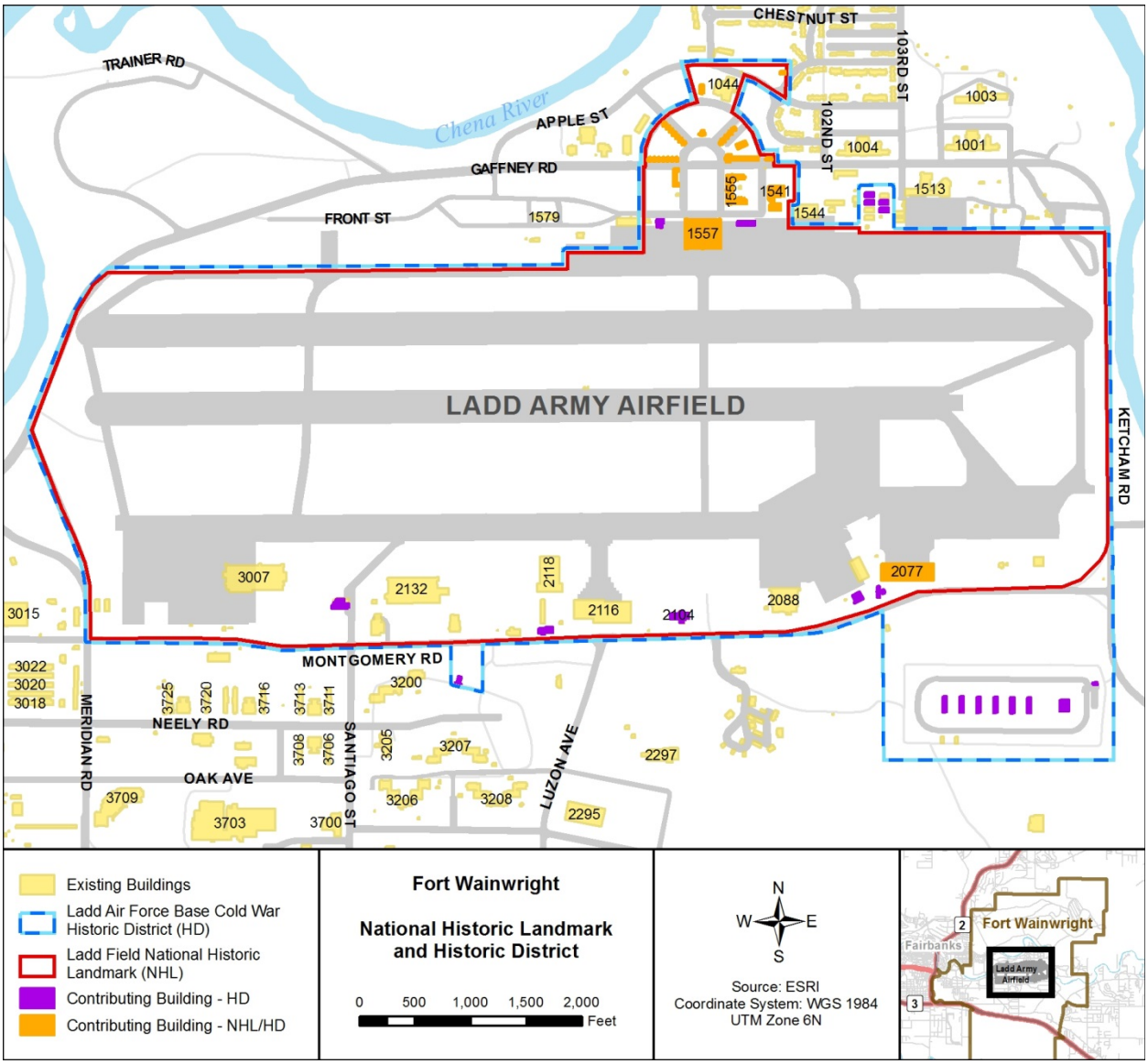
3.3.1.1 Fort Wainwright

Ladd Field National Historic Landmark

In 1985, the Ladd Field NHL at Fort Wainwright was listed in the National Register of Historic Places (National Register) as a historic district of national significance for its role in the Army Air Corps' cold weather testing prior to and during World War II, its role as an air depot commanded by the Air Transport Command, and its role in the Lend-Lease Operations as the transfer point of planes to the Russians for transport along the Alaska-Siberia Route during World War II. The Ladd Field NHL is bound on the east and west by the Chena River and on the north and south by roads established during World War II (Figure 3-1).

The Ladd Field NHL embodies the pre-World War II and World War II military construction. The Ladd Field NHL nomination included 26 buildings and structures that contributed to the historic district. The historic features that comprise the Ladd Field NHL include wood, concrete, and steel buildings; concrete and cement runways, taxiways, and roadways; timber and steel-frame aviation hangars; and associated utilities. The period of significance for the Ladd Field NHL extends from 1939 when construction began on the airfield to 1945 when the war ended, the Soviet mission left Ladd Field, and the Air Transport Command transferred Ladd Field from the Army Signal Corps to the Air Force. Ladd Field was the first Army Airfield in Alaska and was a key part of the region's defense buildup for World War II.

Figure 3-1: Ladd Field National Historic Landmark



In 1961, when the Air Force transferred Ladd Field back to the Army, 50 of the 671 extant World War II buildings on the installation were scheduled for disposal because they had either deteriorated beyond economic restoration or they did not fit the foreseeable requirements for the Army or Air Force. The buildings were either sold to the public or transferred to the state of Alaska. Most temporary structures, such as Quonset huts, were moved off the installation to new locations (Price and Sackett, 2001; Design Alaska and JCA, 2011). The initial design and layout of the airfield and installation were developed in the late 1930s and early 1940s prior to the United States' entry into the war. Pre-war facilities at Ladd Field were designed as permanent structures; however, as the war progressed and construction materials,

especially steel, became more limited, buildings were constructed as semi-permanent or temporary structures.

The centrally located airfield is the anchoring visual and organizational element of the Ladd Field NHL and includes runways, taxiways, and aprons surrounded by open spaces. North Post, located directly north of the airfield, consists of a collection of flight service facilities, housing, and administrative buildings. The parade ground at the center of North Post remains an important visual and organizational element of that area. North Post is the original garrison built for the cold weather test detachment right before the start of World War II. Once the war began, an additional runway, hangars, and other support facilities were constructed south of the original runway. North Post continued to play a major role in all activities at Ladd Field supporting the war effort, including the Lend-Lease Operations and the air depot functions. North Post has the needed concentration, linkage, and continuity among its historically united buildings and structures to form a historic district, while continuing to retain a high degree of integrity.

Since Ladd Field was listed as an NHL in 1985, a total of 12 of the 26 original contributing buildings have been removed, including Hangars 2 and 3, which were recently demolished in 2014 and occupied the location where the new Gray Eagle UAS hangar facilities are proposed under Alternative 1 of the Proposed Action. The majority of the contributing resources are located in the North Post area, including Hangar 1 (Building 1557) where physical transfer of planes occurred during the Lend-Lease Operations. The south edge of the Ladd Field NHL contains World War II hangars and non-contributing service buildings. Since 1945, 18 new buildings have been constructed within the Ladd Field NHL boundaries, most of which are located in the southeastern section of the Ladd Field NHL (Design Alaska and JCA, 2011). Although changes have occurred over time, the Ladd Field NHL currently retains sufficient integrity to convey its historic significance.

Ladd Air Force Base Cold War Historic District

During the Cold War, Ladd AFB served as the Alaska Air Command Headquarters (HQ) for all the territory north of the Alaska Range. Ladd AFB was significantly associated with strategic aerial reconnaissance, air defense operations, and Arctic research (Price and Sackett, 2001). When the Army assumed control of the installation in 1961 and renamed it Fort Wainwright, operations became devoted to Army Cold War missions, such as aviation, training, and ground defense.

In 2010, the USAG FWA determined that the Ladd Air Force Base Cold War Historic District (Cold War Historic District) was eligible for listing in the National Register due to its association with the strategic air reconnaissance, air defense, and Arctic research missions of the Cold War, and specifically for its role in the early Cold War defense mission of the 46th/72nd Air Reconnaissance Unit and Fighter Intercept

Squadrons (Meeks, 2010; Bittner, 2010). The Cold War Historic District largely comprises the same contributing resources as the Ladd Field NHL with the addition of several buildings surrounding the airfield that were built during the early Cold War (see Figure 3-1). In 2010, 36 structures were identified as contributing resources in the Cold War Historic District; however, two (Hangars 2 and 3) have subsequently been demolished.

At Fort Greely, where 2-week training operations would occur approximately quarterly, a number of archaeological surveys have been conducted over the past 37 years. Studies conducted in 2002 (Holmes, 2002) and 2010 (Gaines et al., 2010) identified nine sites as being eligible for listing in the National Register. Three of these sites) are located within the cantonment area of Fort Greely, and only one has been determined eligible for listing in the National Register. Previous architectural survey at Fort Greely identified 26 buildings and structures that are eligible for listing in the National Register. However, adverse effects on these historic structures have been mitigated by a memorandum of agreement between the U.S. Army and the Alaska SHPO through Historic American Buildings Survey Level 1 recordation (U.S. Army, 2002).

3.3.1.2 Eielson Air Force Base

Three National Register-eligible historic districts have been identified at Eielson AFB: the Flightline Historic District, Engineer Hill Munitions Historic District, and Quarry Hill Munitions Historic District. The proposed location of the Gray Eagle UAS hangar under Alternative 2 is adjacent to the Flightline Historic District, which meets National Register Criteria A for its significant association with the theme of military Cold War activity and Criteria C for the architectural/engineering importance of several hangars (Eielson AFB, 2007). Overall, the Flightline Historic District includes 20 contributing buildings and one contributing structure, a runway.

In 1996, results of a prehistoric and historic archaeological survey of large portions of Eielson AFB (Gerlach et al., 1996, as cited in Eielson AFB, 2007) indicated a very low probability of site occurrence at Eielson AFB. The areas surveyed were chosen based on a predictive model developed specifically for the installation (Eielson AFB, 2007).

3.3.2 Environmental Consequences

3.3.2.1 Significance Criteria

For the purposes of assessing the degree of the impacts related to cultural resources, the following thresholds were developed:

- **None**—No measurable impacts are expected to occur.
- **Minor to Moderate (not significant)—**The degree to which activities would affect any NHLs or historic districts but would not cause a reduction in the integrity of the district to such a degree that it would lose its designation as a historic property.
- **Severe (significant)—**Activities that would adversely affect NHLs or historic districts by causing the reduction in integrity of the district to such a degree that it would lose its designation as a historic property.

3.3.2.2 Alternative 1

Under Alternative 1, during the interim period prior to completing construction of the permanent hangar facilities, the 25th Avn Rgt CO D would temporarily operate out of Hangar 1 on the north side of Ladd Army Airfield. To temporarily accommodate the 25th Avn Rgt CO D, Hangar 1 would need some minor alterations including installation of temporary walls and electrical conduit on the interior and electrical outlets on the exterior. No new hardstands would be constructed along the runway to support the necessary ground support equipment for the Gray Eagle UAS. Because the changes to Hangar 1 are minor and mostly interior, the Ladd Field NHL or Cold War Historic District would not be affected as a result of operations during the interim period.

To accommodate the 25th Avn Rgt CO D in the long term, new permanent hangar facilities would be constructed in the southwest corner of the airfield in the same location as the former Hangars 2 and 3, which were demolished in 2014. This site is within the boundaries of the Ladd Field NHL and Cold War Historic District. New hardstands (i.e., concrete pads) would also be constructed along the airfield to accommodate the ground support equipment necessary for the Gray Eagle UAS, although the exact number and location is not known at this time.

In addition, an approximately 3.3-acre organizational vehicle parking area would be constructed in proximity to other organizational vehicle parking areas and the motor pool/industrial area on Fort Wainwright (see Figure 2-4). The exact location of this parking is not known at this time, but the general site location for the proposed parking is not within the boundaries of either the Ladd Field NHL or Cold War Historic District.

A visual analysis for the construction of numerous buildings at Fort Wainwright was completed for the *Stationing and Training of Increased Aviation Assets within U.S. Army Alaska Environmental Impact Statement* (USARAK, 2009). Alternative 2 presented in the environmental impact statement (EIS) involved approximately 2.4 million square feet (ft^2) of new construction along with demolition of three

buildings. This analysis included visual impacts as they specifically relate to cultural resources and impacts to Fort Wainwright visual resources in general. The impacts analysis concluded that the planned new construction and demolition at Fort Wainwright would adversely affect the Ladd Field NHL by reducing the density of contributing structures and increasing the density of new structures in the Ladd Field NHL, which would diminish the setting, association, and feeling of the NHL. The new construction analyzed was centered along the south side of the flight line, which does not directly affect the integrity of the North Post of the Ladd Field NHL (USARAK, 2009).

Although construction of the new hangar facilities at Fort Wainwright, including the new hardstands, would constitute a minor, adverse impact on the Ladd Field NHL and Cold War Historic District by introducing new elements into the districts, they would not be significant. While the new hangar facilities would be within the Ladd Field NHL and Cold War Historic District, the hangar design would be compatible with surrounding structures and the new structure and the new hardstands would not interrupt sight lines between contributing buildings. The proposed organizational vehicle parking area is located outside the Ladd Field NHL and Historic District boundaries and thus would have no effect on these resources. Additionally, if Alternative 1 is selected to be implemented, the USAG FWA would enter into consultations with the Alaska SHPO under Section 106 of the National Historic Preservation Act (NHPA) and would implement any agreed upon mitigation measures to help mitigate the adverse impacts.

Construction of the new hangar facilities in the southwest corner of the airfield would occur within a disturbed context archaeologically, i.e., the location of the recently demolished Hangars 2 and 3, so it is not anticipated that archaeological resources would be encountered or affected. The location where the new organizational vehicle parking area would be sited is a heavily developed and previously disturbed area; however, some undeveloped areas, particularly north and south of MacArthur Road, are not developed. In these areas, though not anticipated, construction activities could encounter unreported archaeological resources. In the event that previously unrecorded or unevaluated cultural resources are encountered, the USAG FWA would manage these resources in accordance with the NHPA and other federal and state laws, Army and DoD regulations and instructions, and DoD American Indian and Alaska Native policy. Therefore, impacts to intact archaeological deposits are not anticipated.

Alternative 1 would also include training exercises at Fort Greely that would occur for 2-week periods approximately every quarter. These exercises would use existing training areas, such as gravel pads and bivouac sites located within the DTA. These activities would not involve any new construction or ground disturbance; therefore, no impacts to cultural resources at Fort Greely are anticipated.

3.3.2.3 Alternative 2

Similar to Alternative 1, Alternative 2 would also involve the temporary use of Hangar 1 on the north side of Ladd Army Airfield until new hangar facilities could be constructed on Eielson AFB. As under Alternative 1, minor, temporary renovations to Hangar 1, including installation of temporary walls in the hangar bay and electrical conduit on the interior and electrical outlets on the exterior of the building would be necessary. Since these changes are mostly interior to the building and minor, the Ladd Field NHL and Cold War Historic District would not be adversely affected as a result of operations during the interim period.

Cultural resources are not anticipated to be affected by construction of the new permanent facilities under Alternative 2. The new hangar facility would be constructed on the northeast side of the Eielson AFB airfield just outside the Flightline Historic District boundary on the north side of Building 1120 and would not interrupt sight lines between contributing buildings. The building's design would conform to the *Architectural Compatibility Plan* in order to conform to the Programmatic Agreement for Operation, Maintenance, and Development of Historic Properties at Eielson AFB (Eielson AFB, 2014, Appendix A). According to Eielson AFB's Integrated Cultural Resource Management Plan (Eielson AFB, 2014), no known archaeological sites are located at Eielson AFB. Therefore, impacts to intact archaeological deposits are not anticipated at Eielson AFB. As described under Alternative 1, the proposed location for the organizational vehicle parking area at Fort Wainwright is outside the Ladd Field NHL and the Cold War Historic District, so neither of these resources would be adversely affected. Additionally, as described under Alternative 1, impacts on archeological resources are not anticipated from construction of the new parking area. Though not anticipated, in the event that previously unrecorded or unevaluated cultural resources are encountered at either Eielson AFB or Fort Wainwright, the USAG FWA, in conjunction with Eielson AFB, as appropriate, would manage these resources in accordance with the NHPA and other federal and state laws, Army and DoD regulations and instructions, and DoD American Indian and Alaska Native policy. Similar to Alternative 1, cultural resources would not be affected during training exercises at Fort Greely. Consultation with the Alaska SHPO under Section 106 of the NHPA for this project would not be initiated until a final site for the new hangar is chosen.

3.3.2.4 No Action Alternative

Under the No Action Alternative, the 25th Avn Rgt CO D would not be stationed in Alaska and would not operate out of Fort Wainwright or Eielson AFB. Therefore, existing historic resources at Fort Wainwright, Eielson AFB, or Fort Greely would not change.

3.4 Energy Demand and Utilities

This section describes and analyzes demand for utilities including electricity, water, sewer, and telecommunications at Fort Wainwright and Eielson AFB as they pertain to supporting the 25th Avn Rgt CO D.

3.4.1 Affected Environment

3.4.1.1 Fort Wainwright

The ROI for the energy demand and utilities analysis is Fort Wainwright, Eielson AFB, and Fort Greely.

Doyon Utilities owns, operates, and maintains all the utilities on Fort Wainwright, including the electric power generation and distribution system, the water treatment and distribution system, the wastewater collection and treatment system, and the steam and condensate distribution system. The utilities at Fort Wainwright were privatized in 2008. The central heat and power plant at Fort Wainwright is a coal-fired co-generation plant that produces electricity and steam heat. The electrical distribution system distributes power generated at the power plant to most of Fort Wainwright. The water treatment plant consists of a small-pressurized green sand filter plant connected to the water distribution system. Wastewater is collected throughout the installation and discharged to the wastewater treatment plant through a central lift station. During the privatization process, Doyon Utilities completed an extensive study and modeling of existing and projected energy requirements at Fort Wainwright and undertook upgrades to existing power distribution technology to ensure full capability for future growth (U.S. Army, 2008b).

3.4.1.2 Eielson Air Force Base

Eielson AFB provides its own water, sewer, electricity, and steam. All water and wastewater treatment services are performed by installation personnel or contracted operations, including the installation's own water and wastewater treatment plants. Adequate capacity is available to support current demand and potential future mission expansion (U.S. Air Force, 2007). Electricity and heat are provided by the onsite central heat power plant, which is a coal-fired power/heat plant equipped with six boilers that provide steam for Eielson AFB.

3.4.2 Environmental Consequences

3.4.2.1 Significance Criteria

For purposes of assessing the significance of impacts related to utilities the following impact thresholds were developed:

- **None**—No measurable impacts are expected to occur. Adequate utility infrastructure is in place and utility usage would not substantially increase or decrease due to the activities.
- **Minor to Moderate (not significant)**—Activities use reasonable amounts of utilities and the existing utility infrastructure can support the new demands with extensions, minor upgrades and/or changes. Other users of the utility systems would not be negatively affected.
- **Severe (significant)**—Activities use excessive amounts of utilities and provision of such utilities would require extensive infrastructure upgrades and could negatively impact other users of the system(s).

3.4.2.2 Alternative 1

Under Alternative 1, utilities at Fort Wainwright would experience minor, adverse impacts. During the interim period prior to completion of the permanent hangar facility on Fort Wainwright, the 25th Avn Rgt CO D would use Hangar 1 on the north side of Ladd Army Field. While no new construction would be required to use this space, some minor, temporary renovations would be needed. These renovations include extending electrical lines to needed areas via 2-inch conduit in the interior of the building and installing electrical outlets on the exterior of the building. Hangar 1 is currently served by all required utilities, and these services would be adequate to support operations during the interim period. The location of the proposed new hangar facility would be in the southwest corner of Ladd Army Airfield in the former location of Hangars 2 and 3, which were demolished in 2014. Construction of the new hangar would require utility extensions from existing infrastructure located along Montgomery Road. Operation of the facility and functional support services (e.g., dining, barracks, and health services) for the 128 additional Soldiers, 5 contractors, and their Family members stationed at Fort Wainwright would increase the installation's demand for energy, water, sewer, and telecommunications. The infrastructure for the functional support services is in place and adequately served by all utilities, so this aspect is considered to have minor impacts.

All electrical power and heating needs for the new facility and supporting equipment would be supplied by the central heating and power plant. The existing high-voltage electrical distribution system and steam/condensate heating system are adequate to serve this facility. Cooling for sensitive electronic equipment and for specific testing areas in the new facility would be supplied by on-site systems constructed as part of this project. Water would be supplied from wells and a water treatment plant within the Main Post. Sufficient capacity exists to serve the domestic water supply needs for the facility. The sewage generated by this facility would be collected and distributed to the regional wastewater treatment plant (Golden Heart Utilities Wastewater Treatment Plant) via the existing Fort Wainwright sewage

collection system. The wastewater collection and treatment systems are adequate to serve the flows expected from this facility (U.S. Army, 2012b). Impacts of physically connecting to the utility systems would be minor and temporary; increased utility usage would be minor and long-term.

The Gray Eagle uses aviation fuel (aviation grade JP-8), which is not stored at Fort Wainwright. Aviation grade JP-8 fuel is stored at Eielson AFB, which is located approximately 23 miles from Fort Wainwright. Fuel demands for operating the Gray Eagle UAS would require one trip per week of a 2,400-gallon heavy expanded mobility tactical truck (HEMTT) truck, resulting in a slight increase in use of aviation fuel that would have negligible impacts on overall energy consumption.

Training exercises would be conducted at Allen Army Airfield at Fort Greely on an approximately quarterly basis for 2 weeks at a time. Training would occur on existing training areas (gravel pads and bivouac sites) located within the DTA, and Gray Eagle UAS flights would originate from the airfield. These training exercises would occur in the same manner as current training exercises for the Shadow UAS at Fort Greely. A slight increase in demand for utilities at Fort Greely would be required for these training exercises at Allen Army Airfield. Generators would be used for all support equipment, and Fort Greely's systems could support the slight increased demands for water and sewer from associated personnel.

3.4.2.3 Alternative 2

Implementation of Alternative 2 would result in minor, adverse impacts to utilities at Eielson AFB and at Fort Wainwright. Under Alternative 2, the 128 Soldiers and 5 contractors associated with the 25th Avn Rgt CO D, along with their Families, would be stationed at Fort Wainwright. Adequate functional support infrastructure is currently available at Fort Wainwright, and minor impacts to utilities would occur in support of these additional Soldiers, contractors, and Family members.

During the interim period prior to completion of the permanent hangar facility at Eielson AFB, the 25th Avn Rgt CO D would use Hangar 1 on the north side of Ladd Army Field at Fort Wainwright. Similar to Alternative 1, only minor, temporary renovations would be required to use Hangar 1, including extending electrical lines to needed areas via 2-inch conduit in the interior of the building and installing electrical outlets on the exterior of the building. No new construction would be required to use this space. Hangar 1 is currently served by all required utilities and these services would be adequate to support operations during the interim period. Due to the temporary nature of the interim period, the support equipment would not be supplied with shore power, but would use generators instead.

Construction of the new hangar at Eielson AFB would require utility extensions from existing infrastructure located on the installation. Generators are not allowed on the runway, so the support equipment would also require utility extensions to supply shore power to them. Operation of the hangar facility would increase Eielson AFB's demand for energy, water, sewer, and telecommunications. Steam, water, sewer, and electrical utilities are run within the utility corridors at Eielson AFB. Communication feeders run through the proposed site and are available. Water pressure and flow volume must be investigated for the selected site. The central heat power plant is a coal-fired power/heat plant equipped with six boilers that provide steam for Eielson AFB. The boilers are circa 1950s and have been de-rated by approximately 20 percent. Two of the six boilers are currently being replaced and would be installed and operational by December 2015 (HQ PACAF, 2014). Replacing the third boiler has been delayed until Fiscal Year (FY) 2018, which is very late compared to the need. Replacement of the third boiler would be required sooner to support Alternative 2 (HQ PACAF, 2014). The necessary utility infrastructure is in place at Eielson AFB, with the exception of the third boiler, and changes/upgrades to support Alternative 2 would have minor impacts on the overall utility systems.

Aviation fuel demands for operating the Gray Eagle UAS would be similar to Alternative 1, approximately 2,400 gallons of aviation grade JP-8 fuel per week, resulting in a slight increase in use of aviation fuel that would have negligible impacts on overall energy consumption. Also similar to Alternative 1, training exercises would be conducted at Allen Army Airfield at Fort Greely on an approximately quarterly basis for 2 weeks at a time. Like Alternative 1, this activity would result in a slight increase in demand for utilities at Fort Greely. Generators would be used for all support equipment, and Fort Greely's systems could support the slight increased demand for water and sewer usage by associated personnel.

3.4.2.4 No Action Alternative

The No Action Alternative would not affect the existing utility systems at Fort Wainwright or Eielson AFB. Under the No Action Alternative, the 25th Avn Rgt CO D would neither be stationed in Alaska nor operate from either location; therefore, the demand for utilities would not change.

3.5 Hazardous Materials/Hazardous Waste

This section describes and analyzes hazardous materials and wastes, contaminated sites, aboveground storage tanks (ASTs) and underground storage tanks (USTs), and the management of toxic substances such as polychlorinated biphenyls (PCBs) and radon at Fort Wainwright and Eielson AFB as it pertains to the Operations of the 25th Avn Rgt CO D in Alaska. The ROI for the analysis includes the footprint of the

new construction activities and Fort Wainwright and Eielson AFB in general as it relates to their programs for handling hazardous materials and wastes.

3.5.1 Affected Environment

3.5.1.1 Fort Wainwright

Hazardous Materials/Wastes Use, Handling, and Storage

Nearly all facilities across Fort Wainwright are known to use hazardous materials, including solvents, fuels, POLs, and antifreeze (USAG FWA, 2013a). Fort Wainwright is also a large-quantity generator of hazardous waste that comes from training, aircraft, vehicles, and maintenance activities (CH2M Hill, Inc., 2009).

Hazardous wastes generated by facilities and routine activities at Fort Wainwright include used rifle bore patches/wadding, used batteries, used solvents, contaminated or excess fuels, used antifreeze, used POLs, spill clean-up materials, and contaminated soil (USAG FWA, 2013a). These wastes are accumulated temporarily at the generating facilities in accumulation points, such as hazardous waste satellite accumulation areas or hazardous waste accumulation areas. Appropriate Army personnel transport accumulated hazardous wastes off the installation (USAG FWA, 2013a).

The three turn-in facilities for hazardous wastes and materials include the Hazardous Materials Control Center at Building 3030, Defense Logistics Agency – Disposition Services at Fairbanks Environmental Branch, and the Hazardous Waste Management Contractor at Building 3489. The Logistics Readiness Center manages the Hazardous Materials Control Center and is also responsible for monitoring the use of hazardous materials. The Defense Logistics Agency – Disposition Services is responsible for determining hazardous material sale or reuse and disposing of hazardous waste off the installation. The Hazardous Waste Management Contractor is responsible for providing hazardous waste identification labels for each hazardous materials accumulation container and establishing a contracted waste pick up with the Defense Reutilization Marketing Office (USAG FWA, 2013a).

The USAG FWA must manage its hazardous materials and wastes in accordance with the Resource Conservation Recovery Act, as amended by the Hazardous and Solid Waste Amendments to comply with federal regulations. Per the Resource Conservation Recovery Act, Fort Wainwright is registered with the U.S. Environmental Protection Agency (USEPA) under the facility identification number AK6210022426. The USAG FWA must also comply with military regulations, state regulations, and employee safety standards for hazardous materials and wastes.

DTA is one of three training areas that does not fall under the USAG FWA's USEPA identification number because it is located off the installation. DTA generates minimal amounts of hazardous waste and is registered as a Conditionally Exempt Small Quantity Generator with the USEPA, although Fort Wainwright manages it as a Small Quantity Generator to allow for the potential for greater amounts of hazardous waste generation during peak training seasons (USAG FWA, 2013a). Hazardous wastes generated during training evolutions include used oil and waste fuels, absorbent pads, solvents, and antifreeze and are managed in accordance with the installation's Hazardous Material and Waste Management Plan (USAG FWA, 2013a).

Contaminated Sites

Fort Wainwright is on the National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The National Priorities List specifies national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The Fort Wainwright National Priorities List site comprises six Operable Units (USAG FWA, 2011). Twelve source areas have been identified within these six Operable Units, and several have been further divided into sub-areas. Remediation at Operable Units 1, 2, and 4 has been implemented and is protective of human health and the environment. The implemented remedy at Operable Unit 5 is currently protective of human health and the environment, but it requires continued long-term monitoring. Remediation at Operable Unit 3 is currently protective of human health and the environment, but in order to remain protective for the long term, the USAG FWA is required to initiate appropriate responses in cooperation with the USEPA and Alaska DEC (USAG FWA, 2011). A Federal Facility Agreement between the USEPA, the Alaska DEC, and the Army sets deadlines, objectives, responsibilities, and procedural frameworks for implementing an Installation Restoration Program.

Groundwater in the Fort Wainwright area has relatively high, naturally occurring levels of metals, especially iron and arsenic (USAG FWA, 2013b). However, groundwater contamination from previous Army-related industrial activities exists in the Main Post area and is commonly associated with leaking USTs, chemicals storage facilities, and chemicals dump areas. Groundwater contamination is generally localized, and there is no indication of deep groundwater pollution (USAG FWA, 2013b). Intensive monitoring and remediation of the areas of contaminated groundwater are being implemented via projects under CERCLA.

At the site proposed for the permanent hangar facility, the location of former Hangars 2 and 3, soils were tested for contamination during the recent demolition of the hangars. Soils under Hangar 3 were found to

be clean, while soils under Hangar 2 were found to contain petroleum contaminants above the Alaska DEC cleanup criteria, as well as trace amounts of solvents (Malen, 2015). In spring 2015, remediation activities began to remove and properly dispose of the contaminated soils, sample and analyze the bottom and sidewalls of the excavation site, and submit appropriate documentation to the USEPA and the Alaska DEC for concurrence that the excavation site is clean. Once concurrence is received from the agencies, the area of soil removal will be backfilled with clean soil (Malen, 2015).

Site Number CC-FTW-103, an Installation Restoration Program site, is located approximately 124 feet east of the site of the proposed permanent hangar facilities under Alternative 1 (where Hangar 3 was located in the southwest portion of the airfield) (USAG FWA, 2012). A preliminary site evaluation conducted in 2008 found contamination exceeding Alaska DEC criteria in subsurface soils. During follow-up investigations in 2010, concentrations of trichloroethene, vinyl chloride, 1,3,5-trimethylbenzene, 1,3,5-trimethylbenzene, diesel range organic compounds, gasoline range organic compounds, benzo(a)pyrene, benzo(b)fluroanthene, dibenzo(a,h)anthracene, and dieldrin were detected above the Alaska DEC cleanup criteria in soil samples collected from 1 to 10 feet below ground surface (Fish, 2012). Approximately 660 cubic yards of soil have been removed in response to various construction activities within the area and a full site investigation and remedial actions will begin in summer 2015 (Sprau, 2015). Concentrations of contaminants in groundwater did not exceed the Alaska DEC groundwater cleanup levels.

Another Installation Restoration Program site—FTWW-018 (location of former Building 3009)—is approximately 74 feet from the southwest corner of where Hangar 2 was located (i.e., the location of the proposed permanent hangar facilities under Alternative 1). The area was the location of Building 3009, a temporary building used as a wood shop that was demolished in 2001 (CH2M HILL, Inc., 2009). The site received a no further action determination from the USEPA and is now closed with Institutional Controls in place (USAG FWA, 2012).

The location of the organizational vehicle parking area would be in proximity to other organizational vehicle parking areas and the motor pool/industrial area of Fort Wainwright. The area has several Installation Restoration Program sites in the area that are undergoing remediation, are closed or are closed with Institutional Controls in place (USAG FWA, 2012).

Aboveground and Underground Storage Tanks

Ninety-eight ASTs located on Fort Wainwright contain the following products: diesel fuel, diesel fuel (arctic grade), heating oil, JP-4, and unleaded gasoline. Forty-four USTs located on the installation contain similar products to the ASTs: diesel fuel, heating oil, unleaded gasoline, and used oils. No ASTs

or USTs are located at the former Hangar 2 and Hangar 3 location, the site of the proposed Gray Eagle UAS hangar (U.S. Army, 2015a).

The location of the organizational vehicle parking area would be in proximity to other organizational vehicle parking areas and the motor pool/industrial area of Fort Wainwright. The area has several USTs that have been closed or are undergoing remediation action (USAG FWA, 2012).

3.5.1.2 Eielson Air Force Base

Hazardous Waste/Materials Use, Handling, and Storage

Eielson AFB operates two active permitted solid waste landfills to manage coal ash, asbestos materials, and some demolition debris. By regulation, Eielson AFB is considered a Large Quantity Generator because 2,200 pounds or more of hazardous wastes or 2.2 pounds of acute hazardous waste are generated per calendar month. Hazardous wastes are initially accumulated at one of the Satellite Accumulation Points, and then transferred to the Hazardous Waste Facility where storage is limited to 90 days. The Hazardous Waste Facility identifies and prepares the wastes for shipment. A contractor ships waste under a contract with the Defense Reutilization Marketing Office on Fort Wainwright (Eielson AFB, 2012). The contractor comes directly to the installation to receive the shipment and take the waste for final disposition. Currently, Eielson AFB is transitioning to an Integrated Solid Waste Management Plan in support of the Air Force conversion to the Asset Management System. Under the Integrated Solid Waste Management Plan, all solid and hazardous waste functions and certain pollution prevention activities are managed comprehensively. Eielson AFB is in compliance with all applicable federal regulations pertaining to the collection and disposal of hazardous waste (Eielson AFB, 2012).

Contaminated Sites

Eielson AFB identified the locations and contents of 61 potential environmental contamination sites in 1990. The USEPA has reviewed all sites, and 40 received no further action status, 20 received further action/long-term monitoring with institutional controls, and 1 received no further action with institutional controls (Eielson AFB, 2007).

Groundwater has been investigated as a potential source for contamination. One shallow, unconfined groundwater aquifer extending from approximately 12 feet to more than 300 feet below ground surface serves Eielson AFB. This shallow aquifer is the primary source of potable drinking water supply for the installation, and during investigation, it was found to be affected at a number of the Installation Restoration Program sites. Results of site-wide groundwater monitoring indicate that in general,

contaminant plumes are not expanding, and contaminant levels are either constant or are decreasing (Eielson AFB, 2012).

Eielson AFB monitors the contaminated sites for compliance with Institutional Controls, having controlled access to the contaminated media at the site (e.g., contaminated groundwater, soil, and/or surface water) (Eielson AFB, 2012). None of the contaminated sites overlap with the current proposed site for the proposed Gray Eagle UAS hangar on Eielson AFB (Eielson AFB, 2007).

3.5.2 Environmental Consequences

3.5.2.1 Significance Criteria

For the purposes of assessing the significance of impacts related to hazardous materials and hazardous waste and other concerns, the following impact thresholds were developed:

- **None**—No measurable impacts are expected to occur.
- **Minor to Moderate (not significant)**—The degree to which activities would increase the potential for environmental or human exposure to hazardous materials and hazardous waste.
- **Severe (significant)**—Activities that violate applicable regulations or that seriously threaten or cause exposure to hazardous materials or hazardous waste capable of causing imminent and substantial endangerment to human health and the environment would represent a significant impact.

3.5.2.2 Alternative 1

During the interim period, no new construction would be required for the 25th Avn Rgt CO D to temporarily use Hangar 1 while the permanent hangar facilities are being constructed. Some minor, temporary renovations to Hangar 1 would be needed, but would only include installing temporary walls in the hangar bay, extending electrical lines via 2-inch conduit to needed areas in the interior of the building, and installing electrical outlets on the exterior of the building; therefore, there would be no concerns related to potential impacts from hazardous materials or hazardous waste. Operational activities during the interim period would not affect ASTs and USTs because refueling of the Gray Eagle UAS would be accomplished using a refueling truck. The Gray Eagle UAS uses aviation grade JP-8 as its fuel, but it is currently not used on Fort Wainwright, so it would need to be transported from Eielson AFB in a HEMTT once per week. While there is some risk of JP-8 fuel spillage during fueling, loading, and transportation from Eielson AFB to Fort Wainwright and during aircraft refueling operations at Fort Wainwright, these operations would be conducted similarly to existing fueling/refueling operations and in accordance with

Air Force regulations at Eielson AFB and U.S. Army Field Manual 10-67-1, *Concepts and Equipment of Petroleum Operations*, at Fort Wainwright (U.S. Army, 1998), thereby minimizing any potential for impacts.

During operations, adverse impacts from hazardous wastes and materials would be minor because all materials and wastes used and produced during routine activities, such as maintenance on the aircraft, would be supplied/disposed of using existing facilities at Fort Wainwright in accordance with the Fort Wainwright Hazardous Material and Waste Management Plan (USAG FWA, 2013a). Additionally, only routine maintenance activities and minor inspections of the aircraft would occur at Fort Wainwright. Any defective items requiring more than just routine servicing or upkeep would be returned to the original equipment manufacturer. Therefore, minor, adverse impacts from hazardous materials and hazardous waste are anticipated during the interim period under Alternative 1.

For the long-term solution, the site proposed for the permanent hangar facility is currently undergoing remediation activities to address the contaminated soils discovered during the recent demolition of Hangar 2 at that location. Therefore, during the construction of the new hangar, it is anticipated no contamination would be encountered within the footprint of the current remediation activities. However, depending on final design layout, construction activities could extend beyond the remediation footprint. If this occurs and additional contaminated soil is encountered, it would be removed and properly disposed of in accordance with the appropriate State and federal regulations. Similarly, while the exact location of the organizational vehicle parking area has not yet been determined, it would be in proximity to other organizational vehicle parking areas and the motor pool/industrial area of Fort Wainwright. The final siting of the parking area would comply with appropriate state and federal regulations for the designated use if a site is located within an area of the Installation Restoration Program. Hazardous construction materials, such as paints and solvents, would be stored and handled in accordance with the appropriate state and federal regulations. Long-term operational activities under Alternative 1 would be conducted in a manner similar to the interim period. Therefore, minor, adverse impacts from hazardous materials and hazardous waste are anticipated.

3.5.2.3 Alternative 2

During the interim period prior to construction of the permanent hangar facility being completed at Eielson AFB, the 25th Avn Rgt CO D would be housed in Hangar 1 on the north side of Ladd Army Airfield and would operate out of Fort Wainwright. Impacts during this period under Alternative 2 would therefore be the same as described for Alternative 1. For the long-term solution under Alternative 2, facility construction of the permanent hangar would occur at Eielson AFB, while construction of the

organizational vehicle parking lot would occur on Fort Wainwright in the same location as discussed for Alternative 1.

At Eielson AFB, no known contaminated sites overlap with the proposed project area for the new hangar. If earthwork or excavation during construction of the new facilities resulted in the discovery of subsurface contamination, adverse impacts would include an increased potential for exposure and public endangerment. However, if subsurface contamination were encountered, work would be halted and any contaminated soil would be removed and properly disposed of in accordance with appropriate federal and state regulations. Additionally, while no USTs or ASTs are known to exist at the proposed location for the permanent hangar at Eielson AFB or the organizational vehicle parking area at Fort Wainwright, if any USTs or ASTs are discovered during construction activities, their removal would be conducted in compliance with federal and state regulations, and any contaminated soils associated with the USTs or ASTs would be remediated. The location of the organizational vehicle parking area would be the same as under Alternative 1; therefore, minor impacts would be the same as described for Alternative 1.

Hazardous construction materials, such as paints and solvents, would be stored and handled in accordance with appropriate state and federal regulations. Continued adherence to applicable regulations and management plans would result in minor, adverse impacts related to contaminated sites and exposure or endangerment of the public.

During operations, adverse impacts from hazardous wastes and materials would be minor because all materials and wastes used and generated during routine activities, such as maintenance of the aircraft, would be supplied/disposed of using existing facilities at Eielson AFB in accordance with applicable regulations/guidance. Additionally, only routine maintenance activities and minor inspections of the aircraft would occur. Any defective items requiring more than just routine servicing or upkeep would be returned to the original equipment manufacturer. Therefore, minor, adverse impacts from hazardous materials and hazardous waste are anticipated under Alternative 2.

3.5.2.4 No Action Alternative

No hazardous material or hazardous waste impacts would occur under the No Action Alternative because the 25th Avn Rgt CO D would not be stationed in Alaska or operate out of either Fort Wainwright or Eielson AFB.

3.6 Health and Safety

3.6.1 Affected Environment

The ROI for health and safety includes the areas where construction activities would take place, the areas where the Gray Eagle UAS would operate (e.g. Fort Wainwright, Eielson AFB, Fort Greely, and the associated training areas, as well as the NAS where the Gray Eagle UAS would transit to the training areas), and the road routes that Army convoys would travel during training and deployment activities.

Human health and safety includes those facets of military activities and materials that potentially pose a risk to the health, safety, and well-being of the public, military personnel, civilian employees, and dependents. Aspects of the Proposed Action that can present risk to human health and safety include the construction of a permanent hangar, construction of an organizational vehicle parking area, construction of communication infrastructure to support the information systems, transporting missiles for deployment, and conducting Gray Eagle UAS operations and training (U.S. Army, 2010b).

The USAG FWA has implemented a comprehensive program to eliminate, avoid, or reduce the associated risks to its workers and the public. This program includes the following basic components:

- Complying with all applicable federal, state, DoD, and Army laws and regulations addressing health, safety, and risk management
- Developing local regulations and detailed standard operating procedures (SOPs), which further implement these laws and regulations and focus on unique risk factors and mission requirements within lands of Fort Wainwright
- Establishing a local installation safety office that has the proper resources and authority to effectively implement the USAG FWA's health and safety program and that is properly integrated with other USAG FWA and local civilian safety and emergency response organizations
- Providing effective, mission-focused training and guidance to all USAG FWA personnel
- Encouraging proactive employee participation in safety and health programs and charging leaders at all levels with the responsibility for planning and conducting mission activities in a safe manner (U.S. Army, 2010b)

The USAG FWA's health and safety program operates in compliance with a number of regulations and guidance documents, including:

- Occupational Safety and Health Act of 1970 (29 United States Code [U.S.C.] 651-678) and implementing regulations at 29 CFR §1910, *Occupational Safety and Health Standards*, and 29 CFR §1926, *Safety and Health Regulations for Construction*)
- AR 40-5, Preventive Medicine
- AR 75-15, Policy for Explosive Ordnance Disposal
- AR 200-1, Environmental Protection and Enhancement
- USARAK Pamphlet 200-1, Hazardous Materials and Regulated Waste Management
- AR 385-1, The Army Safety Program
- AR 385-64, U.S. Army Explosives Safety Program
- Field Manual 100–14, *Risk Management*
- Department of the Army Pamphlet 40-501, *Hearing Conservation Program*
- Department of the Army Pamphlet 40-503, *Industrial Hygiene Program*
- DoD Directive 4715.11, *Environmental and Explosives Safety Management on DoD Active and Inactive Ranges within the United States*
- DoD Directive 6055.9–STD, *DoD Ammunition and Explosives Safety Standards*

These regulations have guided the development of SOPs, which all installation users are required to follow and would help to ensure human health and safety.

At Eielson AFB, ongoing operations and maintenance activities are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health requirements.

3.6.2 Environmental Consequences

3.6.2.1 Significance Criteria

The following criteria have been used to assess impacts to human health and safety:

- **None**—No measurable impacts would occur to temporary or permanent safety.

- **Minor to Moderate (not significant)**—The degree to which activities would increase the potential for human exposure to safety hazards.
- **Severe (significant)**—Activities that violate applicable regulations and policies capable of causing imminent and substantial human safety concerns and resulting in unacceptable risk would represent a significant impact.

3.6.2.2 Alternative 1

Under Alternative 1, during the interim period, no new construction would be required, though some minor, temporary renovations to Hangar 1 would be needed, including installing temporary walls, extending electrical lines to needed areas in the interior of the building, and installing electrical outlets on the exterior of the building. Given the minor nature of the renovations, any potential impacts to human health and safety would be minimal due to adherence to occupational safety and health standards. Additional potential impacts during the interim period would occur from training operations, as discussed below.

During construction of the permanent UAS hangar, concrete apron, taxiway, POV and organizational vehicle parking, and the installation of UAS ground support equipment temporary and minor impacts to human health and safety would occur. These temporary impacts would occur as a result of the inherent risks associated with heavy construction equipment and activities and construction worker commutes. Furthermore, during construction of the permanent UAS hangar, concrete apron, taxiway, and POV and organizational vehicle parking areas and the installation of UAS ground support equipment, personnel working in designated noise-hazard areas would be required to wear hearing-protection devices. No person would enter a noise-hazard area without wearing approved hearing protection. All supervisors would be responsible for strict adherence to this requirement.

For airfield construction activities using construction equipment, a Spill Pollution Prevention and Countermeasure Plan would be employed to prevent spills and effectively address clean-up strategies before potential spill contaminants from construction equipment could reach surface water or groundwater resources. In addition, during airfield construction activities, Gray Eagle UAS operations personnel would follow existing SOPs for the handling and transfer of hazardous material and would adhere to relevant and applicable occupational health and safety standards listed under 29 CFR §§1910, 1920, and 1926 (U.S. Army, 2010b).

Under Alternative 1, Ladd Army Airfield would be used to support the operations, training and maintenance of the Gray Eagle UAS. All Gray Eagle UAS operations would originate from Fort

Wainwright, and all training would occur within existing restricted airspace, which is approximately 20 nautical miles (NM) away, minimizing potential impacts to the general public from training evolutions. To transit from the Class D airspace at Fort Wainwright to the restricted airspace, COAs would be established with the FAA to detail flight path(s), altitudes, and takeoff and landing locations. Also, per FAA regulations, the Gray Eagle UAS is not permitted to fly unassisted in airspace that is not under military control. As a result, the Gray Eagle UAS would transit from Fort Wainwright to restricted airspace or between restricted air spaces as required using a ground observer, a chase aircraft, or an approved GBSAA system. Per 14 CFR §91.113, the purpose of these mechanisms is to provide see and avoid capabilities that are currently lacking on the Gray Eagle UAS. Because the Gray Eagle UAS would not be allowed to fly unassisted in non-military owned airspace, the potential for collisions with non-military aircraft would be greatly reduced. Upon exiting restricted airspace, the same see and avoid measures (ground observer, chase plane, or GBSAA system) would be employed as required to return to the installation, airfield, or point of landing. Adhering to the existing airspace management and scheduling operations would minimize potential impacts to human health and safety, resulting in minor, adverse impacts. Furthermore, adherence to all applicable federal, state, DoD, and Army laws and regulations addressing health, safety, and risk management would be required, thereby reducing risks to human health and safety.

In the event the Gray Eagle UAS encounters a lost link, the aircraft would be programmed to either loiter at a specific location within the restricted airspace or return to the airfield from which it was launched. As stated above, procedures would be established for lost link, lost communication, and other emergency scenarios for all mission profiles and by each location and specified parameters. Because of these pre-planned procedures, human health and safety would not be affected in the event of lost link.

The Army currently has no intent to conduct live-fire training for the Gray Eagle UAS but instead would use the “house mouse” training missile—a missile simulator that never leaves the aircraft—for all missile training operations. Therefore, human health and safety would not be affected from the use of live munitions.

Hellfire missiles to be used when the 25th Avn Rgt CO D deploys would be stored at Fort Wainwright in existing storage facilities and transported via truck convoy to Eielson AFB for deployment. AR 385-1, *Army Safety Program*, regulations would be adhered to for the transport and handling of all live munitions. All convoy operations used to transport live munitions would comply with SOPs and safety provisions outlined in AR 385-55, USARAK Regulation 55-2, FM 55-30, and other applicable regulations that provide regulatory requirements and guidance for convoy operations (U.S. Army, 2007).

AR 385-55, *Prevention of Motor Vehicle Accidents* (U.S. Army, 1987), and USAG Alaska Regulation 55-2, *Transportation Operations and Planning in Alaska* (USARAK, 2001), provide detailed regulations for convoy preparation and implementation. Additional information can be found in the *Final Environmental Impact Statement for Transformation of U.S. Army Alaska, Volume 2*, Appendix H (USARAK, 2004). Army convoys are subject to an Alaska Department of Transportation and Public Facilities permitting process. Gray Eagle UAS operations would continue to follow Army regulations and other policies to manage potential traffic and transportation system effects. These regulations include continuing the convoy permitting process with Alaska Department of Transportation and Public Facilities and considering alternate travel routes and methods for military convoys. To avoid public highway travel concurrent with military convoys, the Army would continue to notify the public of imminent convoy activity, segment large convoys, and stagger convoy departure times to reduce impacts to traffic on public roads.

3.6.2.3 Alternative 2

During the interim period under Alternative 2, operations and training would be conducted in the same manner as under Alternative 1, including the use of Hangar 1 by the 25th Avn Rgt CO D. Therefore, impacts would be the same during this time frame as described for Alternative 1. Temporary construction-related impacts to human health and safety would be the same as under Alternative 1 because of the construction of the permanent hangar that would occur at Eielson AFB and the construction of the organizational vehicle parking lot that would occur on Fort Wainwright. Eielson AFB clear zones, accident potential zones, and safety zones have been established around the airfield to minimize the results of a potential accident. Within clear and safety zones associated with the runways, construction is either prohibited (clear zone) or limited in terms of placement and height (accident potential zone). Areas around the airfield where experience has shown most aircraft accidents occur are designated as accident potential zones. Further, an Integrated System Safety Program Plan should be developed prior to the construction phase to reduce impacts to safety. Change orders (if any) would be reviewed to ensure changes do not degrade safety features already incorporated in the design (U.S. Air Force, 2000). As under Alternative 1, COAs, when needed, would be established under Alternative 2, and the same SOPs, see and avoid measures, and lost link precautions would also apply under Alternative 2. Similar to Alternative 1, while no live fire would occur under this alternative, missiles would be stored at Fort Wainwright and transported to Eielson AFB for deployment. Continued adherence to applicable regulations and management plans described under Alternative 1 would result in negligible to minor, adverse impacts related to human health and safety.

Impacts as a result of UAS operations would be similar to those presented under Alternative 1. The incorporation of a UAS would place a greater load on Eielson AFB and on existing airspace management but would not require additional airspace for training, resulting in minor, adverse impacts to human health and safety.

3.6.2.4 No Action Alternative

No direct health and safety impacts would occur under the No Action Alternative because the 25th Avn Rgt CO D would not be stationed in Alaska and would not operate the Gray Eagle UAS from either Fort Wainwright or Eielson AFB.

3.7 Water Resources

3.7.1 Affected Environment

The ROI for the water resources analysis includes Fort Wainwright and Eielson AFB.

3.7.1.1 Fort Wainwright

Surface Water

The surface waters within and surrounding the proposed sites are part of the larger Tanana River watershed and the smaller Chena River subwatershed. The Fort Wainwright Main Post and the Ladd Army Airfield are bordered to the north and west by the Chena River. This river flows west until its confluence with the Tanana River just west of Fairbanks. Clear Creek, a channelized drainage ditch, borders the western side of Ladd Army Airfield where it discharges to the Chena River. Currently, Ladd Army Airfield runways and tarmac direct stormwater and snowmelt runoff to drainage swales or concrete pipes that discharge to the Chena River through seven outfalls. Much of the runoff surrounding the former site of Hangars 2 and 3 in the southwest corner of the airfield (the proposed site for the permanent hangar facilities) drains to Clear Creek. Fort Wainwright currently has a National Pollutant Discharge Elimination System Multi-Sector General Permit for industrial activities that requires compliance with a prepared Stormwater Pollution Prevention Plan (SWPPP). The Multi-Sector General Permit describes the potential sources of pollution and the best management practices (BMPs) for pollution control and prevention. The SWPPP requires sampling of stormwater and inspections.

Fort Wainwright is considered a small municipal separate storm sewer system (MS4) and stormwater is regulated by a permit. Under the MS4 permit, Fort Wainwright must reduce pollutant discharges to the storm sewer system to the maximum extent practicable to protect the Chena River and other waters of the U.S. The installation has a Stormwater Management Plan that describes BMPs and activities that can be

implemented to comply with the MS4 permit. Guidance materials for construction activities have also been prepared that detail appropriate erosion and sediment control and stormwater management BMPs.

The Chena River reach that passes the proposed site is protected for the designated uses of water supply for agriculture, aquaculture, and industrial activities; recreation; and growth and propagation of aquatic life and wildlife (Alaska DEC, 2012a). Anti-degradation policies prohibit actions that would cause or contribute to violations of the state water quality standards. The existing water uses and water quality must be maintained and protected to support the designated uses. The Chena River is on Alaska's Section 303(d) impaired waters list for sediment and requires a total maximum daily load (Alaska DEC, 2012b). Urban runoff was identified as the source of the sediment impairment. Other previous impairments of the river included turbidity, petroleum hydrocarbons, and oils and grease.

Groundwater

The area surrounding the Fort Wainwright Main Post is characterized by shallow groundwater that is frequently connected to surface waters. The groundwater underlying the area consists of an alluvial aquifer recharged by the Tanana River (U.S. Army, 2009). In addition to naturally occurring iron and arsenic found in the groundwater, some historical industrial activity has resulted in shallow groundwater pollution on the Main Post. Nevertheless, the groundwater quality is considered good in the Main Post area (USAG FWA, 2013b).

Wetlands

No wetlands are located within Ladd Army Airfield for the site of the proposed new hangar (USAG-AK, 2015). As described above in the Surface Water section, the channelized drainage of Clear Creek flows westward south of the former location of Hangars 2 and 3 and Montgomery Road before turning to the northwest and its eventual confluence with the Chena River. Several wetlands are located within the general location designated for construction of the new organizational vehicle parking area (see Figure 2-4). A large 20-acre palustrine emergent/scrub-shrub wetland is located adjacent to MacArthur Road. During the growing season, this wetland is characterized by saturation to the surface for extended periods. The vegetative community is classified as a needleleaf woodland with a scattered tree canopy covering 10 to 25 percent of the area. Greater than 75 percent of the tree species are coniferous with the dominant tree species being black spruce. A 10-acre palustrine emergent/scrub-shrub wetland is located approximately 300 feet south of MacArthur Road. The vegetative community is classified as an open needleleaf forest with a tree canopy covering 25 to 60 percent of the area with the dominant tree species being black spruce. Furthermore, several freshwater emergent and scrub-shrub wetlands and ponds are located to the

north of the airfield associated with the Chena River. This information is based on wetland delineations conducted from 2008 to the present and are presented for planning purposes only.

Floodplains

The Main Post of Fort Wainwright, including the proposed sites located at Ladd Airfield, is within the 100-year floodplain of the Tanana River (U.S. Army, 2013d). However, according to the Federal Emergency Management Agency's (FEMA) Flood Insurance Risk Map, the proposed sites are located within an area that is protected from the 1 percent annual chance or greater flood hazard by a levee system (FEMA, 2014a). Both the Chena River and Clear Creek have 100-year floodplains that are restricted to small areas adjacent to the channels and do not overlap the proposed sites. The Chena River Flood Control Project levee system operated by U.S. Army Corps of Engineers protects Fort Wainwright and the southern Fairbanks area from flooding.

3.7.1.2 Eielson Air Force Base

Surface Water

Eielson AFB is located within the Tanana River watershed. No surface waters are located within the proposed site for the new hangar facilities; however, several are present in the surrounding area. An unnamed creek, located approximately 600 feet east of the proposed site, drains northwest to Garrison Slough. Garrison Slough approximately parallels the unnamed drainage farther to the east and drains urban and industrial land uses. Garrison Slough was listed in 1996 as impaired for PCBs (Alaska DEC, 2012b). Contaminated sediment from a drainage ditch on Eielson AFB was identified as the source of the impairment. A total maximum daily load for PCBs in Garrison Slough was completed in 1996. Although implementation of this total maximum daily load should result in full attainment of the applicable water quality standards, long-term monitoring is taking place.

Stormwater runoff discharge at Eielson AFB is regulated under a National Pollutant Discharge Elimination System stormwater Multi-Sector General Permit (#AK050000) (Eielson AFB, 2012). The installation has a SWPPP highlighting potential existing sources of stormwater pollution and BMPs that could be implemented to control and manage runoff in accordance with the stormwater permit.

Groundwater

The groundwater underlying much of Eielson AFB consists of a shallow, unconfined aquifer of approximately 200 to 300 feet of loose alluvial sand and gravel over bedrock (Battelle PNL, 1994, as cited in Eielson AFB, 2012). The groundwater resources extend from approximately 10 to 300 feet below the ground surface. Typically, the shallow groundwater table is located 10 feet below the ground surface;

however, seasonal highs of 1.5 feet below ground surface can occur during the April to May snowmelt (Battelle PNL, 1994, as cited in Eielson AFB, 2012). Eielson AFB and surrounding areas withdraw water from the unconfined aquifer for potable water supply.

Wetlands

According to the Integrated Natural Resources Management Plan for Eielson AFB and the U.S. Fish and Wildlife Service's National Wetland Inventory data, no wetlands are located within the proposed construction area (USFWS, 1997; Eielson, AFB, 2011). National Wetland Inventory data indicate a freshwater wetland is located several hundred feet north of the proposed sites.

Floodplains

Much of the area to the west of the airfield and the proposed site is located within the 100-year floodplain of the Tanana River (Eielson AFB, 2012). However, according to the FEMA's Flood Insurance Risk Map, the proposed site and the Main Post areas are not considered within a floodplain (FEMA, 2014b). The closest floodplain to the site is the 100-year floodplain associated with the unnamed tributary on the east side of Flight Line Avenue. The floodplain is limited to a small buffer on either side of the channel.

3.7.2 Environmental Consequences

3.7.2.1 Significance Criteria

For purposes of assessing the significance of impacts related to water resources, the following impact thresholds were developed:

- **None**—No measurable impacts are expected to occur.
- **Minor to Moderate (not significant)**—The degree to which activities would result in measureable changes to water resources.
- **Severe (significant)**—Activities causing an exceedance of regulatory thresholds would represent a significant impact.

3.7.2.2 Alternative 1

For the interim period, temporary use of Hangar 1 by the 25th Avn Rgt CO D would not require any new construction and only minor renovation activities to the building itself (installing temporary walls in the hangar bay, extending electrical lines via 2-inch conduit to needed areas inside the building, and installing electrical outlets on the exterior of the building); therefore, water resources would not be affected during

this time frame, except potential impacts that may occur from the direct operation of the Gray Eagle UAS, as described below.

Construction of permanent facilities at Fort Wainwright could temporarily adversely affect surface water resources, including the water quality of the Chena River and wetlands. Clearing, grading, and other construction activities would disturb and expose soil, resulting in increased potential for soil erosion, sedimentation of surrounding water resources, and accidental release of hazardous materials. Adverse impacts would be avoided or minimized through adherence to water quality regulations and the requirements of the Multi-Sector General Permit, MS4 permit, and an Alaska Construction General Permit for stormwater, as well as the SWPPP, Stormwater Management Plan, and associated BMPs for reduction and control of erosion and sedimentation, stormwater and snowmelt runoff, and spills or leaks.

Construction of the new facilities would include installation of an appropriate storm drainage system. If the organizational vehicle parking is sited within undisturbed land, the amount of impervious surfaces would increase by up to 3.3 acres. More impervious surface would result in less infiltration of stormwater and snowmelt and increased runoff. The increase in impervious surface would be relatively small compared to the overall amount of impervious surface at Fort Wainwright. Adverse impacts would be avoided or minimized through adherence to the requirements of the stormwater construction permits, Stormwater Management Plan, and associated BMPs for reduction and control of stormwater runoff. Additionally, the USAG FWA would be required to maintain or restore the predevelopment runoff hydrology. The stormwater drainage system following implementation of the Proposed Action would comply with Section 438 of the Energy Independence and Security Act of 2007, which details standards for retention of stormwater runoff.

During times of snow and ice (approximately October through April), Gray Eagle UAS operations would require measures to maintain an acceptable airfield Runway Condition Reading (RCR) of 8 to ensure safe landing conditions. The USAG FWA would continue to mechanically clear snow and ice to maintain an acceptable RCR. However, if in the future, mechanical measures are found to be insufficient to maintain the necessary RCR, the USAG FWA would implement the use of deicing products on Ladd Army Airfield, which could affect water quality of adjacent water resources such as the Chena River. If the USAG FWA implements chemical deicing measures, under the Multi-Sector General Permit, it would be required to update its Multi-Sector General Permit and associated SWPPP to minimize impacts from discharges of deicing chemicals. Updating the Multi-Sector General Permit would require the USAG FWA to detail the specific deicing chemicals used, the frequency and quantity of application, and the control measures to prevent contamination of the Chena River and other waters of the U.S. In addition,

appropriate personnel would inspect stormwater outfalls from the airfield and test runoff from the airfield to ensure that the discharge complies with applicable water quality standards. The deicing chemicals would be prohibited from leaving the airfield as would direct discharge of contaminated runoff to the Chena River and other waters of the U.S. Use of the minimum amount of deicing products practicable and implementation of appropriate BMPs would minimize the adverse impacts to water quality and aquatic species. Potential collection and mitigation measures to control and prevent contaminated runoff from traveling offsite include removal of deicing chemicals with a collection system (e.g., a vacuum or collection truck), directing runoff into vegetated swales, collecting runoff in wet ponds, or storing runoff. Runoff contaminated with deicing chemicals would eventually be trucked or sent via the Fort Wainwright sanitary sewer to Golden Heart Utilities Wastewater Treatment Plant for treatment.

Federal activities within floodplains must comply with the Executive Order 11988, *Floodplain Management*. According to this executive order, federal agencies are required to avoid floodplain development and any adverse impacts from the use or modification of floodplains when there is a feasible alternative. Specifically, Section 1 of the executive order states that an agency is required “to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities.” However, the Main Post is located almost entirely within a floodplain and the location of the Proposed Action must be in proximity to the airfield and other necessary facilities. Therefore, there are no practicable alternatives to construction within the floodplain of the proposed site. Because the site was previously disturbed and consisted of buildings and other impervious surfaces, beneficial natural floodplain functions and values from development would not be lost. The Chena River Flood Control Project reduces or eliminates potential risks from flood loss and minimizes the impact of floods on human safety, health, and welfare within the project area. Therefore, floodplains would not be affected and flood hazard risks would not increase.

Executive Order 11990, *Protection of Wetlands*, requires federal agencies to consider alternatives to wetland sites and to limit potential damage if an activity affecting a wetland cannot be avoided. Specifically, Section 1 of the executive order states that an agency is required to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." The executive order emphasizes a process of wetland avoidance, minimization, and compensation. If the organizational vehicle parking is sited within land that has not been disturbed previously, construction may require the filling, grading, excavation, vegetation removal, and disturbance of wetlands resulting in minor, adverse impacts. During construction, the use of heavy equipment within the wetland could result in soil compaction, soil disturbance, sedimentation, and potential degradation of

wetland functions. Temporary adverse impacts to wetlands during construction would be minimized through the implementation of a sediment and erosion control plan and BMPs. A Clean Water Act Section 404 permit would be obtained to minimize impacts to wetlands. Wetlands that are temporarily disturbed would be restored and revegetated. Additionally, unavoidable adverse impacts would be mitigated to offset the filled wetlands and replace lost functions and values.

Compliance with water quality standards, stormwater discharge permits, the SWPPP, and associated BMPs during construction and operation would prevent discharges of sediment and other pollutants into the Chena River and other waters of the U.S, and other surrounding water resources. Therefore, implementation of Alternative 1 would result in short-term, minor, adverse impacts to water resources during construction and long-term, minor, adverse impacts due to the possible use of deicing chemicals. If the organizational vehicle parking is sited within wetlands, Alternative 1 would result in minor, short-term, adverse impacts to wetlands resulting from temporary disturbance and water quality issues. Additionally, minor, long-term adverse, impacts would occur from lost wetland and wetland buffer functions and values and an increase in impervious surface.

3.7.2.3 Alternative 2

Operations of the Gray Eagle UAS during the interim period prior to construction of the permanent hangar being completed at Eielson AFB would be the same as Alternative 1, with the 25th Avn Rgt CO D using Hangar 1 and operating the Gray Eagle UAS from Fort Wainwright. Therefore, impacts during this period would be the same as those described for Alternative 1.

Under Alternative 2, construction of the permanent hangar facilities at Eielson AFB could temporarily and adversely affect surface water resources. Clearing, grading, and other construction activities would disturb and expose soil, resulting in increased potential for soil erosion, sedimentation of surrounding water resources, and accidental release of hazardous materials. The location of the organizational vehicle parking area on Fort Wainwright would be the same as under Alternative 1; therefore, impacts to wetlands and impervious surface would be the same. Adverse impacts would be avoided or minimized through adherence to water quality regulations and the requirements of the Multi-Sector General Permit and stormwater construction permits as well as the SWPPP and associated BMPs for reduction and control of erosion and sedimentation, stormwater and snowmelt runoff, and spills or leaks.

Eielson AFB currently has a runway deicing program and associated drainage and treatment system. Therefore, deicing activities would not increase any adverse impacts on water quality. Construction of new facilities at Eielson AFB would minimally increase impervious surfaces. The stormwater drainage

system following the Proposed Action would adhere to Section 438 of the Energy Independence and Security Act of 2007, which details standards for retention of stormwater runoff.

Because no floodplains are located within the proposed site, these resources would not be directly affected. Indirect, adverse impacts to these resources would be avoided through compliance with water quality regulations and existing permits, implementation of BMPs and techniques to prevent erosion and sedimentation along with leaks or spills of hazardous materials, and control of stormwater runoff.

Compliance with water quality standards, stormwater discharge permits, the SWPPP, and associated BMPs during construction and operation would minimize discharges of sediment and other pollutants into surrounding water resources. Therefore, implementation of Alternative 2 would result in short-term, minor, adverse impacts to water resources from construction activities. Construction of the organizational vehicle parking area on Fort Wainwright, if sited within land that has not been disturbed previously, may require the filling, grading, excavation, vegetation removal, and disturbance of wetlands. This would result in the same potential impacts as described under Alternative 1: minor, short-term, adverse impacts to wetlands resulting from temporary disturbance and water quality issues, and minor, long-term adverse, impacts from lost wetland and wetland buffer functions and values and an increase in impervious surface causing additional runoff. A Clean Water Act Section 404 permit would be obtained to minimize impacts to wetlands and wetlands that are temporarily disturbed would be restored and revegetated. Additionally, unavoidable adverse impacts would be mitigated to offset the filled wetlands and replace lost functions and values.

3.7.2.4 No Action Alternative

Under the No Action Alternative, the 25th Avn Rgt CO D would not be stationed in Alaska or operate from Fort Wainwright or Eielson AFB; therefore, there would be no changes and no impact to the existing water resources at the proposed sites.

3.8 Socioeconomics and Environmental Justice

3.8.1 Affected Environment

The ROI for socioeconomics is defined as the geographical area within which the principal direct and secondary socioeconomic effects of actions associated with the Proposed Action would likely occur and where most consequences for local jurisdictions would be expected. The Proposed Action would occur within Fort Wainwright, Alaska, which is located within the city of Fairbanks and in proximity to the city of North Pole. Fort Wainwright is also located within the Fairbanks North Star Borough. The Fairbanks

North Star Borough also is home to Eielson AFB, an alternative location for the operations of the Gray Eagle UAS; therefore, the ROI for the socioeconomic analysis is Fairbanks North Star Borough, Alaska. All dollar values in this section are presented in 2013 dollar values unless stated otherwise.

3.8.1.1 Population and Demographics

On average, the population of the ROI was 98,656 between 2009 and 2013. Population growth in the ROI increased by 6.6 percent between 1990 and 2000 and by 17.8 percent between 2000 and 2013. Overall, the ROI experienced a 24.4 percent growth in population between 1990 and 2013. Based on population projections that the Alaska Department of Labor and Workforce Development developed, the rate of population growth is expected to increase approximately 14 percent between 2013 and 2022 (U.S. Department of Commerce, 1990, 2000, 2013; State of Alaska, 2015).

Population Characteristics

In 2013, individuals identifying themselves as white alone represented the majority of the population in both the ROI (77 percent) and the state of Alaska (67 percent). Approximately 8 percent of the population identified themselves as some other race or a combination of races, while those identifying themselves as Alaska Native or American Indian accounted for approximately 7 percent of the total population. Approximately 7 percent of the total population within the ROI identified themselves as ethnically Hispanic or Latino regardless of their race (e.g., White). These race and ethnicity figures are provided in Table 3-1 (U.S. Department of Commerce, 2013).

Table 3-1: Population Characteristics, 2013

Location	Total Population	Percent of Total Population[a]						
		Ethnicity	Race					
		Hispanic or Latino[b]	White	African American	Alaska Native/ American Indian	Asian	Native Hawaiian /Pacific Islander	Some Other Race/Two Races or More
U.S.	311,536,594	17	74	13	1	5	0	8
Alaska	720,316	6	67	4	14	5	1	9
Fairbanks North Star Borough	98,656	7	78	5	7	2	0	8

Source: U.S. Department of Commerce (2009–2013) (5-year data)

[a] Totals may not add to 100 percent due to rounding.

[b] Hispanic and Latino is considered an ethnicity, which is a separate classification from race. These percentages represent the percentage of the entire population of the geography that is Hispanic or Latino. Persons identified in this category must also have a race, such as White, African American, or Asian.

3.8.1.2 Economic Characteristics

Poverty, Income, and Cost of Living

The U.S. Census Bureau sets poverty thresholds that vary by family size to determine the level of poverty for a given area. As presented in Table 3-2, on average between the years 2009 and 2013, the percentage of individuals living below the poverty level in the ROI was lower than in the state of Alaska or the United States as a whole. In the Fairbanks North Star Borough, approximately 8.4 percent of the population lived below the poverty level, which is lower than the state and national percentages.

Table 3-2: Income and Poverty Characteristics, 2013

Location	Median Household Income	Percent of Total Population	
		Individuals Living Below Poverty	Individuals Living Below Poverty Under Age 18
United States	$53,046	15.4	21.6
Alaska	$70,760	9.9	13.4
Fairbanks North Star Borough	$69,223	8.4	10.8

Source: U.S. Department of Commerce, 2009–2013 (5-year data)

Labor Force

Labor force participation averaged 37,320 persons in the ROI in 2013 (U.S. Department of Labor, 2013). A majority of the ROI's workforce works within the city of Fairbanks along Highways 2 and 3. This population resides throughout a wider area of the ROI, including the suburbs of Fairbanks and the city of North Pole (U.S. Department of Commerce, 2015).

Unemployment

In 2013, the ROI had an unemployment rate of approximately 6 percent, which was lower than the state of Alaska's unemployment rate of approximately 7 percent. The unemployment rate in the ROI increased slightly between 2008 and 2010, then began to decline annually from 2010 through 2013. These trends are similar to those experienced throughout Alaska with unemployment increasing slightly from 7 to 8 percent between 2008 and 2010 and steadily declining between 2010 and 2013 (U.S. Department of Labor, 2013).

Employment by Industry

Major industries in terms of percentage of total non-farm employment in the ROI include military, state and local government, retail trade, and accommodation and food services. The mining industry saw the

largest employment growth from 2011 to 2013 at 27 percent. Construction constitutes 6 percent of the total non-farm workforce in the ROI. From 2011 to 2013, this industry actually saw a decline in employment (U.S. Department of Commerce, Bureau of Economic Analysis, 2013). Despite this, the North America Industry Classification System Code 47-2061, construction laborers, is forecast to see an overall employment increase of approximately 10 percent between 2012 and 2022, providing support that construction labor could reasonably come from the ROI (State of Alaska, 2015).

Housing Characteristics

A total of 3,495 housing units were available for rent in the Fairbanks North Star Borough on average between 2009 and 2013. This is 11 percent higher than the 3,096 rental-housing units that were available in the ROI in 2000. Although renter-occupied housing stock increased during this time, vacancy declined modestly, leading to a lower overall number of available units (U.S. Department of Commerce, 2000b, 2013). For the years 2009 to 2013, the rental vacancy rate averaged 8.4 percent. Fort Wainwright has 1,976 permanent on-base military family units in six neighborhoods on the installation (U.S. Army, 2013c).

3.8.1.3 Community and Public Services

Fire protection, law enforcement, and healthcare are analyzed below to determine both the level of support that they could provide if an emergency occurs on the project site and the degree to which the Proposed Action could affect these services. The location of educational facilities, particularly children's educational facilities, is identified to determine whether the Proposed Action would affect services where populations of children reside.

Law Enforcement and Fire Protection

The Fort Wainwright Military Police and Fire Department provide security and fire protection on Fort Wainwright, while the 354th Mission Support Group provides both security and fire protection at Eielson AFB. The area surrounding Fort Wainwright and Eielson AFB (both installations are located within the Fairbanks North Star Borough) is served by the Fairbanks Police Department. North Pole Police, Fairbanks Airport Police, and the Division of Alaska State Troopers provide support when necessary to the Fairbanks Police Department (State of Alaska, 2015).

The Fairbanks Fire Department, North Pole Fire Department, and the Fairbanks International Airport Fire Department can provide mutual support for the Fort Wainwright Fire Department. The Fairbanks Fire Department has 46 full-time employees and four fire engines located at two staffed stations in Fairbanks (City of Fairbanks, 2015).

Medical

Bassett Army Community Hospital is located on Fort Wainwright and is designated as a Class I medical activity under the U.S. Army Medical Activity jurisdiction of Alaska (U.S. Army, 2015b). Patients can be transported to regional hospitals in Anchorage or Seattle, depending on the severity of their injuries. For Eielson AFB, medical facilities are operated by the 354th Medical Group. The facilities provide outpatient primary care, dental care, and some specialized medical services (e.g., pharmacy, laboratory, X-ray, and immunizations).

Educational and Child Support Services

A youth center, an elementary school (Arctic Light Elementary), two child development centers, and one school age services center are located on Fort Wainwright, and primarily reside on the western side of the installation (USAG FWA, 2015; Arctic Light Elementary School, 2015). According to the Fairbanks North Star Borough School District (of which Arctic Light Elementary at Fort Wainwright is a part), the district currently has approximately 13,000 students, with an additional student capacity of approximately 3,300 students (Pearce, 2015).

Eielson AFB operates three schools, Anderson Elementary School (kindergarten through second grade), Crawford Elementary (third grade through sixth grade), and Ben Eielson Junior/Senior High School. Approximately 1,648 students attend these schools. A child development center on the installation provides child care for families (Eielson AFB, 2015).

3.8.1.4 Environmental Justice and Protection of Children

Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Executive Order 12898 directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these populations. The general purposes of this executive order are to:

- Focus the attention of federal agencies on human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice
- Foster nondiscrimination in federal programs that substantially affect human health or the environment

- Improve data collection efforts on the impacts of decisions that affect minority communities and low-income communities and encourage more public participation in federal decision making by ensuring documents are easily accessible (e.g., in multiple languages and readily available)

As defined by the Environmental Justice Guidance under NEPA (CEQ, 1997), "minority populations" include persons who identify themselves as Asian or Pacific Islander, Native American or Alaska Native, Black (not of Hispanic origin), or Hispanic. Race refers to census respondents' self-identification of racial background. Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, and central or South American.

A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations are identified using the U.S. Census Bureau's statistical poverty threshold, which is based on income and family size. The U.S. Census Bureau defines a "poverty area" as a census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level. A census tract is a small geographic subdivision of a county and typically contains between 2,500 and 8,000 persons (U.S. Department of Commerce, 2013).

Race, ethnicity, household income, and poverty data are presented in Table 3-3 below. These Census Tracts are located contiguous to, or contain, both Fort Wainwright and Eielson AFB. Among the nine census tracts, Census Tracts 1, 3, 10, 11, and 17 had the highest percentage of their populations living below the poverty level. In comparison, the percentage for the population below the poverty level for the entire Borough was 8.4 percent, while the state had 10 percent of its population living below the poverty threshold. However, none of the census tracts had more than 20 percent of the population below the poverty level. Therefore, it was concluded that no poverty areas are located within proximity to the Proposed Action.

Table 3-3: Race, Ethnicity, Income, and Poverty Data for Select Areas, 2013

Geography	Total Population	Percent Minority	Percent of Population Below Poverty Level
Alaska	720,316	36.5%	10%
Fairbanks North Star Borough	98,656	26.9%	8.4%
Select Fairbanks North Star Borough Census Tracts			
Census Tract 1	1,854	35.3%	15%
Census Tract 3	4,548	51.6%	16%

Geography	Total Population	Percent Minority	Percent of Population Below Poverty Level
Census Tract 4	4,948	38.0%	10%
Census Tract 10	1,490	23.8%	18%
Census Tract 11[a]	8,129	42.5%	15%
Census Tract 12	6,714	20.0%	3%
Census Tract 14	7,659	13.4%	5%
Census Tract 17	1,095	8.0%	15%
Census Tract 18 [b]	2,647	29.7%	2%

Source: U.S. Department of Commerce, 2009-2013 (5 year data)

[a] Fort Wainwright's Census Tract

[b] Eielson AFB's Census Tract

Census Tracts 3, 4, and 11 had larger percentages of their populations identify themselves as minority at 51.6 percent, 38 percent, and 42.5 percent, respectively. They are therefore identified as minority communities because the percentage of their minority populations is meaningfully greater than the minority population of either the state of Alaska or the Fairbanks North Star Borough. Environmental justice communities and impacts are determined based on the impacts of the Proposed Action and is discussed further in the Environmental Consequences section (U.S. Department of Commerce, 2013).

Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health and Safety Risk*, requires federal agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. This executive order, dated April 21, 1997, further requires federal agencies to ensure that their policies, programs, activities, and standards address these disproportionate risks. Executive Order 13045 defines environmental health and safety risks as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink and use for recreation, the soil we live on and the products we use or are exposed to)."

As identified above in the Educational and Child Support Services section, many services on Fort Wainwright and Eielson AFB support and contain a high proportion of children. Additionally, children reside with their families in housing on the installation. Impacts to children are identified in the subsequent Environmental Consequences section below.

3.8.2 Environmental Consequences

Impacts from the two action alternatives on the ROI's demographics, economy, and housing are examined, as well as impacts that could occur to community and public services, such as law enforcement, fire and rescue, schools, and medical services. Environmental justice impacts and impacts to children are addressed, where applicable.

To analyze the effects of the alternatives on socioeconomic resources in the ROI, the Economic Impact Forecast System (EIFS) was used to evaluate the significance of the impact of the alternatives on the ROI. The EIFS model results associated with construction spending in the ROI were assessed for both direct effects (such as construction employment and salaries) and induced effects (such as the effect of construction workers' salaries and associated spending on the ROI's economy).

Changes in local economic activity associated with the project are computed as the product of initial changes in sales volume and a local impact multiplier. In total, the model examines changes in economic indicators including sales volume, income, employment, and population in the ROI, estimating the direct and induced effects of the Proposed Action. Appendix B describes this methodology in more detail and presents the model input and output tables for this analysis.

The thresholds of significance for the economic variables are determined by the model and are based on actual historic deviations from the historic trends for extreme events. To determine the historical range of economic variation, the model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and plots the average growth rate for the sales volume, income, employment, and population patterns as a trend over a 30-year period. This model then can identify and evaluate the historical annual extremes of these values over this 30-year period as a deviation from the average growth trend. These deviations are called historical extremes and the largest deviations during this 30-year period are the thresholds of significance (i.e., the RTVs) for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant.

Local spending under the alternatives would support the employment of the construction workforce and Fort Wainwright and Eielson AFB employees that already live in the ROI. Increases in the salaries and income of this workforce may provide slightly higher household spending in the ROI. Members of the construction workforce who currently live outside the ROI and temporarily move to the ROI as a result of the action alternatives would provide new economic stimulus to the ROI, such as through increased food and beverage spending (induced effects), which would increase downstream jobs and income in the ROI.

3.8.2.1 Significance Criteria

The estimated impact on socioeconomic resources, such as employment, business volume, population, and income are compared to the RTV of these components calculated by the EIFS model. If the impact, as output by the EIFS model, exceeds the RTV for a particular parameter then the impact is considered to be significant. Community and emergency services, such as, but not limited to, education, housing, and law enforcement, can be significantly affected, separate from the aforementioned socioeconomic parameters. The significance of this impact to these community and emergency services depends on the services; but, generally, impacts to these services are defined as the following:

- **None**—No measurable impacts are expected to occur.
- **Minor to Moderate (not significant)**—The degree, slight to noticeable, to which activities would result in measureable changes on the resource.
- **Severe (significant)**—Adverse impacts are expected to occur; impacts would be obvious, are significant and would have serious consequences to the resource.

Environmental justice impacts and impacts to children are assessed separately from the RTV analysis and community and emergency services analysis as environmental justice populations and populations of children can be more sensitive than other socioeconomic impacts and environmental changes. An environmental justice impact is considered to be significant if the impact from an alternative disproportionately and adversely affects a minority or low income community. An impact to a population of children is considered to be significant if the impact disproportionately and adversely affects this population of children.

3.8.2.2 Alternative 1

During the interim period, the 25th Avn Rgt CO D would operate out of Hangar 1 on the north side of Ladd Army Airfield. No new construction would occur, and only minor, temporary renovations to Hangar 1 would be required, resulting in minimal impacts to the local economy. For the long-term support of the 25th Avn Rgt CO D, the new Gray Eagle UAS hangar facilities would be constructed at Fort Wainwright as described in Chapter 2.0. The total cost to construct the facilities is estimated to be $48 million, and construction would take approximately 2 years to complete beginning in FY 2017. Because the construction contract for this alternative would be advertised as full and open, a contractor located outside the ROI may be selected for the project. A non-local contractor may choose to bring in workers from outside the ROI to accommodate specialized occupational requirements.

Personnel associated with the 25th Avn Rgt CO D include 128 Soldiers and 5 contractors. Along with their Families, it is anticipated that approximately 300 people would relocate to the Fairbanks North Star Borough from outside the ROI. Additionally, it is assumed that all military personnel would be housed on the installation. Anticipated impacts associated with construction are presented separately from those associated with operations below.

Economic Impact Forecast System

Construction of the Gray Eagle UAS hangar under Alternative 1 is anticipated to begin in FY 2017 and would take 2 years to complete. The following model results are estimated based on all construction impacts occurring within this 2-year period. Construction spending associated with this alternative would generate sales of approximately $51,360,000 in the 2-year period, which represents a negligible deviation of sales volume over time in the ROI in any 2-year period. Direct income associated with construction of the hangars is estimated to be $4,763,084, which represents a negligible deviation of income over time in the ROI. Based on construction spending during the 2-year period, this project would directly employ approximately 62 persons full-time annually and support an additional 66 jobs indirectly through construction-related spending for a total of 128 full-time jobs annually, which represents a negligible deviation from the average rate of employment over time in the ROI. None of the forecasted sales, income, or employment estimates has a significant deviation greater than their respective historic extreme deviations (see Appendix B); therefore, the anticipated economic changes in these indicators, while beneficial, are expected to have less than a significant effect on the ROI's economy.

Salary payments and benefits to the 128 new military personnel under this alternative are estimated to be $34,538 annually, on average. For the five contractor personnel, the average annual salary and benefits are estimated to be $55,244. Operational employment would support sales of approximately $2,985,435 annually, which is a negligible deviation based on sales volume over time in the ROI. Total direct and induced income is estimated at $4,991,652 annually, which is also a negligible deviation of income in the ROI. These 133 new jobs would support an additional 8 indirect jobs, both military and non-military, for a total of 141 supported jobs. While beneficial, this again is a negligible deviation of employment over time and therefore would be a less than significant effect on the ROI's economy.

Population

Because the construction contract would be advertised as a Full and Open, Best Value solicitation, it could be awarded to either a local contractor or one located outside the ROI. While the local workforce for construction may have a price advantage over a workforce coming from outside the ROI, it is possible that some of the technical skills required would require bringing workers into the ROI on a temporary

basis, during the construction period. If all 50 construction workers were to come from outside the ROI, a temporary increase in the local population would result.

Overall, the Proposed Action would increase the population within the ROI by 133 personnel, plus their Families. All but five of these personnel would be military and would be assumed to be housed on the installation.

Employment

Alternative 1 is expected to provide approximately 50 construction-related, full-time jobs annually for a 2-year period. Construction constitutes 6 percent of the total non-farm workforce in the ROI. From 2011 to 2013, this industry actually saw a decline in employment (U.S. Department of Commerce, Bureau of Economic Analysis, 2013). However, the North American Industry Classification System Code 47-2061, *Construction Laborers*, is forecast to see an overall employment increase of approximately 10 percent between 2012 and 2022, providing support that construction labor could reasonably come from the ROI (State of Alaska, 2015).

Housing

It is possible that the workforce for construction of the facilities could come from within the ROI; however, some specialized workers may temporarily relocate to the ROI at various times during the construction period. It is likely that these few workers who would temporarily relocate would either stay in hotels or rent an apartment in the short term. Fairbanks contains numerous hotels, and hotel rooms would likely be available for any workers relocated from outside the ROI. If a contractor is selected from outside the ROI and that contractor brings their entire workforce to the ROI, then a minor impact to housing may occur as a result of temporary construction workers relocating to the ROI.

Of the 133 total personnel associated with the project, 128 would be military personnel. Fort Wainwright houses approximately 69 percent of its personnel on the installation with the remainder living off the installation (Larson, 2014). It is assumed this ratio would apply to these additional personnel, indicating approximately 88 of the Soldiers and their Families would live on the installation. The total military family housing requirement for Fort Wainwright is expected to decline between 2013 and 2018, from 2,425 to 1,839, respectively, a decline of 586 required housing units (U.S. Army, 2013e). In addition, housing requirements were privatized at Fort Wainwright in 2009, under the Residential Communities Initiative Program. An estimated 524 units are estimated to be constructed under this program (U.S. Army, 2013e). Taking these factors into consideration, adequate housing should be available for these Soldiers and their Families.

It is presumed that in addition to the approximately 40 Soldiers who would live off the installation, the 5 civilian contractors would also live off the installation. Housing vacancy off the installation averaged roughly 8 percent for the period 2009–2013; therefore, ample housing would be available for the Soldiers and contractors who are presumed to live off the installation under the Proposed Action, resulting in only negligible impacts on housing in the ROI.

Government and Emergency Services

Bassett Army Community Hospital is located on Fort Wainwright and because of its proximity to the project's location would likely treat emergency medical injuries sustained by construction project personnel if they occur. If the sustained injury cannot be treated at this hospital, the patient may be transported to Fairbanks Memorial Hospital.

It is expected that only temporary, minor impacts to local law enforcement and emergency services would occur under this alternative because of the increase in population associated with the temporary relocation of the project's construction workforce. Additionally, while some construction workers may temporarily relocate to the area as a result of this construction, it is not expected that they would relocate with their families; consequently, impacts to educational and child support services are not expected. The addition of 133 new personnel and their Families equates to approximately 300 additional individuals, applying the standard military Family multiplier of 2.3. These additional individuals would have a minor impact on law enforcement.

Based on the approximately 3,300 additional student capacity that the Fairbanks North Star Borough currently has (Pearce, 2015), the addition of 133 personnel associated with the 25th Avn Rgt CO D and their Families would have only a minor, long-term impact on educational and support services within the ROI.

Environmental Justice and Protection of Children

No significant environmental or human health impacts are identified that may directly or indirectly affect people or their activities under Alternative 1. Census tracts with impoverished populations and proportionally high minority populations were identified previously within and around Fort Wainwright. It is likely this project would have a positive, proportional impact on all populations in the ROI; therefore, no potential impact on impoverished or minority communities is anticipated under Alternative 1.

Furthermore, this alternative is not anticipated to disproportionately affect the health of children in the ROI. Children currently live and attend school and day care on the installation. These sites, however, are neither located in proximity to the proposed project site at either installation nor in proximity to Hangar 1,

the temporary location of the project while construction of the permanent hangar facilities occurs. As a result, no adverse impacts on children living on the installations or attending child care facilities on the installations are anticipated.

3.8.2.3 Alternative 2

Similar to Alternative 1, during the interim period under Alternative 2, the 25th Avn Rgt CO D would operate out of Hangar 1 on Fort Wainwright. Because only minor, temporary renovations would be required to use this facility during the interim period, impacts to the local economy would be minimal.

Under Alternative 2, the permanent hangar facilities would be constructed on Eielson AFB. The total cost to construct the facilities is estimated to be the same as for Alternative 1 ($48 million), and construction would also take approximately 2 years to complete beginning in FY 2017.

While the permanent hangar facilities would be located at Eielson AFB, the 128 Soldiers, 5 contractors, and their Families would be located at Fort Wainwright. No personnel associated with the 25th Avn Rgt CO D would live on Eielson AFB.

Economic Impact Forecast System

Because Eielson AFB is located within the same ROI as Fort Wainwright, and construction is anticipated to require the same 2-year time frame; socioeconomic impacts under this Alternative 2 would remain the same as those discussed for Alternative 1. This includes construction spending associated with this alternative, sales volume, direct income, and direct and indirect employment (see Appendix B).

The operations period would remain the same as under Alternative 1, and the salary payments and benefits to the 133 new Soldiers and civilian contractor personnel would also be the same as those described under Alternative 1.

Population

Overall, the Proposed Action would increase the population within the ROI by approximately 300 people, including 128 Soldiers, 5 contract personnel, and their Families. All but the five contract personnel and their families would be military and would be housed at Fort Wainwright; consequently, impacts would be the same as under Alternative 1.

Employment

Under Alternative 2, impacts to employment would be identical to those under Alternative 1.

Housing

Under Alternative 2, impacts to housing would be identical to those under Alternative 1.

Government and Emergency Services

The 354th Medical Group operates medical facilities at Eielson AFB. This facility provides outpatient primary care, dental care, and some specialized medical services (e.g., pharmacy, laboratory, X-ray, and immunizations). However, these facilities would likely only be used minimally and likely only in emergency situations as only 35 to 40 personnel would commute to and work at Eielson AFB on a daily basis. Similar to Alternative 1, the Soldiers, contractors, and their Families would be housed on Fort Wainwright or the surrounding area and would most likely use the medical services provided at Fort Wainwright. Therefore, impacts would be the same as described for Alternative 1. Impacts to emergency services and law enforcement would also be the same as under Alternative 1.

Impacts on educational and support services in the ROI would be the same as under Alternative 1 because no personnel from the 25th Avn Rgt CO D or their Families would be located on Eielson AFB.

Environmental Justice and Protection of Children

The analysis has not identified any significant environmental or human health impacts that may directly or indirectly affect people or their activities under this alternative. Census tracts with impoverished populations and proportionally high minority populations were identified previously within and around Fort Wainwright and Eielson AFB. It is likely this project would have a positive proportional impact on all populations in the ROI; therefore, there would be no potential to impact impoverished or minority communities associated with Alternative 2.

Alternative 2 is not anticipated to disproportionately affect the health of children in the ROI. There may be some children living on either installation (Fort Wainwright and Eielson AFB) in dependent housing, attending day care at a child development center or schools on the installations, or participating in activities at youth centers. These sites, however, are not located in proximity to the proposed project site at Eielson AFB. As a result, there are not expected to be any adverse impacts on children living on the installation or attending child care facilities on the installation.

3.8.2.4 No Action Alternative

Under the No Action Alternative, the 25th Avn Rgt CO D would not be stationed in Alaska and would not operate the Gray Eagle UAS from either Fort Wainwright or Eielson AFB. Therefore, there would be no impacts to any of the socioeconomic resources of the region, including environmental justice and children.

3.9 Cumulative Effects

In addition to identifying the direct and indirect environmental impacts of their actions, the CEQ's NEPA regulations require federal agencies to address cumulative impacts related to their proposals. A cumulative impact is defined in the CEQ regulations (40 CFR §1508.7) as "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." This section describes the process used to identify potential cumulative impacts related to the Proposed Action and discusses those impacts for each of the resources addressed earlier in this chapter in Sections 3.2 through 3.8.

3.9.1 Approach for Assessing Cumulative Effects

Guidance used for preparing the cumulative effects analysis includes:

- CEQ's NEPA implementing regulations (40 CFR §1500–1508)
- Environmental Analysis of Army Actions (32 CFR §651)
- Considering Cumulative Effects under the National Environmental Policy Act, 1997
- CEQ's Guidance on the Consideration of Past Actions in Cumulative Effects Analysis, 2005
- U.S. Army Environmental Command's *NEPA Analysis Guidance Manual*, 2007

The process outlined by CEQ includes identifying significant cumulative effects issues, establishing the relevant geographic and temporal (time frame) extent of the cumulative effects analysis, identifying other actions affecting the resources of concern, establishing the cause-and-effect relationship between the Proposed Action and the cumulative impacts, determining the magnitude and significance of the cumulative effects, and identifying ways in which the agency's proposal might be modified to avoid, minimize, or mitigate significant cumulative impacts.

Issues to be addressed in the cumulative effects analysis were determined based on the identification of resources that would be directly or indirectly affected by the alternatives being considered for implementing the Proposed Action. These resources, discussed earlier in this chapter, were identified based on information received during internal scoping or through the analysis of direct and indirect effects that have the potential to combine with other past, present, or reasonably foreseeable future actions to produce a larger impact. If the analysis demonstrated there would be no direct or indirect impact to a

resource, it was not included in the cumulative effects analysis because the Proposed Action would not add to the cumulative impact.

CEQ regulations specify that cumulative effects analyses encompass past, present, and reasonably foreseeable future actions. Actions considered in this cumulative effects analysis are identified in Section 3.9.2.1. As a practical matter, the impacts of past actions are already reflected in the conditions that currently exist, as described earlier in this chapter in the Affected Environment section of each resource area. For example, past actions on Fort Wainwright affecting the Ladd Field NHL and Cold War Historic District are already considered in the Affected Environment section of Cultural Resources in the discussion of the existing integrity of the Ladd Field NHL and Cold War Historic District. Present and reasonably foreseeable future actions are considered as those that currently exist or are under construction, are the subject of an existing plan or proposal, or have identified funding. Actions beyond that become increasingly speculative and difficult to assess.

For example, two projects—one an Air Force project and one an Army project—could potentially have cumulative impacts with the current Proposed Action; however, not enough information is known at this time regarding the actions and potential impacts to determine the exact nature of the cumulative impacts. The Air Force is proposing to base F-35A operational aircraft in the Pacific Air Force (PACAF) area of responsibility. Based on strategic requirements, site survey results, and application of selection standards, the Secretary of the Air Force identified Eielson AFB as the preferred location for the PACAF area of responsibility F-35A beddown. The Proposed Action is to base two F-35A squadrons at Eielson AFB, with a total of 48 primary and 6 backup aircraft assigned to the installation. The first squadron of F-35As would arrive by the end of 2019, and the second would follow in 2020. While some information is known about the project, the Air Force is only in the beginning stages of conducting the NEPA process (an EIS) and a final decision has not been made as to whether or not the F-35A will be stationed at Eielson AFB or not. Therefore, there is not enough information to determine what the specific impacts of the project might be and how they might cumulatively impact resources along with the Army's proposed action analyzed in this EA. Therefore, it is not considered in the cumulative impacts analysis below.

As part of the Army's initiative for drawing down U.S. forces nationwide, in addition to realignments identified in FY 2014 and FY 2015 as noted below in Section 3.9.2.1, the Army has indicated a need to further reduce the end strength of the Army by FY 2020. In 2014, the Army identified 30 installations nationwide where troop reductions could occur, including potentially up to 5,800 Soldiers and Army civilians at Fort Wainwright. However, no decisions have been made by the Army, so it is not known how many Soldiers, if any at all, could be lost at Fort Wainwright. If reductions were to occur at Fort

Wainwright, it is also not known which units would be reduced or realigned. As a result, it is not possible to determine the potential impacts from the action, if any. Therefore, this potential reduction scenario is not carried forward in the cumulative impacts analysis.

3.9.2 Geographic Scope

The geographic scope for direct and indirect impacts of the Proposed Action includes Fort Wainwright, Eielson AFB, and the restricted airspace where the Gray Eagle UAS training operations would occur, as well as Fairbanks North Star Borough because that is where potential socioeconomic impacts could occur.

3.9.2.1 Present Actions

Implementation of the Aviation Restructuring Initiative at Fort Wainwright, Alaska

In response to the Headquarters Department of the Army (HQDA) Aviation Restructuring Initiative, USARAK is proposing to reconfigure the aviation units at Fort Wainwright, Alaska. This includes inactivating the 6th Squadron, 17th Calvary Regiment (6-17 CAV) and activating the 1st Battalion, 25th Aviation Regiment Attack Reconnaissance Battalion (1-25 ARB) in its place. The 30 OH-58 Kiowa helicopters assigned to the 6-17 CAV will be removed from the Fort Wainwright aircraft inventory and replaced with 24 AH-64 Apache helicopters assigned to the 1-25 ARB. The total personnel change resulting from this proposed action will be an increase of approximately 40 personnel; from 290 assigned to the 6-17 CAV to 330 assigned to the 1-25 ARB. The replacement of the Kiowa with the Apache will result in an overall reduction in the number of helicopters from the current level of 65 to 59. This restructuring initiative will also result in an overall reduction of unit support vehicles from 91 to 89. The proposed inactivation of the 6-17 CAV will occur in July 2015 while the stationing of the 1-25 ARB and AH-64 Apache helicopter is anticipated to occur in September 2015.

Fiscal Year 14 to 15 Force Structure Actions at Fort Wainwright, Alaska

In response to the HQDA initiative for drawing down U.S. forces nationwide, the USARAK is proposing to realign existing forces at Fort Wainwright, Alaska, by FY 2015. USARAK is proposing to implement the force structure changes through inactivation, activation, relocation, and conversion of several units. Overall, there will be an increase of approximately 489 Soldiers and personnel at Fort Wainwright. Incoming Soldiers and Families will be housed in existing infrastructure at Fort Wainwright, and no new construction will occur in the near term. Instead, renovation projects will be made to accommodate the missions of the realigned units. The breakdown of force structure realignments occurring at Fort Wainwright are presented in Table 3-4.

Table 3-4: Force Structure Realignments at Fort Wainwright, Alaska

Unit	Change in Personnel (overall change)
9th Army Band conversion	-3 (40 to 37)
21st Infantry Battalion conversion	-28 (692 to 664)
8th Field Artillery Battalion conversion	+131 (389 to 520)
539th Transportation Company conversion	+109 (163 to 272)
1st Battalion 52nd Aviation Regiment conversion	+ 1 (663 to 664)
HHC, 1st Brigade Combat Team 25th Infantry Division conversion	-67 (221 to 154)
549th Military Police Detachment conversion	0 (20 to 20)
525th Military Police Detachment	Delayed
574th Quartermaster Company relocation	+ 172 (0 to 172)
25th Support Battalion conversion	+ 197 (738 to 935)
1st Battalion 5th Infantry Regiment conversion	-28 (692 to 664)
1st Battalion 24th Infantry Regiment conversion	-28 (692 to 664)
5th Squadron 1st Cavalry Regiment conversion	-28 (411 to 383)
472th Military Police Company inactivates	-168 (168 to 0)
184th Military Intelligence Company inactivates	-116 (116 to 0)
176th Signal Company inactivates	-56 (56 to 0)
73rd Engineer Company inactivates	-143 (143 to 0)
52nd Infantry Company inactivates	-53 (53 to 0)
70th Engineering Battalion activates	+469 (0 to 469)
25th Aviation Regiment Company D	+ 128 (0 to 128)
Total Change	**+ 489 (5,257 to 5,746)**

Stationing and Training of Increased Aviation Assets at Fort Wainwright, Phases 3B and 4

The Army has been reorganizing and augmenting its aviation assets in Alaska to become a front line aviation unit with an increased combat-readiness capacity. This includes stationing of additional Soldiers and helicopters, construction of a number of facilities within the Fort Wainwright Main Post, and increased aviation training on Army lands and within airspace in Alaska. As part of the reorganization, existing USARAK aviation assets were converted into a Task Force consisting of approximately 1,200 personnel and 72 helicopters as an additional 710 Soldiers and 40 helicopters were added to USARAK's previously existing aviation assets of approximately 490 personnel and 32 helicopters. To accommodate the stationing and training of the new aviation assets new buildings, parking areas, and fencing needed to be constructed along with the renovation or demolition of other structures. This is a four phase project.

Some of these projects have been completed and are already reflected in the conditions that currently exist, as described earlier in this chapter in the Affected Environment section of each resource area. Those phases that are still ongoing and need to be considered for cumulative impacts are:

- **Aviation Task Force Complex, Phase 3B—**The primary facilities in this phase of the Aviation Task Force project include a 19,500-ft^2 Company Operations Facility (COF) with enclosed hardstand, a 52,000-ft^2 warm storage hangar, and a 118,881-ft^2 organizational vehicle parking lot. The new hangar will provide consolidated indoor storage and space for maintenance and repair/reconditioning of helicopter engines, airframes, and electronic and optical systems.
- **Aviation Task Force Complex, Phase 4—**The primary facilities in this phase include two Battalion HQ with organizational classrooms (49,546 ft^2 and 16,015 ft^2), and a 31,878-ft^2 duplex COF with enclosed covered hardstand.

University of Alaska Fairbanks Unmanned Aerial Vehicle Program Test Bed

The Alaska Center for Unmanned Aircraft Systems Integration was established in December 2012 by the University of Alaska's Board of Regents in recognition of the importance and growth of the unmanned aircraft program. It was established under the University of Alaska, Fairbanks, in the Geophysical Institute where it originated, but was given the role of leading all unmanned aircraft programs for the entire system. In 2013, the FAA announced the Alaska Center for Unmanned Aircraft Systems Integration had been selected as one of six test sites for UAS established by the 2012 FAA Modernization and Reform Act. The Alaska Center for Unmanned Aircraft Systems Integration is a research center for small, UASs providing integration of unique payloads and supporting pathfinder missions within government and science communities, with a special emphasis on the Arctic region. Its goal is to develop, test, and ultimately exploit emerging unmanned aircraft technology and its uses to create a positive economic and social benefit within the state of Alaska.

3.9.2.2 Reasonably Foreseeable Future Actions

Battle Area Complex Restricted Airspace Addition

The Army is proposing new restricted airspace be established over the Battle Area Complex within the DTA–East. This airspace is proposed to be of sufficient area to encompass hazardous activities and weapons footprints for those types of munitions and ordnance to be used in this area. The additional restricted airspace would allow more realistic joint training at the Battle Area Complex. The proposed Battle Area Complex Restricted Airspace Addition would be subdivided into three sectors: R-XXXXA (north), R-XXXXB (center), and R-XXXXC (south). These subdivisions would be stratified in three layers: from the surface up to but not including 6,000 feet MSL; 6,000 feet MSL up to but not including

15,000 feet MSL; and 15,000 feet MSL up to 22,000 feet MSL with most Battle Area Complex activities being conducted in the lower strata approximately 60 percent of the training year. The proposal is currently with the FAA for approval.

Expansion of Restricted Area R-2205

The Army is proposing to expand restricted area R-2205 to include the Moose Creek Range Complex (also referred to as the Digital Multi-Purpose Training Range) area within the YTA, as well as the airspace currently designated as the Combined Arms Live-Fire Exercises north and south Controlled Firing Areas, which overlie the YTA and are used for small-arms firing, artillery, ground-launched antitank guided missiles, and mortars. The action aligns the outer restricted area boundary more precisely with the Army-controlled YTA lands to provide the expanded protective airspace needed for encompassing YTA hazardous activities. The proposed R-2205C extends within the Eielson AFB Class D airspace; therefore, the scheduled use of this subdivision would be closely coordinated among the different controlling and scheduling functions so that R-2205C activities do not conflict with Eielson AFB air traffic operations. This restricted airspace would extend from the surface up to FL310 with only those subdivisions and altitudes being activated as needed to support individual unmanned aerial vehicle (UAV) and other mission requirements.

3.9.3 Cumulative Effects Analysis

The proposed alternatives were determined to contribute minimally to cumulative effects on the following resource areas within the geographic and temporal scope of analysis.

3.9.3.1 Air Space

Under Alternatives 1 and 2, minor, adverse impacts to airspace are anticipated as a result of increased operations from Gray Eagle UAS training affecting air traffic flow within the national airspace as a result of additional time and use demands of SUAs. Other potential minor, adverse impacts could occur in the event the Gray Eagle UAS encounters a lost link as a result of a prolonged intrusion into the airspace. Impacts under Alternative 1 and 2 are not anticipated to be significant because Gray Eagle UAS operations would adhere to existing airspace management and scheduling operations, minimizing all potential airspace conflicts. Similarly, under Alternative 2 to minimize potential conflicts between the Gray Eagle UAS and F-16 operations at Eielson AFB, time de-confliction methods would be used through departure and recovery windows. Complete descriptions of impacts to airspace under Alternative 1 and 2 are detailed in Sections 3.2.2.2 and 3.2.2.3.

Under the No Action Alternative, no impacts to airspace are anticipated.

Of the past, present and future projects included in this EA for cumulative impacts analysis, the Stationing and Training of Increased Aviation Assets at Fort Wainwright, Phases 3B and 4; the University of Alaska Fairbanks UAV Program Test Bed; the Battle Area Complex Restricted Airspace Addition, and the Expansion of Restricted Area R-2205 all have the potential to affect existing airspace. The Stationing and Training of Increased Aviation Assets has previously led to an increase in aviation personnel and equipment at Fort Wainwright. The remaining construction under Phases 3B and 4 required to further accommodate the stationing and training of these assets is not anticipated to affect existing airspace use and classifications and, therefore, would not adversely affect airspace. Increased operations resulting from these aviation assets could cause some minor impacts to air traffic flow within the national airspace in the Fort Wainwright area as a result of additional time and use demands of SUAs resulting in potential minor, adverse impacts. Similarly, the establishment of the University of Alaska Fairbanks UAV Program Test Bed could also place additional demands on traffic flow within the national airspace in the Fort Wainwright area, similarly resulting in minor, adverse impacts to airspace. However, adherence to existing airspace management and scheduling operations would minimize potential conflicts within existing airspace.

The proposed new restricted airspace over the Battle Area Complex within the DTA–East would increase the amount of restricted airspace in the region and provide a safety layer for hazardous activities and weapons footprints for those types of munitions and ordnance to be used in this area and as a result would have beneficial impacts to military airspace use. However, the proposed restricted airspace could potentially cause flight delays and may potentially require the routing of civilian air traffic around the restricted airspace when active, resulting in minor, adverse impacts to civilian airspace use. The expansion of Restricted Area R-2205 would have similar beneficial impacts to military airspace from providing expanded protective airspace for YTA hazardous activities, as well as similar minor, adverse impacts on civilian aircraft due to potential flight delays and rerouting of traffic. The additional coordination required for air traffic scheduling functions for the expansion of Restricted Area R-2205 is not anticipated to overburden air traffic control personnel; therefore, no adverse impacts are anticipated.

Although not identified above, the implementation of the Aviation Restructuring Initiative at Fort Wainwright, while affecting aviation personnel and equipment, is not anticipated to affect airspace because reconfiguration activities are minimal and would not alter airspace use or classifications.

The minor, adverse impacts of the above actions when combined with the minor, adverse impacts to airspace under Alternatives 1 and 2 would result in minor, cumulative impacts to airspace at Fort Wainwright and Eielson AFB.

3.9.3.2 Cultural Resources

Alternative 1 would result in a minor impact to the Ladd Field NHL and the Cold War Historic District because both would retain historical significance and would retain their overall historic integrity. Alternative 2 would result in a minor impact to the Flightline Historic District at Eielson AFB because the district would retain its overall historic integrity and significance through adherence to guidelines established in the Architectural Compatibility Plan found in the Programmatic Agreement for Operation, Maintenance, and Development of Historic Properties at Eielson AFB. The No Action Alternative would have no impact because no new buildings would be constructed.

Past adverse effects on World War II NHLs in Alaska include deterioration of resources due to environmental conditions, passage of time, and intentional demolition of resources. The combined impact of these actions has resulted in a moderate impact to the state's collection of World War II resources. Proposed demolition and new construction at Fort Wainwright for Stationing and Training of Increased Aviation Assets at Fort Wainwright has also diminished the overall integrity of setting, feeling and association of the Ladd Field NHL and Cold War Historic District at Fort Wainwright.

The Proposed Action would result in the introduction of a modern building within the Ladd Field NHL at Fort Wainwright, which is a minor impact to cultural resources. Combined with the past, present, and reasonably foreseeable future actions discussed above, the impacts from the Proposed Action would constitute a minor, cumulative impact to cultural resources because it is unlikely to contribute significantly to cumulative impacts to the Ladd Field NHL or Cold War Historic District at Fort Wainwright. The location of the new hangar in the Ladd Field NHL is the previous location of the recently demolished Hangars 2 and 3. Hence, there would be no reduction of historically open space in the Ladd Field NHL. The south side of the flight line has been altered significantly with construction of hangars. The addition of a new hangar at this location would not significantly alter the viewshed of the Ladd Field NHL. The design of the new hangar would not be substantially out of character with adjacent developed areas. The impacts of the Proposed Action would constitute a minor, cumulative impact to the Ladd Field NHL because other previous projects have had greater impacts to the Ladd Field NHL. The demolition and construction of buildings for the Stationing and Training of Increased Aviation Assets at Fort Wainwright contributed to the loss of integrity at the Ladd Field NHL to a much greater extent than the current proposed hangar.

3.9.3.3 Energy Demand and Utilities

Under Alternatives 1 and 2, minor, cumulative impacts to energy demand and utilities are expected because as discussed in Sections 3.4.2.2 and 3.4.2.3, adequate utility infrastructure exists to support both

alternatives and only a minor increase in usage would occur during operations. Minor impacts to energy demand and utilities are expected to occur with the use of Hangar 1 during the interim period. Construction of the new hangar at Fort Wainwright (Alternative 1) or Eielson AFB (Alternative 2) would result in minor, temporary impacts to utilities at the respective installation during the construction of utility extensions and long-term minor impacts associated with the increased use of energy and utilities to support hangar operations. Impacts would be minor because the existing infrastructure can support the increase with small changes or upgrades.

No energy demand or utility impacts would occur under the No Action Alternative.

Of the past, present and future projects included in this EA for cumulative impacts analysis, the construction related to the Fiscal Year 14 to 15 Force Structure Actions at Fort Wainwright, Alaska, and Stationing and Training of Increased Aviation Assets at Fort Wainwright, Phases 3B and 4 would have minor, adverse impacts on energy demand and utilities at Fort Wainwright and would not affect Eielson AFB. The Army took steps to prepare its utility systems at Fort Wainwright for future growth by conveying them to a private utilities contractor in August 2008 to own, operate, and upgrade (U.S. Army, 2013c). The Army has planned for the growth expected from the projects in the cumulative analysis; therefore, the implementation of the projects would only have a minor impact on energy demand and utilities.

3.9.3.4 Hazardous Materials and Hazardous Waste

Under Alternatives 1 and 2, minor, adverse impacts to hazardous materials and hazardous waste are expected. Under either Alternative 1 or 2, during the interim period, no new construction would occur, and only minor, temporary renovations involving installing temporary walls in the hangar bay, extending electrical lines to needed areas via 2-inch conduit inside the building, and installing electrical outlets on the exterior of the building would be required. Therefore, there would be no impacts from hazardous materials and hazardous wastes from construction activities. Construction activities for the long-term solution under Alternative 1 would increase hazardous materials and hazardous wastes at Fort Wainwright, while under Alternative 2, construction activities at Eielson AFB would increase hazardous materials and hazardous wastes. However, adherence to applicable regulations and management plans would result in only minor, adverse impacts from hazardous materials and hazardous wastes under either alternative. During operations, under either Alternative 1 or 2, adverse impacts from hazardous materials and hazardous wastes would be minor because hazardous materials used and hazardous wastes generated during routine activities, such as maintenance on the aircraft, would be supplied/disposed of using existing facilities at Fort Wainwright or Eielson AFB, in compliance with applicable regulations,

guidance and management plans (USAG FWA, 2013a). Additionally, only routine maintenance activities and minor inspections of the aircraft would occur at Fort Wainwright or Eielson AFB. Any defective items requiring more than just routine servicing or upkeep would be returned to the original equipment manufacturer.

Under the No Action Alternative, no impacts to hazardous materials and hazardous wastes are anticipated.

Of the past, present and future projects included in this EA for cumulative impacts analysis, the construction related to the Stationing and Training of Increased Aviation Assets at Fort Wainwright, Phases 3B and 4 would have less than significant, short-term impacts from hazardous materials and hazardous wastes. Fort Wainwright and Eielson AFB would handle any additionally generated hazardous materials and wastes from construction in accordance with all applicable state and federal regulations. If contaminated soil is discovered during construction, it would be removed and properly disposed of in accordance with all appropriate regulations. The Force Structure Actions and Stationing and Training of Increased Aviation Assets increased personnel and equipment at Fort Wainwright. Additional personnel and equipment resulted in the increase in the use of hazardous materials and generation of hazardous wastes; therefore, the action resulted in minor, adverse impacts hazardous materials and hazardous wastes.

The short-term and long-term, minor, adverse impacts from hazardous materials and hazardous wastes anticipated under the No Action Alternative, Alternative 1, and Alternative 2 of the Proposed Action are not be expected to contribute significantly to cumulative impacts at Fort Wainwright or at Eielson AFB.

3.9.3.5 Health and Safety

Under Alternatives 1 and 2, minor, cumulative impacts to safety would be expected because, as discussed in Section 3.6.2.3 and 3.6.2.4, construction-related impacts would be minor and temporary in duration. Potential impacts during the interim period would only occur from training operations. While no impacts to human health and safety are expected to occur with the use of Hangar 1 during the interim period, temporary and minor impacts to human health and safety would occur during the construction activities under Alternatives 1 and 2. These temporary impacts would occur as a result of the inherent risks associated with heavy construction equipment and activities, and construction worker commutes. In addition, during airfield training activities, Gray Eagle UAS operations would follow existing SOPs for the handling and transfer of hazardous material and would adhere to relevant and applicable occupational health and safety standards listed under 29 CFR §§1910, 1920, and 1926 (U.S. Army 2010), reducing all impacts to human health and safety.

No direct human health and safety impacts would occur under the No Action Alternative.

Of the past, present and future projects included in this EA for cumulative impacts analysis, the construction related to the Stationing and Training of Increased Aviation Assets at Fort Wainwright Phases 3B and 4 would have less than significant impacts on human health and safety. The combined cumulative impacts to human health and safety would result in less than significant impacts because the safety concerns and impacts under the alternatives would be confined to a limited area and would be temporary in duration. Additionally, by following applicable SOPs, occupational health and safety standards, and other applicable regulations related to construction safety, personnel would ensure that safety would not be compromised during construction activities. For the Battle Area Complex Restricted Airspace Addition and the Expansion of Restricted Area R-2205, these actions would increase safety by expanding restricted airspace over the respective training areas to encompass all hazardous activities and weapons footprints for those types of munitions and ordnance to be used in the areas.

Therefore, short-term, minor impacts are anticipated under Alternative 1 and Alternative 2, and these impacts are not expected to contribute significantly to cumulative impacts to human health and safety at Fort Wainwright or at Eielson AFB.

3.9.3.6 Water Resources

Under Alternatives 1 and 2, minor, adverse impacts to water resources are anticipated as a result of the construction of permanent facilities for Gray Eagle UAS operations. Construction activities, such as clearing, grading, and using heavy equipment, would temporarily disturb and expose soil, resulting in increased potential for sedimentation of surrounding water resources and accidental release of hazardous materials. Other potential long-term, minor, adverse impacts could occur under Alternative 1 if deicing products are used on the Ladd Army Airfield. Both Alternatives 1 and 2 would increase the amount of impervious surface on Fort Wainwright by approximately 3.3 acres, a relatively small amount compared to all impervious surfaces on Fort Wainwright. This increase would have a slight impact on surrounding water resources or stormwater runoff. Construction of the organizational vehicle parking area may also cause minor, adverse impacts to wetlands if it is not constructed in a previously disturbed area. Impacts under Alternatives 1 and 2 are not anticipated to be significant because the USAG FWA would adhere to applicable water quality regulations, stormwater discharge and construction permits, stormwater management and pollution prevention plans and would implement associated BMPs, minimizing potential degradation of water quality and stormwater runoff. No impacts are anticipated during the interim period. Complete descriptions of impacts to water resources under Alternatives 1 and 2 are detailed in Sections 3.7.2.2 and 3.7.2.3.

Under the No Action Alternative, no impacts to water resources are anticipated.

Of the past, present and future projects included in this EA for cumulative impacts analysis, the Stationing and Training of Increased Aviation Assets at Fort Wainwright, Phases 3B and 4, has the potential to affect existing water resources, although these impacts would be less than significant. The construction of new facilities, such as buildings and parking lots, would disturb soils, increase impervious surfaces, and increase the potential for erosion, resulting in sediment and other pollutant loading into surrounding waters. The demolition of existing facilities is also anticipated to result in minor impacts on water quality from sedimentation and potential accidental leaks and spills of hazardous materials. During construction, this ongoing project would be expected to have short-term, minor, adverse impacts on water resources. Following construction, the changes would be expected to have long-term, minor, adverse impacts. When considered in combination with cumulative impacts, the impacts on water resources from the proposed alternatives are expected to be minor.

3.9.3.7 Socioeconomic Resources

Under Alternatives 1 and 2, no significant socioeconomic impacts are anticipated in terms of construction and additional personnel for the project. The analysis indicates that impacts to population, employment, housing and government and emergency services within the ROI would be less than significant at both locations.

Under the No Action Alternative, no socioeconomic impacts would occur.

Of the past, present, and reasonably foreseeable future projects included in this EA for cumulative impacts analysis, three of the present projects would have socioeconomic impacts on the ROI; of these, two involve additional personnel and their Families relocating to Fort Wainwright in the near term. The first project, the implementation of the Aviation Restructuring Initiative at Fort Wainwright, which is currently occurring, would increase installation personnel by 40 persons. It is anticipated that these personnel and their Families would be housed on the installation because they would be military personnel and would be stationed at Fort Wainwright. The second project, the Fiscal Year 14 to 15 Force Structure Actions at Fort Wainwright, Alaska, was recently completed and increased installation personnel by 489 persons. These personnel and their Families are being housed in existing infrastructure on Fort Wainwright.

These population increases would likely affect the emergency services (e.g., military police, fire/rescue and hospital service) within the ROI. The population of the ROI increased 17.8 percent from 2000 to 2013, to just under 99,000 persons. The additional personnel and their Families at Fort Wainwright

represent a small percentage compared to this figure; as such, it is anticipated that these population increases would have only minor additional impacts on area hospitals. Because the ROI is serviced by numerous law enforcement and fire protection entities (Fort Wainwright Military Police, along with the Fairbanks Police Department, North Pole Police Department, Alaska State Troopers, Fort Wainwright Fire Department, Fairbanks Fire Department, and the North Pole Fire Department), it is anticipated that impacts to emergency services from the population increases of these two past and present projects in combination with the action alternative would be less than significant.

Cumulative impacts to education facilities are also anticipated to occur as a result of these projects' population increases. Families housed at Fort Wainwright attend both on-installation and off-installation schools (USAG FWA, 2015). According to the Fairbanks-North Star Borough School District, the district currently has an additional student capacity of approximately 3,300 students (Pearce, 2015). As such, the additional personnel and their Families at Fort Wainwright would have a minor impact on educational facilities.

The Stationing and Training of Increased Aviation Assets at Fort Wainwright, Phases 3B and 4, only involve construction of facilities because all of the personnel and equipment associated with the project arrived during the first phases of the project. Construction of the facilities under these two phases of the project would have temporary, minor, beneficial economic impacts on the ROI in terms of construction employment and increased spending.

The minor, adverse, and beneficial impacts of the above actions when combined with the minor, adverse impacts to socioeconomics under Alternatives 1 and 2 would result in minor, cumulative impacts at Fort Wainwright, Eielson AFB, and the ROI.

4.0 FINDINGS AND CONCLUSIONS

Based on the analysis performed in this EA, implementation of the Proposed Action under any of the alternatives would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Therefore, preparation of an EIS is not required and issuance of a Finding of No Significant Impact is appropriate.

Table 4-1 summarizes the environmental impacts associated with each alternative for each resource area evaluated in this EA. A summary of proposed mitigation measures is provided after the table.

Table 4-1: Summary of Environmental Impacts

Resource Area	Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska for the Interim and Permanent Period	Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and from Eielson Air Force Base for the Permanent Period	No Action
Air Space	Short term: no impact. Long term and minor: increased Gray Eagle UAS training operations could cause impacts to air traffic flow.	Short term: no impact. Long term: increased Gray Eagle UAS training operations could cause impacts to air traffic flow.	No impact
Cultural Resources	Short term: no impact. Long term and minor: impacts from introducing new elements into the Ladd Field NHL and Cold War Historic District.	Short term: no impact. Long term: no impact.	No impact
Energy Demand and Utilities	Short term and minor: physically connecting to utility services. Long term and minor: utility needs for new facilities and demand for energy, water, sewer, and telecommunications increased with additional Soldiers. Slight increase in demand for aviation grade JP-8 fuel for Gray Eagle UAS operations.	Short term and minor: physically connecting to utility services. Long term and minor: operation of the hangar facility would increase Eielson AFB's demand for energy, water, sewer, and telecommunications, and slightly increase demand for aviation grade JP-8 fuel for Gray Eagle UAS operations. Additional Soldiers would increase energy and utility demand at Fort Wainwright	No impact

Resource Area	Alternative 1: Operate the Gray Eagle UAS from Fort Wainwright, Alaska for the Interim and Permanent Period	Alternative 2: Operate the Gray Eagle UAS from Fort Wainwright for the Interim Period and from Eielson Air Force Base for the Permanent Period	No Action
Hazardous Materials/ Hazardous Waste	Short term and minor: increased hazardous material and waste production during construction of the UAS hangar. Long term and minor: impacts from risk of aviation grade JP-8 fuel spillage and use of hazardous materials and waste for aircraft maintenance.	Short term and minor: increased hazardous material and waste production during construction of the UAS hangar. Long term and minor: impacts from risk of aviation grade JP-8 fuel spillage and use of hazardous materials and waste for aircraft maintenance.	No impact
Health and Safety	Short term and minor: risks associated with heavy construction equipment and activities. Long term and minor: adhering to existing airspace management and scheduling operations would minimize potential impacts to human health and safety; furthermore, the Gray Eagle UAS would not be allowed to fly unassisted in non-military owned airspace.	Short term and minor: risks associated with heavy construction equipment and activities. Long term and minor: adhering to existing airspace management and scheduling operations would minimize potential impacts to human health and safety; furthermore, the Gray Eagle UAS would not be allowed to fly unassisted in non-military owned airspace.	No Impact
Water	Short term and minor: clearing, grading, and other construction activities would disturb and expose soil resulting in increased potential for soil erosion, sedimentation of surrounding water resources. Long term and minor: from increased impervious surfaces, possible use of deicing chemicals, and possible disturbance of wetlands.	Short term and minor: clearing, grading, and other construction activities would disturb and expose soil resulting in increased potential for soil erosion, sedimentation of surrounding water resources. Long term and minor: from increased impervious surfaces, and possible disturbance of wetlands.	No impact
Socioeconomics and Environmental Justice	Long term: no impact on environmental justice and protection of children; housing; Economic Impact Forecast System. Long term and minor: government and emergency services; population. Long term and beneficial: employment.	Long term: no impact on environmental justice and protection of children; housing; Economic Impact Forecast System. Long term and minor: government and emergency services; population. Long term and beneficial: employment.	No impact

Notes: AFB – Air Force Base, Cold War Historic District – Ladd Air Force Base Cold War Historic District, Ladd Field NHL – Ladd Field National Historic Landmark, UAS – unmanned aircraft system

The Proposed Action would not result in significant impacts to any of the resource areas; however, dependent on the resource area, some mitigation measures would be needed as a result of minor impacts. For example, if siting of the organizational vehicle parking area on Fort Wainwright were to result in minor, adverse impacts on wetlands, mitigation measures would be required to offset the impacts and replace the lost functions and values of the wetlands. Specific mitigation measures would be determined during the Clean Water Act 404 permitting process. Additionally, because Alternative 1, if selected, would result in minor, adverse impacts to the Ladd Field NHL and Cold War Historic District, the USAG FWA would initiate consultation per Section 106 of the NHPA to determine what mitigation is necessary for the adverse effect on the Ladd Field NHL and Cold War Historic District.

Though the Proposed Action would not require mitigation measures other than potentially for cultural resources and wetlands, a number of standard measures, including BMPs, would be employed where appropriate to reduce or minimize potential impacts. In recent years, both the USAG FWA and USARAK have produced a variety of NEPA analyses evaluating several actions, including Army force transformation efforts, the addition of Soldiers and new equipment, a general increased use of training lands, and range development projects throughout USARAK ranges. These documents have also identified many regulations, policies, management programs, BMPs, and specific mitigation measures used to avoid, minimize and mitigate various adverse impacts to the affected environment at Fort Wainwright. The BMPs and mitigation measures discussed in the following documents are ongoing and will continue as part of the baseline management employed by the USAG FWA and the Army in Alaska on Army-owned and controlled lands, including during the construction and operation of Gray Eagle UAS facilities as a part of the current Proposed Action:

- *Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex in Alaska Final EIS*, August 2013
- *Transformation of U.S. Army Alaska Final EIS*, May 2004
- *Stationing and Training of Increased Aviation Assets within U.S. Army Alaska Final EI*S, August 2009
- *U.S. Army Pacific Supplemental Programmatic EIS for Army Growth and Force Structure Realignment*, 2008
- *USAG Alaska Grow the Army Force Structure Realignment EA*, 2008
- *Integrated Natural Resource Management Plan* (INRMP), 2013; *2007 INRMP EA*; and *2013 INRMP Update Record of Environmental Consideration*

- *Integrated Cultural Resource Management Plan* (ICRMP), 2013; *2000 ICRMP EA*; and *2012 ICRMP Update Record of Environmental Consideration*
- *Integrated Training Area Management* (ITAM) *Plan and ITAM EA*, October 2005 and June 2005, respectively
- Department of Army Pamphlet (PAM) 350-38, *Standards in Training Commission*
- AR 385-63, *Range Safety*
- PAM 385-63, *Range Safety*
- AR 385-64, *U.S. Army Explosives Safety Program*
- PAM 385–64, *Ammunition and Explosives Safety Standards*
- USARAK Regulation 350-2, *Training*

5.0 LIST OF PREPARERS

Table 5-1 lists the individuals responsible for preparing the EA and their areas of technical expertise.

Table 5-1: List of Preparers

Name of Preparer	Title	Education	Experience/Role
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9.0 ACRONYMS

1-25th SBCT	1st Stryker Brigade Combat Team, 25th Infantry Division
25th Avn Rgt CO D	Company D of the 25th Aviation Regiment Gray Eagle
1-25 ARB	1st Battalion, 25th Aviation Regiment Attack Reconnaissance Battalion
6-17 CAV	6th Squadron, 17th Calvary Regiment
A	Ampere
AFB	Air Force Base
AGI	Air Ground Integration
AGL	Above Ground Level
Alaska DEC	Alaska Department of Environmental Conservation
AR	Army Regulation
AST	Aboveground Storage Tank
ATF	Aviation Task Force
BCT	Brigade Combat Team
BMP	Best Management Practice
CAB	Combat Aviation Brigade
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COA	Certificate of Authorization
COF	Company Operations Facility
Cold War Historic District	Ladd Air Force Base Cold War Historic District
DoD	Department of Defense
DTA	Donnelly Training Area
EA	Environmental Assessment
EIFS	Economic Impact Forecast System
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FL	Flight Level
ft^2	Square Feet or Square Foot
FY	Fiscal Year
GBSAA	Ground Based Sense and Avoid
GCS	Ground Control Station
GDT	Ground Data Terminal
HEMTT	Heavy Expanded Mobility Tactical Truck
HMMWV	High Mobility, Multipurpose, Wheeled Vehicle
HQ	Headquarters
HQDA	Headquarters Department of the Army

ICRMP	Integrated Cultural Resource Management Plan
ID	Infantry Division
IFR	Instrument Flight Rules
INRMP	Integrated Natural Resource Management Plan
ITAM	Integrated Training Area Management
JPARC	Joint Pacific Alaska Range Complex
Ladd Field NHL	Ladd Field National Historic Landmark
MGCS	Mobile Ground Control Station
MS4	Municipal Separate Storm Sewer System
MOA	Military Operations Area
mph	Miles per Hour
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAS	National Airspace System
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NM	Nautical Mile
PACAF	Pacific Air Force
PAM	Department of Army Pamphlet
PCB	Polychlorinated Biphenyl
POL	Petroleum, Oil, and Lubricant
POV	Privately Owned Vehicle
RCR	Runway Condition Reading
RGT	Regiment
ROI	Region of Influence
RTV	Rational Threshold Value
SBCT	Stryker Brigade Combat Team
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SOP	Standard Operating Procedure
SUA	Special Use Airspace
SWPPP	Stormwater Pollution Prevention Plan
TALS	Takeoff and Landing System
TCDL	Tactical Common Data Link
UAS	Unmanned Aircraft System
UATF	USARAK Aviation Task Force
UAV	Unmanned Aerial Vehicle
U.S.	United States
USAG	United States Army Garrison
USAG FWA	U.S. Army Garrison Fort Wainwright, Alaska
USARAK	U.S. Army Alaska

USEPA	U.S. Environmental Protection Agency
U.S.C.	United States Code
UST	Underground Storage Tank
VAC	Volts Alternating Current
VEC	Valued Environmental Component
VFR	Visual Flight Rule
YTA	Yukon Training Area

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APPENDIX A: Record of Non Applicability

Record of Non-Applicability (RONA) for General Conformity

JUN 22 2015

Name of Action: Gray Eagle UAS basing–2015

Estimated Start Date: 2015

General Conformity under the Clean Air Act, Section 176 has been evaluated for the action named above. The scope of this action is published in the Environmental Assessment titled *Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System* ("Gray Eagle UAS basing–2015"). The Environmental Division at Fort Wainwright evaluated the Gray Eagle UAS basing action for conformity and determined that while this basing action and other recent basing decisions restructure aviation assets at the Post, there is no change in emissions from the baseline levels already present in the relevant State Implementation Plan (State Air Quality Control Plan; Section III.D.5.1-5.14; Adopted 24 December 2014). As such, this action can be presumed to conform.

Point of contact for this memorandum is Eric Dick, Environmental Engineer, USAG Fort Wainwright, eric.m.dick2.civ@mail.mil.

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Directorate of Public Works
USAG Fort Wainwright

APPENDIX B: Economic Impact Forecast Model

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1.0 Socioeconomic Impact Assessment

Socioeconomic impacts are linked through cause-and-effect relationships. Military payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, the proposed construction and eventual employment of the project's operational workforce would have a multiplier effect on the local and regional economy. Through Alternatives 1 and 2, direct jobs would be supported, which would support income and personal spending in the ROI. This spending generally supports secondary jobs, sales volume, and revenues for schools and other social services. Project operations employment would also have a similar socioeconomic effect, supporting jobs, sales volume and local revenues. Both action alternatives would occur within the ROI, which is Fairbanks North Star Borough, and both would involve the same military construction spending and number of personnel (128 Soldiers and 5 civilian contractors). Only the location of the action alternative (Fort Wainwright or Eielson AFB) would differ. As both locations are in the same ROI, the multiplier effects on the ROI would the identical. Therefore, the action alternatives are not analyzed separately.

2.0 Economic Impact Forecast System

The Army, with the assistance of many academic and professional economists and regional scientists, developed the Economic Impact Forecast System (EIFS) to address the economic impacts of the National Environmental Policy Act (NEPA)-requiring actions and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS should be used in NEPA assessments for the proposed action. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in the EIFS model are simple and easy to understand, but still have firm, defensible bases in regional economic theory. EIFS was developed under a joint project of the U.S Army Corps of Engineers; the Army Environmental Policy Institute; and the Computer and Information Science Department of Clark Atlanta University, Georgia. EIFS is an on-line system, and the EIFS Web application is hosted by the U.S Army Corps of Engineers, Mobile District. The system is available to anyone with an approved user-id and password. University staff and the staff of the U.S Army Corps of Engineers, Mobile District, are available to assist with the use of EIFS.

3.0 Economic Impact Forecast System Model

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from military-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses the economic base model approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by federal activities (such as military

installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the environmental assessment (EA) and environmental impact statement (EIS) process. The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its base sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a location quotient approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user inputs into the model the data elements that describe the Army's action: the change in expenditures, or dollar volume of the construction project(s); change in civilian or military employment; average annual income of affected civilian or military employees; the percent of civilians expected to relocate due to the Army's action; and the percent of military living on-post. Once these are entered into the EIFS model, a projection of changes in the local economy is provided. These are projected changes in sales volume, income, employment, and population. These four indicator variables are used to measure and evaluate socioeconomic impacts. Sales volume is the direct and indirect change in local business activity and sales (total retail and wholesale trade sales, total selected service receipts, and value-added by manufacturing). Employment is the total change in local employment due to the proposed action, including not only the direct and secondary changes in local employment, but also those personnel who are initially affected by the military action. Income is the total change in local wages and salaries due to the proposed action, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the proposed action. Population is the increase or decrease in the local population as a result of the proposed action.

4.0 The Significance of Socioeconomic Impacts

Once model projections are obtained, the rational threshold value (RTV) profile allows the user to evaluate the significance of the impacts. This analytical tool reviews the historical trends for the defined region and develops measures of local historical fluctuations in sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries that provide a basis for comparing an action's impact on the historical fluctuation in a particular area. Specifically, EIFS sets the boundaries by multiplying the maximum historical deviation of the following variables: the sales volume, income, employment, and population (Table 4-1) (U.S Army Corps of Engineers, 2015).

Table 4-1: Historical Deviation Variables

Variable		Increase	Decrease
Sales volume	x	100%	75%
Income	x	100%	67%
Employment	x	100%	67%
Population	x	100%	50%

Source: U.S Army Corps of Engineers (2015)

These boundaries determine the amount of change that will affect an area. The percentage allowances are arbitrary, but sensible. The maximum positive historical fluctuation is allowed with expansion because economic growth is beneficial. While cases of damaging economic growth have been cited, and although the zero-growth concept is being accepted by many local planning groups, military base reductions and closures generally are more injurious to local economics than are expansion actions. The major strengths of the RTV are its specificity to the region under analysis and its basis on actual historical data for the region. The EIFS impact model, in combination with the RTV, has proven successful in addressing perceived socioeconomic impacts. The EIFS model and the RTV technique for measuring the intensity of impacts have been reviewed by economic experts and have been deemed theoretically sound.

Table 4-2 illustrates annual fluctuations in RTV for the ROI, both above and below the thresholds which would mean a significant socioeconomic impact.

Table 4-2: EIFS Rational Threshold Value Summary

EIFS Report Fairbanks North Star Borough, Alaska				
	Sales Volume	**Income**	**Employment**	**Population**
Positive RTV	40.50%	40.42%	23.35%	7.01%
Negative RTV	-19.03%	-15.15%	-6.65%	-1.68%

Source: U.S Army Corps of Engineers (2015)

The following are the EIFS inputs and output data and the RTVs for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 3.8.2 of the EA.

4.1 Summary of Assumptions

Two EIFS models were run for the action alternatives as these alternatives have both a construction period and an operations period economic impact. The same models were run for both alternatives; therefore, the findings of the two models below apply to both alternatives. For purposes of running the EIFS model on construction spending, the overall construction spending associated with the action alternatives was selected to determine the maximum impact that the action alternatives could have on the ROI. Though a small number of construction period workers may relocate to the ROI, they are not included in this analysis as it is unclear as to exactly how many construction workers would relocate to the ROI during the construction period. Therefore, only construction costs, and not direct employment associated with the project's construction, were used to determine the impact of the Proposed Action during the construction period of each action alternative. Civilian and military employment associated with operations period impacts are assessed under a separate EIFS model below, the construction period is anticipated to be 2 years beginning in FY 2017.

4.1.1 Action Alternatives: Construction—Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System

Table 4-3 shows input values to the EIFS model for the construction cost of the hangar and administrative space.

Table 4-3: EIFS Report – Forecast Input

EIFS Report Fairbanks North Star Borough, Alaska	
Change in local expenditures	$48,000,000
Change in civilian employment	0
Average income of affected civilian	$0
Percent expected to relocate	0
Change in military employment	0
Average income of affected military	$0
Percent of military living on base	0

Source: U.S Army Corps of Engineers (2015)

Table 4-4 shows the EIFS model outputs that would result from construction-related spending on the hangar and administrative space.

Table 4-4: EIFS Report—Forecast Output

EIFS Report Fairbanks North Star Borough, Alaska		
Employment multiplier	2.07	
Income multiplier	2.07	
Sales Volume—direct	$24,811,590	
Sales Volume—induced	$26,548,400	
Sales Volume—total	$51,360,000	2.35%
Income—direct	$4,736,084	
Income—induced	$5,067,610	
Income—total (place of work)	$9,803,694	0.48%
Employment—direct	124	
Employment—induced	133	
Employment—total	257	0.52%

Source: U.S Army Corps of Engineers (2015)

Note: Employment numbers output by model are full-time equivalent numbers. Because this project has a completion estimate of 2 years instead of 1 year, employment numbers are one-half of those shown by the output.

4.1.2 Action Alternatives: Operations Period—Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System

Table 4-5 shows the input value into the EIFS model for the average operations income per military and civilian personnel and the change in employment for the operations period of project.

Table 4-5: EIFS Report—Forecast Input

EIFS Report Fairbanks North Star Borough, Alaska	
Change in local expenditures	$0
Change in civilian employment	5
Average income of affected civilian	$55,244
Percent expected to relocate	100
Change in military employment	128
Average income of affected military	$34,538
Percent of military living on base	100

Source: U.S Army Corps of Engineers (2015)

Table 4-6 shows the EIFS model outputs from operations-related spending that would result from the 133 person increase in employment associated with the project.

Table 4-6: EIFS Report—Forecast Output

EIFS Report Fairbanks North Star Borough, Alaska		
Employment multiplier	2.07	
Income multiplier	2.07	
Sales Volume—direct	$1,442,239	
Sales Volume—induced	$1,543,196	
Sales Volume—total	$2,985,435	0.14%
Income—direct	$4,697,084	
Income—induced	$294,568	
Income—total (place of work)	$4,991,652	0.24%
Employment—direct	140	
Employment—induced	8	
Employment—total	148	0.40%

Source: U.S Army Corps of Engineers (2015)

Note: Employment numbers output by model are full-time equivalent numbers.

5.0 References

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