

**DRAFT  
ENVIRONMENTAL ASSESSMENT  
FOR THE PROPOSED CONSTRUCTION OF A  
C-130 ASSAULT LANDING ZONE  
MALMSTROM AIR FORCE BASE, MONTANA**



**OCTOBER 2018**

Draft

**ENVIRONMENTAL ASSESSMENT  
FOR CONSTRUCTION OF A C-130 ASSAULT LANDING ZONE and  
HELICOPTER SLIDE TRAINING AREA  
MALMSTROM AIR FORCE BASE, MONTANA**

**On Behalf of:**

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## **FINDING OF NO SIGNIFICANT IMPACT**

### **FOR THE PROPOSED CONSTRUCTION OF A C-130 ASSAULT LANDING ZONE MALMSTROM AIR FORCE BASE GREAT FALLS, MONTANA**

#### **INTRODUCTION**

The United States Air Force (USAF) proposes to construct a C-130 Assault Landing Zone (ALZ) at Malmstrom Air Force Base (AFB) for use by USAF C-130s, the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), other Air National Guard Bureau (ANGB) units, USAF Reserve and Malmstrom AFB 40<sup>th</sup> Helicopter Squadron (40 HS), as a Helicopter Slide Training Area (HSA). Hereinafter this EA will refer to the combined ALZ/HSA as the ALZ. The ALZ is proposed to be constructed adjacent to and parallel with the Malmstrom AFB runway that was decommissioned in 1997 after the Base Realignment and Closure (BRAC) Commission recommended moving the KC135R Mission from Malmstrom AFB to MacDill AFB, FL. The ALZ will provide USAF Aircrew assault landing training as required for the nation's combat operations near or behind enemy lines.

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

##### **Proposed Action**

The Proposed Action is to construct a semi-improved (dirt) C-130 ALZ of crushed recycled base adjacent and parallel to the southeast of the Malmstrom AFB decommissioned runway with dirt keyhole turnarounds constructed on each end of the runway. Construction of the ALZ would meet the minimum runway criteria per Air Force Instruction (AFI) 13-217.3.5, including adequate length and width, weight-bearing capability, clear zones, transitional area, approach zones, and overrun. The ALZ would be developed in consultation among Malmstrom AFB, USAF C-130 active duty units, Montana ANG 120 AW, and the Federal Aviation Administration (FAA) and surveyed prior to use in accordance with AFI 13-217.3A, Volume II of Air Force Joint Pamphlet (AFJPAM) 32-8013, and Unified Facilities Criteria (UFC) 3-260-01 Chapter 7. The USAF will conduct an inspection of the ALZ to certify it in accordance with UFC 3-260-03, which will allow it to be added to the USAF-approved landing zone list. This certification would make the ALZ available to active duty USAF C-130s for training. USAF C-130 training requires that the ALZ is a semi-improved (dirt) surface to train in replicated expeditionary conditions. Once constructed, the ALZ would be placed in the USAF inventory of ALZ training opportunities and become available for use by all USAF C-130 units for training. This Proposed Action would not change the current operations or training conducted by the 40 HS, simply improve and combine the existing HSA site with the proposed ALZ. The HSA provides a USAF Aircrew training area for helicopter aircrews to train under higher speed controlled slide landing situations.

##### **Alternatives Considered**

Three alternatives were identified and considered during the planning stages of the proposed project. One of these alternatives (ALZ construction at Great Falls International Airport) was eliminated from further consideration because it did not meet the selection criteria. Alternative 1 (Preferred Alternative) is the construction of the proposed C-130



ALZ adjacent to and parallel with the Malmstrom decommissioned runway. Alternative 2 is the same as Alternative 1 except the C-130 ALZ would be connected to the existing decommissioned runway for use as a taxiway. Under the No Action Alternative, a C-130 ALZ would not be constructed at Malmstrom AFB. C-130 units would not have a regional ALZ available for training. The Montana ANG would lose the efficiencies gained by having a local training asset without incurring increased costs and impacts associated with travel to a remote training site.

Alternative 1 (Preferred Alternative), Alternative 2, and the No Action Alternative were carried forward for further analysis in the EA.

## **AFFECTED ENVIRONMENT AND CONSEQUENCES**

**Air Quality.** Under the Proposed Action, no significant impacts to air quality would occur. Dust and combustion emissions would create short-term air emissions; however, implementation of standard dust minimization practices would serve to reduce the amount of dust generated during construction. Implementing the Proposed Action would cause a minor increase in air emissions from the landing and takeoff of the C-130 aircraft during training missions at Malmstrom AFB. However, long-term emissions associated with the proposed ALZ would be minor, resulting in no significant impacts to air quality. The Proposed Action and its associated flight path is not located within a maintenance area. Therefore, in conclusion of this General Conformity Applicability Analysis, a Conformity Determination is not required.

**Noise.** Under the Proposed Action, no significant impact to noise receptors would occur. Construction-related noise would have minor, temporary effects on the noise environment in the vicinity of the Proposed Action area. Given the type of construction activities (sporadic, during daytime hours, short-term, etc.) and the distance from the proposed construction to the closest residence (2,800 feet), no significant impacts to residences would occur. Therefore, short-term noise generated by construction activities would not significantly impact sensitive receptors at or adjacent to Malmstrom AFB. Operational noise would result from C-130 landing and takeoff training missions at Malmstrom AFB. Noise levels associated with daily ALZ operations (daily average of 1.5 landings/takeoffs per day and 0.5 landing/takeoff per night) are not expected to exceed the current noise levels produced by the 40 HS activities. The C-130 training activities at the proposed ALZ would not generate noise above ambient levels. Therefore, the Proposed Action would have no significant impacts to noise receptors.

**Land Use.** Under the Proposed Action, no impacts to land use would occur. The site is undeveloped and characterized as open field. The Proposed Action site is in an area designated for airfield operations and is compatible with the 2015 Malmstrom AFB Installation Development Plan (IDP). Additionally, no impact on zoning in the surrounding area would occur because the Proposed Action would occur within the boundaries of Malmstrom AFB.

**Geological Resources.** Under the Proposed Action, no significant impacts to geological resources would occur. The Proposed Action will impact approximately 9 acres of soil consisting of Lawther and Gerber Series, which comprise very deep, well-drained, and slowly permeable soils that formed in alluvium, till, calcareous clayey sediments, or glaciolacustrine material. Construction of the ALZ would cause short-term erosion; however, this impact would be minor with the implementation of Best Management Practices (BMPs), as outlined in the Stormwater Pollution Prevention Plan (SWPPP) and Installation General Permit.

**Water Resources.** Under the Proposed Action, no significant impacts would occur directly to surface waters, wetlands, or stormwater drainage structures (ditches, culverts, etc.). BMPs required by state and federal laws would be implemented to protect any nearby surface waters and wetlands during construction and operation. Prior to construction, silt fencing would be installed around the perimeter of the construction site to control sediment erosion. After construction, the areas adjacent to the landing strip will be reseeded with native grass species to stabilize soils. Stormwater runoff and water quality would be controlled in accordance with the Malmstrom AFB Stormwater Management Plan (SWMP) as required by state and federal regulations. Additionally, there will be no drilling, mining, or extracting of groundwater associated with the Proposed Action. Therefore, no significant impacts to water resources are expected.

**Biological Resources.** Under the Proposed Action, no significant impacts to biological resources are expected. Vegetation at the Proposed Action site is previously disturbed and characterized primarily by introduced grasses and a few shrubs. A 60-foot-by-4,800-foot area of vegetation at the proposed ALZ would be permanently converted to a dirt runway, and the runway shoulders would continue to exist as open field vegetated by grasses. Civil, Environmental and Infrastructure Engineering (CEIE) and the natural resources manager will collaborate to minimize impacts to vegetation and wildlife by drill-seeding the cleared areas adjacent to the C-130 ALZ with native grass species in the late fall after construction is complete. Native grasses are adapted to local environment; therefore, they require less water, saving time, money, and a valuable natural resource (water). Other benefits of using native grasses include reduced use of pesticides/herbicides and provides habitat for pollinators. When the grass is 3 years old, it must be watered at least two to three times per summer and maintained at a height of 7 to 14 inches. This will deter ground squirrels from establishing burrows and attracting predators onto the airfield. Ground squirrel management would comply with the Malmstrom AFB Pest Management Plan. Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) permits are obtained annually for Bird/Wildlife Aircraft Strike Hazard (BASH) actions, and a depredation report is filed annually with USFWS. A species determination resulted in “no effect” to the threatened and endangered species identified potentially occurring in the Proposed Action area.

Additionally, the BASH plan will be updated to incorporate fixed wing operations to the current helicopter activity levels to include two C-130 landings and takeoffs per day. The addition of the C-130 operations would increase BASH management significantly. To avoid impacts to wildlife and migratory birds, C-130 Units would coordinate daily with Malmstrom AFB Safety and Natural Resources departments to ensure that BASH management procedures are implemented prior to conducting C-130 training activities.

**Cultural Resources.** Under the Proposed Action, no impacts are expected to occur to cultural resources. A review of the State Historic Preservation Office’s (SHPO) records indicate that there have been several previously recorded cultural resource sites and surveys near the project area. However, none are located within the APE. According to the 2016 Phase I Archaeological Survey, the area of the Proposed Action did not contain any significant archaeological resources. The Montana SHPO concurred with the No Effect finding of the survey. No concerns were noted during tribal consultations. For these reasons, it is not expected that impacts to National Register of Historic Places (NRHP)-eligible archaeological resources would occur as a result of the Proposed Action. Avoidance and/or mitigation of cultural resources may be required in consultation with Malmstrom AFB and the Montana SHPO if historic or prehistoric resources are encountered during project construction.

**Airspace Management.** Under the Proposed Action, no significant impacts to airspace management would occur. Implementation of the Proposed Action is not expected to require modification of the Air Traffic Control (ATC) system at Malmstrom AFB. A daily average of 1.5 daytime and 0.5 nighttime ALZ landings/takeoff training missions would occur at Malmstrom AFB. The C-130 Unit would coordinate all training activities with the 40 HS at Malmstrom AFB to avoid airspace conflicts. No new airspace is proposed and existing airspace management procedures are expected to be sufficient to handle a slight net increase in total aircraft operations.

**Safety and Occupational Health.** Under the Proposed Action, no significant impacts to safety and occupational health are expected. All construction workers would be responsible for maintaining an adequate safety program to minimize risks to workers and ensure compliance with Occupational Safety and Health Administration (OSHA) and state regulations. Additionally, current aircraft flight safety policies and procedures for the Malmstrom AFB and Montana ANG are designed to ensure that the potential for aircraft mishaps is reduced to the lowest possible level. These safety policies and procedures would continue for the Proposed Action.

The potential for midair collisions or near misses associated with privately owned aircraft (such as crop dusters) would be minimal because proposed flight operations would be limited to the restricted airspace over the installation. In the event of an aircraft mishap, the C-130 Unit would coordinate emergency response services with Malmstrom AFB. The Proposed Action would result in new runway protection zones (RPZs) to the southeast of established RPZs from the decommissioned runway; however, no incompatible land uses were identified within the new RPZs. The new RPZs associated with the Proposed Action are located approximately 200 feet outside of the explosive safety quantity distance (QD) arc for the nuclear weapons storage facilities. In the event of emergencies related to aircraft mishaps within the QD arcs, Malmstrom AFB has an emergency management plan in place in accordance with Air Force Manual (AFMAN) 91-201, Explosives Safety Standards and AFI 10-2501, Air Force Emergency Management (EM) Program Planning and Operations. The primary danger to aircraft is posed by birds and/or wildlife. To minimize the potential for any bird/wildlife aircraft strikes, Malmstrom AFB will coordinate with the C-130 Unit and would continue to implement an aggressive Bird/Wildlife Aircraft Strike Hazard Program that would incorporate the ALZ. With implementation of the above safety regulations and plans, the Proposed Action would have no significant impact on safety and occupational health.

Only an average of two flight operations will occur per day. Malmstrom would complete recurring airspace review and coordination to with MAJCOM and FAA prior to ALZ training use. As also discussed in Sections 3.9 and 4.9, mission coordination and NOTAM would occur between the training organization, the Malmstrom Airfield Manager and FAA prior to authorization to conduct ALZ training.

**Utilities and Infrastructure.** Under the Proposed Action, no significant impacts to utilities and infrastructure would occur. Short-term minor adverse impacts related to construction activities and long-term minor increases in stormwater output would be expected. Construction and removal of pavement would generate debris. The pavement materials would require landfill disposal. A subsurface potable water line and a stormwater inlet with associated buried lines are located in the southwest mid-section of the proposed ALZ. These lines will be reconfigured prior to the construction of the ALZ in accordance

to AFI 32-7063 and EO 13693. The proposed project is relatively small, and a minimal amount of construction debris is expected to be generated. To provide global assault landing field conditions for training realism, the proposed ALZ does not require infrastructure. Therefore, there is no need for potable water, wastewater, electricity, natural gas, and solid waste services at the site. Additionally, the Proposed Action does not include any impervious surfaces. Minor increases in stormwater would be expected; however, the Proposed Action would comply with Malmstrom AFB General Permits, associated SWPPPs with specified BMPs and stormwater controls sufficient to ensure no net increase in peak flow rates and total volume of runoff from the site (Section 4.11.2 of the EA). Therefore, there would be no significant impacts to utilities and infrastructure.

**Environmental Justice and Protection of Children.** Under the Proposed Action, no impacts to environmental justice would occur. Short-term impacts from the implementation of the Proposed Action would only consist of construction activities. The construction activities would be confined to the Malmstrom AFB runway area and should not affect the surrounding communities. Implementation of the Proposed Action would not negatively affect AFB employees and their families or civilian households living near Malmstrom AFB. The Proposed Action would not disproportionately affect environmental and human health of minority or low-income populations or disproportionately affect environmental health and safety of children. Therefore, no impact with regard to environmental justice or protection of children would result.

## **PUBLIC NOTICE**

National Environmental Policy Act (NEPA) 40 *Code of Federal Regulations* (CFR) §§1500-1508 and 32 CFR 989 require public review of the EA before approval of the Finding of No Significant Impact (FONSI) and implementation of the Proposed Action. Notice of Availability (NOA) for public review of the Draft EA will be published in the Great Falls Tribune on 1 April 2017. The Draft EA will be available for review at the Great Falls Public Library, 301 2nd Avenue North, Great Falls, MT, 59401. Through the Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process, the Malmstrom AFB notified relevant federal, state, and local agencies (listed in Appendix A) and allowed them sufficient time to disclose their environmental concerns specific to the Proposed Action. The total review period for public and agency comments is 30 days. Letters received are in Appendix A of the Final EA.

## **FINDING OF NO SIGNIFICANT IMPACT**

After careful review of the potential impacts of this Proposed Action as assessed in the *Environmental Assessment for Construction of a C-130 Assault Landing Zone at Malmstrom Air Force Base, Montana*, I have concluded that the action's implementation would not have a significant impact on the quality of the human or natural environment or generate significant controversy. Accordingly, the requirements of the NEPA, CEQ regulations, and 32 CFR 989, et seq. have been fulfilled, and an Environmental Impact Statement (EIS) is not necessary and will not be prepared.

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BRIANC.LEE,GS-15,DAF  
Chief,EngineeringDivision

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Date

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## **EXECUTIVE SUMMARY**

### **INTRODUCTION**

The United States Air Force (USAF) proposes to construct a C-130 Assault Landing Zone (ALZ) at Malmstrom Air Force Base (AFB) for use by USAF C-130s, the Montana Air National Guard's (ANG's) 120<sup>th</sup> Airlift Wing (120 AW), other Air National Guard Bureau (ANGB) units, USAF Reserve and Malmstrom AFB 40<sup>th</sup> Helicopter Squadron (40 HS), as a Helicopter Slide Training Area (HSA). Hereinafter this EA will refer to the combined ALZ/HSA as the ALZ. The ALZ is proposed to be constructed adjacent to and parallel with the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The ALZ will provide USAF Aircrew assault landing training as required for the nation's combat operations near or behind enemy lines.

### **PROPOSED ACTION**

The Proposed Action is to construct a semi-improved (dirt) C-130 ALZ of crushed recycled base adjacent and parallel to the southeast of the Malmstrom AFB decommissioned runway with dirt keyhole turnarounds at each end of the runway. Construction of the ALZ would meet the minimum runway criteria per Air Force Instruction (AFI) 13-217.3.5, including adequate length and width, weight-bearing capability, clear zones, transitional area, approach zones, and overrun. The ALZ would be developed in consultation among Malmstrom AFB, USAF C-130 active duty units, Montana ANG 120 AW, and the Federal Aviation Administration (FAA) and surveyed prior to use in accordance with AFI 13-217.3A, Volume II of Air Force Joint Pamphlet 32-8013, and Unified Facilities Criteria (UFC) 3-260-01 Chapter 7. The USAF Active Duty Team will conduct an inspection of the ALZ to certify it in accordance with UFC 3-260-03, which will allow it to be added to the USAF-approved landing zone list. This certification would make the ALZ available to active duty USAF C-130s for training. USAF C-130 training requires that the ALZ is a semi-improved (dirt) surface to train in replicated expeditionary conditions. Once constructed, the ALZ would be placed in the USAF inventory of ALZ training opportunities and become available for use by all USAF C-130 units for training. This Proposed Action would not change the current operations or training conducted by the 40 HS, simply improve and combine the existing HSA site with the proposed ALZ. The HSA provides a USAF Aircrew training area for helicopter aircrews to train under higher speed controlled slide landing situations.

## **ALTERNATIVES CONSIDERED**

Three alternatives were identified and considered during the planning stages of the proposed project. One of these alternatives (ALZ construction at Great Falls International Airport) was eliminated from further consideration because it did not meet the selection criteria. Alternative 1 (Preferred Alternative) is the construction of the proposed C-130 ALZ adjacent to and parallel with the Malmstrom decommissioned runway. Alternative 2 is the same as Alternative 1 except the C-130 ALZ would be connected to the existing decommissioned runway for use as a taxiway. Under the No Action Alternative, a C-130 ALZ would not be constructed at Malmstrom AFB. USAF C-130 active duty units would not have a regional ALZ available for training. The Air National Guard would lose the efficiencies gained by having a local training asset for one of their units without incurring increased costs and impacts associated with travel to a remote training site.

## **AFFECTED ENVIRONMENT AND CONSEQUENCES**

The Proposed Action would not significantly impact any of the resources analyzed. Minor and short-term impacts would occur from implementation of the Proposed Action on air quality, noise, and geological resources. A listing of the resources analyzed and the consequences of the implementation of the proposed action is as follows:

- **Air Quality** - No significant impact. Minor and short-term impacts will result from equipment and fugitive dust emissions during construction. Long-term emissions associated with the proposed ALZ (daily average of 1.5 landings/takeoffs per day and 0.5 landing/ takeoff per night) would be negligible, resulting in no significant impacts to air quality (Section 4.2.2). The Proposed Action and its associated flight path is not located within a maintenance area. Therefore, in conclusion of this General Conformity Applicability Analysis, a Conformity Determination is not required.
- **Noise** - No significant impact. Minor and short-term impacts will result from construction activities. Long-term noise levels associated with daily ALZ operations (daily average of 1.5 landings/takeoffs per day and 0.5 landing/takeoff per night) are not expected to exceed the current noise levels produced by helicopter activities.
- **Land Use** - No impact. The Proposed Action is in an area designated for airfield operations and is compatible with the 2015 Malmstrom AFB Installation Development Plan (IDP).

- **Geological Resources** - No significant impact. The Proposed Action will impact approximately 9 acres of very deep, well-drained, and slowly permeable soils. Construction of the ALZ would cause short-term erosion; however, this impact would be minor with the implementation of Best Management Practices (BMPs).
- **Water Resources** - No significant impact. Under the Proposed Action, no significant impacts would occur directly to surface waters, wetlands, or stormwater drainage structures (ditches, culverts etc.). BMPs required by state and federal laws would be implemented to protect any nearby surface waters and wetlands during construction and operation. Additionally, there will be no drilling, mining, or extracting of groundwater associated with the Proposed Action.
- **Biological Resources** - No significant impact. No critical wildlife habitat or threatened or endangered species occur at the site. The impacts from ALZ construction to the existing resources would not be significant if the adjacent grassed areas are maintained. Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) permits are obtained annually for Bird/Wildlife Aircraft Strike Hazard (BASH) actions, and a depredation report is filed annually with USFWS. A species determination resulted in “no effect” to the threatened and endangered species identified potentially occurring in the Proposed Action area.
- **Cultural Resources** - No impacts. A review of the State Historic Preservation Office’s (SHPO) records indicate that there have been several previously recorded cultural resource sites and surveys near the project area. However, none are located within the APE. According to the 2016 Phase I Archaeological Survey, the area of the Proposed Action does not contain any significant archaeological resources. The Montana SHPO concurred with the No Effect finding of the survey. No concerns were noted during tribal consultations. Therefore, it is not expected that impacts to National Register of Historic Places (NRHP)-eligible archaeological resources would occur as a result of the Proposed Action.
- **Airspace Management** - No significant impact. Implementation of the Proposed Action is not expected to require modification of the air traffic control (ATC) system at Malmstrom AFB. A daily average of 1.5 daytime and 0.5 nighttime ALZ landings/takeoff training missions would occur at Malmstrom AFB. The C-130 Unit would coordinate all training activities with the 40 Helicopter Squadron (HS) and airfield manager at Malmstrom AFB to avoid airspace conflicts. No new airspace is proposed and existing



airspace management procedures are expected to be sufficient to handle a slight net increase in total aircraft operations.

- **Safety and Occupational Health** - No significant impact. All construction workers would be responsible for maintaining an adequate safety program to minimize risks to workers and ensure compliance with Occupational Safety and Health Administration (OSHA) and state regulations. Additionally, current aircraft flight safety policies and procedures for Malmstrom AFB aircraft operations are designed to ensure that the potential for aircraft mishaps is reduced to the lowest possible level. These safety policies and procedures would continue for the proposed action. Only an average of two flight operations will occur per day. Malmstrom would complete recurring airspace reviews and coordination with MAJCOM and FAA prior to ALZ training use. As also discussed in Sections 3.9 and 4.9, mission coordination and NOTAM would occur between the training organization, the Malmstrom Airfield Manager and FAA prior to authorization to conduct ALZ training. In the event of an aircraft mishap, the C-130 Unit will coordinate emergency response services with Malmstrom AFB. The Proposed Action would result in new runway protection zones (RPZs) to the southeast of established RPZs from the decommissioned runway; however, no incompatible land uses were identified within the new RPZs. The new RPZs associated with the Proposed Action are located approximately 200 feet outside of the explosive safety quantity distance (QD) arc for the nuclear weapons storage facilities. In the event of emergencies related to aircraft mishaps within the QD arcs, Malmstrom AFB has an emergency management plan in place in accordance with Air Force Manual (AFMAN) 91-201, Explosives Safety Standards and AFI 10-2501, Air Force Emergency Management (EM) Program Planning and Operations. The primary danger to aircraft is posed by birds and/or wildlife. To minimize the potential for any bird/wildlife aircraft strikes, Malmstrom AFB would continue to implement an aggressive bird/wildlife aircraft hazard (BASH) program and would incorporate the C-130 landing/takeoff activities (average of 1.5 per day and 0.5 per night) at the ALZ into the BASH plan. USAF C-130 units will coordinate daily with the Malmstrom AFB safety and natural resources managers, so BASH safety measures can be implemented prior to conducting C-130 training activities.
- **Utilities and Infrastructure** - No significant impact. Short-term minor adverse impacts related to construction activities and long-term minor increases in stormwater output would be expected. The proposed project is relatively small, and minimal construction debris is

expected to be generated. A subsurface potable water line and a stormwater inlet with associated buried lines are located in the southwest mid-section of the proposed ALZ. These lines will be reconfigured prior to the construction of the ALZ. Both potable and stormwater lines will be buried sufficiently so that ALZ activity will not impact these lines. Construction will follow the guidelines established in AFI 32-7063 and EO 13693. However, to provide global assault landing field conditions for training realism, the proposed ALZ does not require infrastructure. Therefore, there is no need for potable water, wastewater, electricity, natural gas, and solid waste services at the site. Additionally, the Proposed Action does not include any impervious surfaces. Minor increases in stormwater would be expected; however, the Proposed Action would comply with Malmstrom AFB General Permits, associated SWPPPs with specified BMPs, and stormwater controls sufficient to ensure no net increase in peak flow rates and total volume of runoff from the site (Section 4.11.2).

- **Environmental Justice and the Protection of Children** - No impact. Short-term impacts from the implementation of the Proposed Action would only consist of construction activities. However, the construction activities would be confined to the Malmstrom AFB runway area and should not affect the surrounding communities. Implementation of the Proposed Action would not negatively affect AFB employees and their families or civilian households living near Malmstrom AFB. The Proposed Action would not disproportionately affect environmental and human health of minority or low-income populations or disproportionately affect environmental health and safety of children.

## **CUMULATIVE IMPACTS**

The impacts of the Proposed Action when combined with impacts from other present or planned development in the surrounding area are not anticipated to result in significant adverse cumulative impacts.

## **MEASURES TO REDUCE EFFECTS**

Implementing the proposed action would have no significant adverse effects, and no mitigation measures would be required. For many resource areas, BMPs would be implemented to further minimize the potential effects of the proposed action.

- **Air Quality** - Project construction would employ BMPs to minimize fugitive dust and tailpipe emissions. BMPs to minimize fugitive dust could include using water to control

dust and cleaning streets as needed. BMPs to reduce tailpipe emissions could include minimizing unnecessary idling of vehicles and machinery. These BMPs are not necessarily all-inclusive; Malmstrom AFB, Montana ANG, and any contractors would need to comply with all applicable air pollution control regulations.

- **Geological Resources** - BMPs will be implemented in accordance with the Montana General Permit for Stormwater Discharges Associated with Construction Activity and its associated SWPPP. Implementation of construction BMPs would minimize soil erosion impacts that are caused by wind and stormwater.
- **Water Resources** - The Proposed Action would comply with Malmstrom AFB General Permits, associated SWPPPs and the SWMP with specified BMPs, such as installing silt fencing around the perimeter of the construction site. Post construction BMPs would include reseeded the areas adjacent to the landing strip with native grass species to stabilize the soils. Malmstrom AFB will implement its SWMP and SWPPP in accordance with state and federal regulations. These requirements were developed to prevent significant stormwater effects on the environment, in particular to Whitmore Ravine.
- **Biological Resources** - To minimize impacts to vegetation and wildlife, Civil, Environmental and Infrastructure Engineering (CEIE) and the natural resources manager will collaborate to drill-seed the cleared areas adjacent to the C-130 ALZ with native grass species in the late fall after construction is complete. Native grasses are adapted to local environment; therefore, they require less water, saving time, money, and a valuable natural resource (water). Other benefits of using native grasses include reduced use of pesticides/herbicides and provides habitat for pollinators. When the grass is 3 years old, it must be watered at least two to three times per summer and maintained at a height of 7 to 14 inches. By maintaining the specified grass height, ground squirrels will be deterred from establishing burrows and attracting predators onto the airfield. Ground squirrel management would comply with the Malmstrom AFB Pest Management Plan. Additionally, the BASH plan will be updated to incorporate fixed wing operations to the current helicopter activity levels to include two C-130 landing and take offs per day. The addition of the fixed wing operations would increase BASH management significantly. To avoid impacts to wildlife and migratory birds, all ALZ and DZ aircraft operations will be coordinated with the Malmstrom AFB safety and natural resources departments to ensure that BASH management procedures are implemented prior to conducting helicopter or C-130 operations or training.

- **Cultural Resources** - According to the 2016 Phase I Archaeological Survey, the area of the Proposed Action did not contain any significant archaeological resources. Avoidance and/or mitigation of cultural resources may be required in consultation with Malmstrom AFB and the Montana State Historic Preservation Office (SHPO) if the presence of historic or prehistoric resources is encountered during project construction.
- **Safety and Occupational Health** - All construction contractors would be responsible for maintaining an adequate safety program to minimize risks to workers and the public and ensure compliance with OSHA and state regulations. A site-specific health and safety plan should be prepared and implemented. To minimize the potential for any bird/wildlife-aircraft strikes, C-130 Units will coordinate with Malmstrom AFB safety and natural resources managers to implement an aggressive BASH program that would include the C-130 ALZ. C-130 units will coordinate daily with the Malmstrom AFB Safety and Natural Resources departments so that BASH management can be implemented prior to conducting C-130 training activities.
- **Utilities and Infrastructure** - Short-term minor adverse impacts related to construction activities and long-term minor increases in stormwater control would be expected; however, the Proposed Action would comply with Malmstrom AFB General Permits, associated SWPPPs with specified BMPs, and stormwater controls sufficient to ensure no net increase in peak flow rates and total volume of runoff from the site.

## CONCLUSIONS

Based on the analysis presented in the EA, implementation of the Proposed Action Alternative would not result in significant or major adverse impacts on any of the resources analyzed within this document and no further analysis or documentation, such as the preparation of an Environmental Impact Statement (EIS), would be required. Minor and short-term impacts would occur from implementation of the Proposed Action on air quality, noise, and geological resources. The impacts of the Proposed Action when combined with impacts from other present or planned development in the surrounding area are not anticipated to result in significant adverse cumulative impacts. The USAF will employ all practical and reasonable means to minimize the potential adverse impacts on the human and natural environment. Therefore, a Finding of No Significant Impact (FONSI) is warranted.

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**APPENDICES**

Appendix A Interagency and Intergovernmental Coordination for Environmental  
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Appendix C USFWS Information for Planning and Consultation (IPaC) Letter

Appendix D Air Emissions Calculations

## LIST OF ACRONYMS

120 AW	120 <sup>th</sup> Airlift Wing	ESA	Endangered Species Act
186 FS	186 <sup>th</sup> Fighter Squadron	EO	Executive Order
341 MW	341 <sup>st</sup> Missile Wing	ERG	Ecosystem Research Group
40 HS	40 <sup>th</sup> Helicopter Squadron	FAA	Federal Aviation Administration
AFB	Air Force Base	FAR	Federal Aviation Regulations
AFCEC	Air Force Civil Engineer Center	FICON	Federal Interagency Committee on Noise
AFI	Air Force Instruction	FONPA	Finding of No Practicable Alternative
AFGSC	Air Force Global Strike Command	FONSI	Finding of No Significant Impact
AFJPAM	Air Force Joint Pamphlet	FW	Fighter Wing
AFMAN	Air Force Manual	GHG	Green House Gases
AGL	Above Ground Level	HMA	Helicopter movement area
AICUZ	Air Installation Compatible Use Zone	HRA	Hazard Reduction Area
ALZ	Assault Landing Zone	HWMP	Hazardous Waste Management Plan
ANG	Air National Guard	HSA	Helicopter Slide Training Area
APE	Area of Potential Effect	I-15	Interstate 15
AQCR	Air Quality Control Region	IAP	International Airport
ATC	Air Traffic Control	ICBM	Intercontinental Ballistic Missile
ATCAA	Air Traffic Control Assigned Airspace	ICRMP	Installation Cultural Resource Management Plan
bgs	Below ground surface	IDP	Installation Development Plan
BASH	Bird/Wildlife Aircraft Strike Hazard	IFR	Instrument Flight Rules
BCE	Before Common Era	IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
BGEPA	Bald and Golden Eagle Protection Act	INM	Integrated Noise Model
BMP	Best Management Practices	INRMP	Installation Natural Resource Management Plan
BRAC	Base Realignment and Closure	IR	Instrument routes
CAA	Clean Air Act	IRP	Installation Restoration Program
CEIE	Civil, Environmental and Infrastructure Engineering	ITLO	Installation Tribal Liaison Officer
CEMML	Colorado State University, Center for Environmental Management of Military Lands	JLUS	Joint Land Use Study
CEQ	Council on Environmental Quality	kV	Kilovolt
CFA	Controlled firing area	LF	Launch Facilities
CFR	Code of Federal Regulations	LZ	Landing Zone
CO	Carbon Monoxide	MAF	Missile Alert Facilities
CO <sub>2</sub> e	Carbon Dioxide equivalent	MBTA	Migratory Bird Treaty Act
CWA	Clean Water Act	mgd	Million gallons per day
CZ	Clear Zone	MDEQ	Montana Department of Environmental Quality
dB	Decibels	MDFWP	Montana Department of Fish, Wildlife, and Parks
dBA	Decibel A-weighting	MNHP	Montana Natural Heritage Program
DNL	Day-night Sound Level	MOA	Military Operations Area
DoD	Department of Defense	MPDES	Montana Pollutant Discharge Elimination System
DODI	Department of Defense Instruction	MS4	Municipal Separate Storm Sewer System
DOT	U.S. Department of Transportation	MSL	Mean sea level
EA	Environmental Assessment	MTR	Military Training Routes
EIAP	Environmental Impact Analysis Process	MWS	Montana Water Systems
EIS	Environmental Impact Statement		
EM	Emergency Management		
EPA	Environmental Protection Agency		

NAAQS	National Ambient Air Quality Standards	ROI	Region of Influence
NEPA	National Environmental Policy Act	RPZ	Runway Protection Zone
NGB	National Guard Bureau	SHPO	State Historic Preservation Office
NHL	National Historic Landmark	SIP	State Implementation Plan
NHP	National Heritage Program	SO <sub>2</sub>	sulfur dioxide
NHPA	National Historic Preservation Act	SO <sub>x</sub>	Oxides of Sulfur
NO <sub>2</sub>	Nitrogen dioxide	STP	Shovel test pit
NO <sub>x</sub>	Nitrogen oxides	SUA	Special Use Airspace
NOA	Notice of Availability	SWMP	Stormwater Management Program
NPDES	National Pollutant Discharge Elimination System	SWPPP	Stormwater Pollution Prevention Plan
NRHP	National Register of Historic Places	T&E	Threatened and Endangered
O <sub>3</sub>	Ozone	tpy	Tons per year
OSHA	Occupational Safety and Health Administration	UFC	Unified Facilities Criteria
Pb	Lead	U.S.	United States
PES	Potential Explosive Site	USACE	U.S. Army Corps of Engineers
PM	particulate matter	USAF	U.S. Air Force
PM <sub>10</sub>	particulate matter less than 10 microns in diameter	USC	U.S. Code
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter	USDA	United States Department of Agriculture
QD	Quantity Distance	USFWS	U.S. Fish and Wildlife Service
		VFR	Visual Flight Rules
		VR	Visual Routes
		VOC	Volatile Organic Compounds

## **SECTION 1 INTRODUCTION**

### **1.1 INTRODUCTION**

The United States Air Force (USAF) proposes to construct a C-130 Assault Landing Zone (ALZ) at Malmstrom Air Force Base (AFB) for use by USAF C-130s, the Montana Air National Guard's (ANG's) 120<sup>th</sup> Airlift Wing (120 AW), other Air National Guard Bureau (NGB) units, USAF Reserve and Malmstrom AFB 40<sup>th</sup> Helicopter Squadron (40 HS), as an HSA. The ALZ is proposed to be constructed adjacent to and parallel with the Malmstrom AFB runway that was decommissioned in 1997 after the Base Realignment and Closure (BRAC) Commission recommended moving the KC135R mission from Malmstrom AFB to MacDill AFB, FL. The ALZ is needed to accommodate USAF Aircrew assault landing training as part of the annual C-130 Aircrew requirements. The HSA provides USAF Aircrew slide training for helicopter aircrews to train under higher speed controlled slide landing situations.

This Environmental Assessment (EA) was prepared to evaluate the potential environmental impacts of the proposed project in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 *Code of Federal Regulations* [CFR] 1500-1508), the USAF Environmental Impact Assessment Process (EIAP) Regulations as promulgated at 32 CFR 989, and Air Force Instruction (AFI) 32-7061.

### **1.2 PURPOSE AND NEED**

The purpose is to accommodate USAF Aircrew assault landing training as part of the annual C-130 Aircrew requirements. The need of this action is to construct a dual-purpose surface that will be used as both a semi-improved (dirt) C-130 ALZ and a semi-improved HSA, comprised of crushed recycled base adjacent and parallel to the southeast of the Malmstrom AFB decommissioned runway with dirt keyhole turnarounds at each end of the runway. The USAF will conduct an inspection of the ALZ to certify it in accordance with UFC 3-260-03, which will allow it to be added to the USAF-approved landing zone list. This would make the ALZ available to all C-130s for training. USAF C-130 training requires that the ALZ is a semi-improved (dirt) surface to train in simulated expeditionary conditions. Additionally, the 120 AW recently transitioned from 15 primary aircraft authorized F-15 aircraft to eight C-130H aircraft and does not have an ALZ

dedicated for C-130 training missions. The nearest C-130 training location is Little Rock AFB, Arkansas, approximately 1,300 miles southeast of Great Falls, Montana. C-130 Units may schedule training at any available ALZ training site.

The existing HSA does not provide a safe facility for use by the 40 HS. Ditches and ridges and the general surface quality pose a dynamic rollover hazard for helicopter slide landings. The lane must be centered in the helicopter movement area on the same heading as the runway. The current surface and surrounding grade slope and variations in slope and surface quality does not meet established HSA design criteria.

### **1.3 LOCATION AND BACKGROUND**

Malmstrom AFB is located in central Montana (Figure 1-1) and is home to the 341<sup>st</sup> Missile Wing (341 MW) under the Air Force Global Strike Command (AFGSC). The mission of the 341 MW is to defend America with safe, secure, and effective nuclear forces and combat-ready airmen. Malmstrom AFB is approximately 3,278 acres and has an additional 438 acres of restrictive easements on adjacent lands. Additionally, Malmstrom AFB's 341 MW missile complex, also known as Malmstrom AFB deployment area, consists of 15 missile alert facilities (MAFs) and 150 launch facilities (LFs), distributed throughout a 13,800-square-mile (35,740-square-kilometer) area in north central Montana. Uniquely, Malmstrom AFB houses only helicopter aircraft; the 40 HS provides aerial surveillance of the missile complex, rapid airlifts, and security forces responses.

The C-130 Hercules aircraft primarily performs the tactical portion of the airlift mission and is capable of operating from rough, dirt strips. The C-130 is the prime transport for airdropping troops and equipment into hostile areas. The C-130 operates throughout the U.S. Air Force, serving with Air Mobility Command, Air Force Special Operations Command, Air Combat Command, U.S. Air Forces in Europe, Pacific Air Forces, Air National Guard and the Air Force Reserve Command, fulfilling a wide range of operational missions in both peace and war situations. Basic and specialized versions of the aircraft airframe perform a diverse number of roles, including airlift support, Antarctic ice resupply, aeromedical missions, weather reconnaissance, aerial spray missions, firefighting duties for the U.S. Forest Service, and natural disaster relief missions (USAF,2016).

Active-duty locations for the C-130 and its variations are Dyess Air Force Base, Texas; Little Rock AFB, Arkansas; Ramstein Air Base, Germany; and Yokota Air Base (AB), Japan (USAF, 2016).

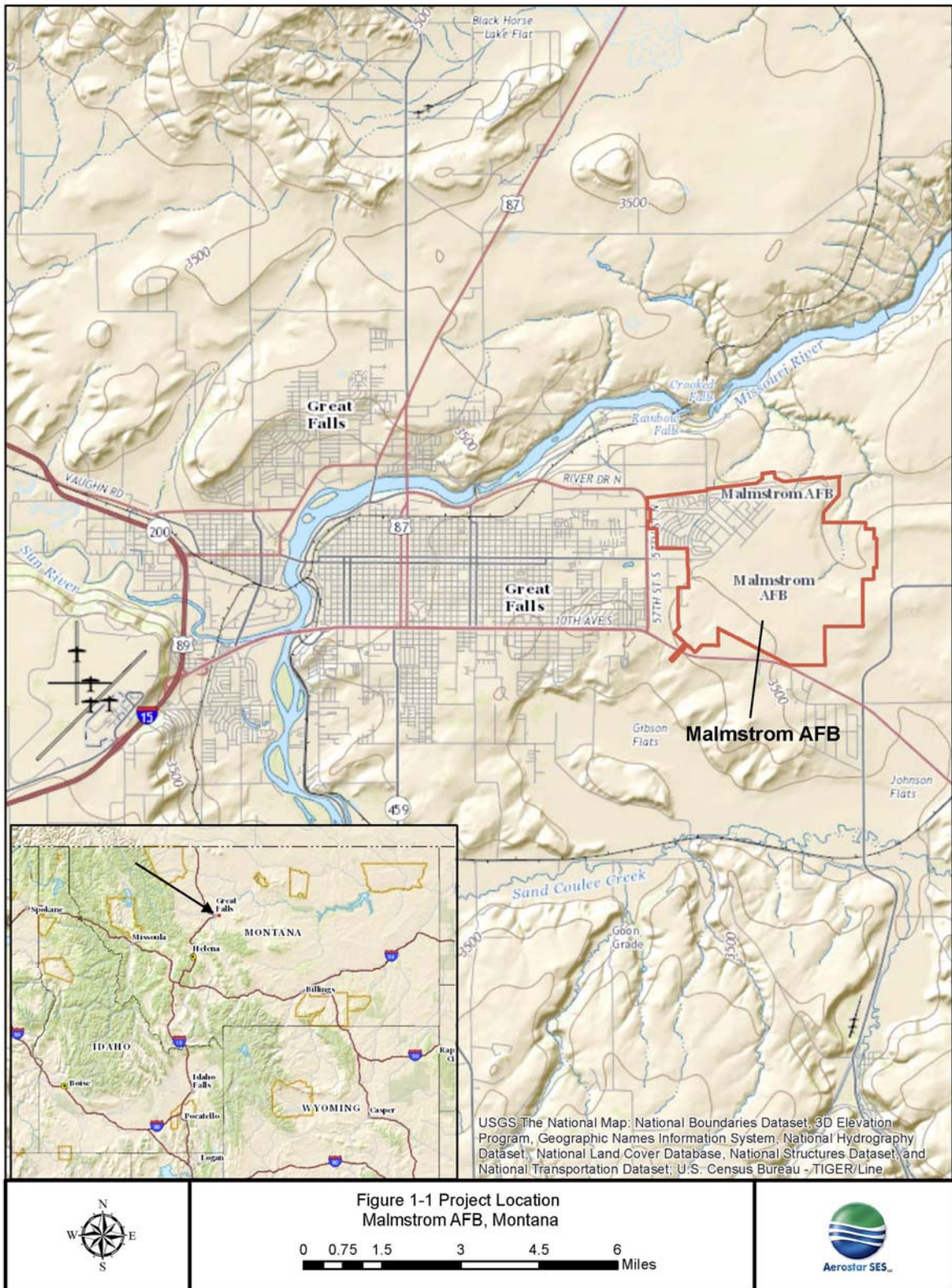
Air Force Reserve locations for assigned C-130 models are (USAF, 2016):

- Dobbins Air Reserve Base, Georgia
- Keesler AFB, Missouri
- Maxwell AFB, Alabama
- Minnesota-St. Paul Joint Air Reserve Station, Minnesota
- Niagara Falls ARS, New York
- Peterson AFB, Colorado
- Pittsburgh ARS, Pennsylvania
- Pope Field, North Carolina
- Youngstown ARS, Ohio

Air National Guard locations for the C-130 and its variations are (USAF, 2016):

- Joint Reserve Base Carswell, Texas
- Channel Island Air National Guard
- Charlotte/Douglas IAP, North Carolina
- Cheyenne Municipal Airport, Wyoming
- Kulis Air National Guard Base, Alaska
- Little Rock AFB, Arkansas
- Louisville IAP, Kentucky
- Munoz ANGB, Puerto Rico
- Minnesota-St. Paul ARS, Minnesota
- Nashville IAP, Tennessee
- Station, California
- New Castle County ANGB, Delaware
- Greater Peoria Regional Airport, Illinois
- Quonset State Airport, Rhode Island
- Reno-Tahoe IAP, Nevada
- Savannah IAP, Georgia
- Schenectady MAP, New York
- Rosecrans Memorial Airport, Missouri
- Yeager Airport, West Virginia
- Great Falls IAP, Montana





1

Figure 1-1

The Montana ANG 120 AW (formerly Fighter Wing [FW]) is at Great Falls International Airport (IAP), approximately 7 miles west of Malmstrom AFB and 3 miles southwest of downtown Great Falls, Montana, in central northern Montana. The 120 AW occupies 139 acres on the northeast section of Great Falls IAP. It is a tenant at the airport and is a co-user of the airport's runways, the supporting taxiway system, and the Federal Aviation Administration (FAA) Air Traffic Control (ATC) Tower. The airport's primary access roadway, Airport Drive, is located immediately north of U.S. Interstate 15 (I-15). Primary activities performed at the installation include aircraft operation and maintenance, ground maintenance, and facilities maintenance (Montana ANG, 2013).

The 120 AW was originally established at Great Falls IAP in 1947 as the 186<sup>th</sup> Fighter Squadron (186 FS), then flying P-51 "Mustang" aircraft. In 1953, the 186 FS became the first ANG unit to be assigned the F-86 "Sabre." In 1955, the 186 FS transitioned to the all-weather fighter interceptor F-89 "Scorpion." The 120 FW came into existence in 1956. In 1966, the F-102 "Delta Dart" appeared, followed by the F-106 from 1972 until 1987. In 1987, the 120 FW began flying F-16s. Per BRAC Commission recommendations, the unit officially retired the F-16 mission in 2007. The unit mission then flew F-15 aircraft from 2007 to 2013. From 2013 to 2014, Montana ANG transitioned from F-15 aircraft (120 FW) to C-130H (120 AW) (Montana ANG, 2013).

#### **1.4 DECISION TO BE MADE**

This EA is a planning and decision-making tool that will be used to guide Malmstrom AFB in implementing the Proposed Action in a manner consistent with USAF standards for environmental stewardship. The EA evaluates whether the Proposed Action would result in significant impacts on human health and the environment. If significant impacts are identified, Malmstrom AFB would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an Environmental Impact Statement (EIS) addressing the Proposed Action, or abandon the Proposed Action.

#### **1.5 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS**

The EIAP is how the USAF facilitates compliance with environmental regulations (32 CFR 989, "Environmental Impact Analysis Process"). NEPA of 1969 is the primary legislation affecting these agencies' decision-making process. This act and other facets of the EIAP are described below.

### **1.5.1 National Environmental Policy Act**

NEPA establishes a national environmental policy with goals for the protection, maintenance, and enhancement of the environment and provides a process for accomplishing these goals within federal agencies. NEPA requires federal agencies to consider the impact(s) of their actions on the natural and physical environment as part of planning and decision-making processes. The level of analysis required to meet NEPA requirements depends on the scope and potential environmental impacts of the Proposed Action.

To comply with NEPA, the planning and decision-making process for the Proposed Action by federal agencies involves a study of relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. NEPA addresses them collectively in the form of an EA or EIS, which provides the decision-maker with a comprehensive view of major environmental issues and requirements associated with the Proposed Action.

This EA has been prepared in accordance with the NEPA of 1969 (42 USC 4321-4347), the CEQ regulations for implementing NEPA (40 CFR 1500-1508), and the EIAP (32 CFR 989).

### **1.5.2 Endangered Species Act**

The Endangered Species Act (ESA) of 1973 (16 USC 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their Proposed Actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA.

### **1.5.3 Clean Air Act and Conformity Requirements**

The Clean Air Act (CAA) (42 USC 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (EPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and lead (Pb). The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA

Amendments of 1990, federal agencies are required to determine whether their undertakings conform with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. The EPA has set forth regulations in 40 CFR Part 93, Subpart B, as implemented by ARM 17.8.1402, which require the proponent of a Proposed Action to perform an analysis to determine if its implementation would conform with the SIP.

#### **1.5.4 Water Resources Regulatory Requirements**

The Clean Water Act (CWA) of 1977 (33 USC 1251 et seq.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA and Executive Order (EO) 11990 Protection of Wetlands regulate development activities in or near streams or wetlands. Section 404 also regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands. EO 11988 Floodplain Management requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains. The Department of Defense (DoD) has implemented stormwater requirements under Section 438 (42 USC 17094) of the Energy Independence and Security Act to maintain the hydrologic functions of a site and mitigate the adverse impacts of stormwater runoff from DoD construction projects. Section 438 requires that Federal facility projects greater 5,000 square feet must “maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow” (EPA, 2009).

#### **1.5.5 Cultural Resources Regulatory Requirements**

The National Historic Preservation Act (NHPA) and 36 CFR 800 direct federal agencies to take into account potential impacts to cultural resources (archaeological and architectural resources and traditional cultural sites) that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP, Section 106). This legislation and guidelines also require consultation with State Historic Preservation Offices (SHPO) and Federally Recognized Native American tribal governments to seek their input when identifying cultural resources (including traditional cultural properties), evaluating their NRHP eligibility, and if eligible, resolving adverse effects of Proposed Actions. The NHPA consultation process is distinct from NEPA and Interagency and

Intergovernmental Coordination for Environmental Planning notification processes, and has its own notification requirements and timelines.

EO 13175, *Consultation and Coordination with Indian Tribal Governments* directs Federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. Consistent with that executive order, Department of Defense Instruction (DoDI) 4710.02, *DoD Interactions with Federally-Recognized Tribes*, and AFI 90-2002, *Air Force Interaction with Federally-Recognized Tribes*, federally-recognized tribes that are historically affiliated with the Malmstrom AFB geographic region were invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the interagency coordination process, and it requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Malmstrom AFB point-of-contact for Native American tribes is Tony P. Lucas, Installation Tribal Liaison Officer. The Native American tribal governments that will be coordinated or consulted, regarding these actions, are listed in **Appendix A**.

### **1.5.6 Sustainability and Greening**

EO 13514 Federal Leadership in Environmental, Energy, and Economic Performance strives to improve efficiency and environmental performance in federal agencies by setting goals for energy efficiency, greenhouse gas emission mitigation, water conservation, waste management and recycling, green procurement, pollution prevention, and livable communities, and others. The EO specifies that every Federal organization and agency must make the reduction of greenhouse gas emissions a priority and establishes specific goal-setting, inventorying, and reporting requirements for Federal agencies. This includes an order for each agency to develop, implement, and update a Strategic Sustainability Performance Plan, which should work toward continual improvement of sustainable practices associated with Federal actions. Sustainable green building and development practices can be recognized through sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

Although no buildings are planned as part of the Proposed Action, Malmstrom AFB will strive to construct the ALZ in accordance with EO 13514 and the USAF memorandum (31 July 2007) “USAF Sustainable Design and Development (SDD) Policy.” The goal of the policy memo is to

reduce the environmental impact and total ownership cost of facilities; improve energy efficiency and water conservation; and provide safe, healthy, and productive built environments.

### **1.5.7 Other Executive Orders**

Additional regulatory legislation that potentially applies to the implementation of this Proposed Action includes guidelines promulgated by EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children are considered under the guidelines established by EO 13045 Protection of Children from Environmental Health Risks and Safety Risks. EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds acts as additional protection for migratory birds.

### **1.5.8 Interagency and Intergovernmental Coordination for Environmental Planning**

In compliance with EO 12372 Intergovernmental Review of Federal Programs, federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action was notified and consulted during the development of this EA. A list of the agencies consulted during the analysis with representative copies of correspondence are included in Appendix A of the EA.

### **1.5.9 Public and Agency Review of the EA**

A Notice of Availability (NOA) of the Draft EA and Finding of No Significant Impact (FONSI) will be published in the *Great Falls Tribune* to announce the availability of the EA for review and comment by the public during a 30-day comment period. A printed copy of the draft EA and FONSI will be made available for review at the Great Falls Public Library and the Arden G. Hill Memorial Library. The documents will also be made available online at <http://www.malmstrom.af.mil/About-Us/Environmental-Resources/>.



## **SECTION 2**

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

#### **2.1 INTRODUCTION**

The USAF is proposing the construction of a C-130 ALZ at Malmstrom AFB for use by USAF C-130s, NGB units, USAF Reserve units and Malmstrom AFB 40 HS, as an HSA. The ALZ is proposed to be constructed adjacent and parallel to the southeast of the Malmstrom AFB runway that was decommissioned in 1997 per BRAC Commission recommendations. The Proposed Action is intended to accommodate USAF Aircrew assault landing training as part of the annual C-130 Aircrew requirements. The HSA provides a USAF Aircrew training area for helicopter aircrews to train under higher speed controlled slide landing situations.

#### **2.2 PROPOSED ACTION**

The Proposed Action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed recycled base adjacent and parallel to the southeast of the Malmstrom AFB decommissioned runway with dirt keyhole turnarounds on each end of the runway. Construction of the ALZ would meet the minimum runway criteria per AFI 13-217.3.5, including adequate length and width (4,800 feet by 60 feet), weight-bearing capability, clear zones, transitional area (60 feet), approach zone ratio (20:1), and overrun. The ALZ would be developed in consultation among Malmstrom AFB, Montana ANG 120 AW, and the FAA and surveyed prior to use in accordance with AFI 13-217.3A, Air Force Joint Pamphlet (AFJPAM) 32-8013 Volume II, and Unified Facilities Criteria (UFC) 3-260-01 Chapter 7. The USAF Active Duty Team will conduct an inspection of the ALZ to certify it in accordance with UFC 3-260-03, which will allow it to be added to the USAF-approved landing zone list. This would make the ALZ available to active duty USAF C-130s to use for training. USAF C-130 training requires that the ALZ is a semi-improved (dirt) surface to train in simulated expeditionary conditions. Once constructed, the ALZ would be placed in the USAF inventory of ALZ training opportunities and become available for use by all USAF C-130 units for training. This Proposed Action would not change the current operations or training conducted by the 40 HS, simply improve and combine the existing HSA site with the proposed ALZ. HSA Construction as a standalone site would reduce the overall length required from 4800 feet to 1600 feet. The HSA site could be located anywhere within the proposed ALZ APE.

## 2.3 SELECTION CRITERIA

Per the requirements of 32 CFR 989 (the USAF EIAP regulations) selection standards are used to identify required factors for meeting the purpose of and need for the Proposed Action. Table 2-1 lists the selection standards established for the proposed ALZ site.

**Table 2-1 Selection Criteria**

Category	Requirements
Facility	<ul style="list-style-type: none"> <li>• Secure.</li> <li>• Readily available.</li> <li>• Minimally improved transport airstrip for use by USAF is needed to satisfy national security and training requirements.</li> </ul>
Location	<ul style="list-style-type: none"> <li>• Must be regional.</li> <li>• Must provide enough space for the appropriate length and width of the ALZ and its associated clear zones and approach zones.</li> <li>• Must be designated for air operations.</li> <li>• Must support all variants of C-130 landing and takeoff.</li> <li>• Must provide isolation from electronic interference from airport operations to achieve test goals and objectives.</li> <li>• Minimal air traffic congestion.</li> <li>• Location outside Class “D” airspace.</li> </ul>
Site features	<ul style="list-style-type: none"> <li>• No hardwired telecommunications needed; communications will be strictly by radio, cellular, or other wireless communication.</li> <li>• Lack of infrastructure is considered crucial; there is a need to provide global assault landing field conditions for training realism.</li> </ul>
Airfield surface	<ul style="list-style-type: none"> <li>• Must be an unpaved, compacted, semi-improved (clay/sand) surface without matting or other structural improvements.</li> <li>• Must provide sufficiently improved turnaround space to accommodate fully loaded transport C-130 aircraft.</li> <li>• Require surface improvements or soil stabilization to resist low speed turning loads.</li> <li>• Must be capable of handling cargo load/offload/transfer training.</li> </ul>
Lighting	<ul style="list-style-type: none"> <li>• Lower levels of cultural (ambient) lighting for improved night vision device training.</li> <li>• Conventional airfield lighting will not be installed, including landing, runway, taxiway, security, and facility lighting because they will alter the primitive airfield conditions required for dark sky operations. However, expeditionary light techniques may be used.</li> </ul>
Operations and maintenance	<ul style="list-style-type: none"> <li>• Expense of maintaining a safe and useful capability cannot exceed limited customer resources; cost is a consideration.</li> <li>• Adequate crash recovery and fire protection support provided.</li> <li>• Mission demands for fire/rescue support will be scheduled.</li> <li>• Maintenance and intentional clearing operations support available.</li> <li>• Refueling/defueling an infrequent and unlikely requirement. Available as part of emergency planning. Fuel bladder, tank or other storage on site not required.</li> <li>• Any servicing is to be provided by fuel truck.</li> <li>• The ability to perform very limited emergency maintenance must be considered. Tire changes and other safety-related maintenance may be required at any time.</li> </ul>

120 AW = 120<sup>th</sup> Airlift Wing  
ANG = Air National Guard  
USAF = U.S. Air Force

AFB = Air Force Base  
IAP = International Airport



## 2.4 DESCRIPTION AND SCREENING OF ALTERNATIVES

NEPA and the CEQ regulations mandate the consideration of reasonable alternatives for the Proposed Action. Reasonable alternatives are those that could be used to meet the purpose of and need for the Proposed Action. During the screening process, alternatives were considered reasonable only if they would enable Malmstrom AFB to construct an ALZ that will enable USAF active duty units and the Montana ANG to achieve its training and mission requirements. The following reasonable alternatives were identified and screened against the selection criteria.

### 2.4.1 Alternative 1 (Preferred Alternative)

Alternative 1 (Preferred Alternative) is the construction of a semi-improved (dirt) C-130 ALZ of crushed recycled base adjacent to and parallel with the Malmstrom AFB decommissioned runway with dirt keyhole turnarounds at each end of the runway (Figure 2-1). This alternative was screened against the selection criteria and was found to meet all the criteria; therefore, this alternative will be carried through for analysis in the EA.

**Table 2-2 Alternative 1 Screening Results**

Category	Evaluation	Meets Criteria?
Facility	No issues noted.	Yes
Location	No issues noted.	Yes
Site Features	No issues noted.	Yes
Airfield Surface	No issues noted.	Yes
Lighting	No issues noted.	Yes
Operations and Maintenance	No issues noted.	Yes

### 2.4.2 Alternative 2

Alternative 2 is the construction of a semi-improved (dirt) C-130 ALZ comprised of crushed recycled base adjacent to and parallel with the Malmstrom AFB decommissioned runway. The ALZ would also be constructed with dirt keyhole turnarounds at each end of the runway. Unlike Alternative 1, the C-130 ALZ would be connected to the existing decommissioned runway for use as a taxiway (Figure 2-2). This alternative was screened against the selection criteria and was found to meet all the criteria; therefore, this alternative will be carried through for analysis in the EA. However, this Alternative is not preferred due to issues related to the decommissioned status and condition of the runway. This Alternative does present a future opportunity should construction, repair and maintenance funds become available to reconsider adding this capability.

**Table 2-3 Alternative 2 Screening Results**

Category	Evaluation	Meets Criteria?
Facility	No issues noted.	Yes
Location	No issues noted.	Yes
Site Features	No issues noted.	Yes
Airfield Surface	Condition of the decommissioned runway does not allow for use as a taxiway.	No
Lighting	No issues noted.	Yes
Operations and Maintenance	No issues noted.	Yes

### 2.4.3 Alternative 3

Alternative 3 is to construct a C-130 ALZ similar to Alternative 1 and 2 at the Great Falls IAP. This alternative was screened against the selection criteria and was found to not meet all the criteria; therefore, this alternative will not be carried forward for further discussion or analysis in this EA. Should the completed Malmstrom ALZ satisfy all 120<sup>th</sup> ALZ training requirements, ANG may have no further need to construct an ALZ at the Great Falls IAP.

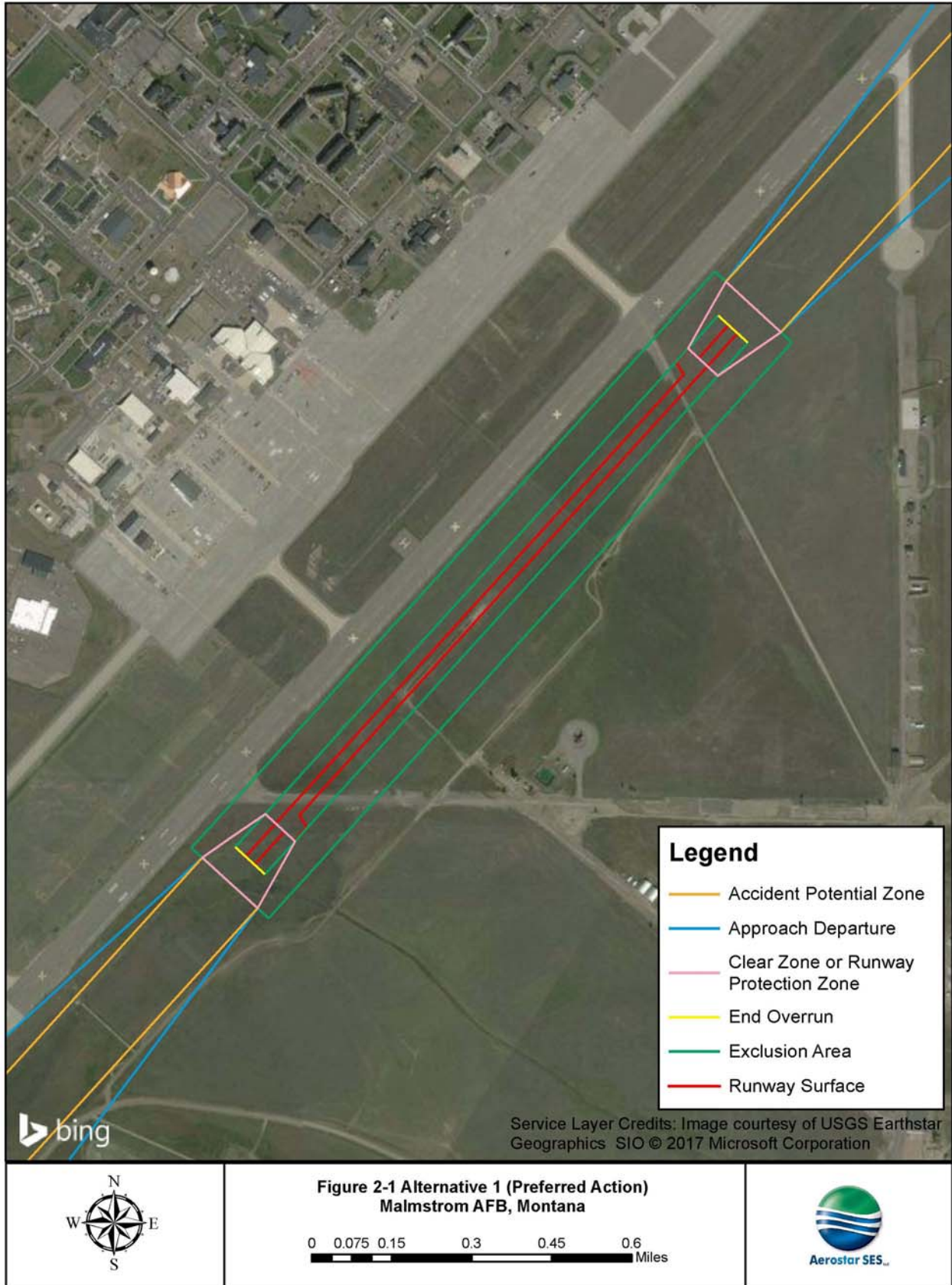
The results of screening this alternative against the selection criteria are summarized Table 2-4.

**Table 2-4 Alternative 3 Screening Results**

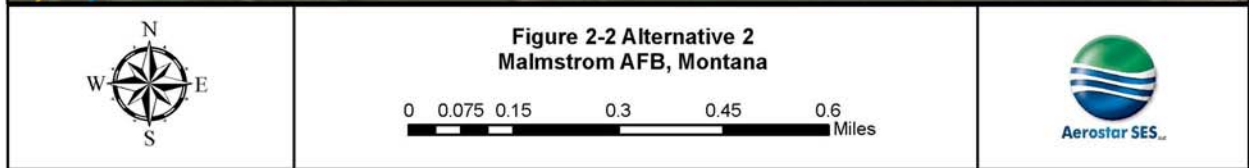
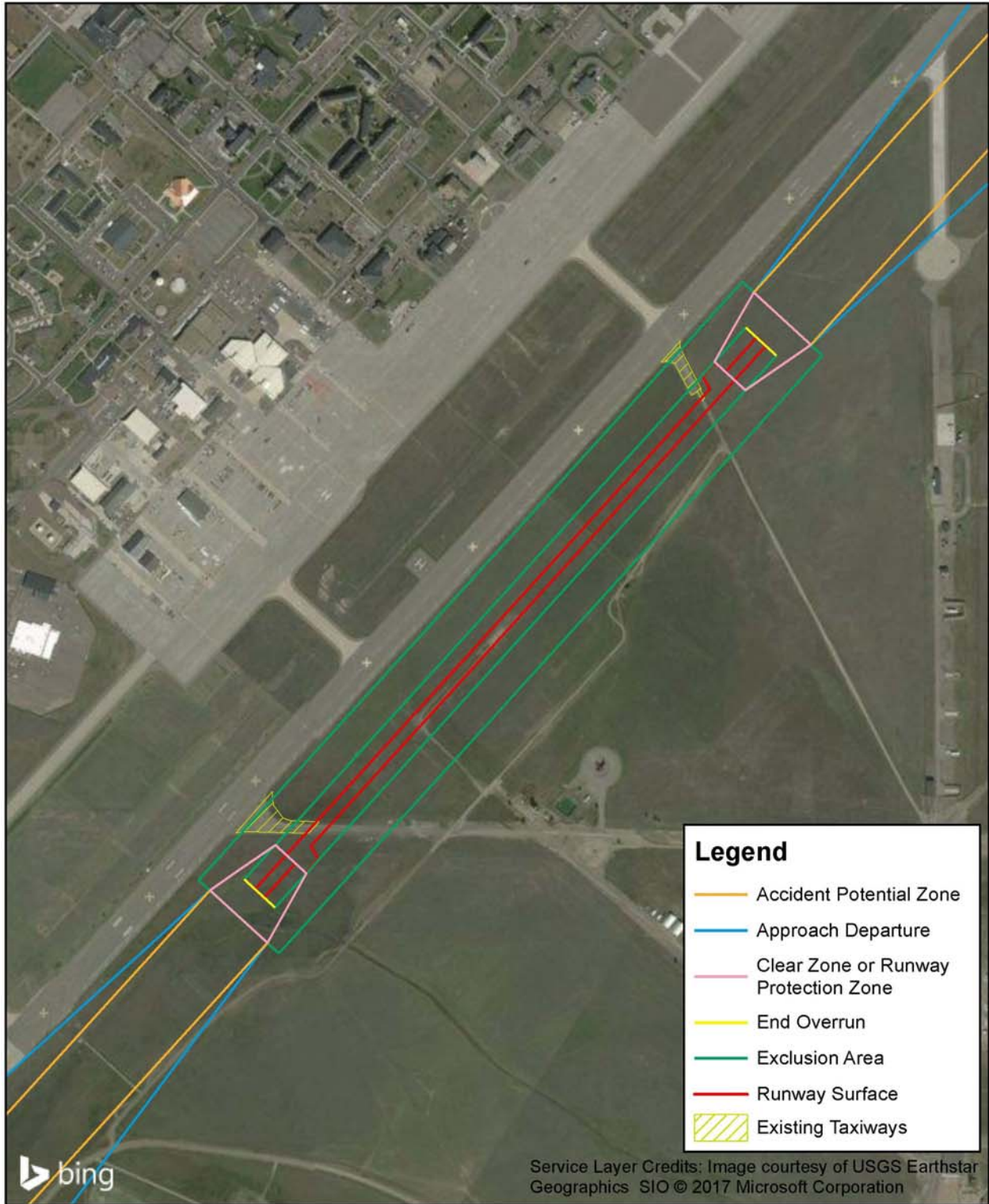
Category	Evaluation	Meets Criteria?
Facility	The Great Falls IAP proposed ALZ does not have a date of availability for completion; therefore, a useable ALZ is unknown at this time.	No
Location	This alternative does not provide isolation from electronic interference from airport operations and minimal air traffic congestion. This alternative is within a Class “D” airspace.	No
Site Features	No issues noted.	Yes
Airfield Surface	No issues noted.	Yes
Lighting	No issues noted.	Yes
Operations and Maintenance	No issues noted.	Yes

ALZ = assault landing zone

IAP = international airport







#### **2.4.4 No Action Alternative**

Under the No Action Alternative, a C-130 ALZ would not be constructed at Malmstrom AFB. USAF C-130 active duty units would not have a regional ALZ available for training. The Montana ANG would lose the efficiencies gained by having a local training asset without incurring increased costs and impacts associated with travel to a remote training site.

CEQ regulations stipulate that the No Action Alternative be analyzed to assess environmental consequences that may occur if the Proposed Action is not implemented. Therefore, the No Action Alternative will be carried forward for analysis in the EA. The No Action Alternative provides a baseline against which the Proposed Action can be compared.

## SECTION 3 AFFECTED ENVIRONMENT

This section describes pertinent existing environmental conditions for resources potentially affected by the Proposed Action and identified alternatives. In compliance with NEPA, CEQ regulations, AFI 32-7061, 32 CFR 989, and UFC 3-260-01, the description of the affected environment focuses only on those aspects potentially subject to impacts. The potential consequences to the affected environments will be presented in Section 4. Cumulative effects will be evaluated in Section 5.

### 3.1 RESOURCES NOT CARRIED FORWARD FOR ANALYSIS

Per CEQ regulations (40 CFR 1500), federal agencies may focus their NEPA analysis on those resource areas that could be affected and omit discussions of resource areas that would not be affected by a Proposed Action (40 CFR 1501.7[a][3]). The following resource areas have been reviewed and determined not to warrant further consideration because there would be no or negligible potential for effects from implementing the Proposed Action:

- Aesthetics and visual resources,
- Hazardous materials and waste,
- Socioeconomics,
- Traffic and transportation, and
- Recreation.

A brief description of each resource and the rationale for a determination of negligible or no effect is provided.

**Aesthetics and Visual Resources.** The Proposed Action would have no appreciable effects on aesthetics or visual resources. There are no aesthetically sensitive locations within the viewshed of the Proposed Action site. Existing views are of typical military installation buildings and supporting infrastructure, such as roads and parking lots. During construction, the visual and aesthetic characteristics of areas undergoing development would be temporarily altered by construction equipment and the staging of construction materials. Following construction, the proposed ALZ would introduce new visual features; however, these features would be visually consistent with existing conditions. As a result, the USAF anticipates negligible short-term (less

than 1 year) effects, no long-term effects, and no significant impacts; therefore, this resource area was not carried forward for detailed analysis.

**Hazardous Materials and Waste.** The Proposed Action would have no appreciable effects on hazardous materials and waste. The Proposed Action area is not in the Installation Restoration Program (IRP), and there is no known soil and groundwater contamination on or near the sites. During construction activities, hazardous materials and petroleum products commonly used in construction (fuel, oils, lubricants, and paint) would be used at the site, and some wastes would be generated and properly disposed. During operation of the ALZ, hazardous materials and petroleum products are not expected to be used or stored at the ALZ. The safe handling, storage, use, and disposal procedures of Malmstrom AFB's Hazardous Waste Management Plan (HWMP) would be implemented, and all applicable federal, state, and local regulations would be followed during construction and operation, as needed. The amount of materials would be limited, and correct management practices would minimize the potential for an accidental spill or release. If a release occurs, it would be promptly stopped and addressed following procedures in the HWMP. As a result, the USAF anticipates negligible short- and long-term adverse impacts and no significant impacts; therefore, this resource area was not carried forward for detailed analysis.

**Socioeconomics.** The Proposed Action would have no appreciable effects on socioeconomics. The term socioeconomics describes demographics associated with the human environment, such as employment, industry, income, population, housing, and schools. The Proposed Action would use existing resources. The ALZ would be constructed by USAF Aircrew students as part of training and would not require additional construction workers. The ALZ would mimic real world conditions; therefore, very little maintenance is required. Maintenance and intentional clearing operations would be handled by Montana ANG in coordination with Malmstrom AFB. No impact to employment, industry, income, population, housing, and schools is expected. As a result, the USAF anticipates no short- or long-term adverse impacts and no significant impacts; therefore, this resource area was not carried forward for detailed analysis.

**Traffic and Transportation.** The Proposed Action would have no appreciable adverse effects on traffic and transportation. The Proposed Action site is not located near any road, highway, or traffic intersection. During construction activities, there will be a slight increase in traffic related to worker commute and delivery of construction materials. As a result, the USAF anticipates

negligible short-term (less than 1 year) effects, no long-term effects, and no significant impacts; therefore, this resource area was not carried forward for detailed analysis.

**Recreation.** The Proposed Action would have no appreciable adverse effects on recreation. The Proposed Action site is not near any recreational areas. As a result, the USAF anticipates no short- or long-term adverse impacts and no significant impacts; therefore, this resource area was not carried forward for detailed analysis.

## **3.2 AIR QUALITY**

### **3.2.1 Definition of Resource**

Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. A region of influence (ROI) is the geographic area where effects from implementing the Proposed Action might occur and are therefore analyzed. The air quality ROI is the Great Falls Intrastate Air Quality Control Region (AQCR).

The EPA established NAAQS under the CAA Amendments of 1990. These standards represent the maximum allowable atmospheric concentration of designated air pollutants that are considered protective of public health and welfare. NAAQS have been set for six criteria pollutants: CO, O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, Pb, and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>).

Based on measured ambient air pollutant concentrations, the EPA determines whether geographic areas are in compliance with the NAAQS. Areas in compliance with the NAAQS are designated as attainment areas; areas not in compliance are nonattainment areas. Nonattainment areas that subsequently achieve compliance with the NAAQS are designated maintenance areas to ensure air quality continues to comply with the NAAQS. Proposed actions that would result in direct or indirect emissions in a designated nonattainment or maintenance area are subject to a conformity evaluation under the General Conformity Rule (40 CFR 93) and the USAF EIAP for air quality in 32 CFR 989.30. For nonattainment regions, the states must develop a SIP designed to eliminate or reduce the severity and number of NAAQS violations with an underlying goal to bring state air quality conditions into and maintain compliance with the NAAQS.



Greenhouse gases (GHGs) are components of the atmosphere (water vapor, carbon dioxide, methane, and nitrous oxide) that trap heat relatively near the surface of the earth, contributing to the greenhouse effect and climate change. GHGs are derived from natural sources, such as volcanic activity and forest fires, and from manmade sources, such as the use of aerosols and the burning of fossil fuels. Global temperatures are likely to rise as atmospheric concentrations of GHGs increase (EPA, 2016a and Intergovernmental Panel on Climate Change, 2014).

EO 13783 Promoting Energy Independence and Economic Growth rescinded EO 13693 Planning for Federal Sustainability in the Next Decade. However NEPA analysis still must evaluate, using air quality analysis, the short- and long-term effects of climate change on their operations and mission caused by a Proposed Action. Federal agencies should address climate change with two primary viewpoints:

- (1) The potential effects of a proposed action on climate change and,
- (2) The effects of climate change on a proposed action and its environmental impacts.

### **3.2.2 Existing Conditions**

#### **Climate**

Cascade County is located east of the Continental Divide and has a characteristically continental climate. Weather generally consists of warm summers and very cold winters, typical of the Northwestern United States. Winter temperatures average 27 degrees Fahrenheit (minus 3 degrees Celsius). January is normally the coldest month, with an average high temperature of 35 degrees Fahrenheit (2 degrees Celsius) and an average low temperature of about 16 degrees Fahrenheit (minus 9 degrees Celsius) and moderate precipitation (snow). Summer temperatures range from an average of 52 degrees Fahrenheit (11 degrees Celsius) to 86 degrees Fahrenheit (30 degrees Celsius). Temperatures reach or exceed 90 degrees Fahrenheit (32 degrees Celsius) about 23 times each summer, on average (Western Regional Climate Center, 2016). Average wind speed in the vicinity of Malmstrom AFB is approximately 11 miles per hour.

#### **Local Air Quality**

Malmstrom AFB is in Cascade County and is located within Great Falls Intrastate AQCR 141 and is currently designated as an attainment or unclassifiable area for all NAAQS criteria pollutants (EPA, 2016b); therefore, the Proposed Action does not have applicable requirements under the Montana SIP. A maintenance area for CO is within Great Falls, adjacent to I-15 and east of the boundary of the Great Falls IAP. The Maintenance Area lies between 9<sup>th</sup> Avenue South and 11<sup>th</sup>

Avenue South and runs from 2<sup>nd</sup> Street South to 54<sup>th</sup> Street South. The Maintenance Area’s eastern boundary is 54<sup>th</sup> Street South, approximately 0.5 mile west of Malmstrom AFB. The Maintenance Period runs through June of 2022. Consequently, under Title V, the major source threshold for each criteria pollutant (CO, NO<sub>2</sub>, oxides of sulfur [SO<sub>x</sub>], volatile organic compounds [VOC] and PM<sub>10</sub> and PM<sub>2.5</sub>) is 100 tpy.

### Emissions at Malmstrom AFB

Malmstrom AFB operates under Title V Operating Permit Number OP1427-11 (Montana Department of Environmental Quality [MDEQ], 2016). A summary of baseline stationary emissions associated with Malmstrom AFB activities is presented in Table 3-1. There were no requirements under the operating permit to update or monitor insignificant sources or activities, such as vehicle maintenance, air conditioning, fueling, painting, and welding. Therefore, emissions for these sources/activities are not included.

**Table 3-1 Summary of Annual Stationary Emissions at Malmstrom AFB**

Source	Criteria Pollutants (tpy)					
	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>x</sub>	VOC
Aboveground storage tanks	--	--	--	--	--	1.936
Degreasing solvent cleaning	--	--	--	--	--	0.620
External combustion	19.078	25.357	1.132	1.085	4.467	0.827
Fire training	0.052	0.018	0.009	0.009	0.000006	0.014
Internal combustion	1.343	5.430	0.247	0.247	0.132	0.250
Munitions	0.654	0.033	0.098	0.053	--	--
Storage piles	--	--	0.001	0.00002	--	--
Underground storage tank	--	--	--	--	--	2.922
<b>Total</b>	<b>21.127</b>	<b>30.839</b>	<b>1.487</b>	<b>1.394</b>	<b>4.599</b>	<b>6.569</b>

Source: 2015 Air Emissions Inventory, Malmstrom AFB

tpy = tons per year

CO = carbon monoxide

NO<sub>x</sub> = nitrogen oxides

PM<sub>2.5</sub> = particulate matter less than 2.5 microns in diameter

PM<sub>10</sub> = particulate matter less than 10 microns in diameter

SO<sub>x</sub> = oxides of sulfur

VOC = volatile organic compounds

## 3.3 NOISE

### 3.3.1 Definition of Resource

Noise is defined as unwanted sound or, more specifically, any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Noise [FICON], 1992). Human response to noise can vary according to the type and characteristics of the noise source, the distance between the noise source

and the receptor, the sensitivity of the receptor, and the time of day. Noise is generated by activities essential to daily life and the military mission, such as construction, vehicle traffic, and aircraft operations.

Sound is measured in decibels (dB) on a logarithmic scale. Because the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called “A-weighting” (dBA). Therefore, a change in sound level of three dBA or less is barely perceptible by the human ear, but a 10 dBA increase or decrease in sound level is perceived as a doubling or halving of sound level. In addition, sound attenuates (lessens) by approximately six dBA with each doubling of distance from the noise source (Federal Transit Administration, 2006). Sound attenuates even more rapidly when it encounters obstacles, such as buildings, terrain, or vegetation. Because noise attenuates fairly rapidly with distance from the source, the ROI for this analysis is the Proposed Action site and areas within a 0.5-mile-radius.

Day-night sound level (DNL) is a noise metric that averages A-weighted sound levels during a 24-hour period and assigns a 10 dBA penalty to noise events occurring between 10:00 p.m. and 7:00 a.m. This penalty is intended to compensate for generally lower background noise levels at night and the additional annoyance of nighttime noise events. DNL is the preferred noise metric of the U.S. Department of Housing and Urban Development, the U.S. Department of Transportation (DOT), FAA, EPA, Veterans Administration, and DoD.

The USAF adopted the NOISEMAP computer model to analyze and evaluate noise impacts created by aircraft operations (USAF, 1992). The NOISEMAP program BASEOPS allows entry of runway coordinates, airfield information, flight tracks, flight profiles (engine thrust settings, altitudes, and speeds) along each flight track for each aircraft, numbers of flight operations, run-up coordinates, run-up profiles, and run-up operations. Table 3-2 shows the noise levels associated with some common indoor and outdoor activities and settings.

**Table 3-2 Common Indoor and Outdoor Activities Noise Levels**

Typical Sound Level (dBA)	Activity/Setting
140	Threshold of pain
130	Jet taking off 200 feet away
120	Operating heavy equipment
110	Nightclub (with music)
100	Construction site
90	Boiler room
80	Freight train (100 feet away)
70	Classroom chatter
60	Conversation (3 feet away)
50	Urban residence
40	Soft whisper (5 feet away)
30	North rim of grand canyon
20	Silent study room
0	Threshold of hearing (1,000 Hertz)

Source: OSHA Technical Manual, August 2013  
dBA = A-weighted decibels

### **3.3.2 Existing Conditions**

#### **Regional Settings**

The noise environment of communities surrounding Malmstrom AFB is characteristic of a low-density agricultural, commercial, and suburban environment, a setting that typically experiences noise associated with vehicles on local highways or agricultural activities. According to FICON, quiet suburban communities typically have an outdoor noise level of 45 to 55 dBA DNL (FICON 1992). Areas adjoining Malmstrom AFB primarily support agricultural land uses; however, suburban neighborhoods of Great Falls are west of the installation. Much of the area surrounding Malmstrom AFB is sparsely populated with noise levels of correspondingly low magnitude; however, helicopter activity is the dominant noise producer within the region.

#### **Malmstrom AFB Existing Noise Levels**

The most current noise data for Malmstrom AFB is in the 1994 Air Installation Compatible Use Zone (AICUZ) Study. The AICUZ identifies 75 dBA DNL, 70 dBA DNL, and 65 dBA DNL noise contours associated with the former fixed-wing flying mission at Malmstrom AFB. According to the 1994 AICUZ, most of the noise contours are on base except areas within the 65 dBA DNL contour that extend northeast and southwest outside the installation boundaries and a small area within the 70 dBA DNL contour that extends slightly across the southwest boundary. Property

zoned commercial with the city of Great Falls lies within the southern 65 dBA DNL noise contour. According to the assessment criteria listed in the 2012 Malmstrom AFB Joint Land Use Study (JLUS), most commercial uses within the 65 – 70 dBA DNL noise contours are allowed.

Noise has decreased dramatically at Malmstrom AFB since fixed-wing flying operations were discontinued. In general, current noise levels around Malmstrom AFB result primarily from helicopter operations at the installation, firing range activities, vehicle traffic in the vicinity, or other background noise sources, such as the repair and/or construction of streets, and building repair, construction, and demolition. No adverse impacts on the environment have been detected because of these noise sources (U.S. Army Reserve [USAR], 2009). The current noise levels at the Malmstrom AFB runway are from helicopter activities and range from 80 to 96 dBA DNL (FAA, 2016b).

### **3.4 LAND USE**

#### **3.4.1 Definition of Resource**

Land cover/land use can be separated into two primary categories: natural and human-modified. Natural land cover includes woodlands, rangeland, grasslands, and other open or undeveloped areas. Human-modified land use includes residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and generally other areas developed from natural land cover conditions. Land use is regulated by management plans, policies, laws, and ordinances (zoning) that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

Several siting criteria have been established specific to land development and use at commercial and military airfields. To maintain safety, the USAF has established siting criteria in AFI 32-1026 Planning and Design of Airfields and Air Force Manual 32-1013, *Airfield and Heliport Planning Criteria*, for land development of USAF military installations. These criteria include clear zones, obstruction zones for runways, and quantity-distance criteria for storage of munitions. Although these criteria are related to safety, they are used to assist decision-makers and planners with appropriate siting of facilities on USAF installations. FAA airfield criteria are used at commercial airports and are generally the same as the USAF criteria. In addition, several regulations address security requirements for military installations (Anti-Terrorism/Force Protection criteria) and have implications on physical layout and design of installations.

### **3.4.2 Existing Conditions**

#### **Regional Land Use**

Cascade County and the City of Great Falls are characterized by a predominantly rural economy; land use throughout the region has historically been centered on agriculture and ranching although industrial activity has also been important. The primary land use designation comprises open space (land that is undeveloped or used for agricultural cultivation and livestock grazing). Industrial land use in the region is centered in the City of Great Falls, primarily concentrated along the Missouri River. Concentrations of residential and commercial land use are primarily in the valley to the west of Malmstrom AFB.

#### **Local Land Use**

Malmstrom AFB is bordered to the north, east, and south by agricultural and pasture lands with mixed commercial, industrial, residential, and open land uses to the west and northwest. Loy Elementary School, a public school with grades K-6, is on the east side of the 57<sup>th</sup> Street Bypass, and residential land uses characterize most of the area west of the installation. A low-intensity commercial district is immediately adjacent to the main gate along the installation's western border (Malmstrom AFB, 2012b).

#### **Malmstrom AFB Land Use**

Malmstrom AFB's main development consists of two distinct land use areas: developed areas primarily in the northwestern third of the installation and open space and weapons storage in the eastern portion. The airfield bisects the installation and is the dominant land use on the installation. Light industrial and aircraft operations and maintenance are adjacent to the airfield. Housing is primarily in the northwestern portion of the installation. Recreational facilities are scattered throughout the installation in areas adjacent to the family housing area. Pow Wow Park is in the eastern portion of the installation and includes a manmade pond for fishing. The park also includes playground equipment and a picnic area (Malmstrom AFB, 2006a).

The Proposed Action site is located in an area designated for airfield operations (Figure 3-1) (2015 Malmstrom AFB Installation Development Plan [IDP]). The site is undeveloped and characterized as open field.



## **3.5 GEOLOGICAL RESOURCES**

### **3.5.1 Definition of Resource**

Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors influencing the ability to support structural development are seismic properties (potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography.

Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (such as mountains) and their influence on human activities.

The term soil, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support manmade structures. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use.

### **3.5.2 Existing Conditions**

Malmstrom AFB is in a glaciated portion of the Glaciated Missouri Plateau, which is in the northern part of the Great Plains Province. Much of the northern part of Montana is a plain of little relief and is the surface of a nearly continuous cover of glacial deposits, generally less than 50 feet thick. The preferred site is underlain by the Sweetgrass Arch, a bedrock structural feature extending northwest between the Little Belt Mountains, 24 miles to the south, past the installation boundary on the southwestern side and into Alberta, Canada. Stratigraphic units, important to the framework of the region surrounding Malmstrom AFB, range from the Madison Limestone of the Mississippian era (360 million years) to the Eolian Sand of the Holocene (10,000 years). These units include sedimentary bedrock formations, unconsolidated glacial deposits, and windblown deposits (Malmstrom AFB, 2006a). The occurrence of geologic hazards in the study area is low. Widely scattered, low-level seismicity characterizes the area. No active faults occur near or on Malmstrom AFB.



In the vicinity of Malmstrom AFB, Quaternary glacial deposits overlie Early Cretaceous shale and sandstone formations. The modern soils of Malmstrom AFB have developed directly on these Quaternary deposits and consist primarily of Lawther silty clay (associated with the Pleistocene till) and Dooley sandy loam (associated with the Holocene Eolian Sand) (Malmstrom AFB, 2006a). The soils at the Proposed Action site consist of Lawther and Gerber Series, which comprise very deep, well-drained, and slowly permeable soils that formed in alluvium, till, calcareous clayey sediments, or glaciolacustrine material (Natural Resources Conservation Service, 2016). None of the Site soil types are classified as Prime or Unique Farmlands as defined in the Farmland Policy Protection Act.

### **3.6 WATER RESOURCES**

#### **3.6.1 Definition of Resource**

Water resources analyzed in this EA include groundwater, surface water, wetlands, and stormwater. The installation is not within a floodplain or coastal zone; therefore, these resources will be excluded from this section.

#### **Groundwater**

Groundwater comprises the subsurface hydrologic resources of the physical environment and is an essential resource in many areas; groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.

#### **Surface Water**

Surface water resources comprise lakes, rivers, and streams and are important for ecological, economic, recreational, aesthetic, and human health reasons. Waters of the U.S. are protected by the CWA and include wetlands and streams that meet certain criteria as defined in 80 Federal Register 37054 (<http://www2.epa.gov/cleanwaterrule/definition-waters-united-statesunder-clean-water-act>).

#### **Wetlands**

Wetlands are defined by the USACE and EPA as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal

circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR 328.3 [b]). Wetlands provide a variety of functions, including groundwater recharge and discharge; flood flow alteration; sediment stabilization; sediment and toxicant retention; nutrient removal and transformation; support of aquatic and terrestrial diversity and abundance; and uniqueness. Three criteria are necessary to define wetlands: vegetation (hydrophytes), soils (hydric), and hydrology (frequency of flooding or soil saturation). Hydrophytic vegetation is classified by the estimated probability of occurrence in wetland versus upland (nonwetland) areas throughout its distribution. Hydric soils are those that are saturated, flooded, or ponded for sufficient periods during the growing season and that develop anaerobic conditions in their upper horizons (i.e., layers). Wetland hydrology is determined by the frequency and duration of inundation and soil saturation; permanent or periodic water inundation or soil saturation is considered a significant force in wetland establishment and proliferation. Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the CWA.

### **Stormwater and Water Quality**

Stormwater runoff is generated from rain and snowmelt events that flow over land or impervious surfaces, such as paved streets, parking lots, and building rooftops and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, oils, and dirt/sediment that can harm rivers, streams, lakes, and coastal waters. To protect these resources, community and industries use stormwater controls, known as best management practices (BMPs), which are prepared and implemented to filter out pollutants and prevent pollution by controlling it at its source (EPA, 2017).

The National Pollutant Discharge Elimination System (NPDES) stormwater program regulates some stormwater discharges from three potential sources: municipal separate storm sewer systems (MS4s), construction activities, and industrial activities. Operators of these sources might be required to obtain an NPDES permit before they can discharge stormwater. This permitting mechanism is designed to prevent stormwater runoff from washing harmful pollutants into local surface waters. MDEQ Water Protection Bureau is the regulatory authority over the issuance of Montana Pollutant Discharge Elimination System Permits (MPDES). The Water Protection Bureau also is responsible for determinations of nondegradation. Nondegradation rules apply to any activity that may affect the quality of surface or ground water.

### **3.6.2 Existing Conditions**

#### **Groundwater**

Groundwater resources in the Proposed Action site occur primarily in deep, confined aquifers, such as the Madison-Swift aquifer. The depth to these deep aquifers ranges between about 100 and 200 feet below ground surface (bgs) at the installation. Shallow groundwater (less than about 25 to 40 feet bgs) occurs locally as noncontiguous, unconfined, perched zones. The deep confined aquifers in the area tend to flow northward while the flow in the shallow, unconfined aquifers typically follows topographic gradients.

The use of oils and hazardous substances on the installation and the presence of past disposal sites for hazardous wastes can create the potential for groundwater contamination. Groundwater has been investigated as part of the IRP. Small isolated areas of groundwater contamination have been identified in the IRP investigation. This groundwater contamination is limited to shallow groundwater in locally discontinuous perched zones. Deep groundwater, encountered at 183 feet (55.8 meters) bgs, has been sampled and no evidence of contamination found (USAR, 2009).

All potable water used at Malmstrom AFB is supplied by the City of Great Falls and is treated surface water from the Missouri River. The deep Madison-Swift aquifer has the greatest potential for future groundwater development. However, because of the limited supply of water and discontinuous nature of the shallow perched zones, they are unlikely to be used as a water source in the future. Because of the ample surface water supply and the depth of most of the aquifers, groundwater resources have not been developed on the installation.

#### **Surface Water**

The installation is on a 10-square-mile plateau that drains northward toward the Missouri River, which is approximately 1 mile north of the installation and serves as the principal source of potable water for Malmstrom AFB and the City of Great Falls. No perennial streams are on the installation. Surface water drainage at the site occurs primarily through open storm ditches, manmade retention areas, and ephemeral streams and coulees. The main impoundment on Malmstrom AFB is Pow Wow Pond, located in the east-central portion of the base. Pow Wow Pond is 12.7 acre-feet in size and fed by stormwater runoff from Drainage Area 6.

### **Wetlands**

Wetland resources are subject to federal and state regulations, including the federal CWA, the Rivers and Harbors Act, and the Montana Water Quality Act. In addition, EO 11990 requires federal agencies to minimize the destruction, loss, or degradation of wetlands from construction activities. Jurisdictional wetlands and Waters of the U.S. on Malmstrom AFB include one wetland area (NWI-11.2), and one stream segment (NWI-11-1). Areas evaluated for wetland characteristics and jurisdictional status are in Figure 3-2. The Proposed Action site is not near jurisdictional wetlands or Waters of the U.S. All other wetland areas on Malmstrom AFB are considered nonjurisdictional they are either “isolated” wetlands not meeting the criteria for Waters of the U.S. (33 CFR 328.3) or because the hydrophytic vegetation is maintained only because of man-induced hydrology and would not persist if the influence were terminated (Ecosystem Research Group [ERG], 2006). In 2011, the USACE performed jurisdictional determinations on areas investigated in 2006 by ERG confirming their findings (USACE, 2011).

AFI 32-7064 requires the USAF to protect and preserve wetlands. If wetlands must be impacted to satisfy mission requirements, USAF regulations contained in 32 CFR 989 require that NEPA documentation be prepared to assess the impacts along with a Finding of No Practicable Alternative (FONPA). The FONPA must be signed by the appropriate Major Command official duly delegated by Secretary of the Air Force.

### **Stormwater and Water Quality**

MDEQ issued Malmstrom AFB authorizations to discharge stormwater under four MPDES General Permits: Permit No. MTR040000 for stormwater discharge associated with a small MS4, Permit No. MTR000197 for discharges associated with industrial activities, Permit No. MTR100000 for construction activities, and Permit No. MTG770000 for discharges associated with disinfected water. In accordance with these permits, Malmstrom AFB is required to control discharges of stormwater-containing pollutants through the development and implementation of its Stormwater Pollution Prevention Plan (SWPPP). BMPs identified in the SWPPP must help eliminate or minimize the discharge of pollutants to surface waters. Malmstrom AFB is also required to develop, implement, and enforce a Stormwater Management Plan (SWMP) that identifies BMPs to address six stormwater minimum control measures and reduce the discharge of pollutants to the maximum extent possible to protect water quality.

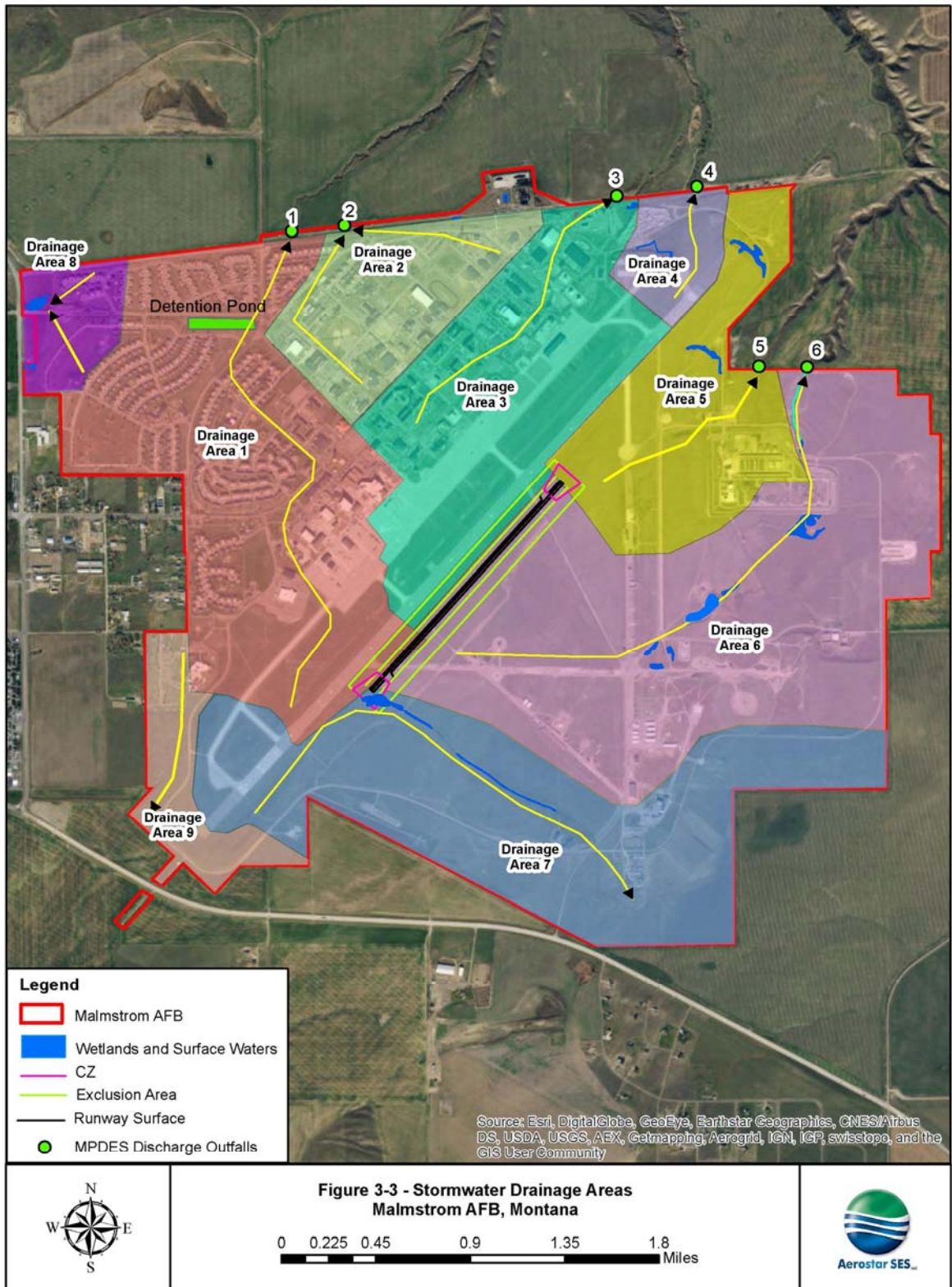


A watershed analysis was conducted to identify and prioritize the key contributors to increased erosion and sedimentation in Whitmore Ravine. The results of the assessment indicated the key contributors were geologic conditions, saturation from constant flow from the installation, stormwater flow from on and off installation, natural processes, and agricultural development. Malmstrom AFB partnered with the Cascade Conservation District, affected landowners, and other stakeholders to address issues at Whitmore Ravine. The partnership developed solutions to reduce off-installation erosion. Solutions included systems to infiltrate and detain stormwater on the installation and a pipeline to convey stormwater around the eroded portions of the West and Middle Forks of Whitmore Ravine.

Stormwater drainage at the site occurs primarily through open storm ditches, swales, and underground pipes. Figure 3-3 illustrates the nine main drainage areas on Malmstrom AFB. Outfalls 1 through 6 have point discharges at the installation boundary and flow through the Whitmore Ravine to the Missouri River. The Whitmore Ravine watershed is part of the Upper Missouri-Dearborn Rivers Sub-Basin (Hydrologic Unit Code 10030102). The Whitmore Ravine watershed encompasses approximately 6,930 acres; Malmstrom AFB contributes 3,052 acres, and the remaining 3,878 acres is surrounding agriculture land. The ravine drains into the Missouri River, downstream of Rainbow Dam. Whitmore Ravine has been subject to considerable soil erosion, which has led to increased deposits in the Missouri River and subsequent varying effects to private farmland. All drainage areas except Drainage Areas 7, 8, and 9 combine off installation and ultimately discharge into the Missouri River through Whitmore Ravine. Drainage Areas 7, 8, and 9 drain to the south, southwest, southeast, east, and west and do not have a point discharge. As a result, they do not affect Whitmore Ravine or the Missouri River (Malmstrom AFB, 2014).

Drainage Areas 5, 6, 7, and 9 consist primarily of ditch and overland flow. The storm drainage system in these more rural areas is limited. The other drainage areas contain industrial and housing portions of the installation and consequently have a significant amount of piping and channeled stormwater flow. In these industrial and housing areas, open grassed ditches are still used in conjunction with the existing pipe systems to accommodate the stormwater discharges. Table 3-3 identifies each drainage area, its size, and the approximate percentage of land surface that is impervious (covered by pavement or buildings) (Malmstrom AFB, 2014).





**Table 3-3 Stormwater Discharge Areas**

<b>Drainage Area</b>	<b>Total Area (Acres)</b>	<b>Impervious Surface</b>	<b>Pervious Surface</b>	<b>Estimated Impervious Surface (%)</b>	<b>Runoff Coefficient</b>
1	655.5	249.1	406.4	38.0	0.61
2	213.6	76.6	137.0	35.9	0.60
3	391.7	179.2	212.5	45.7	0.65
4	74.5	13.1	61.4	17.6	0.50
5	275.7	28.7	247.0	10.4	0.46
6	851.5	77.4	774.1	9.1	0.50
7	598.4	42.5	555.9	7.1	0.46
8	40.0	5.3	34.7	13.3	0.47
9	144.1	22.2	121.9	15.4	0.48

Source: Malmstrom AFB, 2014

The Proposed Action site would occur near nonjurisdictional wetlands associated with Drainage Areas 5, 6 and 7 and would not directly impact surface waters, aquifers, wetlands, or stormwater drainage structures (ditches, culverts etc.).

### **3.7 BIOLOGICAL RESOURCES**

#### **3.7.1 Definition of Resource**

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plant and animal species listed as threatened or endangered or proposed as such by the USFWS or Montana Department of Fish, Wildlife, and Parks (MDFWP). The Federal ESA of 1973 protects listed species against killing, harming, harassing, or any action that may damage their habitat. Federal Species of Concern are not protected by law; however, these species could become listed and protected at any time.

Migratory birds, as listed in 50 CFR 10.13, are ecologically and economically important for recreational activities – including bird watching, studying, feeding, and hunting – practiced by many Americans. In 2001, EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds was issued to focus attention of Federal agencies on the environmental effects to migratory bird species and, where feasible, implement policies and programs that support the conservation and protection of migratory birds. The Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Act are incorporated in this EO.



### **3.7.2 Existing Conditions**

#### **Regional Setting**

The Great Falls area is located within the Northwestern Glaciated Plains ecoregion. This region is characterized by gently rolling grasslands consisting of non-native European grasses with areas of native prairie. The native grasslands tend to be of the western wheatgrass prairie community, which is dominated by western wheatgrass (*Pascopyrum smithii*) or thickspike wheatgrass (*Elymus lanceolatus*) as well as blue grama (*Bouteloua gracilis*) (Montana Natural Heritage Program [MNHP] 2013a). Animal species common to the region include deer (*Odocoileus hemionus*), Richardson's ground squirrel (*Urocitellus richardsonii*), prairie dog (*Cynomys* sp.), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), meadowlark (*Sturnella* sp.), kingbirds (*Tyrannus* sp.), and horned lark (*Eremophila alpestris*) (Malmstrom AFB, 2011).

#### **Malmstrom AFB Wildlife**

##### Wildlife Habitats

Malmstrom AFB is on flat to gently rolling terrain in the Shortgrass Prairie region (also known as the Great Plains and the High Plains) (Malmstrom AFB, 2011). Most indigenous vegetation within the boundaries of the installation and in the general vicinity has been replaced with exotic and weedy species during the past 60 years of site development. Some noxious weed populations of spotted knapweed (*Centaurea stoebe*), Canada thistle (*Cirsium arvense*), and field bindweed (*Convolvulus arvensis*) occur on the installation (Malmstrom AFB, 2011).

Vegetation on grazing lands is predominantly crested wheatgrass (*Agropyron desertorum*) with areas of smooth brome (*Bromus inermis*) and alfalfa (*Medicago sativa*), all of which are introduced non-native grasses or legumes. Approximately 36 acres of wet areas and moist seeps have been identified on Malmstrom AFB and range from retained stormwater (Pow Wow Pond) to streambeds that flow only after heavy precipitation. The primary wetland systems on Malmstrom AFB are shallow, ponded water environments or wetlands within a channel. The largest aquatic area on the installation is the 12.7-acre-foot Pow Wow Pond impoundment in the east-central portion of the installation (Malmstrom AFB, 2011). However, studies have shown that many very small aquatic areas are actually more "significant" in terms of diversity. Wet areas and moist seeps encountered throughout the installation are naturally occurring with some hydrological changes from historical human disturbance.

Wildlife habitats in the general region include lakes, streams, grasslands, parks, and refuges that support wildlife species. Wildlife habitat on Malmstrom AFB is limited by the relatively large portion of land used for buildings, runways, and other installation facilities (Malmstrom AFB, 2011). Quality wildlife habitat on Malmstrom AFB occurs near ponds and wetlands and undeveloped areas of the installation, where trees occur. One 2-acre stand of cottonwoods is occasionally used for nesting by raptors and thermal cover by small mammals. This stand is in the southeastern portion of the installation called Camp Grizzly, an area used by Security Forces for training. Numerous smaller stands of cottonwoods are scattered throughout the eastern portion of the installation (Malmstrom AFB, 2011). In 2001, the USFWS conducted a terrestrial and aquatic survey to document existing resources and recommend potential fish and wildlife habitat enhancement projects. Neotropical bird surveys, small mammal surveys, amphibian surveys, evaluation of potential wildlife enhancement sites, and incidental sightings were recorded. Neotropical bird surveys were conducted on Malmstrom AFB from June 27 to 29, 2001, and small mammal surveys were conducted from August 21 to 23, 2001.

#### Birds and Mammals

Primary bird species on Malmstrom AFB include songbirds, shorebirds, raptors, and waterfowl (Malmstrom AFB, 2011). Ponds and seasonal wetland areas have been known to support waterfowl, and grassland areas support small birds and raptors. Small bird species, such as warblers, have been observed at Pow Wow Pond (Malmstrom AFB, 2007b). According to the Montana National Heritage Program (NHP), 47 wildlife species that are either federally or state listed as threatened, endangered, or species of concern occur throughout Cascade County (MNHP, 2016). Two bird species, the Ferruginous hawk and Loggerhead shrike, are protected by the MDFWP and may be migrants to Malmstrom AFB. Although no specific protective measures are required, consideration would be given to minimize disruption of their habitat.

Common mammals include the white-tailed jack rabbit, cottontail rabbit, badger, red fox, Richardson's ground squirrel, coyotes, and various species of mice, voles, and shrews. Deer (both mule and white-tailed), beaver, skunk, and raccoon also occur on Malmstrom AFB in smaller numbers. The recent installation of an 8-foot chainlink fence around Malmstrom AFB to replace a three-strand barbed-wire fence has limited the movement of large mammals on and off the installation.

Pow Wow Pond contains rainbow trout, brown trout, common goldfish, largemouth bass, crayfish, northern leopard frogs, tiger salamanders, and painted turtles. The USFWS conducts an aquatic species survey and habitat assessment annually on Pow Wow Pond. The pond is maintained as a recreational fishery for trout and crayfish.

#### Bird/Wildlife Aircraft Strike Hazards

The presence of birds and other wildlife on or near airfields represents a potential source of conflict between natural resources management and USAF missions. The Bird/Wildlife Aircraft Strike Hazard (BASH) Program focuses on reducing bird activity around airfields through habitat alteration and direct avian control. Consequently, the general ecosystem management goal of promoting natural biological diversity is basically incompatible with BASH reduction around airfields. Integration of biological diversity objectives, mission flying requirements, and safety are achieved at Malmstrom AFB by wildlife hazing, altering habitat, managing prey-base, and limiting lethal control for BASH reduction to any portion of the installation deemed necessary to ensure the safe operation of aircraft.

Flocks of gulls sometimes feed and rest within the runway and operations area during late summer to fall. California gulls (*Larus californicus*) are present yearround, but thousands of migratory gull species pass through Malmstrom AFB each year, usually in August and September. In the morning, birds sometimes use the runway overruns to warm up and feed in the grassy areas on grasshoppers, other insects, and carrion from mowing activities. Gulls, raptors, and pelicans have been observed riding thermals approximately 300 to 500 feet above ground level (AGL) directly over the runway. Control techniques may include pyrotechnics, vehicle disturbance, propane cannons, grass height management, insect control, and limited lethal control. Newer techniques such as the use of laser beams, also may be considered (BIRD-X, 2017). Laser beam technique is covered for use in the Malmstrom AFB BASH plan for permit-specific birds. The laser beam is a non-lethal and less intrusive method that is preferable to other methods.

The U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service Wildlife Service conducted a Wildlife Hazard Assessment for Malmstrom AFB from September 2011-August 2012. Several types of surveys were conducted to identify and document wildlife – including avian, mammalian, and aquatic – and were used to update the list of wildlife species (Table 3-4).

**Table 3-4 Wildlife Identified at Malmstrom AFB**

Common Name	Scientific Name
<b>Reptiles</b>	
Prairie rattlesnake	<i>Crotalus viridis viridis</i>
Plains garter snake	<i>Thamnophis radix</i>
Common garter snake	<i>Thamnophis sirtalis</i>
Gopher snake	<i>Pituophis catenifer</i>
<b>Amphibians</b>	
Painted turtle	<i>Chrysemys picta</i>
Northern leopard frog	<i>Rana pipiens</i>
Boreal chorus frog	<i>Pseudacris maculata</i>
Tiger salamander	<i>Ambystoma tigrinum</i>
<b>Fish and Crustaceans</b>	
Rainbow trout	<i>Oncorhynchus mykiss</i>
Brown trout	<i>Salmo trutta</i>
Common goldfish	<i>Carassius auratus</i>
Largemouth bass	<i>Micropterus salmoides</i>
Crayfish	<i>Orconectes virelis</i>
<b>Mammals</b>	
Feral (domestic) cat	<i>Felis catus</i>
Raccoon	<i>Procyon lotor</i>
Striped skunk	<i>Mephitis mephitis</i>
Coyote	<i>Canis latrans</i>
Red Fox	<i>Vulpes vulpes</i>
American badger	<i>Taxidea taxus</i>
Meadow vole	<i>Microtus pennsylvanicus</i>
Deer mouse	<i>Peromyscus maniculatus</i>
House mouse	<i>Mus musculus</i>
Bushy-tailed wood rat	<i>Neotoma cinerea</i>
Richardson's ground squirrel	<i>Spermophilus richardsonii</i>
Eastern gray squirrel	<i>Sciurus carolinensis</i>
White-tailed jackrabbit	<i>Lepus townsendii campanius</i>
Mountain cottontail	<i>Sylvilagus nuttallii</i>
Desert cottontail	<i>Sylvilagus audubonii</i>
Muskrat	<i>Ondatra zibethica</i>
Porcupine	<i>Erethizon dorsatum</i>
Little brown bat	<i>Myotis lucifugus</i>
<b>Birds</b>	
American coot	<i>Fulica americana</i>
American crow	<i>Corvus brachyrhynchos</i>
American goldfinch	<i>Carduelis tristis</i>
American kestrel	<i>Falco sparverius</i>
American robin	<i>Turdus migratorius</i>
American tree sparrow	<i>Spizella arborea</i>
American white pelican	<i>Pelecanus erythrorhynchos</i>
American wigeon	<i>Anas americana</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Barn swallow	<i>Hirundo rustica</i>
Black-billed magpie	<i>Pica Hudsonia</i>
Black-capped chickadee	<i>Poecile atricapillus</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
Brown-headed cowbird	<i>Molothrus ater</i>

Common Name	Scientific Name
Bufflehead	<i>Bucephala albeola</i>
Bullock's oriole	<i>Icterus bullockii</i>
California gull	<i>Larus californicus</i>
Canada goose	<i>Branta canadensis</i>
Chipping sparrow	<i>Spizella passerina</i>
Cinnamon teal	<i>Anas cyanoptera</i>
Cliff swallow	<i>Petrochelidon pyrrhonota</i>
Common goldeneye	<i>Bucephala clangula</i>
Common grackle	<i>Oquiscalus guiscula</i>
Common nighthawk	<i>Chordeiles minor</i>
Common raven	<i>Corvus corax</i>
Common snipe	<i>Capella gallinago</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Dunlin	<i>Calidris alpina</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Eurasian collard-dove	<i>Streptopelia decaocto</i>
European starling	<i>Sturnus vulgaris</i>
Franklin's gull	<i>Larus pipixcan</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Gray partridge	<i>Perdix perdix</i>
Great blue heron	<i>Ardea herodias</i>
Great horned owl	<i>Bubo virginianus</i>
Green-winged teal	<i>Anas crecca</i>
Hermit thrush	<i>Catharus guttatus</i>
Hooded merganser	<i>Lophodytes cucullatus</i>
Horned lark	<i>Eremphila alpestris</i>
House finch	<i>Carpodacus mexicanus</i>
House sparrow	<i>Passer domesticus</i>
Killdeer	<i>Charadrius vociferus</i>
Lark bunting	<i>Calamospiza melanocorys</i>
Lesser scaup	<i>Aythya affinis</i>
Long-billed curlew	<i>Numenius americanus</i>
Mallard	<i>Anas platyrhynchos</i>
Merlin	<i>Falco columbarius</i>
Mountain bluebird	<i>Sialia currucoides</i>
Mourning dove	<i>Zenaida macroura</i>
Northern flicker	<i>Colaptes auratus</i>
Northern harrier	<i>Circus cyaneus</i>
Northern pintail	<i>Anas acuta</i>
Northern shoveler	<i>Anas clypeata</i>
Osprey	<i>Pandion haliaetus</i>
Peregrine falcon	<i>Falco peregrinus</i>
Pie-billed grebe	<i>Podilymbus podiceps</i>
Red-breasted nuthatch	<i>Sitta canadensis</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Ring-billed gull	<i>Larus delawarensis</i>
Ring-necked pheasant	<i>Phasianus colchicus</i>
Rock dove	<i>Columba livia</i>
Rough-legged hawk	<i>Buteo jamaicensis</i>
Rough-winged swallow	<i>Stelgidopteryx serripennis</i>

Common Name	Scientific Name
Ruddy duck	<i>Oxyura jamaicensis</i>
Sandhill crane	<i>Grus canadensis</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>
Short-eared owl	<i>Asio flammeus</i>
Snow goose	<i>Chen caerulescens</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Turkey vulture	<i>Cathartes aura</i>
Vesper sparrow	<i>Pooecetes gramineus</i>
Western kingbird	<i>Tyrannus verticalis</i>
Western meadowlark	<i>Sturnella neglecta</i>
Western wood-pewee	<i>Contopus sordidulus</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Wilson's snipe	<i>Gallinago delicata</i>
Yellow warbler	<i>Setophaga petechia</i>
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>
Yellow-rumped warbler	<i>Setophaga coronata</i>

The primary habitat alteration method implemented under BASH is to maintain grass height between 7 inches and 14 inches where helicopters take off and land. This height reduces forage attractiveness, visibility, fire hazard, and bird nesting for certain species. In some instances, shorter grass height can attract wildlife, such as flocking blackbirds and starlings, which use the shorter grass height within the Hazard Reduction Area (HRA) to hunt for food, which is more visible. Ground squirrels tend to establish burrows in grass shorter than 7 inches, so they can see over the grass for predators.

Migratory birds are protected through the MBTA. Federal permits are required to take, possess, transport, and dispose of migratory birds, bird parts, feathers, nests, or eggs. MBTA permits are obtained annually for BASH actions from the USFWS Migratory Bird Permit Office in Denver, Colorado. Malmstrom files a depredation report annually with USFWS.

### **Threatened and Endangered Species**

Threatened and endangered (T&E) species may be in jeopardy from destruction, modification, or curtailment of habitat, overuse, effects of disease, pollution, or predation. Species likely to become threatened in the foreseeable future may be listed as rare, protected, candidate, or species of special concern. Also, some rare, natural vegetation ecosystems may also be protected.

Section 7 of the ESA requires all federal agencies to enter into consultation with the USFWS whenever actions are proposed that may affect federally listed or proposed plant and animal T&E

species. In Montana, state-listed Species of Concern are native taxa that are at-risk from declining population trends, threats to their habitats, restricted distribution, and/or other factors. Designation as a Montana Species of Concern or Potential Species of Concern is based on the Montana Status Rank and is not a statutory or regulatory classification. Rather, these designations provide information that helps resource managers make proactive decisions regarding species conservation and data collection priorities.

Federal agencies must manage T&E species and their habitat in a manner that promotes conservation of these species and is consistent with plans for recovery of such species. Any irreversible or irretrievable commitment of resources that would jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat is prohibited.

No federally listed threatened or endangered species or critical habitats have been identified on Malmstrom AFB (Malmstrom AFB, 2011). However, golden eagles have been observed both on the installation and within a 4-mile radius. Additionally, the grasshopper sparrow, great blue heron, Franklin's gull, Swainson's hawk, and northern leopard frog are candidate species in Montana that have been found on the installation. According to the MNHP, 12 vascular and nonvascular plant species of concern occur throughout Cascade County (MNHP, 2016). State and federally listed species with potential to occur near or within Malmstrom AFB are provided in Table 3-5. This information was obtained from the Installation Natural Resource Management Plan (INRMP), MNHP, and USFWS. Agency coordination letters were sent to the USFWS and MDFWP for comment on the Proposed Action. Coordination letters and the agency responses will be provided in Appendix A.

**Table 3-5 State and Federally Listed Species Potentially Occurring Near/Within  
 Malmstrom AFB**

Common Name	Scientific Name	Listed Status
Canada Lynx	<i>Lynx canadensis</i>	Montana (S3), Federal (LT)
Franklin's Gull	<i>Leucophaeus pipixcan</i>	Montana (S3B)
Golden Eagle	<i>Aquila chrysaetos</i>	Montana (S3), Federal (BGEPA)
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Montana (S3B)
Great Blue Heron	<i>Ardea herodias</i>	Montana (S3)
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Federal (LE)
Sprague's Pipit	<i>Anthus spragueii</i>	Montana (S3B)
Swainson's Hawk	<i>Buteo swainsoni</i>	Montana (S4B)
North American Wolverine	<i>Gulo gulo luscus</i>	Montana (S3), Federal (PT)

Sources: Malmstrom AFB 2009, MNHP 2010, USFWS 2016, USFWS 2017

Notes:

Montana: S3 = Potentially at risk because of limited and/or declining numbers, range and/or habitat even though it may be abundant in some areas; S4 = Apparently secure though it may be quite rare in parts of its range and/or suspected to be declining; B = At risk during breeding season

Federal: LE (Listed Endangered), LT (Listed Threatened), C (Candidate), CH (Critical Habitat), PT (Proposed Threatened), PCH (Proposed Critical Habitat), Bald and Golden Eagle Protection Act (BGEPA)

### 3.8 CULTURAL RESOURCES

#### 3.8.1 Definition of Resource

Cultural resources represent and document activities and traditions of the past, including districts, buildings, structures, and sites. Depending on their condition and use, these resources may provide insight to the everyday lives of individuals from prehistoric and historic-period societies.

Archaeological resources include the physical remains of prehistoric or historic-period activity (lithic materials, ceramics, historic refuse). Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Cultural remains, including architectural resources, generally must be more than 50 years old to be considered for inclusion in the NRHP, an inventory of culturally significant resources identified in the United States. However, more recent structures, such as Cold War-era resources, may warrant protection if they are of exceptional importance and/or have the potential to gain significance in the future. Traditional cultural properties can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture.

The principal Federal law addressing cultural resources is the NHPA of 1966 as amended (16 USC 470 et seq.) and its implementing regulations (36 CFR 800). Compliance with these regulations,



commonly referred to as the Section 106 process, involves identifying and evaluating historic or potentially historic properties; assessing the effects of Federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the SHPO.

The term “historic properties” refers to cultural resources that meet specific criteria for eligibility for listing on the NRHP; historic properties can be determined eligible or be formally listed on the NRHP. According to the National Register Bulletin Number 15 How to Apply the National Register Criteria for Evaluation, historical significance is assigned to a property based on its association with individuals or events significant in local, state, or national history (Criterion A and B); its ability to embody the distinctive characteristics of a type, period, or method of construction (Criterion C); or its potential to yield information important to prehistory or history (Criterion D). Properties less than 50 years of age must possess exceptional historical importance to be included on the NRHP (Criteria Consideration G). Section 106 of the NHPA does not require the preservation of historic properties, but it ensures that the decisions of Federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The Proposed Action is a federal undertaking as defined by 36 CFR 800.3 and is subject to requirements outlined in Section 106 of the NHPA.

DoD Instruction (DODI) 4710.02 Department of Defense Interactions with Federally Recognized Tribes (September 14, 2006) governs the department’s interactions with federally recognized tribes. The policy outlines DoD trust obligations, communication procedures with tribes on a government-to-government basis, consultation protocols, and actions to recognize and respect the significance that tribes ascribe to certain natural resources and properties of traditional cultural or religious importance. The policy requires consultation with federally recognized tribes for proposed activities that could significantly affect tribal resources or interests.

### **3.8.2 Existing Conditions**

#### **Regional History**

Following the retreat of continental glaciers between approximately **11,000 and 5,000 years ago**, **Paleo-Indians** inhabited limited areas of central Montana (MacDonald 2012: 31). However, the earliest known human occupation of Malmstrom lands have been identified as part of the **Plains Middle Archaic period (ca. 5,000-3,000 years ago)**. Intact archaeological sites representing human occupation during this period can be found at the First Peoples Buffalo Jump State Park

(Ulm Pishkun Site) National Historic Landmark (First Peoples NHL) and the Sun River site, located seven miles west of Great Falls, in the heart of Malmstrom's missile deployment area. The First Peoples NHL and Sun River contain the two oldest cultural components so far discovered within five miles of lands managed by Malmstrom AFB.

The successive **Plains Late Archaic period (ca. 3,000-1,500 years ago)** is characterized by: "bison hunting [which] emerged as the dominant subsistence pattern for people of the Great Plains east of the Continental Divide" (MacDonald 2012: 95). "Thousands of stone circles marking the former locations of lodges can be found in Montana. Stone circles were used with increasing frequency during the Late Archaic and the subsequent Late Prehistoric" (MacDonald 2012: 129).

The **Late Prehistoric period (ca. 1,500-300 years ago)** is characterized by the transformation to a complex sociocultural system, during which the adoption of the bow and arrow in Montana approximately 1,500 years ago facilitated increased mobility and hunting of bison, deer, elk, and other game (MacDonald 2012: 123). Throughout later centuries of the Late Prehistoric, "Great Plains bison hunting continued virtually unaltered (in basic form) until the introduction and mass adoption of the horse in the seventeenth and eighteenth centuries" (MacDonald 2012: 95). The type of domestic habitation lodge typical throughout the North American Great Plains was the tepee.

The **Contact period (ca. 300 years ago-present)** is characterized by increasing levels of contact and interaction with Euroamerican explorers, trappers, soldiers, and finally civilian settlers of permanent farming communities. Several factors introduced by Europeans caused indigenous cultures to become destabilized, including the introduction of the horse to Montana in the early 1700s. "The horse enabled many more tribes to travel to the state to participate in bison hunts. The horse also made Montana tribes more mobile, so their territories expanded. All of the Montana tribes obtained and used horses to facilitate mobility across the wide-open spaces of the Great Plains and Columbia Plateau." (MacDonald 2012: 155).

The earliest inhabitants of North America likely entered Montana east of the Continental Divide between 9,500 Before the Common Era (BCE) and 8,200 BCE. This is part of the Paleoindian or Early Prehistoric Period, which dates from 9,500 BCE to 5,000 BCE (Montana ANG, 2013). In the vicinity of Malmstrom AFB, these cultural resources are limited to surface sites and isolated finds (Malmstrom AFB, 2009a). Salish Indians would often seasonally hunt bison in the region, but no permanent settlements existed at or near Great Falls for much of prehistory. Around 350 BCE, Piegan Blackfoot Indians, migrating west, entered the area, pushing the Salish back into the Rocky

Mountains and claiming the site now known as Great Falls as their own. The Great Falls location remained in the tribal territory of the Blackfeet until the United States acquired the region in 1803 through the Louisiana Purchase organized by President Thomas Jefferson.

Euro-Americans, including British and French fur traders, explored the region during the 18<sup>th</sup> century. In 1804, Meriwether Lewis and William Clark began their historic expedition from Missouri to the Pacific Ocean with the intention of exploring and mapping land acquired in the Louisiana Purchase. Meriwether Lewis visited the site of Great Falls on June 13, 1805, as part of the expedition and was the first documented group of Euro-Americans to visit the area. It appears that the expedition spent time in the vicinity of Malmstrom AFB Missile Fields between June 15 and July 12, 1805, while they portaged around the Great Falls of the Missouri River (Malmstrom AFB, 2009a).

Trading posts were established in the region in the first half of the 19<sup>th</sup> century. The 1850s to 1860s also saw an influx of gold prospectors (Malmstrom AFB, 2009a). As settlement of the area intensified, the location at Great Falls began to increase in regional importance. The Great Falls of the Missouri River marked the limit of the navigable section of the Missouri River. The city of Great Falls was founded in 1883 and was officially incorporated in 1888. The area was later included in the state of Montana, when the state was admitted to the Union in 1889. The area became a center of industry for the region and a hub for trade goods exchanged along the Missouri River. Mining and logging operations sent raw materials to Great Falls from throughout the region to be refined and processed and ultimately shipped downriver to Midwest and eastern consumers. By the early 1900s, Great Falls was one of Montana's largest cities (Montana ANG, 2013).

Currently, the Montana SHPO administers the state and NRHP programs. The city of Great Falls has 26 listed historic resources on the NRHP (Montana SHPO, 2016).

The Lewis and Clark/Great Falls Portage National Historic Landmark (NHL) (24CA0238) includes the upper and lower portage camps and occupies 7,700 acres with discontinuous boundaries. The boundary of the Belt Creek portage property extended to within 500 meters to the east of the Base Proper.

### **Federally-Recognized Affiliated Tribes**

The **Blackfeet** (*Niitsitapi* or *Piikuni*) Indian Reservation is located in northwestern Montana, along the international border with Canada and just east of the Front Range of the Rocky Mountains. With a total of 17,321 members, the Blackfeet Nation is one of the ten largest tribes in the United States (Blackfeet Nation 2016). More than half of the Blackfeet tribal members reside on the reservation. Additional members live and work in the City of Great Falls, Montana, and in smaller towns, and farms throughout central and northwestern Montana and southwestern Alberta.



The ancestral lands of the Blackfeet have been estimated as included: “a huge area, from modern day Edmonton, Alberta south to the Yellowstone River and from the Rocky Mountains east to western North Dakota” (Montana State Parks 2012: 5).

From comparing the location of the Blackfeet on two contemporary maps, MacDonald positions them on both sides of the Montana-Alberta border in ca. 1700. As time approaches and enters the nineteenth century, Keyser and Klassen (2001) depict the Blackfeet as having penetrated into north-central Montana, approaching the northwest margins of Malmstrom’s missile deployment area. More recent evidence on a tribal map produced by University of Montana (2009) shows the Blackfeet, in partnership with the Gros Ventre, as having occupied virtually the entirety of Malmstrom’s missile deployment area.

A small portion of the Blackfeet population are fluent in the Niitsitapi language, which belongs to the Algonquian language family. Each of the bands speaks a dialect which can be mutually understood by all. Native Niitsitapi today is sustained through the efforts of the Peigan Institute. Traditional cultural traditions are sustained through activities and studies of Blackfeet Community College (Montana State Parks 2012: 6).

The **Crow** (*Apsa’alooke*) Indian Reservation is located in southeastern Montana. It is situated along the Wyoming border and extends from the Little Big Horn drainage to the east to almost the city limits of Billings, Montana. There are a total of approximately 13,000 registered enrolled tribal



members. Other Crow tribal members live and work in Billings and throughout south-central Montana and northeastern Wyoming.

Apsa'alooke, the tribal name, was given to them by the neighboring tribes. The presence of Crow pottery at sites in eastern Montana indicates, "...Crow peoples [were living] in Montana...during the [final centuries of the] Late Prehistoric period" (MacDonald 2012: 153), just prior to first contacts with Europeans and Euro-Americans.

The Crow "...were part of the Hidatsa tribe...along the Middle Missouri River in areas that would become part of North and South Dakota." This culture originated "...further east in the woodlands near the Great Lakes." According to tribal oral tradition, the early Crow leader No Vitals "led a band of the people in search of...the Sacred Tobacco....They traveled in several directions, including into what would become Canada and to the edges of the Great Salt Lake before a son of No Vitals found the Sacred Tobacco on the east slopes of Big Horn Mountains. That is where the Crow settled" (Montana State Parks 2012: 9).

Crow ancestral lands were found in parts of the Yellowstone River Valley, which included Wyoming, Montana, North Dakota, and adjacent portions of the Middle Missouri River. One medicine wheel exists on Crow land and is being carefully monitored for any adverse impacts, as tribal people are permitted to perform religious and spiritual rituals and other acts of worship. Another, better known medicine wheel is located just across the border on National Forest lands and is also monitored by Crow personnel.

Both the Crow and the Hidatsa"...speak a language that belongs to the Siouan Language family....Due to a strong clan system, a large majority of Crow people speak the Crow language" (Montana State Parks 2012: 9-10). Crow Fair is held in late August. For more information, search [www.crow-nsn.gov](http://www.crow-nsn.gov).

The **Northern Cheyenne** (*Tsististas* and *So'taa'eo'o*) Indian Reservation is located in southeastern Montana. It is situated some 15 miles north of the Wyoming border and extends eastward from the east limits of the Crow Reservation. There are a total of 10,840 enrolled tribal members.



The Cheyenne tribe is a single tribal cultural group which celebrates the existence during Precontact years of two tribal cultural groups, the Tsististas and So'taa'eo'o. Narratives of these separate tribes are told through Cheyenne oral tradition. These became a united people called the Cheyenne in the Eastern Woodlands culture area in America's Upper Midwest some 400 years ago. The ancestral homelands of the Cheyenne tribe were in present-day Minnesota. The Cheyenne "...gradually moved westward, adapting to the new environment as they went until about 200 years ago, when they became a full-fledged Plains horse-and-buffalo culture." During the early 19<sup>th</sup> century, the tribe split. "The Southern Cheyenne moved south to areas that would become the states of Colorado, Kansas and Oklahoma while the Northern Cheyenne moved north to areas that would become parts of the states of South Dakota, Wyoming, and Montana" (Montana State Parks 2012: 16). As time went on, the Northern Cheyenne were pushed further and further west by the Ojibwa and, in more recent years, by the Lakota Sioux.

Northern Cheyenne fought alongside the Lakota in defeating General George Armstrong Custer's forces in the Battle of Little Big Horn. While most Sioux escaped into Canada to avoid capture, "many Northern Cheyenne were rounded up and sent to Indian Territory....Eventually, two bands left and headed north. Little Wolf's band returned to Montana safe" (Montana State Parks 2012: 16). He soon was joined by additional Northern Cheyenne who had escaped from Oklahoma (see details, below).

As is the Blackfeet language, the Cheyenne language is part of the Algonquian language family. Northern and Southern Cheyenne are mutually understandable, "with only minor dialectic differences" (Montana State Parks 2012: 16).

The heritage of this small tribal community in southeastern Montana and Wyoming never encompassed the prairie lands in central and northwestern Montana that currently are occupied by Malmstrom's missile facilities. Montana's other tribal organizations nonetheless insisted in the installation's 2009 consultation that they be included in all future Malmstrom consultations.

The Lame Deer 4<sup>th</sup> of July Powwow is held in July and the Ashland Labor Day Powwow is held in September. For more information, search [www.cheyennation.com](http://www.cheyennation.com).



**Chippewa Cree (Anishanabe and ne hiy awak or Ne-i-yah-wahk) Tribe** of the Rocky Boy's Indian Reservation is located in north-central Montana. The Rocky Boy Indian Reservation is situated in an area extending from the southwestward rail line originating along the transcontinental rail corridor known as

the “Hi-line” southeastward into the Bear Paw Mountains. There are currently over 6,000 Chippewa Cree enrolled as tribal members. Additional Chippewa and Cree tribal members, along with members of the closely aligned Meti's culture, reside on several federally recognized reservations in Minnesota, North Dakota and other American Upper Midwest states and on 15 or more Reserves, as recognized by the government of Canada. Some Montana Chippewa, Cree, and Meti's are affiliated with the landless Little Shell Band of Chippewa, a tribal government recognized by the State of Montana.

The name “Rocky Boy” is an imperfect translation of the name of a Chippewa leader—the name precisely translates to “Stone Child.”

Many members of the tribe moved westward into Montana from Saskatchewan between 1885 and 1892. The original homeland of this band of Cree was Pennsylvania. The Chippewa culture during earlier centuries of the historic era had resided in Minnesota and other areas of the American Upper Midwest, where fellow Ojibwa still reside, many still residing on other federally recognized reservations. Other Chippewa Cree crossed into Montana from Canada to escape the consequences of having instigated several failed political insurgencies against Royal authorities between 1880 and 1885. Once in Montana, they established campsites in several areas, including Missoula, Wolf Point, Deer Lodge, and Havre, where they lived and hunted. The Chippewa (Ojibwe) and Cree (Anishinabe) have remained close allies in the region as both tribes settled in the Bear Paw Mountains, where they reside today. The Chippewa and Cree Tribe (singular) “have lived and worked together for over 100 years” (Montana State Parks 2012: 7).

Despite not having been a major player in most 19<sup>th</sup> century tribal interactions in northwestern central Montana, the Chippewa Cree have been part of Malmstrom's tribal consultation group since the installation began consulting with tribes in 2009, due to its close proximity to the Base Proper and the northern margins of the missile field. As situated within 40 miles of the installations most northeast missile complexes Rocky Boy's is the closest reservation to Malmstrom AFB and its missiles.

The Rocky Boy Powwow is held in early August. For more information, search [www.tribalnations.mt.gov/chippewacree](http://www.tribalnations.mt.gov/chippewacree).

**Assiniboine (*Nakoda*) and Gros Ventre (White Clay People) (*A-a-ninin*)**

**Tribes** of the Fort Belknap Indian Reservation is located in northeastern - central Montana. The “Hi-line,” with focus upon the northernmost transcontinental railroad corridor in the United States, forms the north margins for this territory. This quadrilateral tract extends to the south along the eastern slopes of the Bear Paw Mountains to an east-west line forming its south margins situated less than ten miles north of the Missouri River.



The Fort Belknap Reservation is shared by two tribes, the Gros Ventre (*A-a-ninin*) and the Assiniboine (*Nakoda*) (spellings of indigenous names taken from Montana State Parks 2012: 11). From that which is now Manitoba and Saskatchewan, both the Assiniboine and Gros Ventre migrated into North Dakota and Montana 400 to 250 years ago. However, each of these First Nations followed a distinct earlier path into Canada from specific places in America’s “lower 48” during the final years of the Precontact era.

The name “Gros Ventre,” or “Big Belly,” was first applied by French Canadian fur traders who had misinterpreted the meaning of their hand sign for waterfall, which these people used to identify themselves in “traditional Indian sign language.” This “waterfall” sign stands for the “falls of the Saskatchewan River,” in the vicinity of which this First Nation resided for a time during years of initial contact with Euro-Americans. The actual English name which this tribe has preferred as their identity is “White Clay People” (Montana State Parks 2012:11). This tribe arrived in the Saskatchewan River Falls area from their ancestral lands of other Algonquin speakers, such as the Blackfeet, “in the northern Midwest” (MacDonald 2012: 155).

“The Assiniboine...were originally associated with the Yanktonai Sioux to the east but split away from that group and moved west.” A group of the tribe subsequently split, forming the “Upper Assiniboine” which settled with their White Clay People allies at Fort Belknap (Montana State Parks 2012: 11). The ancestral lands of the Assiniboine thus were those of the Sioux. The Fort Belknap Reservation thus “was created for...the Gros Ventre, and for the Upper Assiniboine (other Assiniboine live on the Fort Peck Reservation, further to the east, as well as on Reserves in Canada)” (Montana State Parks 2012: 11).



A few of the present-day Gros Ventre are fluent in the A-a-ninin language, which belongs to the Algonquin language family. “Much of the Gros Ventre’s culture and spirituality has been passed down from the great leader Bull Lodge, who received seven visions over seven years as a young man in the early 1800s.” Similarly, a small but growing number of Upper Assiniboine are fluent in the Nakoda language, which belongs to the Siouan language family (Montana State Parks 2012:11). The presence of the large bison herd managed on these tribal lands contribute toward maintaining “...the spiritual significance of the buffalo to the people....Fort Belknap Community College and the cultural committee are reviving Assiniboine and White Clay traditions and language” (Ibid.: 12).

The Lodge Pole Powwow is held in June and the Hays Powwow is held in August. Another annual celebration is Milk River Indian Days (Montana State Parks 2012:12). For more information, search [www.ftbelknap.org](http://www.ftbelknap.org).



**Assiniboine (*Nakoda*) and Sioux (*Lakota, Dakota, Nakota*) Tribes of the Fort Peck Indian Reservation** are located in far-northeastern Montana. There are 10,700 enrolled tribal members.

The Fort Peck Reservation is home to two separate American Indian nations, each composed of numerous bands and divisions. The Sioux divisions of Sisseton, Wahpeton, the Yanktonai, and the Teton Hunkpapa are all represented. The Assiniboine bands of Canoe Paddler and Red Bottom are represented. Whereas recent (19<sup>th</sup>-century) Assiniboine hunting expeditions may have impacted the farthest east of Malmstrom’s missile locations, the Sioux traditionally occupied and hunted in the Dakotas and apparently never ranged as far west as central Montana.

“The Assiniboine...were originally associated with the Yanktonai Sioux to the east but split away from that group and moved west.” A group of the tribe subsequently split, forming the “Lower Assiniboine” which settled with their White Clay People allies at Fort Belknap (Montana State Parks 2012: 11). The ancestral lands of the Assiniboine thus were those of the Sioux. The Fort Belknap Reservation thus “was created for...the Gros Ventre, and for the Upper Assiniboine (other Assiniboine live on the Fort Peck Reservation, further to the east, as well as on Reserves in Canada)” (Montana State Parks 2012: 11).

The ancestral area of the common Sioux-speaking culture, from which emerged the historically-documented Sioux and Assiniboine tribes, is “to the east, around the Great Lakes.” For more than a half century during the 1800s, the first three Sioux bands, as listed in the above Table, moved westward, “ahead of white homesteaders and trying to avoid confusion with the U.S. Army.” In response to subsequent “pressures from white settlement [as] increased, more of the Sioux bands spread further and further westward” (Montana State Parks 2012: 3).

The turning point in Sioux history was Chief Sitting Bull’s victory over U.S. Army forces led by General George Armstrong Custer at the Battle of Little Big Horn on June 25-26, 1876. To avoid reprisals, Sitting Bull led his band, the Teton Hunkpapa, into Canada, where they remained as refugees for several years. Other Sioux and aligned tribes were detained and placed on reservations mostly against their will. In 1881, most of the members of Sitting Bull’s Teton Hunkpapa band relocated from Saskatchewan to the Fort Peck Reservation (Montana State Parks 2012: 3).

During their final decades prior being relocated onto reservations, the Assiniboine hunted and carried out daily lifeways a considerable distance east of Malmstrom’s easternmost missile complexes. However, because of the request by the original tribes on their behalf having been involved with Malmstrom’s first government-to-government consultation in 2009, the Assiniboine have become a partner in Malmstrom’s tribal consultation group. In similar manner, the Sioux tribal component was invited to consult with Malmstrom AFB, despite the fact that the tribe’s heritage does not include habitation or food extraction activities anywhere near Malmstrom’s managed lands.

A small but growing number of Lower Assiniboine are fluent in the Nakoda language, which belongs to the Siouan language family (Montana State Parks 2012:11) and indeed “is very close to the Sioux language” (Ibid.: 3). “Programs at Fort Peck Assiniboine and Sioux Cultural Center and Museum and at the Assiniboine Village help pass down cultural ways and knowledge” (Ibid.: 4). Approximately 30,000 Sioux tribal members throughout the United States speak to varying degrees of fluency one or more of the three dialects of the Sioux language. The dialects are to some degree mutually understandable.

Fort Peck powwows include the Red Bottom Celebration in June, Fort Kipp Celebration in July, Wadopana Celebration in August, and Poplar Indian Days in September. The Iron Ring Powwow also occurs annually at Fort Peck. For more information, search [www.fortpecktribes.org](http://www.fortpecktribes.org).



**Confederated Salish (*Sqelio* and *Qaeisp'e*) and Kootenai (*Ksanka* or *Ktunaxa*) (CSK) Tribes** of the Flathead Indian Reservation are located in the Bitterroot Valley on the western side of the Continental Divide in northwestern Montana. The territory extends from the shores of Flathead Lake southward to Mission Valley, in the shadows of the dramatic Mission Mountains, which define the valley's east margins. There are 7,753 enrolled tribal members on the Flathead Reservation. Another federally recognized Kootenai reservation exists in Idaho and two Kutenay reserves are located in British Columbia. Pend d'Oreille, Salish and other Salish-speaking tribes reside at federally recognized reservations located in Oregon, Washington, and Idaho. Tribal members represent the Pend d'Oreille (*Qaeisp'e*), Salish (*Sqelio*), and Kootenai (*Ksanka* or *Ktunaxa*), tribal cultural groups.

In approximately 1883, Walking Coyote, a Pend d'Oreille tribal member, brought several orphaned bison calves to the reservation and began the herd around which “in 1908 President Theodore Roosevelt created the National Bison Range....The 19,000-acre National Bison Range Wildlife Refuge is shared with visitors” (Montana State Parks 2012: 19).

The related tribal groups of Pend d'Oreille and Salish have resided in the Columbia Plateau region for many thousands of years. By contrast, “the Kootenai...once lived on the Great Plains east of the Rocky Mountains but moved across the mountains at some point in their past” (Montana State Parks 2012: 18).

Throughout the centuries following initial contact with Euro-Americans, the Ktunaxa people “have always been allies with the Salish and Pend d'Oreille, sharing hunting grounds in northwest Montana with the Pend d'Oreille” (Montana State Parks 2012: 18).

The Pend d'Oreille language belongs to the Salishan language family, as does the language of the Salish tribe. “It is these two Salishan speaking tribes that make up the ‘Confederated Salish’ part of the Flathead Reservation” (Montana State Parks 2012: 18). The Kootenai language is a “linguistic isolate,” which means that no known language or language family has been identified

as being related. This would appear to mean that Kootenai culture has remained in an unusually stable status in relative seclusion from neighboring cultures for many thousands of years.

The Standing Arrow Powwow is held in mid-July. For more information, search [www.csktribes.org](http://www.csktribes.org).

## **Cultural Resources at Malmstrom AFB**

### Brief History of Malmstrom AFB

Founded as the Great Falls Army Base in 1942, Malmstrom AFB occupied agricultural land that was primarily used for cultivating crops and livestock grazing (Malmstrom AFB, 2009a). Originally established to support Alaskan air bases and crew training for the B-17 Flying Fortress, Malmstrom AFB was used in World War II to transport aircraft and supplies to the Soviet Union as part of the Lend-Lease Program. In exchange, the United States acquired leases to military bases in Allied territory during the war. Supplies were also transported to Great Britain, France, China, and other nations. Malmstrom would later assist in the Berlin Airlift in 1948 as well as continue to serve as a training facility for Military Air Transport Service crews through the Korean War.

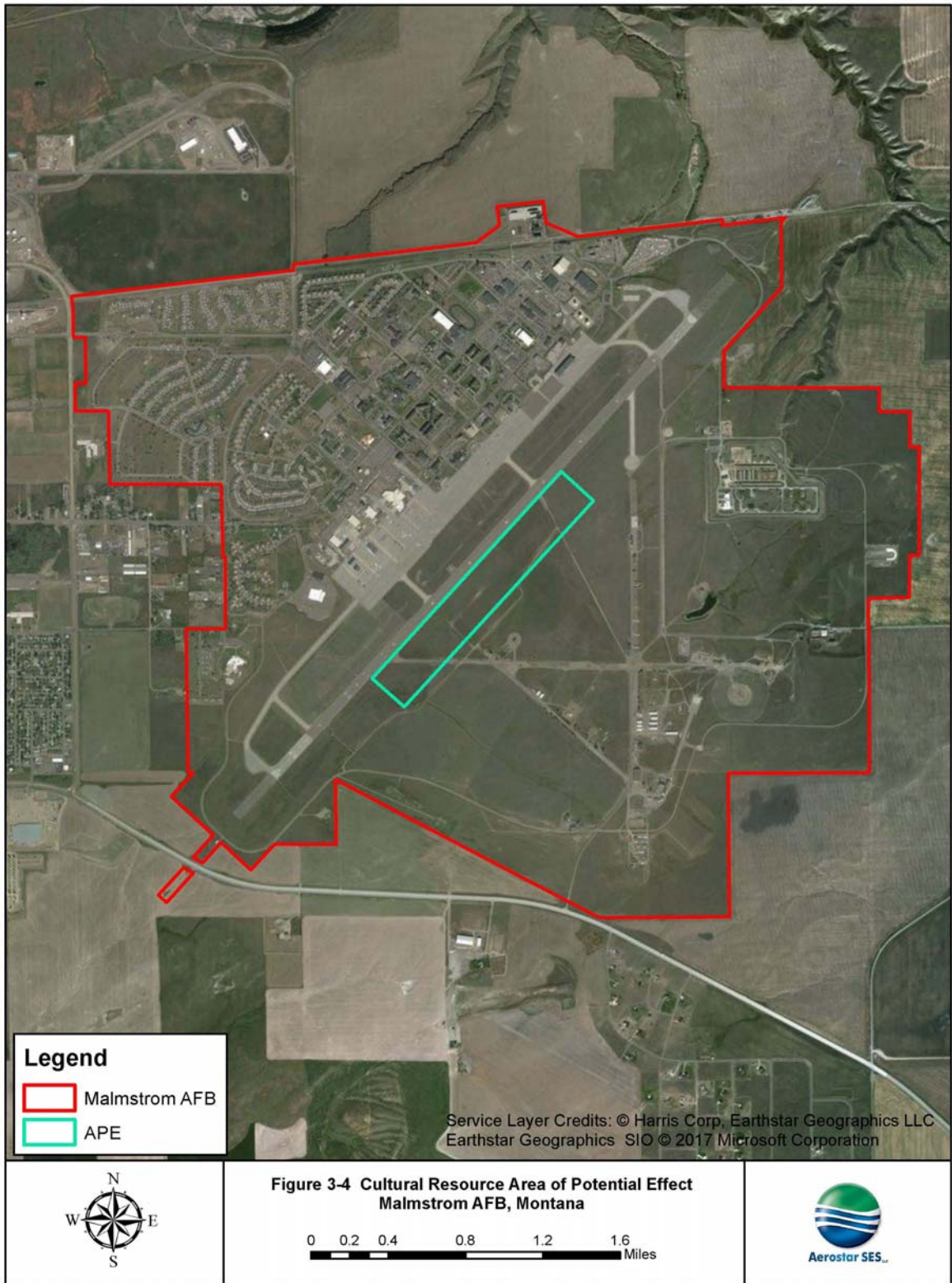
Perhaps Malmstrom AFB's most prominent role was serving as an essential component in the nation's air defense during the Cold War (Malmstrom, 2009a). This included introducing an air surveillance system and being the first Minuteman Intercontinental Ballistic Missile (ICBM) base in 1960. The installation and deployment of these missiles was accelerated in October 1962 as a result of the Cuban missile crisis. Later, more updated versions of missile defense systems were deployed at Malmstrom AFB, including Minuteman II during the 1960s and Minuteman III during the 1970s and 1980s. Undoubtedly, the geographic location of Malmstrom near transpolar routes to Europe, Russia, and China played a part in its development as a missile and air refueling tanker base (Malmstrom, 2009a).

### Cultural Resource Inventories

Prior to the onset of archaeological fieldwork, a cultural resources file search was conducted with the Montana SHPO for the APE and vicinity. The APE included the Proposed Action site and an area containing expected disturbances to the existing ground surface from construction of the proposed C-130 ALZ (Figure 3-4). According to SHPO's records, there have been several previously recorded cultural resource sites and surveys near the project area. However, none are located within the APE.

Multiple archaeological and historic resource surveys have been conducted on and around Malmstrom AFB during the past 25 to 30 years (USAR, 2009 and Malmstrom AFB, 2009a). One of the more widespread surveys has included an inventory of Cold War resources both at the “Base Proper” and throughout the “Missile Deployment Area.” Conducted in 1996 and released the following year, it resulted in the evaluation of more than 200 buildings, structures, and missile facilities as eligible or potentially eligible for NRHP listing (Bard et al., 1997). As a result of this survey, the Montana SHPO concurred with Malmstrom AFB that a number of these resources were eligible for listing in the NRHP under Criteria Consideration g as resources of exceptional significance even though they were less than 50 years old. Those on the Base Proper that appear to warrant nomination pending the outcome of recommended additional background research include Buildings 160, 165/170, 250, 300, 1700 (since demolished), and 1708 (since demolished) (Bard et al. 1997: Management Summary; 69-70). Additionally, Bard et al. (1997) assessed several buildings to be not of exceptional significance regarding Criteria Consideration G but still potentially significant, including Buildings 219, 230 (since demolished), 295, 330, 349, 360, 400, 500, 581, 769, 850, 870, 1460, 1464, 1705, 3064 (since demolished), 3070 (since demolished), and 17,100 (since demolished) (Bard et al., 1997). Of these 24 buildings, 18 remain in existence, situated on or within three blocks of the Flightline of the Base Proper. According to a letter prepared by the Montana SHPO (2008), these buildings do not constitute a National Register District nor are individually eligible for listing on the NRHP. Other historic properties are currently being re-evaluated as to NRHP eligibility, since all have surpassed 50 years of age.

Malmstrom AFB has consulted with the seven Federally-Recognized Affiliated Tribes on many proposed actions, mostly construction projects over more than 10 years. Malmstrom AFB has had 3 tribal relations meetings inviting the 7 Montana tribal reservation governments in 2009, 2016 and 2017. None of the tribes has ever identified any sites or issues of religious or cultural significance in the context of Malmstrom AFB actions.



Hoffecker and Greby (1994) conducted a pedestrian survey and shovel testing across 540 acres focusing on the identification of prehistoric and historic resources at Malmstrom AFB. One prehistoric archaeological site (24CA0449) was found within the base boundaries. Site 24CA0449 comprised a small lithic scatter containing primary and secondary flakes of chert, diabase, quartzite, and siltstone in the south-central portion of the installation. Situated approximately 4,600 feet southeast of the southeast corner of the APE, the site was determined considered ineligible for listing in the NRHP. Isolated finds were also recovered in this vicinity; these resources are similarly considered not NRHP-eligible. Another isolated find, recovered less than 2,000 feet southeast of the APE (within the base), consisted of three artifacts (Greiser, 1989). Like those noted above, these resources are not eligible for listing in the NRHP.

An additional survey conducted in anticipation of the proposed construction of military housing and a training center identified three sites on and adjacent to Malmstrom AFB (Greiser, 1989). These included two Native American sites located adjacent to but off of Malmstrom AFB property. Site 24CA0278 is a campsite containing a lithic scatter and fire-cracked rock within a plowed field, approximately 1 mile to the northeast of the northeast corner of the APE. Site 24CA0279, also a campsite, is more than 1.4 miles to the southeast of the southeast corner of the APE and contains fire-cracked rock and flaked quartzite, also from a plowed field context. Neither of these sites is considered eligible for listing in the NRHP. In addition to the above, Greiser (1989) encountered six isolated finds comprising fire-cracked rock and quartzite shatter. As noted, isolated finds do not meet NRHP eligibility criteria.

Greiser (1989) identified another site (24CA0264) comprising a historic-period railroad grade bordering the northern edge of the base. The site represents a section of the Chicago, Milwaukee, St. Paul, and Pacific Railway (aka Milwaukee Railroad) built in Montana between 1906 and 1909. This resource is considered potentially eligible for NRHP listing.

#### Archaeological Potential

Despite the extensive number of archaeological surveys conducted in and around Malmstrom AFB, few archaeological sites have been identified. None of the sites recovered on base (in addition to several isolated finds) are considered to be eligible for listing in the NRHP. According to the Installation Cultural Resource Management Plan (ICRMP) (Malmstrom AFB, 2009a), the



probability of encountering intact archaeological resources at Malmstrom AFB is low because undisturbed areas of the base have been completely surveyed. However, discussions with James Belew ( Colorado State University, Center for Environmental Management of Military Lands [CEMML] Archaeologist) has called into question that supposition. It appears that many of the surveys conducted to date have been limited to pedestrian surveys and may not have been adequately shovel tested.

As a result of the above, new construction projects are being evaluated on an individual basis to determine whether they will be subjected to archaeological survey including subsurface shovel testing. Following a review of a 1942 aerial map depicting construction disturbance at the APE, in conjunction with the completion of a pedestrian reconnaissance of the vicinity (November 16, 2016), and in consultation with Malmstrom AFB personnel, it was decided to conduct shovel testing in portions of the Project.

#### Phase I Archaeological Survey

Phase I archaeological fieldwork was conducted from November 30 through December 2, 2016. The APE included an area containing expected disturbances to the existing ground surface from construction of the proposed C-130 ALZ (Figure 3-3). The APE measured 5,500 feet northeast-southwest by 799 feet northwest-southeast (100.8 acres) and comprised the proposed runway surface and dirt keyhole turnarounds at each end of the runway. The existing decommissioned runway will not be used and is not included in the overall APE. The exact limits of the APE were determined in consultation with Malmstrom AFB personnel, including James Belew, CEMML Archaeologist; Rob Brown, Environmental Engineer; and Tony Lucas, Chief, Environmental. Given prior disturbances in this upland area, including the construction of runways in the 1940s, archaeological potential was considered limited.

In addition to a surface reconnaissance resulting in the identification of four small concrete features housing runway lights, 32 shovel test pits (STP) positioned along three transects were excavated throughout the APE.

Upon completion, all but two of the 32 investigated STPs were found to be negative. STP 1-8 contained a single piece of unidentifiable iron, and STP 3-2 contained one piece of oxidized metal (possible nail) and a piece of slate. Both of these positive STPs were found to have been highly disturbed, as evidenced by asphalt and gravels found in STP 1-8 and severely mottled soils in the



B Horizon of STP-3-2. It appears, therefore, that the recovered materials date to no earlier than circa 1942 military construction activity. No other identifiable artifacts were observed in any of the investigated STPs.

All but three STPs exhibited levels of moderate to extreme disturbance likely related to various roads that have traversed the APE at one time or another. All but these three STPs contained considerable gravels. In many STPs, direct evidence of this disturbance was observed with the occurrence of asphalt. This was especially the case in the vicinity of the helicopter movement area (HMA) and along the proposed runway location. It should be noted that excavation was prematurely terminated in several STPs because either asphalt surface or impenetrable clay was encountered. Additional STPs exhibited evidence of especially high disturbance by recent adverse impacts assumed to be caused by military-related activities between 1942 and the present.

Owing to the presence of disturbed soils throughout the APE and a lack of any identifiable artifacts or cultural features, the area of the proposed ALZ exhibits limited potential for encountering significant archaeological resources. STPs in the northeast corner of the APE are less disturbed and may hold higher potential for containing intact cultural resources. However, all of these STPs were negative. Throughout the center and southwestern portion of the APE, moderately to highly disturbed soils were determined to characterize the majority of STPs. Consequently, the potential is especially low for encountering significant archaeological resources within and to the southwest of the HMA.

### **3.9 AIRSPACE MANAGEMENT**

#### **3.9.1 Definition of Resource**

Airspace management is defined by the USAF as the coordination, integration, and regulation of the use of airspace of defined dimensions. The objective is to meet military training requirements through the safe and efficient use of available navigable airspace in a peacetime environment while minimizing the impact on other aviation users and the public (AFI 13-201). The two categories of airspace or airspace areas are regulatory and nonregulatory. Within these two categories, further classifications include controlled, uncontrolled, special use, and other airspace. The categories and types of airspace are dictated by

- the complexity or density of aircraft movements,
- the nature of the operations conducted within the airspace,

- the level of safety required, and
- national and public interest in the airspace.

### **Controlled Airspace**

Controlled airspace is a generic term that encompasses the different classifications of airspace and defines dimensions within which air traffic control service is provided to instrument flight rules (IFR) flights and to visual flight rules (VFR) flights (DOT, 1994). All military and civilian aircraft are subject to Federal Aviation Regulations (FARs). Figure 3-5 provides information on types of airspace classes.

### **Uncontrolled Airspace**

Uncontrolled airspace (Class G) is not subject to restrictions that apply to controlled airspace. Limits of uncontrolled airspace typically extend from the ground surface to 700 feet AGL in urban areas and from the ground surface to 1,200 feet AGL in rural areas. Uncontrolled airspace can extend above these altitudes to as high as 14,500 feet above mean sea level (amsl) if no other types of controlled airspace have been assigned. ATC does not have authority to exercise control over aircraft operations within uncontrolled airspace. Primary users of uncontrolled airspace are general aviation aircraft operating in accordance with VFR.

Uncontrolled airspace or Class G airspace is the portion of the airspace that has not been designated as Class A, B, C, D, or E. It is therefore designated uncontrolled airspace. Class G airspace extends from the surface to the base of the overlying Class E airspace. Although Air Traffic Control has no authority or responsibility to control air traffic, pilots should remember there are visual flight rules (VFR) minimums that apply to Class G airspace. Surface to 1200' Above Ground Level (AGL), no entry requirements, no specific equipment (radio/transponder), no specific minimum pilot requirement (license). In this case, Controlled Airspace Class E starts at 5000' Mean Sea Level (MSL) or about 1500' AGL.

It should be noted that the charted frequency is 271.9 for common traffic advisory frequency (CTAF), which operates in UHF frequency where the preponderance of civilian aviation exclusively uses VHF. There is a note on the chart that states "Pilots should avoid Malmstrom AFB at all times." Also, a privately owned airstrip is on the approach/departure path of the DZ south of the highway near the town of Tracy named "Prill"; another just before Highwood named "Peterson".

### **Special Use Airspace**

Special use airspace consists of airspace within which specific activities must be confined or limitations imposed on aircraft not participating in those activities. Except controlled firing areas (CFAs), special use airspace is depicted on aeronautical charts, including hours of operation, altitudes, and the agency controlling the airspace. All special use airspace descriptions are contained in FAA Order 7400.8.

Prohibited and restricted areas are regulatory special use airspace and are established in FAR Part 73 through the rulemaking process. Warning areas, CFAs, and military operations areas (MOAs) are nonregulatory special use airspace.

MOAs are airspace of defined vertical and lateral limits outside controlled airspace that are used to separate certain military flight activities from IFR traffic and to identify for VFR traffic the areas where concentrated military aircraft operations may occur. When an MOA is active, IFR traffic may be cleared to enter and pass through the area if adequate IFR separation criteria can be met. Nonparticipating VFR aircraft are not prohibited from entering an active MOA; however, extreme caution is advised when such aircraft are in the area during military operations.

All MOAs within the United States are depicted on sectional aeronautical charts identifying the exact area, the name of the MOA, altitudes of use, published hours of use, and the corresponding controlling agency.

Air traffic control assigned airspace (ATCAA) is airspace above 18,000 feet amsl designed to accommodate nonhazardous high-altitude military flight training activities; this airspace remains in the control of the FAA and may be used to support civil aviation activities when not used by military aircraft. ATCAA permits military aircraft to conduct high-altitude air-to-air combat training, practice evasive maneuvers, perform aerial refueling, and initiate or exit from attacks on targets within a range. ATC routes IFR traffic around this airspace when activated; ATCAA does not appear on any sectional or en route charts. By agreement with the FAA, no ATCAA is authorized over any existing airspace in the vicinity of Malmstrom AFB.

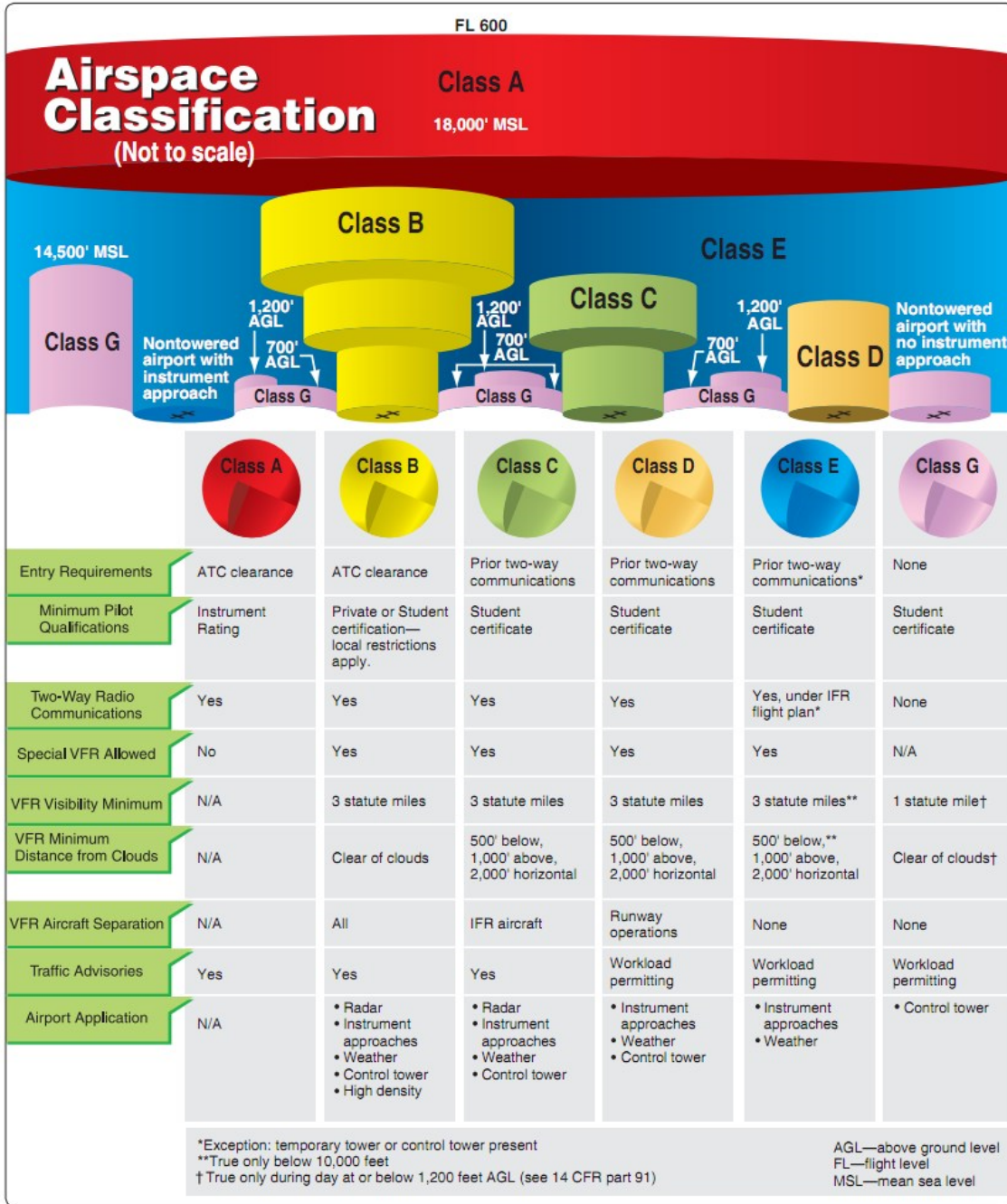


Figure 3-5 Classes of Airspace

**Military Training Routes**

Military training routes (MTRs) are flight paths that provide a corridor for low-altitude navigation and training, which is important because aircrews may be required to fly at low altitudes to avoid

detection in combat conditions. To train realistically, the military and the FAA have developed MTRs. This system allows the military to train for low-altitude navigation at air speeds in excess of 250 knots. The two types of MTRs are instrument routes (IR) and visual routes (VR).

### **3.9.2 Existing Conditions**

The airspace in the Great Falls area is shared by the Malmstrom AFB 40 HS, commercial aircraft arriving and departing from Great Falls IAP, and Montana ANG. The airspace surrounding Malmstrom AFB is uncontrolled. The only active flying mission at Malmstrom AFB is the 40 HS, which uses fully instrument-capable Huey helicopters. These helicopters may be found in the instrument pattern anywhere there is a published approach. Training is conducted within a 3-nautical-mile radius around Malmstrom AFB. The 40 HS communicates with each other on radio frequency 139.225 when operating in the local pattern and requests air traffic to avoid Malmstrom AFB by 3 nautical miles. Training usually occurs during the day and night and at or below 4,500 feet MSL. Helicopter pilots often operate in the VFR patterns of small airfields throughout Montana (Malmstrom AFB, 2012b).

## **3.10 SAFETY AND OCCUPATIONAL HEALTH**

### **3.10.1 Definition of Resource**

Safety and occupational health includes risks to the public and workers from conducting daily activities, noise exposure, and exposure to unsafe or unhealthful environments. Although many routine activities involve some degree of risk, there are numerous ways to enhance safety and minimize health risks. The ROI for this resource is Malmstrom AFB, where the proposed ALZ will be constructed. The capacity of emergency response services is included in this affected environment. Emergency services are agencies and facilities that are equipped to respond to health and safety incidents. These include law enforcement, fire protection, and medical services.

The Occupational Safety and Health Act of 1970 is the primary federal regulation concerning health and safety. The Occupational Safety and Health Administration (OSHA) is the federal agency that implements this regulation. Montana does not have an OSHA state plan but does have regulations related to health and safety, including those found in the Montana Code Annotated 39-71. The Montana Department of Labor & Industry's Safety and Health Bureau is the primary state agency charged with addressing occupational health and safety.

The primary concern with regard to military training flights is the potential for aircraft mishaps (i.e., crashes), which may be caused by midair collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes.

### **3.10.2 Existing Conditions**

#### **Aircraft Mishaps**

Five mishap classifications have been defined by the USAF:

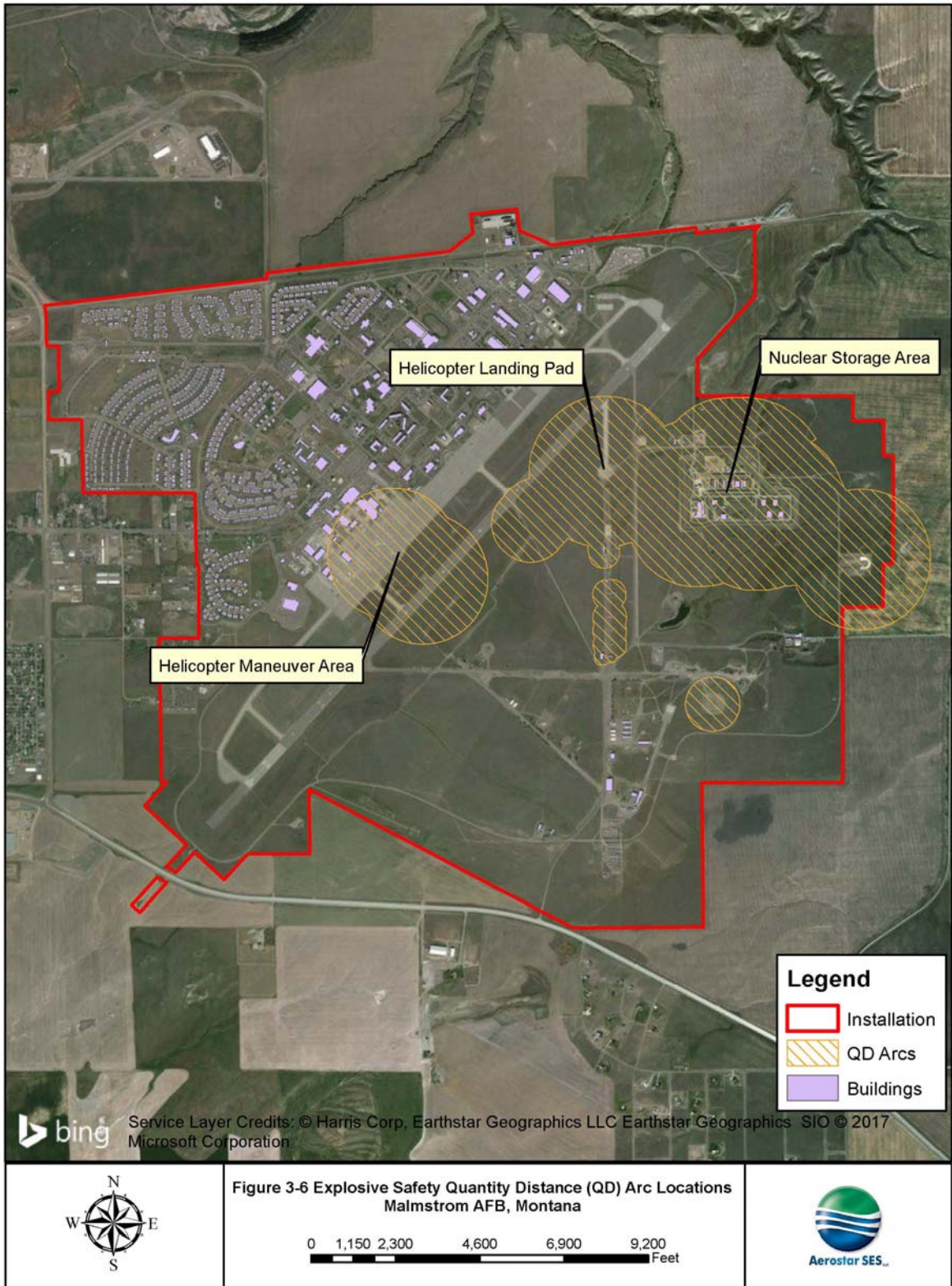
- Class A mishaps result in a fatality or permanent total disability; total cost in excess of \$2 million for injury, occupational illness, and property damage; or destruction or damage beyond repair to military aircraft.
- Class B mishaps result in a permanent partial disability; total cost in excess of \$500,000 but less than \$2 million for injury, occupational illness, and property damage; or hospitalization of five or more personnel.
- Class C mishaps result in total damages between \$50,000 and \$500,000.
- Class D mishaps result in total damages between \$2,000 and \$50,000.
- Class E includes those occurrences that do not meet reportable mishap classification criteria but are deemed important to investigate and/or report for mishap prevention.

The Malmstrom AFB runway was closed in 1996 to fixed-wing aircraft operations. However, helicopter operations continue in support of the installation's missile mission. Since the runway's closing, only one aircraft mishap has occurred at Malmstrom AFB, and it involved the visiting Canadian Forces aerial demonstration squadron, the "Snowbirds," during its practice (Montana ANG, 2013).

#### **Runway Protection Zones**

Runway protection zones (RPZs) or clear zones (CZs) are trapezoidal zones extending outward from the ends of active runways and delineate those areas recognized as having the greatest risk for an aircraft mishap (during takeoff or landing). Development restrictions within RPZs are intended to preclude incompatible land use activities from being established in these areas.





### **Explosive Safety Quantity Distance (QD)**

The term **Quantity-Distance (QD)** refers to protection requirements from potential explosion sites (PES) to different kinds of exposed sites (ES). The QD standards were developed over many years and are based on explosives mishaps, tests and analyses. QD separations are based on an acceptable level of damage between a PES and an ES (AFMAN 91-201, 2011). Figure 3-6 illustrates the QD arcs from existing PES on Malmstrom AFB including the nuclear storage facilities (Malmstrom, AFB, 2017).

### **Bird-Aircraft Strike Hazard**

BASH is defined as the threat of aircraft collision with birds during flight operations and is a safety concern at all airfields because of the frequency of aircraft operations and the possibility of encountering birds at virtually all altitudes. Most birds fly close to ground level, and more than 95% of all reported bird strikes occur below 3,000 feet AGL. At most military installations, about half of reported bird strikes occur in the immediate vicinity of the airfield and another 25% occur during low altitude local training exercises. Because migratory bird species are considered of special ecological value, EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds was issued in 2001 to ensure that federal agencies focus attention on the environmental effects to migratory bird species and, where feasible, implement policies and programs that support the conservation and protection of migratory birds.

Waterfowl present the greatest BASH potential because of their congregational flight patterns and because they can be encountered at altitudes up to 20,000 feet AGL when migrating. Raptors also present a substantial hazard because of their size and soaring flight patterns. In general, the threat of bird-aircraft strikes increases during April and May and from August through November because of migratory activity.

Migratory waterfowl are particularly hazardous around Benton Lake (18 miles north of Malmstrom AFB) and Freezeout Lake (58 miles northwest of Malmstrom AFB). The proximity of Malmstrom AFB to the Missouri River (where thousands of Canada geese overwinter) and agricultural land (which harbors bird congregations) can present hazardous flight conditions for pilots. For example, the prairie pothole off base to the southeast is known to harbor up to 1,000 Canada geese. At approximately 5 p.m. daily in the spring, the Canada geese fly north-northwest across the runway toward the Missouri River to forage. Additionally, an area southwest of the runway provides habitat for birds to congregate during the winter.



According to the FAA Wildlife Strike Database, the 120 AW has reported 12 bird strikes from 2003 to 2015 at Great Falls IAP. The Malmstrom AFB runway has been closed to aircraft operations since 1996. Although helicopter operations are still active, no bird strikes have been reported at Malmstrom AFB. Strikes have occurred at all times of the day and each season of the year with the majority occurring April through October (Montana ANG, 2013). The BASH Reduction Program provides guidance in deterring wildlife near runways and includes habitat/grass management, pest management, and depredation. This program complements AFI 91-204 Safety Investigations and Reports, AFI 91-202 The US Air Force Mishap Prevention Program, AFI 32-7064 Integrated Natural Resources Management Plan, and AFJPAM 91-212 Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques.

### **Emergency Response**

Malmstrom AFB has procedures in place in the event of an aircraft crash or mishap. The fire department currently has

- Crash Rescue P-34 truck equipped with 400 gallons of water/50 gallons of foam;
- KME P-34 truck equipped with 400 gallons water/50 gallons foam;
- P-19 truck equipped with 100 gallons water/130 gallons foam; and
- P-26 truck equipped with 4,000 gallons of water for re supply only.

The total capacity for immediate response at Malmstrom AFB is 1,800 gallons of water and 230 gallons of foam. Montana ANG emergency vehicles consist of a 1500 Stryker truck equipped with 1,500 gallons of water and 210 gallons of foam and a KME P-34 truck equipped with 400 gallons of water and 50 gallons of foam.

## **3.11 UTILITIES AND INFRASTRUCTURE**

### **3.11.1 Definition of Resource**

Infrastructure and utility resources refer to structures and systems that contribute to the functionality of inhabited areas. Infrastructure components at Malmstrom AFB include the potable water supply, stormwater, sanitary sewer and wastewater, electricity, natural gas/coal, communications, and municipal solid waste. The ROI for utilities and infrastructure is the area served by the utility systems for the Proposed Action area.

### **3.11.2 Existing Conditions**

#### **Potable Water**

The city of Great Falls supplies potable water to Malmstrom AFB under a contract for 1.26 million gallons per day (mgd) or 460 million gallons per year. A 12-inch supply main is parallel with 3<sup>rd</sup> Avenue South, and an additional 12-inch supply main is parallel with 2<sup>nd</sup> Avenue North. These two 12-inch mains supply two ground-level storage tanks with capacities of 600,000 and 1,100,000 gallons. There are three elevated storage tanks on the installation with capacities of 8,000, 250,000, and 500,000 gallons, respectively. Malmstrom AFB is implementing a phased process to extend water supply infrastructure into the airfield to support ongoing operations and future development.

#### **Wastewater**

Malmstrom AFB operates and maintains a sanitary sewer collection system. The system was constructed in the 1940s and expanded in the 1950s and 1960s to accommodate the family housing areas on installation. The installation has one 1.5 mgd lift station, which pumps wastewater through the 10-inch force main. Malmstrom AFB, under contract to the City of Great Falls, then transfers all wastewater through the 10-inch force main to a manhole that drains to the Great Falls treatment plant. The City of Great Falls treatment plant is an activated sludge facility operated by a service contract with a private sewage treatment management firm Veolia Water. The plant processes an average of 10 mgd of wastewater and has a maximum operating capacity of 13.3 mgd.

#### **Stormwater**

As discussed in Section 3.6, nine surface drainage basins on the installation drain to the Malmstrom AFB stormwater system. The Malmstrom AFB storm drainage system consists of open drainage ditches, swales, constructed culverts, and buried pipe and is capable of supporting current development as well as moderate growth. Stormwater is considered a wastewater discharge in the CWA. Outfalls 1 through 6 have point discharges at the installation boundary and flow through the Whitmore Ravine to the Missouri River. The ravine drains into the Missouri River downstream of Rainbow Dam. Stormwater is discharged from the installation in accordance with MPDES General Permit Numbers MTR000197 for industrial activities (MDEQ, 2013), MTR040008 for MS4 (MDEQ, 2017), and MTR100000 for construction activities (MDEQ, 2013). Precipitation that falls or melts in the study area is managed in accordance with the Malmstrom AFB SWMP (under the MS4 General Permit) or the SWPPP (under the Industrial General Permit) (Malmstrom AFB, 2014). Malmstrom AFB design standards require that all structures on the airfield be designed to

handle a two-year, 24-hour storm event. Section 3.6 provides details on stormwater management at Malmstrom AFB.

### **Electricity**

Malmstrom AFB purchases electricity from Northwestern Energy, whose territory covers 73% of Montana's land mass. Northwestern Energy's power plant system is capable of producing 851 megawatts, serving 359,000 customers in Montana. Electric services are provided through a 100-kilovolt (kV) transmission line, which terminates at the installation electrical substation. A backup line is available in case of a catastrophic substation failure (Northwestern Energy, 2016). Electrical distribution on the installation is through a three-phase 7,200/12,470-volt transformer connected system. Approximately 53% of the electrical distribution lines on the installation are underground. The Proposed Action site has a combination of overhead and underground electrical distribution lines. Six primary service feeders supply facilities on installation. Additionally, Malmstrom AFB houses on-site electrical generators capable of producing 5.8 megawatt hours, enough to provide limited power to their associated building or building component for up to 174 hours.

### **Natural Gas and Coal**

Malmstrom AFB is supplied with natural gas from Energy West through a 12-inch diameter steel pipeline installed in 1953. The purpose of the natural gas system is to meet the heating requirements of the installation. The gas distribution system was originally installed as steel piping, and approximately half of the line has been replaced with polyethylene lines; the remainder is scheduled for replacement.

A central heating plant burns coal or natural gas to provide high-temperature hot water to heat the installation. The heating plant, constructed in 1986, has three boilers and is capable of producing 240 million British thermal units per hour. High temperature hot water is delivered to installation facilities through the distribution system at 400 degrees Fahrenheit. Approximately 95% of the distribution lines are contained in buried concrete trenches.

### **Solid Waste**

The solid waste management program on Malmstrom AFB is managed by the Asset Management Flight Natural Resources Management Element (341 Civil Engineer Squadron/ Civil, Environmental and Infrastructure Engineering [CEIE]). Malmstrom AFB must meet DODI 4715.23, "Integrated Recycling and Solid Waste Management", as well as federal, state, and local

requirements for disposal of all solid waste materials. The Solid Waste Management Plan provides procedures for disposal and diversion of solid waste at Malmstrom AFB (Malmstrom AFB, 2016b). Solid waste collection and disposal services are provided to the installation by private contractor Montana Waste Systems (MWS) and the City of Great Falls. Material is taken off installation to High Plains Landfill in Black Eagle, Montana. The landfill has been operating since 1980. Malmstrom AFB has a recycling program to reduce the volume of solid waste requiring disposal. No open landfills are at Malmstrom AFB.

### **Communications**

The communication system at Malmstrom AFB provides telephone, cable, and local area network services. The communication system consists of twisted-pair copper cable and fiber optic cable, which is mostly underground with some aerial and direct buried cable. Communications also include narrow-band land mobile radio systems.

## **3.12 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN**

### **3.12.1 Definition of Resource**

#### **Environmental Justice**

Environmental justice addresses race, ethnicity, and the poverty status of populations in the ROI. On February 11, 1994, the president issued EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The EO is designed to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income populations. Environmental justice analyses are performed to identify potential disproportionately high and adverse human health or environmental effects from proposed federal actions on minority or low-income populations.

The U.S. Census Bureau identifies minority populations as Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian and other Pacific Islander, some other race, persons of two or more races, and persons of Hispanic or Latino origin (ethnicity). Per CEQ guidance, minority populations should be identified where either the minority population of the affected area exceeds 50% or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ, 1997).

Poverty thresholds established by the U.S. Census Bureau are used to identify low-income populations. Poverty status is reported as the number of persons or families with income below a defined threshold level.

### **Protection of Children**

EO 13045 Protection of Children from Environmental Health and Safety Risks requires federal agencies to identify and assess environmental health and safety risks that might disproportionately affect children to the extent permitted by law and mission. It also directs federal agencies to ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks. Relevant risks are those attributable to products or substances a child is likely to come into contact with or ingest. These risks are most likely to be encountered in areas where children are present, such as schools, playgrounds, daycare facilities, and neighborhoods with high concentrations of children.

### **3.12.2 Existing Conditions**

#### **Minority and Low-Income Population**

To comply with EO 12898, ethnicity and poverty status in the vicinity of Malmstrom AFB were examined and compared to regional, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action.

Based on data obtained from the 2015 Census and the 2011-2015 American Community Survey, the percentage of the population in the city of Great Falls living below the poverty level in 2015 was 12.6%. This poverty rate was higher than that of Cascade County (11.0%), the state of Montana (9.9%), and the nation (11.3%) (U.S. Census Bureau, 2015).

The percentage of minority residents in the city of Great Falls (8.7%) is consistent with Cascade County (7.8%) and the state of Montana (8.4%). By comparison, minority residents comprise higher percentages of the total population nationwide (23.9%) (U.S. Census Bureau, 2015).

### **Protection of Children**

To comply with EO 13045, the number of children under age 18 in the vicinity of Malmstrom AFB was compared to city, county, state, and national levels. Additionally, locations where populations

of children may be concentrated (e.g., child-care centers, schools, and parks) were determined to address potentially disproportionate health and safety risks to children that may result from implementation of the Proposed Action.

The percentage of the total population represented by children under age 18 in the city of Great Falls is above average for the four geographic areas considered in this analysis. Based on data obtained from the 2011-2015 American Community Survey, approximately 22.1% of the city's total population was comprised of children under age 18. This compares to 22.6% for Cascade County, 22.1% for Montana, and 23.3% for the nation (U.S. Census Bureau 2015).

### **Schools**

The city of Great Falls is served by the Great Falls Public School System. In Great Falls, there are 15 elementary, two middle, and three high schools (Great Falls Public Schools 2015). Eight private schools are also in the Great Falls area. In addition, the University of Great Falls and Montana State University College of Technology-Great Falls are within downtown Great Falls, approximately 3 and 5 miles, respectively, from the Malmstrom AFB.

Four schools are within an approximate two-mile radius of Malmstrom AFB:

- Loy Elementary School is 0.5 mile northwest of the front gate of the installation.
- Chief Joseph Elementary School is approximately 0.8 mile west of the installation.
- Lewis and Clark Elementary School is approximately 1.5 miles west of the installation.
- Mountain View Elementary School is approximately 2 miles southwest of the installation.

## SECTION 4 ENVIRONMENTAL CONSEQUENCES

### 4.1 LEVELS OF IMPACT

Within the scope of NEPA review, project-related impacts are classified based on changes to the existing environment. The assessment of potential impacts and the determination of their significance are based on the requirements in 40 CFR 1508.27. NEPA identifies three levels of impact:

- No Impact – No impact is predicted.
- No Significant Impact – An impact is predicted, but the impact does not meet the intensity or context significance criteria for the specified resource.
- Significant Impact – An impact is predicted that meets the intensity/context significance criteria for the specified resource. A significant impact may exist even if the Federal agency believes that on balance the effect will be beneficial.

Under NEPA (42 USC 4321 et seq.), significant impacts are those that have the potential to significantly affect the quality of the natural or physical environment and the relationship of people to those environments (40 CFR 1508.14). Whether an alternative significantly affects the quality of the environment is determined by considering the context in which it will occur along with the intensity of the action (40 CFR 1508.27). The context of an action is determined by studying the potential ROI and affected interests within each. Significance varies depending on the physical setting of an alternative (40 CFR Section 1508.27). The level at which an impact is considered significant varies for each environmental resource and is referred to as the significance threshold. Significance thresholds are often established by federal, state, tribal, or local regulations. In other cases, significance thresholds are determined by the experiences of the specific resource specialists. The intensity of an action refers to the severity of the impacts, both regionally and locally, and may be determined by

- overall beneficial project effect versus individual adverse effect(s);
- public health and safety;
- unique characteristics in the area (wetlands, parklands, ecologically critical areas, cultural resources, and other similar factors);
- degree of controversy;
- degree of unique or unknown risks;

- precedent-setting effects for future actions;
- cumulatively significant effects;
- cultural or historic resources;
- special-status species or habitats; and
- compliance with federal, state, or local environmental laws.

## **4.2 AIR QUALITY**

### **4.2.1 Approach to Analysis**

The 1990 amendments to the CAA require that Federal agency activities conform to the SIP for achieving and maintaining attainment of NAAQS and addressing air quality impacts. Cascade County is within Great Falls Intrastate AQCR 141 and is designated by the EPA as an attainment or unclassifiable area for all NAAQS criteria pollutants (EPA, 2010). The Proposed Action and its associated flight path is not located within a maintenance area. Therefore, in conclusion of this General Conformity Applicability Analysis, a Conformity Determination is not required. (CAA Section 176 [c] and 42 USC 7506[c]).

The Air Conformity Applicability Model (ACAM) version 5.0.7 was utilized to provide a level of consistency with respect to emissions factors and calculations. The ACAM provides estimated air emissions from proposed Federal actions for each specific criteria and precursor pollutant as defined in the NAAQS. ACAM was utilized to provide emissions for construction, grading, and paving activities by providing user inputs for each.

The air quality analysis focused on emissions associated with land clearing, road improvements, new construction, and aircraft emissions from C-130 flight operations. Construction-related sources include emissions from heavy construction machinery.

GHGs are included in the analysis and ACAM Report. The primary source of carbon dioxide emissions would be from vehicles operating on-site during construction and aircraft emissions from proposed C-130 operations. Air quality calculations are provided in Appendix D.



## 4.2.2 Impacts

### 4.2.2.1 Alternative 1 (Preferred Alternative)

#### **Short-Term Impacts**

Pollutant emissions associated with construction activities of the Proposed Action area would include fugitive dust emissions during ground disturbance and related site preparation activities and combustion emissions from vehicles and heavy-duty equipment used during construction.

#### *Dust Emissions*

Under implementation of Alternative 1, dust would be generated from construction activities, including pavement and vegetation removal and grading. Daily dust emissions can vary substantially depending on levels of activity, specific operations, and prevailing meteorological conditions. Using conservatively high estimates (based on moderate activity levels, moderate silt content in affected soils, and a semi-arid climate), the standard dust emission factor for construction activity is estimated to be 1.2 tons of dust generated per acre per month of activity (EPA, 1995). This factor is referenced to total suspended particulates resulting in conservatively high estimates. Based on this dust-generation factor and the maximum estimated acreage that would be disturbed during the year of project implementation (approximately 9 acres), a maximum projected total of approximately 10.8 tons of dust (a percentage of which would be PM<sub>10</sub> and PM<sub>2.5</sub>) would be generated per month. This estimate is conservatively high and is based on the unlikely scenario that all proposed construction would occur simultaneously. The project duration is estimated to be 3 months; however, to be conservative, a 5-month duration was used for calculations.

The implementation of standard dust minimization practices would reduce the amount of dust generated during the construction period (regularly watering exposed soils, soil stockpiling, and stabilizing soil). These measures can reduce dust generation by 75%, thereby reducing dust emissions to approximately 2.7 tons per month (EPA, 1995). Based on an estimated project duration of 5 months, dust emissions from the construction of the ALZ are conservatively estimated to be approximately 13.5 tpy and are not expected to exceed the 25 tpy threshold of total particulate, which would require a significant permit modification under Montana Prevention of Significant Deterioration (PSD) rules.

According to studies conducted by Midwest Research Institute (1996), the general construction emission factor of PM<sub>10</sub> is estimated to be 0.19 tons of dust generated per acre per month of activity, taking into account dust control practices. Based on a 5-month project for a 9-acre site,

the PM10 is estimated to be 8.55 tpy and is below the 15 tpy PM10 threshold under Montana PSD rules.

*Combustion Emissions*

Combustion emissions would be associated with construction-related equipment and transportation/ delivery of construction materials. USAF ACAM software version 5.0.7 was used to calculate the construction emissions (Table 4-1). Emissions associated with construction equipment (grader, backhoe, dozer, etc.) would be minimal because most equipment would be driven to and kept at affected sites throughout construction. Emissions associated with the transport of materials would also be minimal given the temporary nature of the activities.

**Table 4-1 Potential Emissions from Construction (Tons per Year)**

Source	CO	NOx	SOx	VOC	PM10	PM2.5	CO2e
<b>Construction Emissions</b>	<b>2.233</b>	<b>4.468</b>	<b>0.008</b>	<b>0.545</b>	<b>14.49</b>	<b>0.164</b>	<b>895.6</b>
<b>Malmstrom AFB</b>	<b>21.127</b>	<b>30.839</b>	<b>1.487</b>	<b>1.394</b>	<b>4.599</b>	<b>6.569</b>	<b>--</b>

Assumptions: Combustion emission were calculated with USAF ACAM version 5.0.7 ; 5-month project, 8 hours per day, 5 days per week, totaling 800 hours.

CO = carbon monoxide

NO<sub>x</sub> = nitrogen oxides

PM<sub>10</sub> = particulate matter less than 10 microns in diameter

PM<sub>2.5</sub> = particulate matter less than 2.5 microns in diameter

SO<sub>x</sub> = oxides of sulfur

VOC = volatile organic compound

CO<sub>2</sub>e = carbon dioxide equivalent

**Long-Term Impacts**

Compliance with Malmstrom AFB’s Title V Operating Permit Number OP1427-11 requires that maximum potential emissions associated with the C-130 activities added with other base operations fall below Title V significance levels for all criteria pollutants. Table 4-2 provides a summary of air emissions from the addition of C-130 activities (see calculations in Appendix C). Implementing Alternative 1 would cause a minor increase in air emissions from a daily average of 1.5 daytime landings/takeoffs and 0.5 nighttime landings/takeoffs during C-130 training missions at Malmstrom AFB. However, this minor increase is not expected to exceed the 100-tpy Title V

major source threshold. Long term GHG emissions should not change for C-130 training as a whole, simply provide an alternate training location within the continental United States.

**Table 4-2 Summary of Air Emissions from the Proposed Action**

Source	Criteria Pollutants (tpy)						Greenhouse Gas (tpy)
	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>x</sub>	VOC	CO <sub>2e</sub>
Malmstrom AFB	21.127	30.839	1.487	1.394	4.599	6.569	--
Proposed Action	11.4	2.613	0.396	0.335	0.551	7.556	1,690
<b>Total Emissions</b>	<b>22.815</b>	<b>35.639</b>	<b>3.063</b>	<b>2.813</b>	<b>5.206</b>	<b>7.336</b>	<b>--</b>

Source: 2015 Air Emissions Inventory, Malmstrom AFB, ACAM 2017  
 CO = carbon monoxide  
 NO<sub>x</sub> = nitrogen oxides  
 PM<sub>10</sub> = particulate matter less than 10 microns in diameter  
 PM<sub>2.5</sub> = particulate matter less than 2.5 microns in diameter  
 tpy = tons per year  
 SO<sub>x</sub> = oxides of sulfur  
 VOC = volatile organic compounds  
 CO<sub>2e</sub> = carbon dioxide equivalent

Minor long-term impacts during the operation of the proposed ALZ may result in the emissions of fugitive dust from the C-130 landings/takeoffs and from the 40 HS training (approaches, hover work, and slide landings) on the semi-improved (dirt) ALZ. However, the ALZ will be constructed and stabilized in accordance with the specifications in Engineering Technical Letter 97-9: Criteria and Guidance for C-17 Contingency and Training Operations on Semi-Prepared Airfields (which includes C-130 runway design). Additionally, implementation of dust control measures outlined in Volume II of FM5-430-00-2/AFJAM 32-8013, *Planning and Design of Roads, Airfields, and Heliports in the Theater of Operations-Airfield and Heliport Design*, will help reduce the effects of the fugitive dust. Fugitive dust emissions will be determined during the construction phase of the ALZ and any applicable air quality permits will be obtained accordingly.

Long-term emissions associated with the operations of the Proposed Action are expected to be minor, resulting in no significant impacts to air quality.

#### 4.2.2.2 Alternative 2

Construction and operations activities for Alternative 2 are the same as Alternative 1. Therefore, total emissions would remain below Title V major source thresholds. Short-term and long-term emissions associated with the Proposed Action would be minor, resulting in no significant impacts to air quality.

#### 4.2.2.3 No Action Alternative

Under the No Action Alternative, construction or air activities associated with C-130 training would not occur. Therefore, there would be no impact on air emissions.

### 4.3 NOISE

#### 4.3.1 Approach to Analysis

Noise impact analyses typically evaluate potential changes to existing noise environments that are instigated by implementation of a Proposed Action. These potential changes may be beneficial if they reduce the number of sensitive receptors exposed to unacceptable noise levels. Conversely, changes may be significant if they result in increased exposure to unacceptable noise levels. An increase in noise levels from the introduction of a new noise source can affect the surrounding environment. Noise associated with a Proposed Action is compared with existing noise to determine the magnitude of potential impacts.

Effects on the noise environment would be considered significant if the Proposed Action would be in an area with a current noise level of 65 dBA DNL or greater and be an incompatible land use for that noise level or result in an appreciable long-term increase in ambient noise levels.

#### 4.3.2 Impacts

##### 4.3.2.1 Alternative 1 (Preferred Alternative)

###### **Construction-Related Noise**

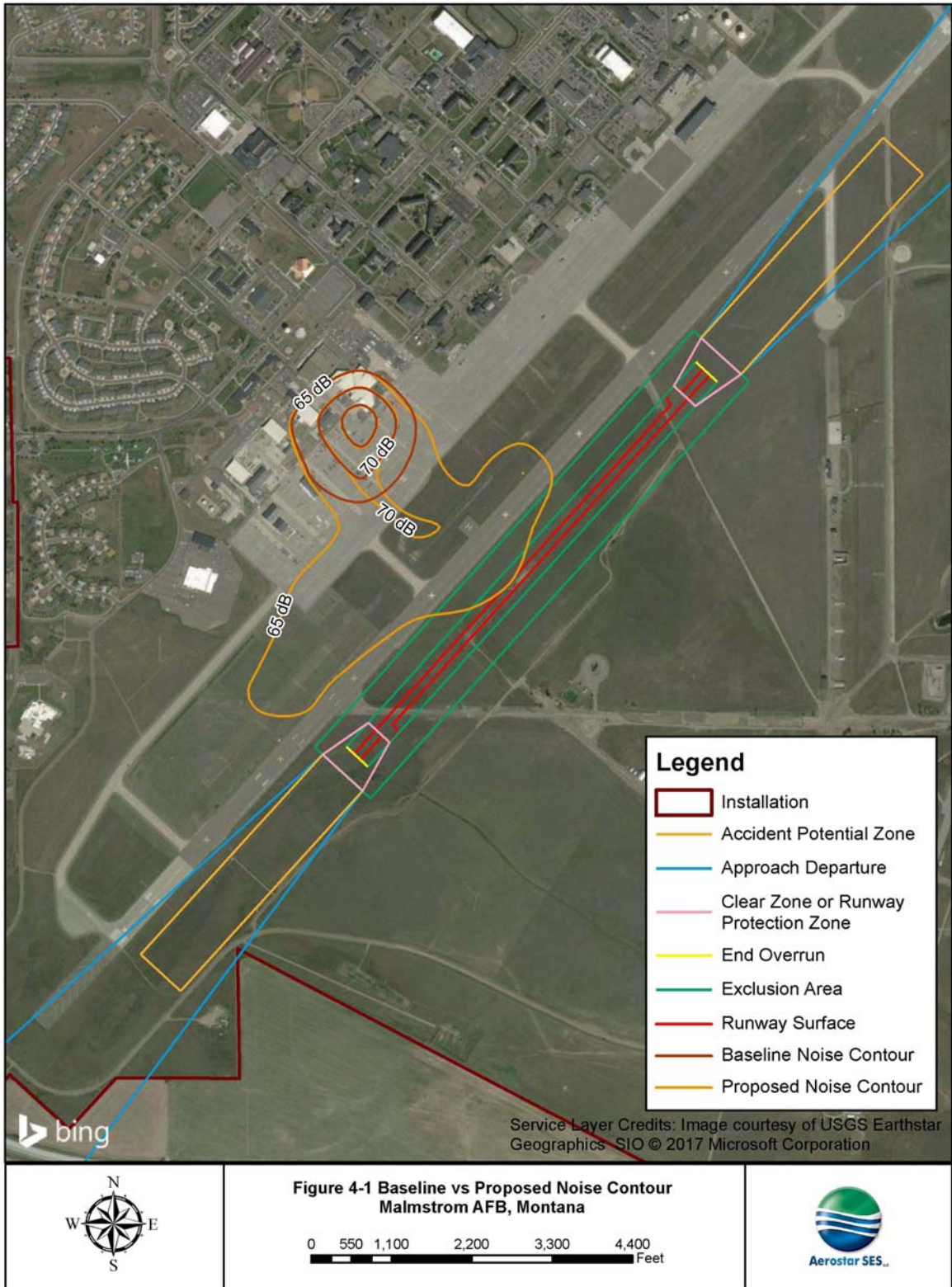
Implementation of Alternative 1 would have minor, temporary effects on the noise environment in the vicinity of the Proposed Action area. Use of heavy equipment for site preparation and development (vegetation removal, grading, and backfill) would generate short-term noise exposure above typical ambient levels at the installation. However, noise generation would be typical of construction activities. Construction activity would be confined to normal working hours (between 7:00 a.m. and 5:00 p.m.). Therefore, although adverse, short-term (during construction) noise generated by construction activities associated with implementation of Alternative 1 would not significantly impact sensitive receptors at or adjacent to Malmstrom AFB. Although proposed construction would generate short-term noise, the residences nearest the Proposed Action area are approximately 2,800 feet to the northwest. Given the type of construction activities (sporadic, during daytime hours, short-term, etc.) and the distance from proposed construction to the closest residence (2,800 feet), no significant impacts to residences would occur.

### **Operational Noise**

Implementation of the Alternative 1 would result in C-130 training missions at Malmstrom AFB, which includes landings and takeoffs. Noise levels associated with daily ALZ operations (daily average of 1.5 landings/takeoffs per day and 0.5 landing/takeoff per night) are not expected to exceed the current noise levels produced by helicopter activities ranging from 80 to 96 dBA DNL (FAA, 2016b). Helicopter activities and C-130 training activities are not anticipated to be conducted simultaneously. Each C-130 landing/takeoff cycle will last approximately 30 minutes. Frequency of noise will increase baseline conditions a total of 1 hour in a 24-hour period from the addition of the C-130 training activities. Additionally, approximately 43 acres would be impacted above the 65 dBA DNL as a result of the ALZ operations with the exposure confined to the approach end of the airfield in a 180-degree, 600-foot radial contour line that does not extend beyond the boundaries of the airfield or Malmstrom AFB (Montana ANG, 2013).

The proposed ALZ is located alongside the decommissioned Malmstrom AFB runway to the southeast. A noise comparison analysis was conducted in October 2016 for the proposed C-130 activities at Malmstrom AFB. The proposed noise contour in Figure 4-1 reflect the average noise of the baseline helicopter activities and the proposed C-130 activities conducted simultaneously. The noise results indicate that, although the Proposed Action increases the acreage within the 65 dBA DNL contour, the average 65 dBA DNL contour would not extend outside the Malmstrom AFB fenceline (see Figure 4-1) (AFCEC, 2016). The shape and scale of the proposed noise contour indicated that helicopter activities are louder than the proposed C-130 activities. Additionally, the direction of noise contour expansion is not in the direction of noise sensitive buildings; therefore, noise is not expected to exceed ambient levels in the surrounding areas. If Alternative 1 is implemented, the 1994 AICUZ would be updated to incorporate C-130 training activities. This will provide a more definitive noise contour and provide information for future compatible development.

The C-130 training activities of the Proposed Action would not generate noise above current operations levels. Therefore, implementation of Alternative 1 would have no significant impacts to noise receptors.



#### 4.3.2.2 Alternative 2

Construction and operational activities for Alternative 2 are the same as Alternative 1. Therefore, implementation of Alternative 2 would have no significant impacts to noise receptors.

#### 4.3.2.3 No Action Alternative

Under the No Action Alternative, construction or air activities associated with C-130 training would not occur. Therefore, there would be no impact on noise receptors.

### 4.4 LAND USE

#### 4.4.1 Approach to Analysis

Determination of land use impacts is based on the degree of land use sensitivity in the area. The impact to a land use would be significant if the Proposed Action would

- be inconsistent or noncompliant with applicable land use plans or policies,
- preclude an existing land use of concern from continuing to exist,
- preclude continued use of an area, or
- be incompatible with adjacent or vicinity land use to the extent that public health or safety is endangered (related to increased noise levels).

The analysis of potential impacts to land use includes

- identification and description of land use areas that may be affected by implementation of a Proposed Action,
- examination of the Proposed Action and its potential effects on land use,
- assessment of the compatibility of a Proposed Action with existing zoning, and
- assessment of the significance of potential impacts to land use based on the criteria described above.

#### 4.4.2 Impacts

##### 4.4.2.1 Alternative 1 (Preferred Alternative)

Alternative 1 would have no impact on land use or zoning in the area because it is within the boundaries of Malmstrom AFB and within an area on the installation designated for airfield use.

#### 4.4.2.2 Alternative 2

Construction and operational activities as well as the location for Alternative 2 are the same as Alternative 1. Therefore, Alternative 2 would have no impact on land use or zoning in the area because it is within the boundaries of Malmstrom AFB and within an area on the installation designated for airfield use.

#### 4.4.2.3 No Action Alternative

Under the No Action Alternative, no changes to the land use or zoning associated with C-130 training would occur. Therefore, there would be no impact on land use.

### **4.5 GEOLOGICAL RESOURCES**

#### **4.5.1 Approach to Analysis**

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating impacts of a Proposed Action on geological resources. Generally, such impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development.

Analysis of potential impacts to geological resources typically includes

- identification and description of resources that could potentially be affected,
- examination of the Proposed Action and the potential effects it may have on the resource,
- assessment of the significance of potential impacts, and
- provision of mitigation measures if potentially significant impacts are identified.

#### **4.5.2 Impacts**

##### 4.5.2.1 Alternative 1 (Preferred Alternative)

Implementation of Alternative 1 would disturb approximately 9 acres of land from construction. Heavy equipment would be used to grade the site, move and compact soils, and excavate foundations. Equipment and material staging would occur on the decommissioned runway. The soils at Alternate Site 1 consist of Lawther and Gerber Series. Most of the construction would occur on previously disturbed land, and continued development of this area would not cause significant impacts on natural soils. No special qualities are associated with the geology or soils on this site. Implementation of appropriate construction BMPs would minimize impacts on soil



erosion caused by wind and stormwater and would be implemented in accordance with the General Permit for Stormwater Discharges Associated with Construction Activity and its associated SWPPP. Construction would cause short-term erosion under Alternative 1; however, this impact would be minor with the implementation of BMPs, as outlined in the SWPPP and Installation General Permit.

#### 4.5.2.2 Alternative 2

Construction and operational activities as well as the location for Alternative 2 are the same as Alternative 1. Construction would cause short-term erosion under Alternative 2; however, this impact would be minor with the implementation of BMPs, as outlined in the SWPPP and Installation General Permit.

#### 4.5.2.3 No Action Alternative

Under the No Action Alternative, no construction activities would occur. Therefore, there would be no impact on geological resources.

## **4.6 WATER RESOURCES**

### **4.6.1 Approach to Analysis**

Significance of potential impacts to water resources is based on water availability, water quality, and use; existence of wetlands; and associated regulations. An impact to water resources would be significant if it would

- reduce water availability to or interfere with the supply of existing users,
- create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources,
- adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions,
- threaten or damage unique hydrologic characteristics, or
- violate laws or regulations that have been established to protect or manage water resources of an area.

## **4.6.2 Impacts**

### **4.6.2.1 Alternative 1 (Preferred Alternative)**

There will be no drilling, mining, or extracting of groundwater associated with Alternative 1; therefore, no impacts to groundwater resources are expected.

The design of the ALZ will not impact surface waters and wetlands directly. Additionally, all BMPs required by state and federal laws will be implemented to protect any nearby surface waters and wetlands during construction and operation. Therefore, no significant impacts to surface waters and wetlands are expected.

Alternative 1 occurs in Drainage Areas 5, 6 and 7. The drainage areas are predominantly flat, and no slopes exceed approximately 10% grade except at the end of the runway. Runoff from Drainage Areas 5 and 6 flows off the installation at NPDES Discharge Outfalls Number 5 and 6 (Section 3.6.2) and drains into Whitmore Ravine's East Fork followed by the Missouri River. Alternative 1 would comply with Malmstrom AFB General Permits, associated SWPPPs, specified BMPs, and stormwater controls sufficient to ensure no net increase in peak flow rates and total volume of runoff from the site. These requirements were developed to prevent significant stormwater effects on the environment, in particular Whitmore Ravine. Construction-related impacts of Alternative 1 would be minor with the implementation of appropriate BMPs. There would be no increase in impervious surfaces because the ALZ will be constructed with pervious surface materials. Therefore, Alternative 1 would not substantially increase the runoff in Drainage Areas 5 and 6. Runoff from Drainage Area 7 would not impact surface waters because it drains as sheet flow over pasture toward the southeast corner of the installation and does not enter any ravines (Malmstrom AFB, 2014). No significant impacts to stormwater and water quality are expected.

### **4.6.2.2 Alternative 2**

Construction and operational activities as well as the location for Alternative 2 are the same as Alternative 1. Therefore, implementation of Alternative 2 would have no significant impacts to water resources.

### **4.6.2.3 No Action Alternative**

Under the No Action Alternative, no construction activities would occur. Therefore, there would be no impact on water resources.

## **4.7 BIOLOGICAL RESOURCES**

### **4.7.1 Approach to Analysis**

Determination of the significance of potential impacts to biological resources is based on

- the importance (legal, commercial, recreational, ecological, or scientific) of the resource;
- the proportion of the resource that would be affected relative to its occurrence in the region;
- the sensitivity of the resource to proposed activities; and
- the duration of ecological ramifications. Impacts to biological resources are significant if species or habitats of concern are adversely affected over relatively large areas or disturbances cause reductions in population size or distribution of a species of high concern.

Under the ESA, a Federal agency needs to determine whether their Proposed Action may affect threatened and endangered species and designated critical habitat. An online consultation with USFWS via Information for Planning and Consultation (IPaC) would be conducted to obtain the official species list, which requires updating every 90 days. The Federal agency would assess the effects to the threatened or endangered species based on project-specific knowledge. A “no effect” determination would not require additional consultations with USFWS. A record of the determination would be kept on file. A “may effect” determination would require further review by the USFWS.

Potential physical impacts such as habitat loss, noise, and impacts to surface water were evaluated to assess potential impacts to biological resources resulting from implementation of the Proposed Action and identified alternatives.

### **4.7.2 Impacts**

#### **4.7.2.1 Alternative 1 (Preferred Alternative)**

Vegetation at the preferred site is previously disturbed (see Section 3.8 for additional details) and characterized primarily by introduced grasses and a few shrubs. Areas (60 feet by 4,800 feet) of vegetation at the Proposed Action area would be permanently converted to a dirt runway, and the runway shoulders would continue to exist as open field vegetated by grasses. The site is already in highly disturbed habitat for wildlife from aircraft operations. However, to minimize impacts to vegetation and wildlife, the cleared areas adjacent to the proposed ALZ will be drill-seeded with native grass species in the late fall after construction is complete through collaboration between the

CEIE and the natural resources manager. When the grass is 3 years old, it must be watered at least two to three times per summer and maintained at a height of 7 to 14 inches. By maintaining the specified grass height, ground squirrels will be deterred from establishing burrows and attracting predators onto the airfield. Ground squirrel management would comply with the Malmstrom AFB Pest Management Plan. If ground squirrels become established within the Proposed Action area, ground squirrel-excluding fencing with a pea gravel moat (USDA, 2012) may be constructed to keep ground squirrels from entering the area and potentially damaging the proposed ALZ. No eagle strikes have been reported; therefore, the Proposed Action is "not likely to adversely effect" the bald or golden eagle. However, since there have been historical occasional golden eagle sightings and for precautionary measures, Malmstrom AFB and Montana ANG will obtain a non-purposeful take BGEPA permit. All other bird species of concern at Malmstrom AFB is covered under the MBTA permit that is updated annually.

According to an online consultation conducted with USFWS via Information for Planning and Consultation (IPaC) for the Proposed Action area, the Proposed Action is not located within any critical habitats. Based on the IPaC review, the North American Wolverine (*Gulo gulo luscus*) is known to be in the general area of the Proposed Action area; however, no known sightings have been recorded within the fence line of Malmstrom AFB. No other threatened and endangered species were identified. The species determination and rationale are provided in Table 4-3. The IPaC consultation letter is provided in Appendix C.

**Table 4-3 Species Determination**

Common Name	Scientific Name	Determination	Rationale
North American Wolverine	<i>Gulo gulo luscus</i>	No effect	No suitable habitat in project area

Additionally, the BASH plan will be updated to incorporate C-130 training activities to the current helicopter activity levels. The addition of C-130 training activities would increase BASH management significantly. To avoid impacts to wildlife and migratory birds, USAF C-130 active duty units and Montana ANG will coordinate daily with the Malmstrom AFB Safety and Natural Resources departments so that BASH safety measures can be implemented prior to conducting C-130 training activities at the proposed ALZ.

Based on the limited amount of biological resources at the Proposed Action area and aggressive implementation of the BASH program, no significant impacts on biological resources are expected.

#### 4.7.2.2 Alternative 2

Construction and operational activities as well as the location for Alternative 2 are the same as Alternative 1. Therefore, no significant impacts on biological resources are expected.

#### 4.7.2.3 No Action Alternative

Under the No Action Alternative, construction and operation activities would not occur. Therefore, there would be no impact on biological resources.

## 4.8 CULTURAL RESOURCES

### 4.8.1 Approach to Analysis

Cultural resources are subject to review under both federal and state laws and regulations. Section 106 of the NHPA of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the NRHP.

After cultural resources have been identified, NRHP significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (eligible for the NRHP) are protected under the NHPA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts.

Direct impacts may occur by

- physically altering, damaging, or destroying all or part of a resource;
- altering the characteristics of the surrounding environment that contribute to resource significance;
- introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or
- neglecting the resource to the extent that it is deteriorated or destroyed.

Direct impacts can be assessed by identifying the locations of development and determining if the Proposed Action would coincide with the locations of cultural resources and the potential for impact to that cultural resource. Indirect impacts can result from the effects of project-induced increases in population and the resulting need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and the subsequent use of the facilities can disturb or destroy cultural resources.

## **4.8.2 Impacts**

### **4.8.2.1 Alternative 1 (Preferred Alternative)**

Based on the completion of the Phase I archaeological survey, the area of the Proposed Action did not contain any significant archaeological resources. In accordance with the NHPA, the federally recognized tribes that have historical affiliation with the Malmstrom AFB geographic region (listed in Appendix A) were invited to consult and provide comments. Interagency/ Intergovernmental Correspondence for Environmental Planning (IICEP) letters were sent to seven tribes (Assiniboine, Blackfeet, Northern Cheyenne, Chippewa Cree, Crow, Fort Belknap, and Salish and Kootenai). No tribal comments or responses were received. The Installation Tribal Liaison Officer conducted a tribal relations meeting with all the 7 tribal governments on 11 July 2017. Mr. Tony Lucas, ITLO, presented general scope discussion about present and future construction projects, including the proposed ALZ. No tribal representative attending the meeting raised any issue related to the Proposed Action. No issues were noted during discussions related to the Proposed Action. For these reasons, it is not expected that impacts to NRHP-eligible archaeological resources will occur as a result of Alternative 1.

Since the Area of Potential Effect (APE) is located within previously disturbed areas, it is unlikely that any cultural resources are located in this area. A cultural resource survey has been conducted at the APE and consultation with the Montana SHPO was completed with the SHPO Letter included in Appendix B. Malmstrom attached the survey report to a SHPO consultation letter, concluding no effect to cultural resources (Appendix B). The SHPO has concurred with the no effect determination. (Appendix B) Although not expected, avoidance and/or mitigation of cultural resources may be required in consultation with Malmstrom AFB and the Montana SHPO if historic or prehistoric resources are encountered during project construction.

#### 4.8.2.2 Alternative 2

Construction and operational activities as well as the location for Alternative 2 are the same as Alternative 1. Therefore, implementation of Alternative 2 would have no impact to NRHP-eligible archaeological resources.

#### 4.8.2.3 No Action Alternative

Under this alternative, there would be no direct impacts on cultural resources because there would be no construction or operational activities.

### **4.9 AIRSPACE MANAGEMENT**

#### **4.9.1 Approach to Analysis**

Airspace management impacts are considered in terms of context, intensity, and duration. Impacts would be considered significant if existing scheduling and coordination systems would not be adequate to support the increased airspace usage. Impacts would also be considered significant if additional special use airspace (SUA) was proposed and the proposed additional SUA would hinder ongoing civilian aircraft operations. Finally, impacts would be considered significant if an action were proposed that was not in compliance with FAA or USAF regulations regarding management procedures to ensure safety of flight.

#### **4.9.2 Impacts**

##### 4.9.2.1 Alternative 1 (Preferred Alternative)

ALZ operations, averaging 1.5 landings per day and 0.5 landing per night training missions, would occur at Malmstrom AFB. All ALZ operations would be contingent upon scheduling with and approval by the USAF or airport manager and the FAA and would only be conducted after establishment of appropriate ALZ markings. In addition, implementation of Alternative 1 would not require modification of the ATC system at Malmstrom AFB. The Montana ANG and all potential users would coordinate all training activities with the current 40 HS at Malmstrom AFB to avoid airspace conflicts.

No new airspace is proposed, and existing airspace management procedures are expected to be sufficient to handle a slight net increase in total aircraft operations. There would be no significant impacts to airspace management under Alternative 1.

#### 4.9.2.2 Alternative 2

Airspace activities for Alternative 2 are the same as Alternative 1. Therefore, implementation of Alternative 2 would have no significant impacts to airspace management.

#### 4.9.2.3 No Action Alternative

Under the No Action Alternative, construction or operation activities associated with C-130 training would not occur. Therefore, there would be no impact on airspace management.

### **4.10 SAFETY**

#### **4.10.1 Approach to Analysis**

Potential effects on safety and occupational health were analyzed by evaluating whether implementing the proposed project would result in unique or disproportionate risks to workers or the public or expose these populations to inherently unsafe or unhealthful environments. The Proposed Action would have a significant impact if it would

- result in disproportionately high and adverse environmental health or safety risks to workers or the public;
- substantially increase risks associated with aircraft mishap potential or flight safety relevant to the public or the environment; or
- place excessive constraints on emergency services (police, fire, emergency services) such as by not providing adequate site access for emergency responders, triggering the need for expanded capacity, or resulting in discernible reductions in the level of service provided.

Further, if implementation of the Proposed Action would result in incompatible land use with regard to safety criteria such as RPZs or QD arcs, impacts would be significant.

#### **4.10.2 Impacts**

##### 4.10.2.1 Alternative 1 (Preferred Alternative)

#### **Safety and Occupational Health**

Short- and long-term minor adverse effects related to safety and occupational health could occur. During ALZ construction activities, workers would be exposed to typical construction site risks such as slips and falls, repetitive motion injuries, lifting and handling materials, use of heavy

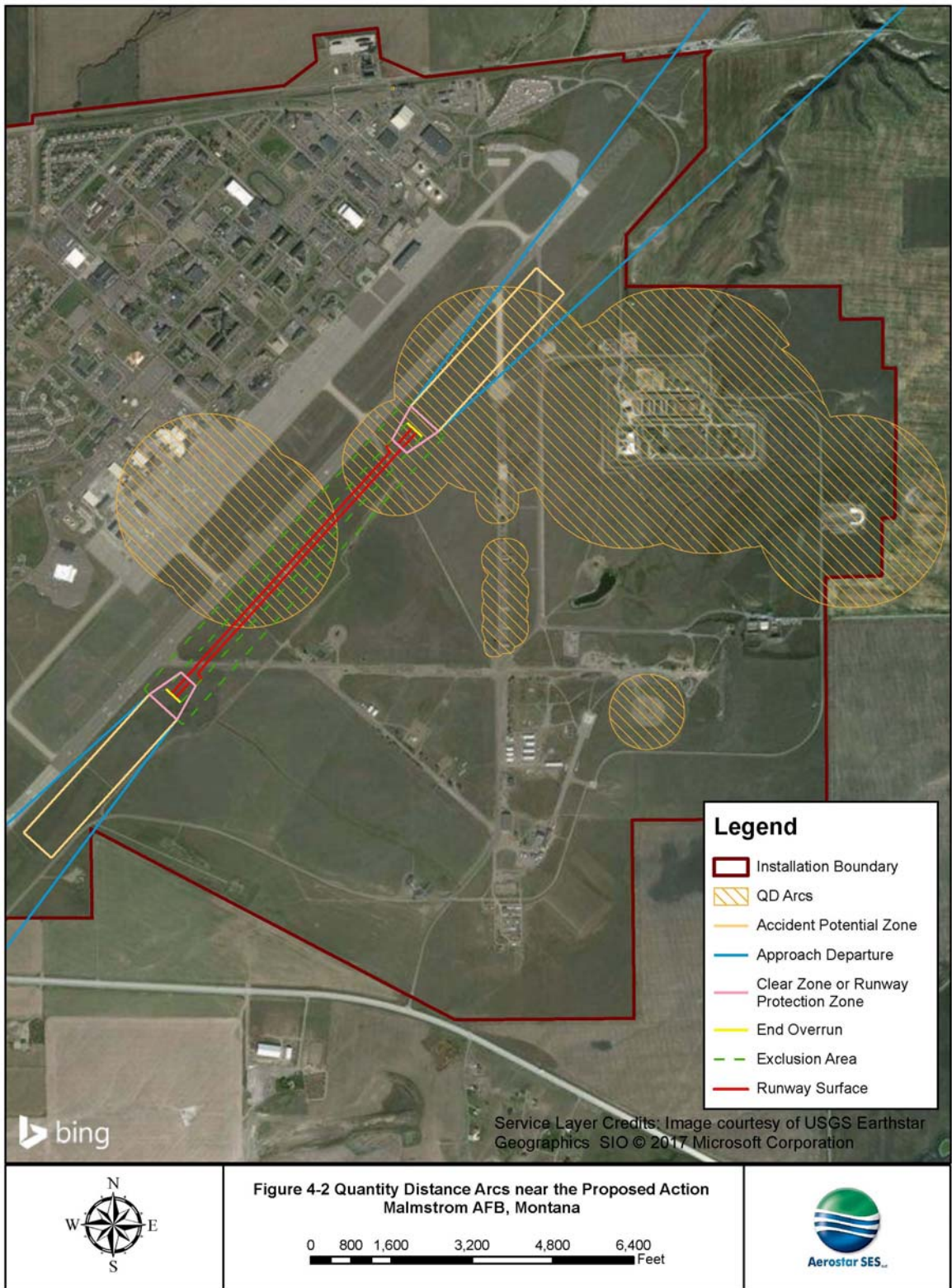


equipment, heat or cold stress, and noise exposure. Alternative 1 is along the runway and has restricted access. The public would not be able to access the construction site.

All construction workers would be responsible for maintaining an adequate safety program to minimize risks to workers and ensure compliance with OSHA and state regulations. The construction site would be maintained in a clean and orderly manner; any spills would be stopped and cleaned up promptly. In the unlikely event that contaminated soil or water is encountered, work would stop in that area, a designated manager would be contacted, and work would not resume in the area until appropriate actions were taken to minimize any risks to health and safety. By implementing safety plans and regulation measures, health and safety risks would not exceed those typical of any construction site; therefore, no significant impacts would occur.

#### **Runway Protection Zone and Quantity Distance**

Facilities present at and adjacent to the Proposed Action site are compatible with land use with regard to established RPZs (or CZs) associated with the current 40 HS and former fixed wing activities. The Proposed Action would result in new RPZs to the southeast of established RPZs associated with the decommissioned runway; however, no incompatible land use were identified within the new RPZs (Figure 4-1). The new RPZs associated with the Proposed Action are located within the QD arc for the helipad but are over 300 feet outside of the QD arc for the nuclear weapons storage facilities (Figure 4-2). In the event of emergencies related to aircraft mishaps within the QD arcs, Malmstrom AFB has an emergency management plan in place in accordance with Air Force Manual (AFMAN) 91-201, *Explosives Safety Standards* and AFI 10-2501, *Air Force Emergency Management (EM) Program Planning and Operations*. Therefore, no significant impact with regard to airfield safety would result from implementation of Alternative 1.



### **Aircraft Mishaps**

Alternative 1 would allow for C-130 ALZ training missions to be conducted at Malmstrom AFB, less than 1,000 hours of flight time annually. During the past 10 years, the C-130 has experienced a Class A mishap rate of only 0.27 mishaps per 100,000 hours of flight time (USAF 2015b). Using a training duration of two hours and at the current C-130 mishap rate, this would equate to an annual probability of a Class A mishap of only 0.0054%. This analysis makes only a statistical prediction regarding the frequency of mishaps and may not represent real-world conditions. Current aircraft flight safety policies and procedures at Malmstrom AFB and Montana ANG are designed to ensure that the potential for aircraft mishaps is reduced to the lowest possible level. These safety policies and procedures would continue.

Only an average of two flight operations per day will occur per day. Malmstrom would complete airspace review and coordination to ensure separation of aircraft and safety of flight for increase of traffic density, routing, and clearance altitudes (or simply, training space needs) with MAJCOM and FAA prior to ALZ training use. The potential for midair collision or near misses associated with privately owned aircraft would be minimal. As also discussed in Sections 3.9 and 4.9, mission coordination and NOTAM would occur between the training organization, the Malmstrom Airfield Manager and FAA prior to authorization to conduct ALZ training .

### **Bird-Aircraft Safety Hazard**

Birds and/or wildlife pose the primary danger to aircraft. To minimize the potential for any bird/wildlife-aircraft strikes, Malmstrom AFB would continue to implement an aggressive BASH program and would incorporate fixed-wing landings and takeoffs at the ALZ two times per day. Malmstrom AFB would also continue to coordinate with USDA wildlife experts regarding BASH-related issues (identification of problem species, control methodologies). The Malmstrom AFB BASH program requires cooperation and communication between Malmstrom AFB and Montana ANG. USAF active duty units and Montana ANG will coordinate daily with the Malmstrom AFB safety and natural resources managers, so BASH management can be implemented prior to fixed-wing air operations. Even with deterrent strategies and environmental modifications, certain species of birds continue to use the airfield environment and areas off-base that can harbor congregating birds. Through active communication between all parties involved in day-to-day airfield activities, individuals or concentrations of birds can be detected and avoided. Some birds cannot be deterred from using the airfield, but bird strikes can be avoided through constant observation and advisories

to pilots. Malmstrom AFB would also continue to coordinate with USDA wildlife experts regarding BASH-related issues, such as identification of problem species and control methodologies (such as lasers and pyrotechnics). Therefore, by implementing the BASH plan and coordinating and communicating, no significant impacts to aircraft safety is expected.

Overall operations associated with the Proposed Action are expected to result in no significant impacts to aircraft safety.

### **Emergency Services**

All C-130 training activities at the proposed ALZ at Malmstrom AFB would be scheduled in advance. During in-flight emergencies, the C-130 aircraft would divert to Great Falls IAP and a response at Malmstrom AFB would not be required. As a precautionary measure, Montana ANG will send an emergency response vehicle ahead of planned C-130 training at Malmstrom AFB. Should USAF C-130 aircraft schedule training sorties, Malmstrom AFB would establish, maintain and provide appropriate emergency response capability. Malmstrom AFB fire department will be on normal standby duty unless otherwise directed. A memorandum of understanding (MOU) would need to be agreed upon by Malmstrom AFB and Montana ANG prior to implementing the Proposed Action for ANG training. In the event of an emergency where additional support would be needed, Malmstrom AFB has agreements with the local community fire and police departments. Therefore, implementing Alternative 1 would have no significant impact on emergency services.

#### **4.10.2.2 Alternative 2**

Construction and operations activities for Alternative 2 are the same as Alternative 1; therefore, safety and occupational health concerns are the same. Implementation of Alternative 2 would have no significant impacts to safety and occupational health.

#### **4.10.2.3 No Action Alternative**

Under the No Action Alternative, the proposed ALZ would not be constructed and would not be used for C-130 assault landing training. There would be no increase in aircraft operations, which would maintain the current likelihood of aircraft mishaps or BASH, resulting in no effect on safety. With the continuation of policies and procedures in place to ensure the safety of the public as well as military personnel, there would be no adverse impacts associated with the No Action Alternative.

## **4.11 UTILITIES AND INFRASTRUCTURE**

### **4.11.1 Approach to Analysis**

Potential effects on utilities and infrastructure from implementing the Proposed Action were analyzed by evaluating whether required utilities are readily available to serve the project site, whether existing utilities would have to be relocated or upgraded, and whether utility systems have sufficient capacity to accommodate the change in demand. Implementing the Proposed Action would have a significant impact on utilities and infrastructure if it would require extensive relocation, upgrade, or installation of new utility systems; exceed available system capacity; or substantially increase stormwater runoff volume, decrease stormwater infiltration rates, increase erosion, or increase sediment loading of surface water through stormwater runoff.

### **4.11.2 Impacts**

#### **4.11.2.1 Alternative 1 (Preferred Alternative)**

Short-term minor adverse impacts related to construction activities and long-term minor increases in stormwater control would be expected. A subsurface potable water line and a stormwater inlet with associated buried lines are located in the southwest mid-section of the proposed ALZ (Malmstrom AFB, 2015a). These lines will be reconfigured prior to the construction of the ALZ. Both potable and stormwater lines will be buried sufficiently so that ALZ activity will not impact these lines. Construction will follow the guidelines established in AFI 32-7063 and EO 13693. Additionally, the Proposed Action would comply with Malmstrom AFB General Permits, associated SWPPPs with specified BMPs, and stormwater controls sufficient to ensure no net increase in peak flow rates and total volume of runoff from the site. No significant impacts to utilities and infrastructure would occur.

Construction and removal of pavement would generate debris. The pavement materials would require landfill disposal. The proposed project is relatively small, and a minimal amount of construction debris is expected to be generated. The High Plains Landfill has been operating since 1980 and accepts up to 106 tons of waste per day (USAF, 2009), which is more than sufficient to accommodate debris from the project, so adverse effects would be minor.

The proposed ALZ does not require infrastructure to provide global assault landing field conditions for training realism. Airfield lighting (landing, runway, taxiway, security, and facility lighting) will not be installed. These features will alter the primitive airfield conditions required for dark

sky operations. No hardwired telecommunications are needed, and communications will be accomplished strictly by radio, cellular, or other wireless communication. There is also no need for potable water, wastewater, electricity, natural gas, and solid waste services to be provided to the site. Additionally, Alternative 1 does not include construction of impervious surfaces. It is expected that minor increases in stormwater would occur; however, Malmstrom AFB will implement its SWPPP in accordance with state and federal regulations. Therefore, there would be no significant impacts to utilities and infrastructure.

#### 4.11.2.2 Alternative 2

Construction and operations activities for Alternative 2 do not differ from Alternative 1; therefore, the demand on utilities and infrastructure are the same. Implementation of Alternative 2 would have no significant impacts to utilities and infrastructure.

#### 4.11.2.3 No Action Alternative

Under the No Action Alternative, construction or operation activities associated with C-130 training would not occur. Therefore, there would be no impact on utilities and infrastructure.

## **4.12 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN**

### **4.12.1 Approach to Analysis**

Environmental justice analysis addresses potential impacts on minority and low-income populations per EO 12898. Following CEQ guidance, minority populations are identified where either the minority population of the affected area exceeds 50% or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ, 1997). Low-income populations are identified using poverty thresholds established by the U.S. Census Bureau. The number of persons or families living in poverty are those with income below the U.S. Census Bureau-defined threshold levels of \$12,082 annual income for an individual and \$24,257 annual income for a family of four (U.S. Census Bureau, 2015b).

Potential effects on the protection of children were analyzed by evaluating whether implementing the proposed project would result in disproportionate health or safety risks to children or expose children to inherently unsafe or unhealthful environments. Risks to children could include an increase in a child's risk of exposure to an environmental hazard (through contact, ingestion, or

inhalation) or the risk of potential substantial harm to children's safety during construction or operation of the school.

Impacts on identified environmental justice (minority and low-income) communities and the protection of children would be considered significant if one or more of the following would occur:

- Activities or operations substantially altering lifestyles or quality of life of Malmstrom AFB employees and their families or civilian households living near Malmstrom AFB;
- Disproportionately high and adverse environmental or human health impacts on an identified minority or low-income population, which appreciably exceed those to the general population around the Proposed Action area; or
- Disproportionately high and adverse environmental health or safety risks to an identified population of children.

#### **4.12.2 Impacts**

##### 4.12.2.1 Alternative 1 (Preferred Alternative)

###### **Short-term Impacts**

Short-term impacts from the implementation of Alternative 1 would only consist of construction activities. However, the construction activities would be confined to the Malmstrom AFB runway area and should not affect the surrounding communities.

###### *Environmental Justice*

In general, residents in communities near the Malmstrom AFB are considered middle income. The poverty rate of the city of Great Falls is 12.6%, slightly higher than that of Cascade County (11.0%), the state of Montana (9.9%), and the nation (11.3%). The percentage of minority residents living in the city of Great Falls (8.7%) is consistent with the percentage of minority residents living in Cascade County (7.8%), and the state of Montana (8.4%). However, the percentage of minority residents living in the four geographic areas considered for this analysis are substantially below the percentage of minority residents reported nationally (23.9%). Residents within Great Falls would not be affected by short-term impacts associated with implementation of Alternative 1, which would largely be confined to construction activities on site.

###### *Protection of Children*

The percentage of the total population represented by children under age 18 in the city of Great Falls (22.1%) is lower than of Cascade County (22.6%), Montana (22.1%) and the nation (23.3%). Further, no housing or facilities for children exist on or in the immediate vicinity of Alternative 1. Children would not have access to construction sites; therefore, implementation of Alternative 1 would not result in increased environmental health risks or safety risks to children.

#### **Long-Term Impacts**

No significant adverse long-term environmental impacts associated with Alternative 1 would occur; therefore, no populations (minority, low-income, or otherwise) would be disproportionately adversely impacted. In addition, implementation of the Alternative 1 would not result in increased environmental health risks or safety risks to children. Therefore, no impacts with regard to environmental justice or protection of children would result.

#### 4.12.2.2 Alternative 2

Construction and operational activities as well as the location for Alternative 2 are the same as Alternative 1. Therefore, implementation of Alternative 2 would have no impacts to environmental justice or protection of children.

#### 4.12.2.3 No Action Alternative

Under the No Action Alternative, construction or operational activities associated with C-130 training would not occur. Therefore, there would be no impact on environmental justice or protection of children.



## **SECTION 5 CUMULATIVE IMPACTS**

This section provides a definition of cumulative effects; a description of past, present, and reasonably foreseeable actions relevant to cumulative effects; and an evaluation of cumulative effects potentially resulting from these interactions.

### **5.1 DEFINITION OF CUMULATIVE EFFECTS**

The most severe environmental degradation may not result from the direct effects of any particular action but from the combination of effects of multiple, independent actions over time. As defined in 40 CFR 1508.7 (CEQ Regulations), a “cumulative impact” is the impact on the environment that 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 not) or person undertakes such other actions. Some authorities contend that most environmental effects can be seen as cumulative because almost all systems have already been modified. Principles of cumulative effects analysis are described (CEQ, 1997b) as follows: Cumulative effects analysis must be limited through scoping to effects that can be evaluated meaningfully to help the decision-maker and inform interested parties. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties. Guidance for implementing NEPA requirements recommends that federal agencies identify the temporal and geographic boundaries of the potential cumulative effects of a Proposed Action.

### **5.2 PROPOSED PROJECTS IN THE VICINITY**

Malmstrom AFB’s Installation Development Plan (IDP) presents ongoing and reasonably foreseeable projects at the installation. Malmstrom AFB’s IDP also provides a framework for evaluating other installation development proposals. The IDP includes a strategic vision and goals and objectives for implementing that strategic vision. It defines planning constraints, capacity opportunities, and sustainable development indicators, which are the bases of compatible land uses, appropriate scale of development, how and where development should occur, and project priority to best meet Malmstrom AFB’s mission needs (Malmstrom AFB, 2015a). Table 5-1 outlines short range (less than 6 years), medium range (6-10 years), and long range (more than 11 years) development plans at Malmstrom AFB.

**Table 5-1 Proposed Projects at Malmstrom AFB**

<b>Short Range Projects (less than 6 years)</b>			
1	Construct Helicopter Ops/ TRF Alert Facility	17	Repair Roads Inside WSA
2	Construct Missile Maintenance Facility	18	Repair Bldg 1840 WSA <sup>2</sup>
3	Construct Physical Fitness Center, PH 2	19	Repair LF Driving Surface <sup>1</sup>
4	Construct Commercial Gate Entrance Control Facility <sup>2</sup>	20	MAF Helo Pad Repairs <sup>1,2</sup>
5	Replace Missile Alert Facilities, PH 1 <sup>1</sup>	21	Repair O-11 Bridge <sup>1</sup>
6	Dormitory Improvements/ Construction	22	Maintain Earth Cover on Igloos <sup>2</sup>
7	Expand Parking for MDG	23	Repair Perimeter Road Pavements
8	Modernize Heat Plant	24	Repair Heat Plant Boiler System
9	New Switchgear	25	Repair Natural Gas Lines
10	Create Redundancy in Electrical System	26	Repair TRF Facility Drainage
11	Repair Guardhouse Heaters Bldg 194 and 2100	27	Construct Vehicle Inspection Station <sup>2</sup>
12	Repair Dorm 655	28	Repair Pavements
13	Construct Elevator in Gym, Building 1012	29	Construct Snow Barn <sup>2</sup>
14	Construct Force Protection Water Tank 1511 and 1152	30	Weapons Storage Facility
15	Repair Fire Protection Entrance Bldg 3080	31	Construct Missile Transfer Facility
16	Pave South End of Hardened Intersite Cable System (HICS) Warehouse, B1846 <sup>2</sup>		
<b>Medium Range Projects (6-10 years)</b>			
32	Construct North/South Gate Entrance Control Facilities		
33	Covered Vehicle Storage for MXG		
34	Replace MAFs, PH 2 <sup>1</sup>		
35	Construct Alert Fire Team Facility, WSA		
36	Replace Missile Alert Facilities, PH 3 <sup>1</sup>		
37	Construct Fire Station		
<b>Long Range Projects (more than 11 years)</b>			
38	New CE Building/Campus	47	Add/Alter SF Deployment Section, Building 510
39	Parking Garage for Dorms/ B500	48	Construct Power Pro Facility
40	Propulsion Maintenance Building	49	Construct Dormitory
41	New Supply LRS Building	50	Construct Civil Engineer Compound
42	Replace Missile Alert Facilities, PH 4 <sup>1</sup>	51	Construct Contracting Facility
43	Construct Force Development Center	52	Construct Vehicle Alert Facility
44	Replace Missile Alert Facilities, PH 5 <sup>1</sup>	53	Construct Security Forces Compound
45	Construct Dormitory	54	Construct Supply Facility
46	Construct Base Chapel		

Source: Malmstrom AFB IDP, October 2015

<sup>1</sup> Proposed project is not located on the main base.

<sup>2</sup> Project has been completed.

LRS = Logistic Readiness Squadron

PH = Phase

WSA = Weapons Storage Area

MXG = Maintenance Group

TRF = Tactical Response Force

### **5.3 AIR QUALITY**

Estimated emissions generated by the Proposed Action would be minor and below regulatory thresholds and would not contribute significantly to adverse cumulative effects on air quality. Many of the IDP projects would generate short-term air emissions and fugitive dust during construction from site grading, use of construction equipment, and paving. Some of the IDP projects would generate long-term emissions during operation, such as from heating, ventilation, and air conditioning (HVAC) systems in new buildings. However, none of the past, present, or reasonably foreseeable projects have been identified that would have substantial cumulative effects on air quality when combined with the Proposed Action. Therefore, cumulative effects on air quality would be minor. No significant impacts would occur.

### **5.4 NOISE**

Construction noise attenuates relatively rapidly with distance, so the area where noise from multiple projects would overlap is relatively small. None of the other past, present, or reasonably foreseeable projects are close enough to the Proposed Action area or on the same timeline to cause concurrent construction noise. Operational noise levels would not appreciably exceed baseline noise levels in the area when combined with the past, present, and reasonably foreseeable projects. Therefore, cumulative effects on noise would be minor. No significant impacts would occur.

### **5.5 LAND USE**

No significant adverse cumulative impacts to land use resources will occur because the Proposed Action will use a designated area for airfield use. The airfield land use area may be limited for future aeronautical endeavors. However, any changes to air operations would be coordinated between Malmstrom AFB and Montana ANG.

### **5.6 GEOLOGICAL RESOURCES**

No significant adverse cumulative impacts to geological resources would occur. The site contains previously disturbed soils as indicated by the archeological survey (Section 3.8). Therefore, disturbance of the soils at the project site would not contribute to cumulative adverse impacts when combined with past, present, and future projects.

## **5.7 WATER RESOURCES**

No significant cumulative impacts to water resources are expected because the Proposed Action will not significantly impact these resources. When combined with past, present, and future projects, adverse cumulative impacts are not expected because avoidance, minimization (BMPs), and mitigation measures would be employed for each project as directed by state and federal regulations.

## **5.8 BIOLOGICAL RESOURCES**

No significant cumulative impacts to biological resources are expected because the Proposed Action will not significantly impact these resources. When combined with past, present, and future projects, adverse cumulative impacts are not expected because avoidance, minimization (BMPs), and mitigation measures would be employed for each project as directed by state and federal regulations.

## **5.9 CULTURAL RESOURCES**

No significant cumulative impacts to cultural resources are expected because the Proposed Action will not impact these resources. When combined with past, present, and future projects, adverse cumulative impacts are not expected because avoidance, minimization, and mitigation measures would be employed for each project as directed by state and federal regulations.

## **5.10 AIRSPACE MANAGEMENT**

There are no past, present, or reasonably foreseeable actions within the ROI other than ongoing 40 HS operations and training that would affect airspace management. Therefore, cumulative effects on airspace management would be minor. No significant impacts would occur.

## **5.11 SAFETY AND OCCUPATIONAL HEALTH**

Projects in the ROI would have common construction site safety risks. These would be expected to be minimized through BMPs, such as fencing the construction site and implementing a health and safety plan to promote occupational safety. Operation of projects in the ROI would not be expected to have appreciable effects on safety or health, the protection of children, or emergency services. None of the past, present, or reasonably foreseeable projects, alone or in combination with the Proposed Action, would likely result in disproportionately high and adverse environmental health or safety risks to workers, the public, or an identified population of children or place

excessive constraints on emergency services. Therefore, cumulative effects on safety and occupational health would not be significant.

### **5.12 UTILITIES AND INFRASTRUCTURE**

None of the past, present, or reasonably foreseeable projects have been identified that would have substantial cumulative effects on utilities and infrastructure when combined with the Proposed Action. Therefore, cumulative effects on utilities and infrastructure would not be significant.

### **5.13 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN**

None of the past, present, or reasonably foreseeable projects have been identified that would have substantial cumulative effects on environmental justice or protection of children when combined with the Proposed Action. Therefore, cumulative effects on environmental justice or protection of children would not be significant.

## SECTION 6 FINDINGS AND CONCLUSIONS

This EA considered the effects of implementing the Proposed Action of constructing a C-130 ALZ at Malmstrom AFB. In addition to the No Action Alternative, two alternatives for implementing the proposed action were considered and are described below:

- Alternative 1 (Preferred Alternative): Construct a semi-improved (dirt) C-130 ALZ of a crushed recycled base adjacent and parallel to the southeast of the Malmstrom AFB decommissioned runway with dirt keyhole turnarounds constructed on each end of the runway.
- Alternative 2: Construct a semi-improved (dirt) C-130 ALZ similar to Alternative 1. However, the C-130 ALZ would be connected to the existing decommissioned runway for use as a taxiway.

### 6.1 SUMMARY OF ENVIRONMENTAL EFFECTS

Table 6-1 compares the potential effects of implementing the Proposed Action or No Action Alternative for the environmental resources evaluated. Implementing the Proposed Action would result in short- and long-term less than minor to moderate adverse effects, and no significant impacts would occur. Implementing the No Action Alternative would have no effects. Cumulative effects would not be significant.

**Table 6-1 Summary of Environmental Impacts**

Environmental Resource	Alternative 1 (Preferred Alternative)	Alternative 2	No Action Alternative
Air Quality	No significant impact	No significant impact	None
Noise	No significant impact	No significant impact	None
Land Use	No impact	No impact	None
Geological Resources	No significant impact	No significant impact	None
Water Resources	No significant impact	No significant impact	None
Biological Resource	No significant impact	No significant impact	None
Cultural Resource	No impact	No impact	None
Airspace Management	No significant impact	No significant impact	None
Safety and Occupational Health	No significant impact	No significant impact	None
Utilities and Infrastructure	No significant impact	No significant impact	None
Environmental Justice and Protection of Children	No impact	No impact	None

## **6.2 MEASURES TO REDUCE EFFECTS**

Implementing the Proposed Action would have no significant adverse effects and no mitigation measures would be required. For many resource areas, BMPs would be implemented to further minimize the potential effects of the Proposed Action. The BMPs in Section 4 are summarized below.

### **6.2.1 Air Quality**

Project construction would employ BMPs to minimize fugitive dust and tailpipe emissions. BMPs to minimize fugitive dust could include using water to control dust and cleaning streets as needed. BMPs to reduce tailpipe emissions could include minimizing unnecessary idling of vehicles and machinery. These BMPs are not necessarily all-inclusive; the Malmstrom AFB, Montana ANG, and any contractors would need to comply with all applicable air pollution control regulations.

### **6.2.2 Geological Resources**

BMPs will be implemented in accordance with the General Permit for Stormwater Discharges Associated with Construction Activity and its associated SWPPP. Implementation of construction BMPs would minimize soil erosion impacts that are caused by wind and stormwater.

### **6.2.3 Water Resources**

The Proposed Action would comply with Malmstrom AFB General Permits, associated SWPPPs with specified BMPs, and stormwater controls sufficient to ensure no net increase in peak flow rates and total volume of runoff from the site. BMPs, such as silt fencing, would be installed on the perimeter of the construction site to keep erosion from migrating to wetland and water resources. Post construction would include reseeding the areas adjacent to the landing strip with native grass species (specifically drill-seeding) to stabilize the soils. Malmstrom AFB will implement their SWMP and SWPPP in accordance with state and federal regulations. These requirements were developed to prevent significant stormwater effects on the environment, in particular to Whitmore Ravine.

### **6.2.4 Biological Resources**

After the proposed ALZ is constructed, the cleared areas adjacent to the ALZ will be drill-seeded with native grass species in the late fall. When the grass is 3 years old, it must be watered at least two to three times per summer and maintained at a height of 7 to 14 inches. To deter ground

squirrels from establishing burrows and attracting predators onto the airfield, revegetated areas will be maintained through collaboration between the CEIE and the natural resources manager. Ground squirrel management would comply with the Malmstrom AFB Pest Management Plan. If ground squirrels become established within the ALZ area, fencing with a pea gravel moat (USDA, 2012) may be constructed to prevent them from entering the area and potentially damaging the ALZ.

The Montana ANG and the Malmstrom AFB safety and natural resources departments will coordinate daily to implement BASH management procedures.

### **6.2.5 Cultural Resources**

Based on the completion of the Phase I archaeological survey, the area of the Proposed Action did not contain any significant archaeological resources. Avoidance and/or mitigation of cultural resources may be required in consultation with Malmstrom AFB and the Montana SHPO if historic or prehistoric resources are encountered during project construction. If any flint-like flakes or projectile points, bones, pottery sherds, or anything else that appears out of place and unexpected is inadvertently found during the construction, Malmstrom's cultural resources program staff will be contacted immediately. An archaeologist qualified by the U.S. Department of the Interior shall inspect the finds and determine whether they constitute an archaeological site and the course of action required to ensure that no adverse impact shall occur to a historic property. As soon as such action is completed, the construction will be permitted to resume.

### **6.2.6 Safety and Occupational Health**

All construction contractors would be responsible for maintaining an adequate safety program to minimize risks to workers and the public and ensure compliance with OSHA and state regulations. A site-specific health and safety plan should be prepared and implemented to specify construction safety measures, such as holding daily safety briefings, wearing appropriate personal protective equipment, specifying the amount and type of training required for workers performing certain tasks, establishing administrative and engineering controls to minimize health and safety risks, identifying BMPs for materials handling, and outlining general construction site safety. The construction site would be maintained in a clean and orderly manner; any spills would be stopped and cleaned up promptly. The construction site is in a restricted area and would not have public access. In the unlikely event that contaminated soil or water is encountered, work would stop in that area, a designated manager would be contacted, and work would not resume in the area until appropriate actions were taken to minimize any risks to health and safety.



To minimize the potential for any bird/wildlife-aircraft strikes, Malmstrom AFB would continue to implement an aggressive BASH program and would incorporate the C-130 landing/takeoff activities (average of 1.5 per day and 0.5 per night) at the ALZ into the BASH plan. Montana ANG will coordinate daily with the Malmstrom AFB safety and natural resources departments so that BASH management procedures can be implemented prior to conducting C-130 training activities.

### **6.2.7 Utilities and Infrastructure**

Short-term minor adverse impacts related to construction activities and long-term minor increases in stormwater control would be expected; however, the Proposed Action would comply with Malmstrom AFB General Permits, associated SWPPPs with specified BMPs, and stormwater controls sufficient to ensure no net increase in peak flow rates and total volume of runoff from the site. All BMPs required by state and federal laws will be implemented to protect adjacent surface waters and wetlands during construction and operation. The subsurface potable water line and a stormwater inlet with associated buried lines will be reconfigured prior to the construction of the ALZ in accordance to AFI 32-7063 and EO 13693.

## **6.3 CONCLUSIONS**

Based on the analysis presented in the EA, implementation of the Proposed Action Alternative would not result in significant or major adverse impacts on any of the resources analyzed within this document, and no further analysis or documentation, such as the preparation of an EIS, is required. Minor and short-term impacts would occur from implementation of the Proposed Action on air quality, noise, and soils. The impacts of the Proposed Action when combined with impacts from other present or planned development in the surrounding area are not anticipated to result in significant adverse cumulative impacts. All practical and reasonable means will be employed by the USAF to minimize the potential adverse impacts on the human and natural environment. Therefore, a FONSI is warranted.

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**APPENDIX A**  
**Interagency and Intergovernmental Coordination for**  
**Environmental Planning**

**APPENDIX A**  
**INTERAGENCY AND INTERGOVERNMENTAL**  
**COORDINATION FOR ENVIRONMENTAL PLANNING**  
**DISTRIBUTION LIST**

**Federal**

Bureau of Land Management  
HiLine District Office  
920 Northeast Main  
Lewistown, MT 59457

Federal Aviation Administration  
NW Mountain Region  
1601 Lind Avenue Southwest  
Renton, WA 98057

US Environmental Protection Agency  
Region 8 Montana Office  
10 West 15th Street, Suite 3200  
Helena, MT 59626

U.S. Fish and Wildlife Service  
Montana Field Office  
585 Shepard Way, Suite 1  
Helena, MT 59601

Federal Aviation Administration  
Helena Airports District Office  
2725 Skyway Drive, Suite 2  
Helena, MT 59602

**State**

Deputy Director  
Montana Department of Environmental  
Quality  
1520 East 6th Avenue  
Helena, MT 59620-0901

Montana Department of Transportation  
District 3 Administrator  
200 Smelter Avenue NE  
Great Falls, MT 59403-1359

Montana Department of Natural Resources  
Conrad Field Office  
600 South Main Street, Suite 10  
Conrad, MT 59425

Montana Fish, Wildlife & Parks  
Region 4 Headquarters  
4600 Giant Springs Road  
Great Falls, MT 59405

**Local**

Dr. Mark Baumler  
Montana State Historic Preservation Office  
1301 Lockey Avenue  
Helena, MT 59620

Director  
Cascade County Planning Division  
121 4th Street N #2H-2I  
Great Falls, MT 59401

Mr. John Faulkner  
Great Falls International Airport  
2800 Terminal Drive  
Great Falls, MT 59404

Development Review Coordinator  
City of Great Falls Planning and Community  
Department  
2 Park Drive South, Room 112  
Great Falls, MT 59403

Air Pollution Control Program  
Cascade City-County Health Department  
115 4th Street South  
Great Falls, MT 59401

**Tribal**

Honorable Floyd Azure, Chairman  
Assiniboine & Sioux Tribes of the Fort Peck  
Reservation  
501 Medicine Bear Road  
P.O. Box 1027  
Poplar, MT 59255

Honorable Ken St. Marks, Chairman  
Chippewa Cree Tribe of the Rocky Boy's  
Reservation  
31 Agency Square  
P.O. Box 544  
Box Elder, MT 59521

Honorable Harry Barnes, Chairman  
The Blackfeet Nation  
850 Government Square  
P.O. Box 850  
Browning, MT 59417

Honorable Darren Old Coyote, Chairman  
The Crow Nation  
P.O. Box 159  
Crow Agency, Montana 59022

Honorable Llevando “Cowboy” Fisher,  
Chairman  
Northern Cheyenne Tribe  
600 Cheyenne Avenue  
P.O. Box 128  
Lame Deer, Montana 59043

Honorable Mark Azure, Chairman  
Fort Belknap Indian Community,  
Gros Ventre and Assiniboine Tribes  
656 Agency Main Street  
Harlem, Montana 59526

Honorable Vernon Finley, Chairman  
Confederated Salish and Kootenai Tribes  
42487 Complex Boulevard  
P.O. Box 278  
Pablo, Montana 59855



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341 ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Bureau of Land Management  
HiLine District Office  
1101 15th Street North  
Great Falls, MT 59401

Dear Sir or Madam

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a C-130 Assault Landing Zone (ALZ) for use by the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), USAF C-130s, and other National Guard Bureau units. The EA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom Air Force Base (AFB) runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements.

The Air Force invites government agency representatives and private citizens to participate in the environmental review process and requests your input regarding any information you feel would assist us in this process. The environmental issues analyzed in the EA will be used in the decision-making process by the Air Force for determining appropriate actions to be taken during construction. Input is requested within 30 days of receipt of this letter to ensure that the Air Force has time to address any comments from interested parties.

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Sincerely

JOEL D. PURCELL, Lt Col, USAF  
Commander, 341st Civil Engineer Squadron

Attachment:  
1. Proposed Action Map

**DETER...ASSURE...STRIKE!**



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Director  
Cascade County Planning Division  
121 4th Street N #2H-21  
Great Falls, MT 59401

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341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Air Pollution Control Program  
Cascade City-County Health Department  
115 4th Street South  
Great Falls, MT 59401

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HEADQUARTERS 341ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Development Review Coordinator  
City of Great Falls Planning and Community Department  
2 Park Drive South, Room 112  
Great Falls, MT 59403

Dear Sir or Madam

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Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Deputy Director  
Montana Department of Environmental Quality  
1520 East 6<sup>th</sup> Avenue  
Helena, MT 59620-0901

Dear Sir or Madam

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Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Montana Department of Natural Resources  
Conrad Field Office  
600 South Main Street, Suite 10  
Conrad, MT 59425

Dear Sir or Madam

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Lt Col Joel D. Purcell  
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39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

US Environmental Protection Agency  
Region 8 Montana Office  
2725 Skyway Drive, Suite 2  
Helena, MT 59602

Dear Sir or Madam

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The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom Air Force Base (AFB) runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements.

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Written comments should be addressed to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence.

Sincerely

JOEL D. PURCELL, Lt Col, USAF  
Commander, 341st Civil Engineer Squadron

Attachment:

1. Proposed Action Map

**DETER...ASSURE...STRIKE!**



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341 ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Federal Aviation Administration  
Helena Airports District Office  
2725 Skyway Drive, Suite 2  
Helena, MT 59602

Dear Sir or Madam

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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341 ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Federal Aviation Administration  
NW Mountain Region  
1601 Lind Avenue Southwest  
Renton, WA 98057

Dear Sir or Madam

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a C-130 Assault Landing Zone (ALZ) for use by the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), USAF C-130s, and other National Guard Bureau units. The EA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

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Commander, 341st Civil Engineer Squadron

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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Mr. John Faulkner  
Great Falls International Airport  
2800 Terminal Drive  
Great Falls, MT 59404

Dear Mr. Faulkner:

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a C-130 Assault Landing Zone (ALZ) for use by the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), USAF C-130s, and other National Guard Bureau units. The EA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Montana Department of Transportation  
District 3 Administrator  
200 Smelter Avenue NE  
Great Falls, MT 59403-1359

Dear Sir or Madam

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a C-130 Assault Landing Zone (ALZ) for use by the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), USAF C-130s, and other National Guard Bureau units. The EA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

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**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Montana Fish, Wildlife & Parks  
Region 4 Headquarters  
4600 Giant Springs Road  
Great Falls, MT 59405

Dear Sir or Madam

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The USFWS Information for Planning and Conservation online tool identified the North American wolverine (*Gulo gulo luscus*), a proposed threatened species, in the area. No other Endangered Species Act (ESA) listings were identified. The following migratory bird species were identified as a "bird of conservation concern": American bittern (*Botaurus lentiginosus*), Baird's sparrow (*Ammodramus bairdii*), Bald eagle (*Haliaeetus leucocephalus*), Black tern (*Chlidonias niger*), Brewer's sparrow (*Spizella breweri*), Cassin's finch (*Carpodacus cassinii*), Common tern (*Sterna hirundo*), Ferruginous hawk (*Buteo regalis*), Golden eagle (*Aquila chrysaetos*), Grasshopper sparrow (*Ammodramus savannarum*), Loggerhead shrike (*Lanius ludovicianus*), Long-billed curlew (*Numenius americanus*), Marbled godwit (*Limosa fedoa*), Mccown's longspur (*Calcarius mccownii*), Mountain plover (*Charadrius montanus*), Olive-sided flycatcher (*Contopus cooperi*), Peregrine falcon (*Falco peregrinus*), Rufous hummingbird (*Selasphorus rufus*), Short-eared owl (*Asio flammeus*), Sprague's pipit (*Anthus spragueii*), Swainson's hawk (*Buteo swainsoni*), Upland sandpiper (*Bartramia longicauda*), and Western grebe (*Aechmophorus occidentalis*). A map illustrating the location of the proposed project is attached.

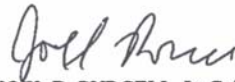
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**DETER...ASSURE...STRIKE!**

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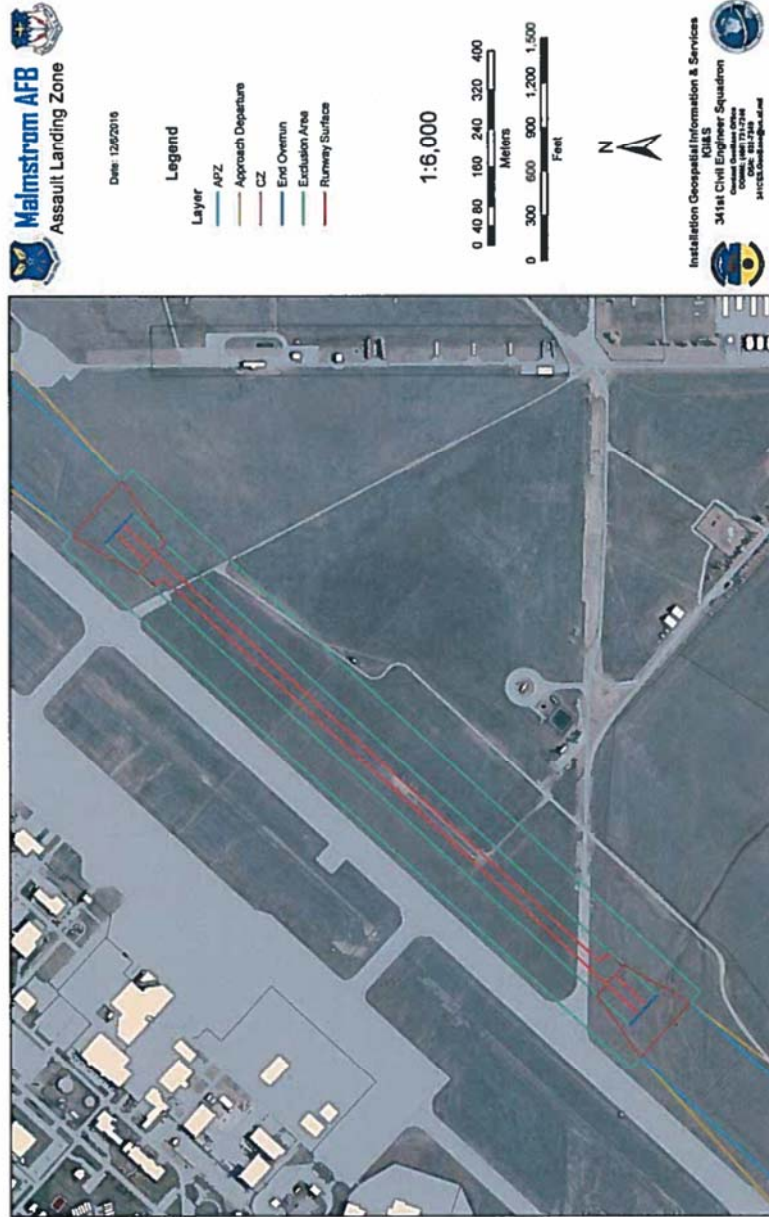
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JOEL D. PURCELL, Lt Col, USAF  
Commander, 341st Civil Engineer Squadron

Attachment: Proposed Action Map





DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

Dr. Mark Baumler  
Montana State Historic Preservation Office  
1301 Lockey Avenue  
Helena, MT 59620

Dear Dr. Baumler:

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a C-130 Assault Landing Zone (ALZ) for use by the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), USAF C-130s, and other National Guard Bureau units. The EA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

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**DETER...ASSURE...STRIKE!**





**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

U.S. Fish and Wildlife Service  
Montana Field Office  
585 Shepard Way, Suite 1  
Helena, MT 59601

Dear Sir or Madam

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a C-130 Assault Landing Zone (ALZ) for use by the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), USAF C-130s, and other National Guard Bureau units. The EA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

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**DETER...ASSURE...STRIKE!**

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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

FEB 03 2017

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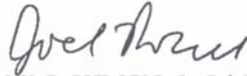
**DETER...ASSURE...STRIKE!**

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Written comments should be addressed to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence.

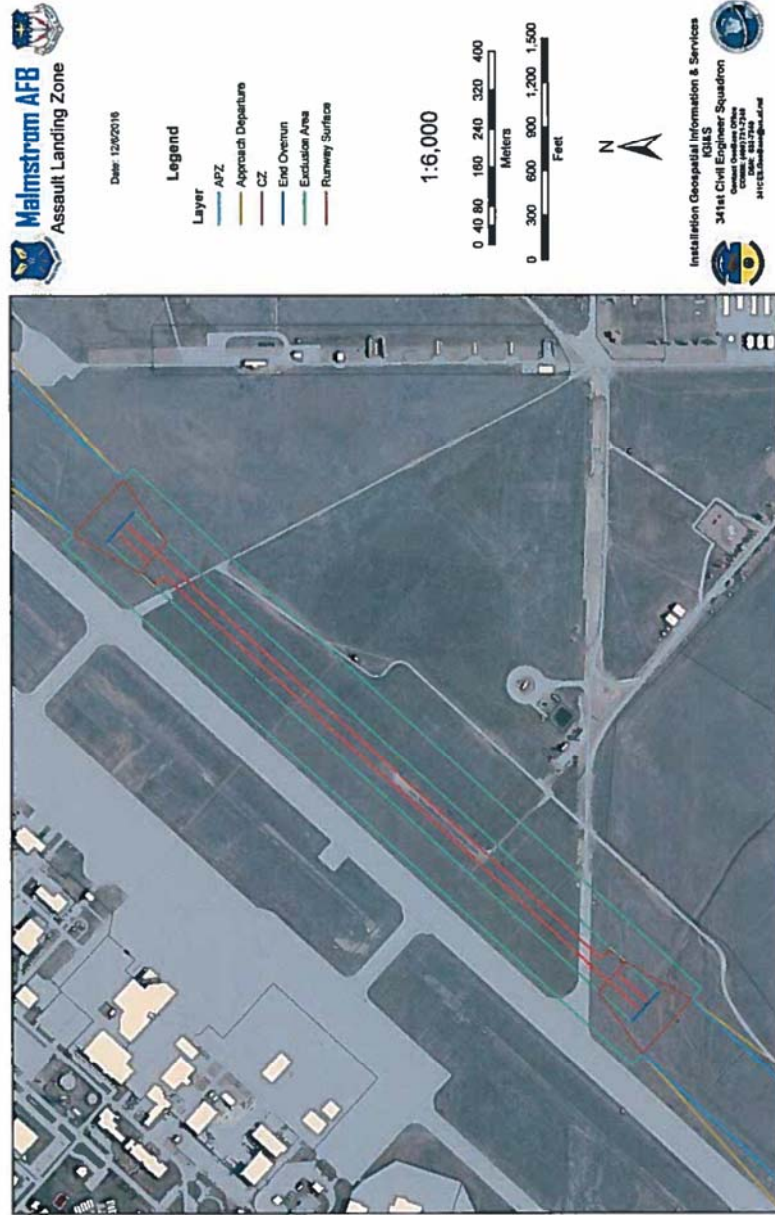
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JOEL D. PURCELL, Lt Col, USAF  
Commander, 341st Civil Engineer Squadron

Attachment:

1. Proposed Action Map







**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Colonel Denise L. Cooper  
Commander, 341st Mission Support Group  
27 77th Street North, Ste. 148  
Malmstrom AFB, MT 59402

FEB 07 2017

Honorable Floyd Azure, Chairman  
Assiniboine & Sioux Tribes of the Fort Peck Reservation  
501 Medicine Bear Road  
P.O. Box 1027  
Poplar, MT 59255

CC:  
Darrell "Curley" Youpee, THPO  
Assiniboine & Sioux Tribes of the Fort Peck Reservation  
501 Medicine Bear Road  
P.O. Box 1027  
Poplar, MT 59255

**Subject: Environmental Assessment for Construction of a C-130 Assault Landing Zone, Malmstrom Air Force Base, Montana**

Dear Chairman Azure:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the proposed construction of a C-130 assault landing zone (ALZ) within the boundaries of Malmstrom Air Force Base (AFB). Attachment 1 is a map illustrating the proposed location of the ALZ.

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements. The Air Force is not aware of any site or resources of known or potential interest to the Assiniboine & Sioux Tribes of the Fort Peck Reservation being present at the site.

The 1999 Department of Defense American Indian and Alaska Native Policy recognizes the "importance of...addressing tribal concerns, past, present, and future" and states that "these concerns should be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands."

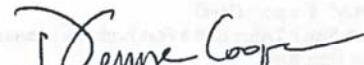
With this letter, the Air Force invites the Assiniboine & Sioux Tribes of the Fort Peck Reservation to provide input regarding this NEPA analysis and to initiate government-to-government consultation so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will

***DETER...ASSURE...STRIKE!***

provide an opportunity to exchange information, ask questions, and advise Malmstrom AFB of any concerns or suggestions you may have regarding the proposed project. After the draft EA is completed, we will send you a copy for your further review and comment.

Input is requested within 30 days of receipt of this letter. Written comments may be forwarded to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence. Thank you for your assistance.

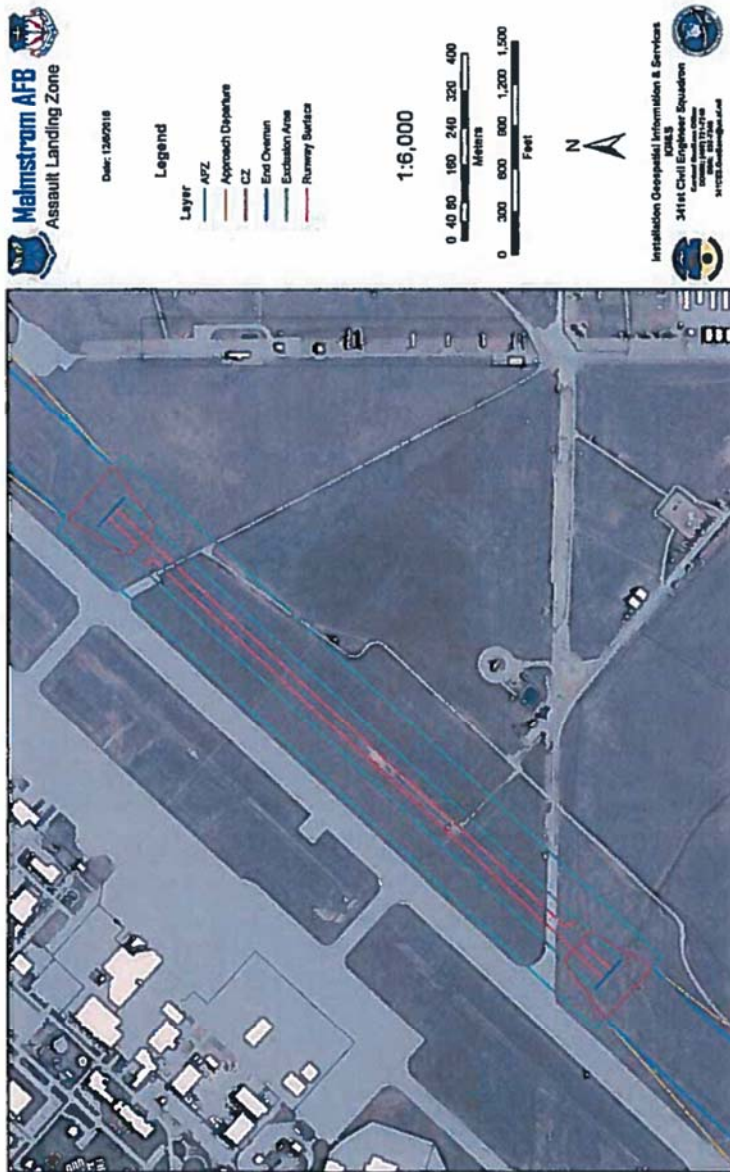
Sincerely

  
DENISE L. COOPER, Colonel, USAF  
Commander, 341st Mission Support Group

**Attachment:**

**1. Proposed Action Map**

3





**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Colonel Denise L. Cooper  
Commander, 341st Mission Support Group  
27 77th Street North, Ste. 148  
Malmstrom AFB, MT 59402

FEB 07 2017

Honorable Harry Barnes, Chairman  
The Blackfeet Nation  
850 Government Square  
P.O. Box 850  
Browning, MT 59417

CC:  
John Murray, THPO  
The Blackfeet Nation  
850 Government Square  
P.O. Box 850  
Browning, Montana 59417

Subject: Environmental Assessment for Construction of a C-130 Assault Landing Zone, Malmstrom Air Force Base, Montana

Dear Chairman Barnes:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the proposed construction of a C-130 assault landing zone (ALZ) within the boundaries of Malmstrom Air Force Base (AFB). Attachment 1 is a map illustrating the proposed location of the ALZ.

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements. The Air Force is not aware of any site or resources of known or potential interest to the Blackfeet Nation being present at the site.

The 1999 Department of Defense American Indian and Alaska Native Policy recognizes the "importance of...addressing tribal concerns, past, present, and future" and states that "these concerns should be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands."

With this letter, the Air Force invites the Blackfeet Nation to provide input regarding this NEPA analysis and to initiate government-to-government consultation so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an opportunity to exchange

***DETER...ASSURE...STRIKE!***



information, ask questions, and advise Malmstrom AFB of any concerns or suggestions you may have regarding the proposed project. After the draft EA is completed, we will send you a copy for your further review and comment.

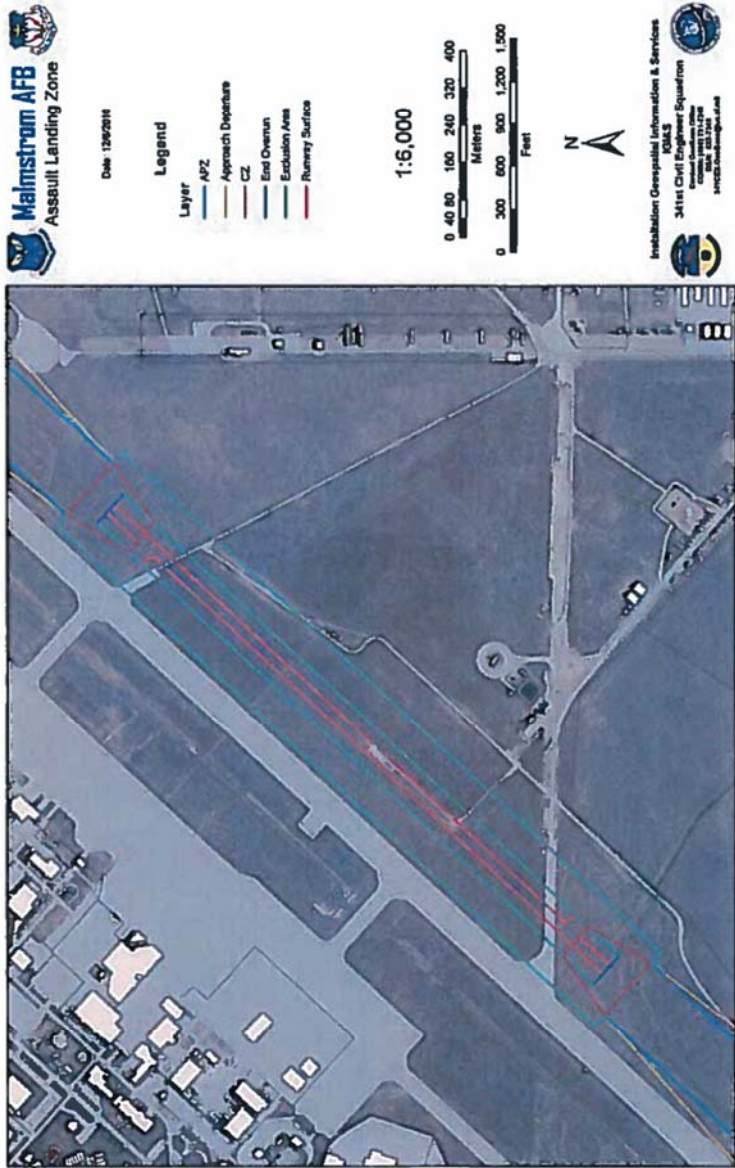
Input is requested within 30 days of receipt of this letter. Written comments may be forwarded to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence. Thank you for your assistance.

Sincerely

  
DENISE L. COOPER, Colonel, USAF  
Commander, 341st Mission Support Group

Attachment:  
1. Proposed Action Map

3





**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Colonel Denise L. Cooper  
Commander, 341st Mission Support Group  
27 77th Street North, Ste. 148  
Malmstrom AFB, MT 59402

FEB 07 2017

Honorable Ken St. Marks, Chairman  
Chippewa Cree Tribe of the Rocky Boy's Reservation  
31 Agency Square  
P.O. Box 544  
Box Elder, MT 59521

CC:  
Alvin Windy Boy, Sr., THPO  
Chippewa Cree Tribe of the Rocky Boy's Reservation  
9740 Upper Box Elder Road  
P.O. Box 230  
Box Elder, Montana 59521

**Subject: Environmental Assessment for Construction of a C-130 Assault Landing Zone, Malmstrom Air Force Base, Montana**

Dear Chairman St. Marks:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the proposed construction of a C-130 assault landing zone (ALZ) within the boundaries of Malmstrom Air Force Base (AFB). Attachment 1 is a map illustrating the proposed location of the ALZ.

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements. The Air Force is not aware of any site or resources of known or potential interest to the Chippewa Cree Tribe of the Rocky Boy's Reservation being present at the site.

The 1999 Department of Defense American Indian and Alaska Native Policy recognizes the "importance of...addressing tribal concerns, past, present, and future" and states that "these concerns should be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands."

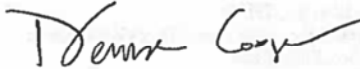
With this letter, the Air Force invites the Chippewa Cree Tribe of the Rocky Boy's Reservation to provide input regarding this NEPA analysis and to initiate government-to-government consultation so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide

***DETER...ASSURE...STRIKE!***

an opportunity to exchange information, ask questions, and advise Malmstrom AFB of any concerns or suggestions you may have regarding the proposed project. After the draft EA is completed, we will send you a copy for your further review and comment.

Input is requested within 30 days of receipt of this letter. Written comments may be forwarded to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence. Thank you for your assistance.

Sincerely

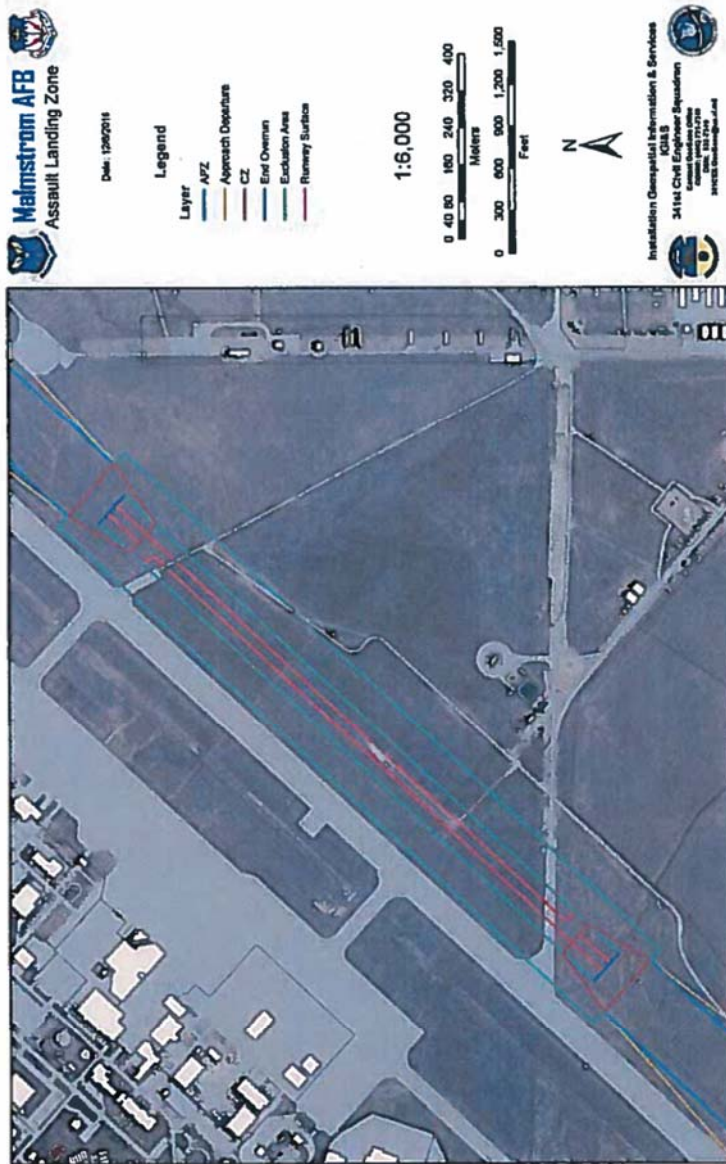


DENISE L. COOPER, Colonel, USAF  
Commander, 341st Mission Support Group

Attachment:  
1. Proposed Action Map



3





**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Colonel Denise L. Cooper  
Commander, 341st Mission Support Group  
27 77th Street North, Ste. 148  
Malmstrom AFB, MT 59402

FEB 07 2017

Honorable Darren Old Coyote, Chairman  
The Crow Nation  
P.O. Box 159  
Crow Agency, Montana 59022

CC:  
Emerson Bull Chief, THPO  
The Crow Nation  
P.O. Box 159  
Crow Agency, Montana 59022

Subject: Environmental Assessment for Construction of a C-130 Assault Landing Zone, Malmstrom Air Force Base, Montana

Dear Chairman Old Coyote:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the proposed construction of a C-130 assault landing zone (ALZ) within the boundaries of Malmstrom Air Force Base (AFB). Attachment 1 is a map illustrating the proposed location of the ALZ.

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements. The Air Force is not aware of any site or resources of known or potential interest to the Crow Nation being present at the site.

The 1999 Department of Defense American Indian and Alaska Native Policy recognizes the "importance of...addressing tribal concerns, past, present, and future" and states that "these concerns should be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands."

With this letter, the Air Force invites the Crow Nation to provide input regarding this NEPA analysis and to initiate government-to-government consultation so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an opportunity to exchange information, ask questions, and advise Malmstrom AFB of any concerns or suggestions you may have

***DETER...ASSURE...STRIKE!***

regarding the proposed project. After the draft EA is completed, we will send you a copy for your further review and comment.

Input is requested within 30 days of receipt of this letter. Written comments may be forwarded to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence. Thank you for your assistance.

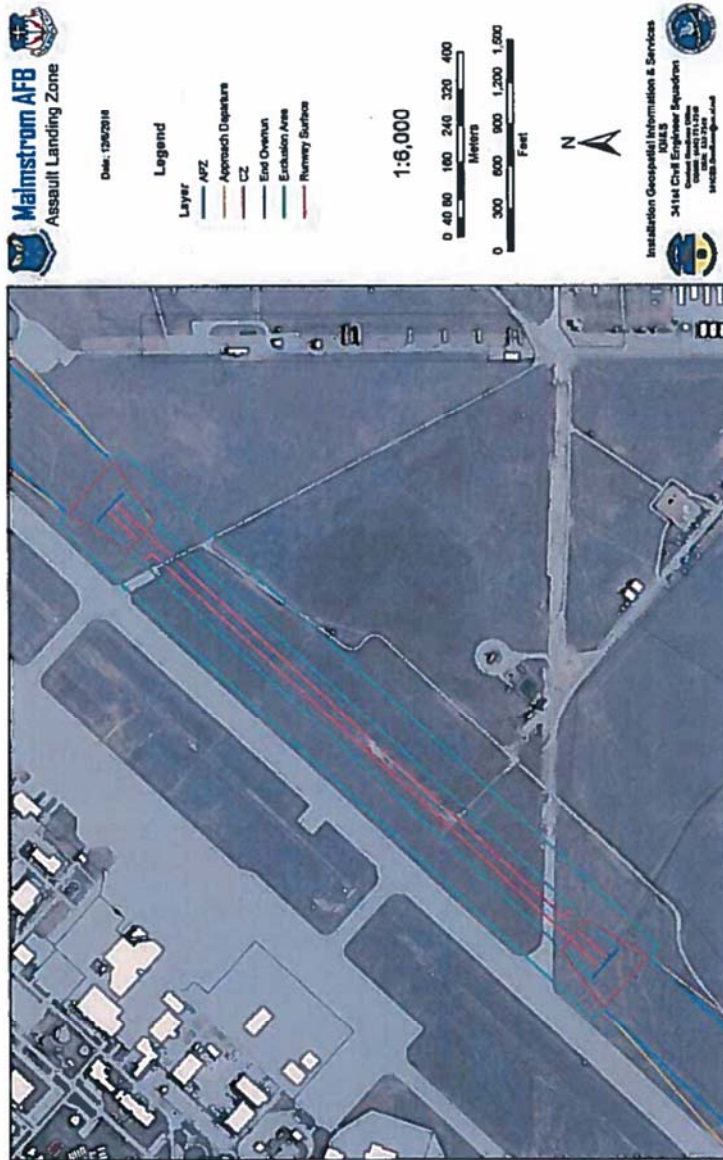
Sincerely

  
DENISE L. COOPER, Colonel, USAF  
Commander, 341st Mission Support Group

**Attachment:**

**1. Proposed Action Map**

3







**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Colonel Denise L. Cooper  
Commander, 341st Mission Support Group  
27 77th Street North, Ste. 148  
Malmstrom AFB, MT 59402

FEB 07 2017

Honorable Mark Azure, Chairman  
Fort Belknap Indian Community,  
Gros Ventre and Assiniboine Tribes  
656 Agency Main Street  
Harlem, Montana 59526

CC:  
Michael J. Black Wolf, THPO  
Fort Belknap Indian Community,  
Gros Ventre and Assiniboine Tribes  
656 Agency Main Street  
Harlem, Montana 59526

Subject: Environmental Assessment for Construction of a C-130 Assault Landing Zone, Malmstrom Air Force Base, Montana

Dear Chairman Azure:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the proposed construction of a C-130 assault landing zone (ALZ) within the boundaries of Malmstrom Air Force Base (AFB). Attachment 1 is a map illustrating the proposed location of the ALZ.

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements. The Air Force is not aware of any site or resources of known or potential interest to the Fort Belknap Indian Community being present at the site.

The 1999 Department of Defense American Indian and Alaska Native Policy recognizes the "importance of...addressing tribal concerns, past, present, and future" and states that "these concerns should be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands."


With this letter, the Air Force invites the Fort Belknap Indian Community to provide input regarding this NEPA analysis and to initiate government-to-government consultation so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an

***DETER...ASSURE...STRIKE!***

opportunity to exchange information, ask questions, and advise Malmstrom AFB of any concerns or suggestions you may have regarding the proposed project. After the draft EA is completed, we will send you a copy for your further review and comment.

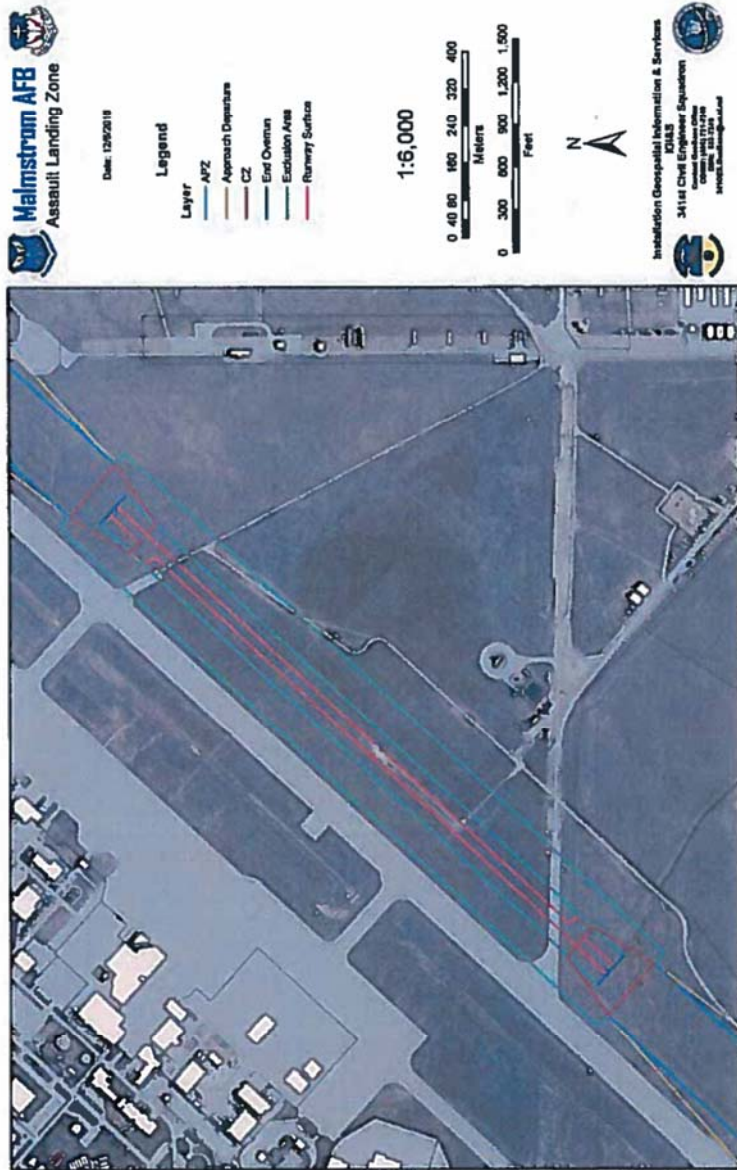
Input is requested within 30 days of receipt of this letter. Written comments may be forwarded to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence. Thank you for your assistance.

Sincerely



DENISE L. COOPER, Colonel, USAF  
Commander, 341st Mission Support Group

Attachment:  
1. Proposed Action Map





**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Colonel Denise L. Cooper  
Commander, 341st Mission Support Group  
27 77th Street North, Ste. 148  
Malmstrom AFB, MT 59402

FEB 07 2017

Honorable Llevando "Cowboy" Fisher, Chairman  
Northern Cheyenne Tribe  
600 Cheyenne Avenue  
P.O. Box 128  
Lame Deer, Montana 59043

CC:  
Teanna Limpy, THPO  
Northern Cheyenne Tribe  
600 Cheyenne Avenue  
P.O. Box 128  
Lame Deer, Montana 59043

**Subject: Environmental Assessment for Construction of a C-130 Assault Landing Zone, Malmstrom Air Force Base, Montana**

Dear Chairman Fisher:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the proposed construction of a C-130 assault landing zone (ALZ) within the boundaries of Malmstrom Air Force Base (AFB). Attachment 1 is a map illustrating the proposed location of the ALZ.

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements. The Air Force is not aware of any site or resources of known or potential interest to the Northern Cheyenne Tribe being present at the site.

The 1999 Department of Defense American Indian and Alaska Native Policy recognizes the "importance of...addressing tribal concerns, past, present, and future" and states that "these concerns should be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands."

With this letter, the Air Force invites the Northern Cheyenne Tribe to provide input regarding this NEPA analysis and to initiate government-to-government consultation so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an opportunity to

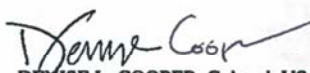
***DETER...ASSURE...STRIKE!***



exchange information, ask questions, and advise Malmstrom AFB of any concerns or suggestions you may have regarding the proposed project. After the draft EA is completed, we will send you a copy for your further review and comment.

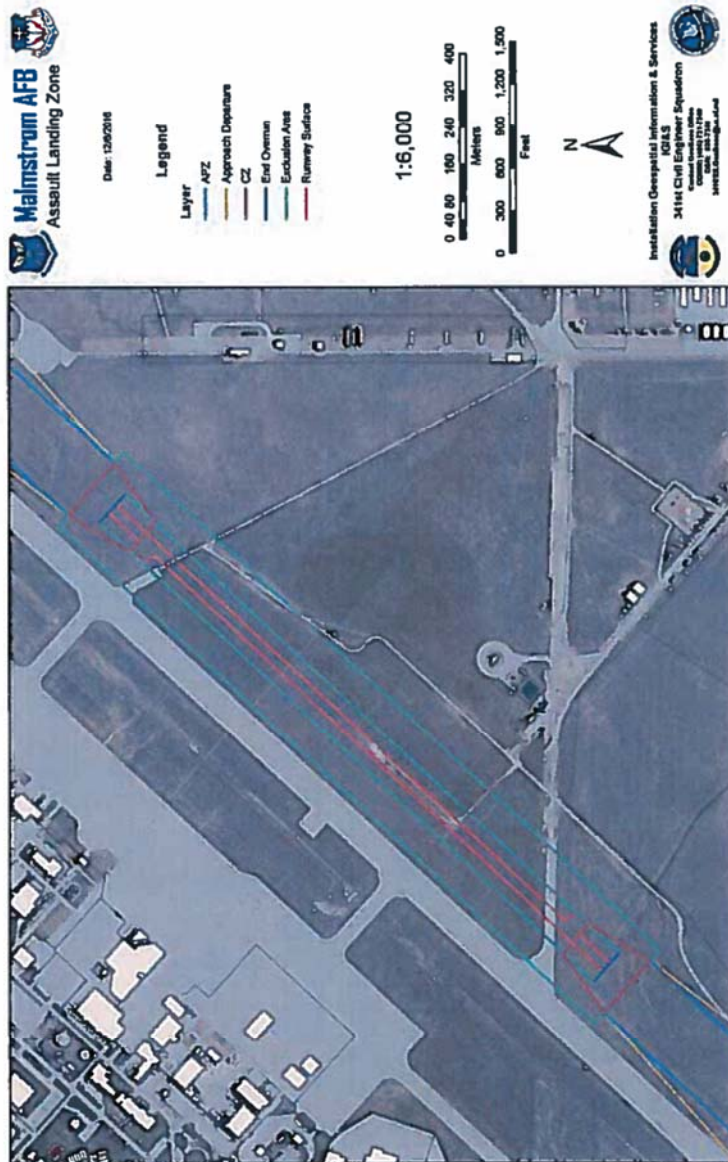
Input is requested within 30 days of receipt of this letter. Written comments may be forwarded to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence. Thank you for your assistance.

Sincerely

  
DENISE L. COOPER, Colonel, USAF  
Commander, 341st Mission Support Group

Attachment:  
1. Proposed Action Map

3





**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Colonel Denise L. Cooper  
Commander, 341st Mission Support Group  
27 77th Street North, Ste. 148  
Malmstrom AFB, MT 59402

FEB 07 2017

Honorable Vernon Finley, Chairman  
Confederated Salish and Kootenai Tribes  
42487 Complex Boulevard  
P.O. Box 278  
Pablo, Montana 59855

CC:  
Clayton Matt, THPO  
Confederated Salish and Kootenai Tribes  
42487 Complex Boulevard  
P.O. Box 278  
Pablo, Montana 59855

**Subject: Environmental Assessment for Construction of a C-130 Assault Landing Zone, Malmstrom Air Force Base, Montana**

Dear Chairman Finley:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the proposed construction of a C-130 assault landing zone (ALZ) within the boundaries of Malmstrom Air Force Base (AFB). Attachment 1 is a map illustrating the proposed location of the ALZ.

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed concrete, asphalt and gravel base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom AFB runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements. The Air Force is not aware of any site or resources of known or potential interest to the Confederated Salish and Kootenai Tribes being present at the site.

The 1999 Department of Defense American Indian and Alaska Native Policy recognizes the "importance of...addressing tribal concerns, past, present, and future" and states that "these concerns should be addressed prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands."


With this letter, the Air Force invites the Confederated Salish and Kootenai Tribes to provide input regarding this NEPA analysis and to initiate government-to-government consultation so you can express your comments, concerns, and suggestions. These consultations, conducted pursuant to Section 106 of the National Historic Preservation Act, 36 CFR Part 800, and Executive Order 13175, will provide an

***DETER...ASSURE...STRIKE!***

opportunity to exchange information, ask questions, and advise Malmstrom AFB of any concerns or suggestions you may have regarding the proposed project. After the draft EA is completed, we will send you a copy for your further review and comment.

Input is requested within 30 days of receipt of this letter. Written comments may be forwarded to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown.124@us.af.mil](mailto:robert.brown.124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence. Thank you for your assistance.

Sincerely

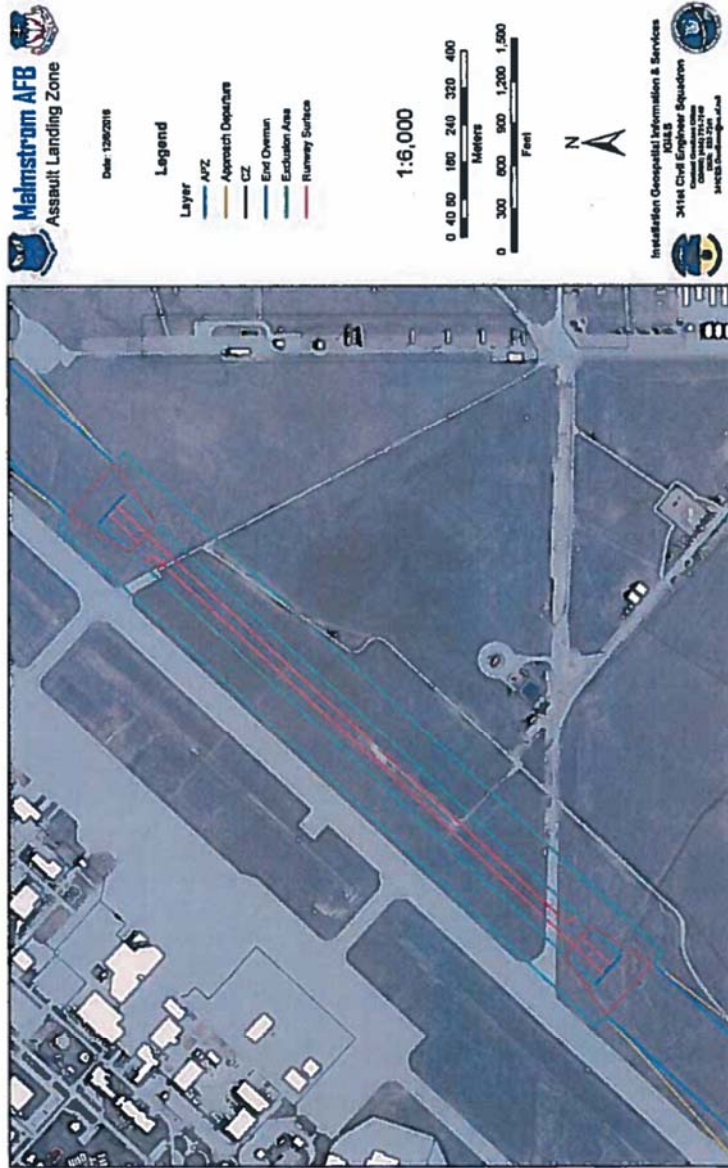
  
DENISE L. COOPER, Colonel, USAF  
Commander, 341st Mission Support Group

**Attachment:**

1. Proposed Action Map



3





**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST MISSILE WING (AFGSC)**



Lt Col Joel D. Purcell  
341st Civil Engineer Squadron  
39 78th Street North  
Malmstrom AFB, MT 59406-7536

## Example Letter

Federal Aviation Administration  
Helena Airports District Office  
2725 Skyway Drive, Suite 2  
Helena, MT 59602

Dear Sir or Madame

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a C-130 Assault Landing Zone (ALZ) for use by the Montana Air National Guard's (ANG's) 120th Airlift Wing (120 AW), USAF C-130s, and other National Guard Bureau units. The EA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

The purpose of this action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed recycled base with dirt keyhole turnarounds constructed on each end of the runway. The ALZ is proposed to be constructed adjacent and parallel to the Malmstrom Air Force Base (AFB) runway that was decommissioned in 1997 per Base Realignment and Closure (BRAC) Commission recommendations. The existing BRACed runway would be connected to the C-130 ALZ utilizing the existing taxiways for taxi purpose only. The need is to accommodate USAF Aircrew Assault Landing training as part of the annual C-130 Aircrew requirements.

The Air Force invites government agency representatives and private citizens to participate in the environmental process and requests your input regarding any information you feel would assist us in this process. The environmental issues analyzed in the EA will be used in the decision-making process by the Air Force for determining appropriate actions to be taken during construction. Input is requested within 30 days of receipt of this letter to ensure that the Air Force has time to address any comments from interested parties.

Written comments should be addressed to Mr. Robert Brown, 341 CES/CEIE, 39 78th Street North, Malmstrom AFB, MT 59406-7536, or e-mail to [robert.brown124@us.af.mil](mailto:robert.brown124@us.af.mil). Mr. Brown can be reached at (406) 731-7099 if you have any questions or concerns pertaining to this correspondence.

Sincerely

JOEL D. PURCELL, Lt Col, USAF  
Commander, 341st Civil Engineer Squadron

Attachment:  
I. Proposed Action Map

***DETER...ASSURE...STRIKE!***

## **APPENDIX B**

### **SHPO Consultation Letter and Archaeology Survey Report**



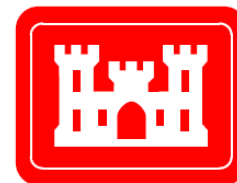
# Final Phase I Archaeological Survey Report

Proposed C130 Assault Landing Zone Cultural Resource Assessment  
Malmstrom AFB, Great Falls, Cascade County, Montana

GAI Project Number: C161091.00

SHPO Project #: 2016102805

September 2017



**US Army Corps  
of Engineers**  
Mobile District

Prepared by: GAI Consultants, Inc.  
Pittsburgh Office  
385 East Waterfront Drive  
Homestead, Pennsylvania 15120-5005  
and  
Department of Anthropology  
The University of Montana  
Missoula, Montana 59812

Prepared for: Aerostar SES LLC  
820 South University Boulevard  
Mobile, Alabama 36609  
and  
U.S. Army Corps of Engineers, Mobile District  
109 St. Joseph Street  
Mobile, Alabama 36602



Erosion and Sedimentation Control Plan  
Reliant Energy Northeast Management Company  
Keystone Generating Station Flue Gas Desulfurization (FGD)

**Contract Number: W91278-15-D-0087**  
Subcontract Number: M3010.1424.0005.19.1-3159

# Final Phase I Archaeological Survey Report

Proposed C130 Assault Landing Zone Cultural Resource Assessment  
Malmstrom AFB, Great Falls, Cascade County, Montana

GAI Project Number: C161091.00  
SHPO Project #: 2016102805

September 2017

Prepared for:  
Aerostar SES LLC

and

U.S. Army Corps of Engineers, Mobile District

Prepared by:  
GAI Consultants, Inc.  
Pittsburgh Office  
385 East Waterfront Drive  
Homestead, Pennsylvania 15120-5005

and

Department of Anthropology  
The University of Montana  
Missoula, Montana 59812

Authors:  
Brandon Bachman, M.A., Douglas H. MacDonald, PH.D., RPA  
and  
Benjamin Resnick, M.A., RPA

## Abstract

On behalf of Aerostar SES LLC and the U.S. Army Corps of Engineers, Mobile District, GAI Consultants, Inc., (GAI) conducted a Phase I archaeological survey for Malmstrom Air Force Base proposed C-130 Assault Landing Zone Project, located in Great Falls, Cascade County, Montana. The University of Montana (UM) implemented the field survey under contract to GAI between November 30, 2016 and December 2, 2016. The project was conducted under the auspices of Section 106 of the National Historic Preservation Act of 1966, which requires federal agencies to consider the effects of their undertakings on historic properties.

The Area of Potential Effect (APE) measured 1,676 meters (5,500 feet) northeast-southwest by 243.5 meters (799 feet) northwest-southeast [40.8 hectares (100.8 acres)] and comprised the proposed 1,463-meter (4,800-foot)-long dirt runway surface and dirt keyhole turnarounds at each end of the runway. The survey included a surface reconnaissance and the excavation of 32 shovel test pits positioned along three transects within the APE. Survey results yielded two positive shovel test pits each containing one historic-period artifact. Based on these results, GAI recommends that neither of the two isolated finds are eligible for listing on the National Register of Historic Places as they both lack integrity and the potential to provide important information. As a result, no historic properties will be affected by the proposed action and no additional archaeological work is recommended.

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## 1.0 Introduction

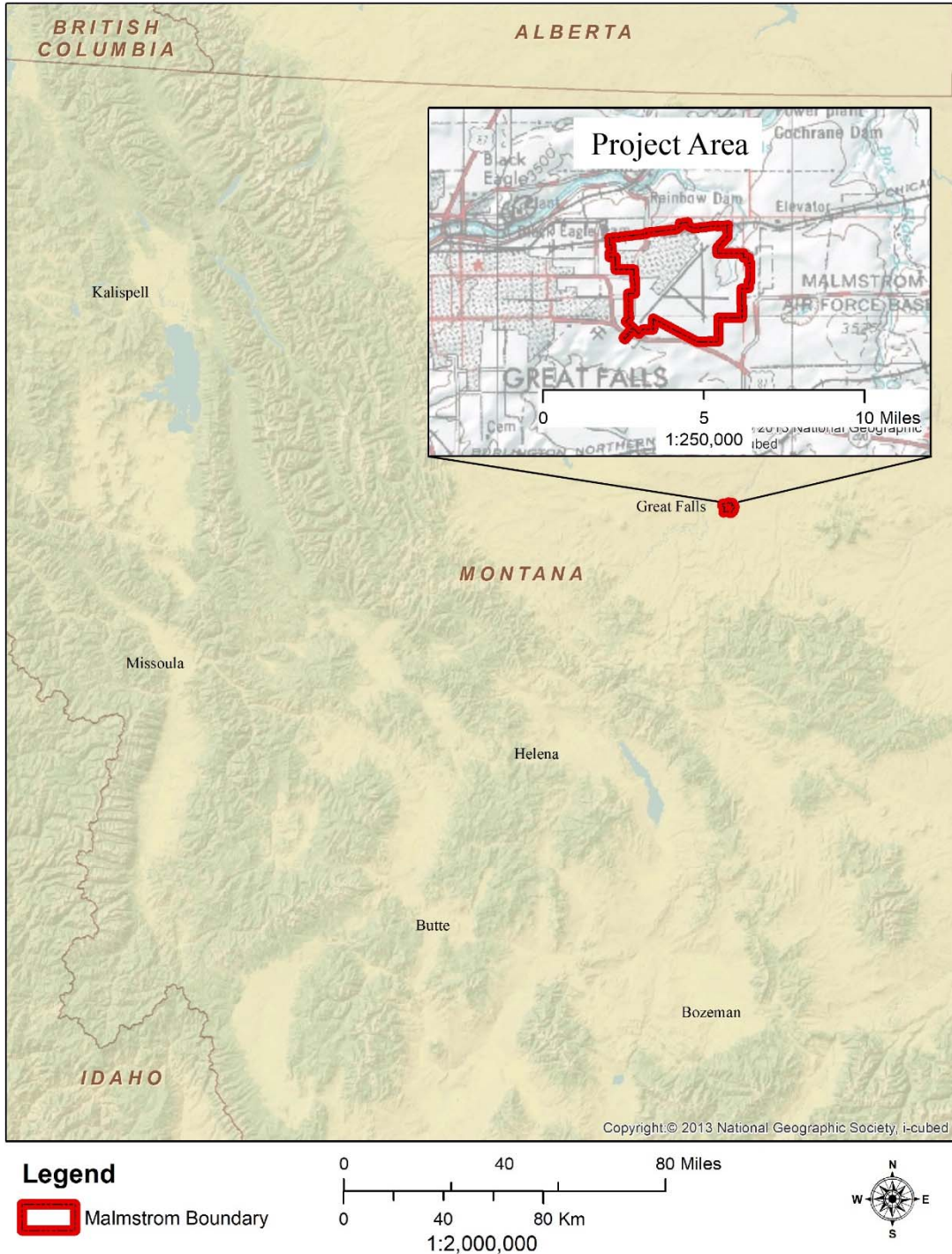
Malmstrom Air Force Base's (AFB) proposed C-130 Assault Landing Zone (ALZ) Project entailed the archaeological survey of a portion of the base parallel and southeast to the current decommissioned runway in Great Falls, Cascade County, Montana (Figures 1, 2 and 3). The survey was conducted to identify archaeological resources that may be present and potentially adversely affected by the proposed C-130 ALZ. The proposed C-130 ALZ is currently occupied by a grass covered field. The University of Montana, Department of Anthropology (UM) was contracted by GAI Consultants, Inc. (GAI) to complete the required survey of cultural resources within the project Area of Potential Effect (APE). The work was conducted on behalf of Aerostar SES LLC and the U.S. Army Corps of Engineers, Mobile District in association with the United States Air Force. The project was conducted in accordance with state and federal regulations and guidelines under the auspices of Section 106 of the National Historic Preservation Act of 1966, which requires federal agencies to consider effects of their undertakings on historic properties.

The APE included an area containing expected disturbances to the existing ground surface from construction of the proposed dirt, C-130 ALZ. The APE measured 1,676 meters (5,500 feet) northeast-southwest by 243.5 meters (799 feet) northwest-southeast [40.8 hectares (100.8 acres)] and comprised the proposed 1,463-meter (4,800-foot)-long runway surface and dirt keyhole turnarounds at each end of the runway. The decommissioned runway was not included in the overall APE. The exact limits of the APE were determined in consultation with Malmstrom AFB personnel including Rob Brown, NEPA Program Manager and Tony Lucas, Chief Environmental Section, and James "Jay" Belew, Colorado State University, Center for Environmental Management of Military Lands (CEMML) employee.



**Figure 1. Overview of Project Area/APE, view southwest.**

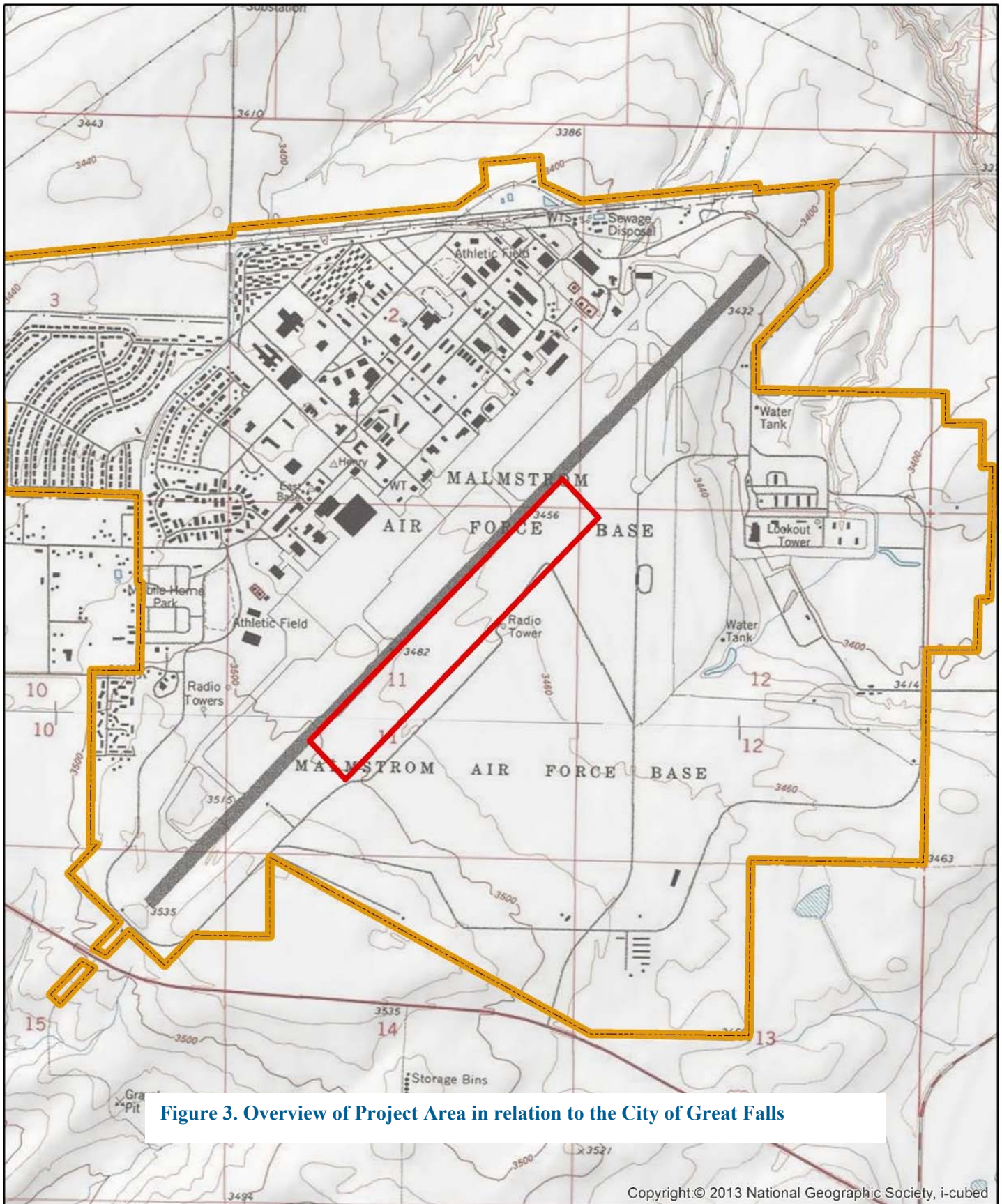
The UM field crew included Field Director Matt Nelson, as well as Brandon Bachman, M.A. along with assistance from CEMML Archaeologist, James Belew. On November 30, 2016, the UM crew traveled to Malmstrom AFB to begin conducting the Phase I archaeological survey, which included an intensive pedestrian survey and systematic sub-surface investigation with shovel test pits (STPs). STPs focused on the area comprising the centerline for the proposed C-130 ALZ (Figure 4; Figure 5). In all, a total of 32 shovel test pits (STPs) were positioned along three transects, and excavated throughout the APE. Placed along the centerline of the APE in the area of the proposed runway, Transect 1 contained a total of 16 STPs spaced at 100-meter (328-foot) intervals. Transect 2, placed 80 meters (262.5 feet) southeast of the centerline of the proposed runway, extended parallel to Transect 1 and contained eight STPs placed at 200-meter (656-foot) intervals. Transect 3 was placed 80 meters (262.5 feet) northwest of the centerline and parallel with both Transects 1 and 2. Like Transect 2, Transect 3 included the excavation of eight STPs spaced at 200-meter (656-foot) intervals. The soil from STPs was sifted through 0.64-centimeter (0.25-inch) hardware mesh for systematic artifact recovery.



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**Figure 2. Regional Map of the Location of Malmstrom AFB in Montana.**





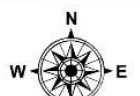
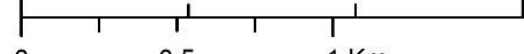
**Figure 3. Overview of Project Area in relation to the City of Great Falls**

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**Legend**

 Malmstrom Boundary

0 0.5 1 Miles



## 1.1 Summary of Results

The field survey was conducted from Wednesday, November 30, 2016 through Friday, December 2, 2016. Two STPs were positive for containing cultural resources. STP 1-8 contained a single piece of unidentifiable iron, while STP 3-2 contained one piece of oxidized metal (possible nail) and a piece of broken slate. Both of these positive STPs were found to have been from highly disturbed contexts, as evidenced by asphalt and gravels found in STP 1-8 and severely mottled soils in the B Horizon of STP 3-2. These positive STPs are separated by approximately 460 meters and were unlikely produced by a common cultural activity, and thus clearly do not represent an archaeological site. It appears, therefore, that the recovered materials date to no earlier than circa 1942 military construction activity. No other identifiable artifacts were observed in any of the excavated shovel test pits.

Neither diagnostic artifacts nor sites were identified at either of the positive STPs, and none are recommended eligible for National Register of Historic Places (NRHP) listing due to a lack of information potential and integrity of association and setting. The GAI team recommend that no historic properties will be affected by the project. No additional archaeological investigations are recommended in the APE.

## 1.2 Acknowledgements

Many people contributed to the success of the survey and inventory for the proposed C-130 ALZ Project. CEMML Archaeologist, James Belew, assisted UM Field Director Matt Nelson. UM employee, Brandon Bachman, M.A. is the primary report author, with co-authored sections and editing by Douglas MacDonald and maps produced by Matt Nelson. Ben Resnick, GAI Consultants, Inc., reviewed and edited the overall report.

The GAI team would like to thank the following for their assistance in the proposed C-130 ALZ Project: James "Jay" Belew, CEMML employee; Rob Brown, NEPA Program Manager; and Tony Lucas, Chief Environmental Section. Mr. Belew was especially helpful in providing access to various maps, photographs, and reports documenting the history and previous archaeological work at Malmstrom AFB.

The remainder of this report provides details of the investigations for the proposed C-130 ALZ Project, including a description of the project's environment, prehistory, and prior archaeological research (Section 2.0), archaeological survey results (Section 3.0), and summary and recommendations



**Figure 4. Crew digging in front of current Landing Zone/Skid area (lighter grassy area enclosed by orange cones).**



**Figure 5. Crew digging to the north (left) of current Landing Zone/Skid area.**



(Section 4.0).

## 2.0 Environment, Prehistory and Prior Research

This chapter provides overviews of the project location, regional geology, climate, flora and fauna, history and prehistory, and prior archaeological research near Malmstrom AFB in Great Falls, Cascade County, Montana. These sections provide an overall context for presenting the results of archaeological research.

### 2.1 Project Location, Geology, Physiography, and Hydrology

Malmstrom AFB is located in Cascade County, Montana; it is approximately two miles east of the city of Great Falls, and approximately 120.7 kilometers (75 miles) east of the Front Range of the Rocky Mountains. The base occupies a total area of 1,326.6 hectares (3,278 acres) of government-owned land situated on gently rolling uplands just south of the Missouri River, with an additional approximately 33,670 square kilometers (13,000 square miles) which comprise the Missile Deployment Area; the Missile Deployment Area surrounds Great Falls on all sides except for the city's northeast direction. These Missile Fields are located in nine counties in central Montana, and include 150 Launch Facilities and 15 Missile Alert Facilities (USAF 2016).

The base lies at an elevation of 1,074.4 meters (3,525 feet) above sea level on a plateau that slopes away from the Little Belt Mountains, and north towards the Missouri River, which is approximately one to four miles away from the base boundaries. The Missouri River flows north and northeast of Malmstrom AFB. While there are multiple stream valleys interspersed throughout the area, these valleys remain dry for the majority of the year (Hoffecker and Greby 1995).

The geologic setting for the proposed C-130 ALZ Project encompasses an area that is located on gently rolling hills on an unglaciated portion of the Missouri Plateau (Figure 6), in the northern part of the Great Plains physiographic province (Greiser 1989a). More specifically, the base lies over top of unconsolidated sediments, which in turn, overlies Cretaceous bedrock (the Kootenai Formation) which is comprised primarily of sandstone and shale (Gill and Cobban 1973; Lemke 1977). Originally, the area was not glaciated during the Pleistocene, but was inundated by Glacial Lake Great Falls, and the unconsolidated sediments represent lacustrine deposits and/or residuum of decomposed bedrock (Greiser 1988a).



**Figure 6. CEMML Archaeologist Jay Belew laying in an STP transect in the southwest extent of the Project Area.**

The majority of Malmstrom AFB is covered by deposits of Pleistocene till, which is comprised of an unstratified mixture of clay, sand, and silt, with some gravels and boulders intermixed. These deposits are typically oxidized and exhibit a grey/tan color (Lemke and Maughan 1977). Modern soils on the base have developed on the surface of these sediments and generally consist of Lawther silty clay and Dooley sandy loam (Soil Conservation Service 1973) that have mixed together due to the many disturbances that have occurred over time. The surficial sediments on which the base and its facilities have been constructed appear to have been deposited prior to the arrival of the first humans to the area (before 12,000 years ago), and, as such, possesses little to no archaeological potential for deeply-buried materials. However, artifacts that were once deposited on the ground surface are very

likely to be redeposited up to 25.4 centimeters (10 inches) below ground surface (bgs), due to both natural process (bioturbation) and human disturbance (plowing) (Butzer 1982).

## 2.2 Climate, Flora and Fauna

Malmstrom AFB lies in a section of rolling plains in central Montana near the upper boundary of the short-grass prairie zone of the Northwestern Plains [approximately 1,036 to 1,067 meters (3,400 to 3,500 feet) above sea level] (Hoffecker and Greby 1995). In more recent times, however, various introduced grasses have been planted throughout parts of the base for the purposes of erosion control; additionally, trees and shrubbery have been planted in the cantonment area for modern aesthetic purposes (Gill and Cobban 1973). The land surrounding the base to the north, south, and east is currently used as farmland in order to produce small grain cereals, and other similar agricultural uses, as well as for livestock grazing.

Native fauna for this area of the northern Great Plains formerly included bison, black bear, mule deer, pronghorn sheep, wapiti, and white-tailed deer, in addition to many various small mammals and birds. During time out in the field conducting the STP survey of the APE for the proposed C-130 ALZ, the only fauna observed were a handful of snowshoe hares, and both coyote and fox tracks.

Just as the rest of Montana, and the region as a whole, Great Falls has a highly variable, yet somewhat predictable climate based on the season. For example, the average daily temperature for Great Falls hovers at a mere seven degrees Celsius (45 degrees Fahrenheit) (Jackson and Williamson 1996), though temperatures can reach extremes, exceeding 37.8 degrees Celsius (100 degrees Fahrenheit) during the summer months (especially July and August) and dropping to as low as negative 34.4 degrees Celsius (negative 30 degrees Fahrenheit) in the winter. This portion of the greater Northern Plains is characterized by a moderately dry climate, and more specifically, the city of Great Falls averages less than 38 centimeters (15 inches) of annual precipitation of rainfall (Jackson and Williamson 1996). Snowfall in the Great Falls area consistently reaches an annual average of approximately 134.6 to 160 centimeters (53 to 63 inches) (Figure 7) (Jackson and Williamson 1996). Despite this dry climate, the grass vegetation cover throughout Malmstrom AFB is extremely dense, and ground visibility in most areas is very limited (approximately 0 to 25 percent) except for in the most recently disturbed areas (Gill and Cobban 1973).



**Figure 7. Final day of fieldwork after a night of snowfall, view southeast.**

## 2.3 Prehistory of the Northwestern Plains Area

Several cultural chronologies for the Northwestern Plains and greater western Montana regions have been utilized in years past to classify finds in the area (Malouf 1965; Mulloy 1958; Flint 1982; Roll 1982). However, a cross regional chronology is used here to present the areas prehistory in the broader context of other western North American hunter-gatherer cultural periods. The following classifications are used to denote periods of large-scale change: Paleoindian, Early, Middle, and Late Archaic, Late Prehistoric, and the Contact period.

### **2.3.1 Paleoindian Period (12,000 to 8,000 years ago)**

The regions earliest humans are presumed to be highly mobile hunter-gatherers likely exploiting animals like caribou, archaic bison, and elephants. Among the Northwestern Plains, western Montana, and Idaho there existed several possible food targets including several species of bison, mammoths and mastodons, camels, musk-ox, and caribou. Meanwhile predators like dire wolves, saber tooth cats, and large bears also shared the landscape with early man. Still there is no conclusive evidence that suggests man exploited megafauna in the Northwestern Plains or greater western Montana, in general. Sites from this period are almost nonexistent. It only seems reasonable to assume that there could have been occupational overlap between humans and megafauna based solely on the presence of old archaeological materials and megafaunal remains found within the same region.

In the region immediately surrounding Malmstrom AFB, paleoindian remains are confined to surface sites and isolated finds. Multiple projectile point isolated finds have been observed in upland areas and blowouts that are situated around the former Glacial Lake Great Falls along the Missouri River. These isolated finds that have been discovered include Clovis, Folsom, Plainview, Midland, Agate Basin, Hell Gap, Yuma, Scottsbluff, and Eden, projectile points. Two paleoindian surface localities along the Missouri River, that have yielded numerous archaeological materials, are the Chestnut Valley and Coleman Ridge sites (Greiser 1989a).

Paleoindian sites in other parts of the Northwestern Plains have been able to provide information on technology and subsistence. The Dunes site is a deflated multiple occupation/kill site that is located near the Missouri River from which a Hell Gap projectile point was recovered (Ruebelmann 1983). The Anzick site, located in Wilsall, Montana, is a Clovis-age burial of two sub-adults with accompanying grave goods consisting of over 100 lithic and bone artifacts (Lahren and Bonnicksen 1974). Clovis projectile points, large ovoid and lanceolate bifaces or preforms, tools, utilized flakes, and bone foreshafts comprise the Anzick assemblage recovered. The MacHaffie site is a multicomponent occupation site with Folsom and Scottsbluff cultural levels (Forbis and Sperry 1952). Bison, deer, and other small game dominate this Folsom excavation, whereas bison and antelope were the major remains identified in the Scottsbluff level. The Indian Creek site is a deeply stratified occupation site containing both Folsom and Agate Basin/Hell Gap components in its lowest levels (Davis, Aaberg, and Fisher 1980; Davis 1984). Based on archaeological finds at this site, the focus of the subsistence base was the procurement of bison and small mammals (Greiser 1989a).

By the end of this period, essentially modern fauna characterizes the resource environment. Likely due to climatic instability, the end of the ice age, and the resulting change in ecosystems, the megafauna either went extinct or evolved into smaller modern day equivalents.

### **2.3.2 Early Archaic Period (8,000 to 5,000 years ago)**

Side and corner notched projectile points appear during this period likely indicating the adoption of the atlatl and the beginning of the Early Archaic (McLeod and Melton 1986). Much of this period is characterized by what has been called the Altithermal which was a continent-wide drying trend (Antevs 1955). It has been demonstrated that there was a significant reduction in population across the region evinced by the paucity of archaeological sites. The drier, hotter environment could have created a complete reorganization of hunter-gatherer resource management strategies and a resultant shift in population demographics including reduction and dispersal. The latter could account for the lack of identified archaeological sites from this period, meaning that people were living in smaller

communities, more ephemeral camps, and in diverse ecological settings. Still, there seems to be consensus that there were substantial population reductions during the Early Archaic. Some have suggested that the exploitable plant and animal resource base was expanded during this time. The climate could have resulted in resources becoming distributed unevenly forcing some groups to reinvent food procurement strategies and alter their seasonal movement cycle. It is assumed the Plains were largely vacated in favor of mountain areas and ecotone settings (MacDonald 2012).

### **2.3.3 Middle and Late Archaic Periods (5,000 to 1,500 years ago)**

During the Middle Archaic period what has been termed a Medithermal made for a wetter and cooler climate (MacDonald 2012). There was a continuing trend of diversifying food sources and a steady increase in site numbers compared to the Early Archaic. The climate likely favored conditions for increasing bison herds on the Plains. Pit houses occur further west and east during this period, but to date none have been found in western Montana.

Point types from this period include Oxbow, McKean, Mummy Cave side-notched, Bitterroot and Salmon River side-notched, and possibly Mount Albion points although these could be attributed to a later phase. McKean complex artifacts include Duncan, Hanna, McKean lanceolate, Mallory side-notched, and Yonkee points. Taylor (1973) notes that points made during this period are more crudely constructed than their eastern counterparts. Malouf (1965) posited that this may be due to western Montana points being older than the eastern varieties.

The Mummy Cave complex (McCracken et al. 1978) is defined in the mountain and foothill areas and characterized by large side-notched dart points such as Bitterroot, Pahaska, and Blackwater (Frison 1978). Bitterroot side-notched and Mummy Cave-like materials are recorded in surface sites such as Chestnut Valley and Coleman Ridge along the Missouri River (Shumate 1982). Indian Creek, south of the study area, also contained Bitterroot or Mummy Cave complex materials. The predominance of bighorn sheep remains in these levels at Indian Creek suggest a shift in subsistence from the emphasis on bison in the Folsom and Agate Basin/Hell Gap occupations (Davis 1984). Mummy Cave and Salmon River side-notched points have been found at the Graybeal site in western Montana (McLeod and Melton 1986).

The Oxbow complex appears to represent a Plains adaptation which developed out of the Mummy Cave complex and is identified by large basally and side-notched projectile points (Reeves 1973). Currently, the Oxbow complex is poorly defined; Shumate (1982) identifies two types of Oxbow projectile points based on size from the Missouri River area. Reeves (1983) defines several Middle Archaic period complexes which contain Oxbow points in association with earlier Mummy Cave materials and later McKean complex artifacts.

During the Late Archaic period it is likely that there was an increase of communal hunting, which is suggested by larger sites, faunal remains, and the presence of traps and pounds for bison, antelope, sheep, and deer. Groups were probably highly mobile evinced by widespread trade items including lithics and pottery, along with the high quantities of stone circles found in Montana dating to this period. In general, site types include rockshelters, stone circle sites, campsites, limited activity sites, and kill and butchering sites. Assemblages contain diagnostic dart points, lithic debitage and tools, and groundstone tools. Large cooking pits and food storage pits are also typical. Subsistence strategies ranged from generalized hunting and gathering in the early part of this period to a more specialized adaptation involving bison procurement (Greiser 1989a). Large corner-notched projectile points, generally referred to as Pelican Lake points, appear during this period and are found throughout the Late Archaic. Corner-notched points attributed to this type are numerically the most common type found in



Montana (McLeod and Melton 1986). They are typically finely made with straight bases and blades and deep corner notching (MacDonald 2012). Foor (1982) lists three basic types of sites in the Pelican Lake complex: small temporarily occupied camps, subordinate sites associated with communal bison procurement and processing, and subordinate sites associated with individual hunting activities. The Pelican Lake settlement system consisted of large winter settlements in steppe vegetation zones located in protected areas adjacent to permanent water. Campsites in all other seasons were concentrated on exposed terraces or caves in mountainous regions.

The Pilgrim site (Davis et al, 1982) is a multicomponent stone circle site with 28 excavated circles representing Pelican Lake occupations (Davis 1983). The upper three levels at the Sun River site most likely represent Pelican Lake occupations. A wider variety of resources were used in these levels than in the earlier Oxbow occupations and bison was the primary subsistence focus. The Carter Ferry kill (Shumate 1967) is a single component Pelican Lake bison pound along the Missouri River.

The Besant complex reflects a newfound sophistication in bison procurement techniques that were not previously evident on the Plains (Frison 1978). Assemblages for this complex include Besant side-notched darts, smaller projectile points defined as Samantha, lithic tools and debitage, and occasionally, cord-marked ceramics. Additional features of Besant-age sites include possible house structures, bone work platforms or anvils, and a preference for Knife River flint as a lithic material (Johnson 1970a). Reeves (1983) suggests the Besant complex may have had trading relationships with the Hopewell Interaction Sphere located along the Mississippi, but the complex does represent an intrusive group on the northern Plains. Several Besant sites have been recorded near the Great Falls area, and include the Dago Hill, Stelling, Stark-Lewis, and Harlowton sites. Besant complex materials reflect the last recognized usage of atlatl and dart weaponry and the first for early Plains ceramics (Johnson 1970a). The Besant complex is partly contemporaneous with the Avonlea complex of the Late Prehistoric period.

### **2.3.4 Late Prehistoric Period (1500 to 500 years ago)**

The introduction of the bow and arrow is the defining technological achievement that characterizes the beginning of the Late Prehistoric period. The Avonlea point is the earliest representative of this technology in Montana. Dates for Avonlea points are several hundred years older in northwest Montana than in the southeast part of the state, possibly suggesting that the Avonlea point type diffused from the north. Large communal bison kills, particularly jump sites (Frison 1978) and stone circle sites, are the most frequent site types. Assemblages contain small side-notched, corner-notched, tri-notched, and unnotched arrow points; lithic tools and debitage; ceramics; grooved mauls; bone fleshers; and shell beads (Frison 1978). Subsistence practices continued to emphasize bison procurement. Plant species were certainly an important resource and root roasting ovens increase in use during this time to process camas, biscuit root, and bitterroot (Arthur 1968).

Avonlea sites located in the general vicinity of the project area have received little systematic evaluation and include Big Badger (Johnson 1970a; Davis 1966), Crawford (Johnson 1970b; Davis 1966), and Rhinehardt (Johnson 1970b; Davis 1966; Reeves 1983). All of the aforementioned Late Prehistoric sites are Avonlea bison jumps. The Lost Terrace site is an Avonlea midwinter antelope processing site located on the Missouri River. Prairie and Plains side-notched, corner-notched, and tri-notched projectile points are diagnostic of the rest of the Late Prehistoric period.

### **2.3.5 Contact Period (300-100 BP)**

Ten thousand years of rather conservative cultural change in the region was drastically altered in the span of a few centuries for hunter-gatherers. The introduction of the trade gun, horse, and eventually Euro-American's entry into the region are the hallmarks of the Proto-historic period. The horse led to increased mobility and competition between groups. Euro-American population expansion in the east forced many previously Woodland-oriented peoples onto the Plains. The trade gun and horse made bison hunting an efficient and reliable resource procurement strategy. The large-scale population movements brought with it increases in warfare and raiding as groups vied for territory and acquisition of horses and guns. But perhaps the most significant impact on Native Americans during this period was the plethora of diseases including smallpox and cholera that greatly reduced indigenous populations. Many of these consequences of Euro-American expansion affected Indians before they had even seen a white person.

The Plains of western Montana was one of the last regions in the country to be explored by European-Americans. Two French fur traders, LeBlanc and LaGasse, may have been the first whites in western Montana in 1801 although there is no written record of this so it remains speculative (McLeod and Melton 1986). From 1804 to 1806, the Corps of Discovery Expedition led by Captain Meriwether Lewis and Captain William Clark explored the Oregon territory and the newly purchased Louisiana territory by way of the Missouri and Columbia Rivers and their headwaters. In 1805, Lewis and Clark traversed the area along the Missouri River through the present day Malmstrom AFB Missile Fields. The expedition spent the period from June 15, 1805 to July 12, 1805 in the vicinity of present day Malmstrom AFB while they portaged their canoes and gear around the Great Falls of the Missouri from their camp along the Missouri River near Belt Creek to their camp just upstream from Great Falls. In July 1806, the Corps of Discovery may have passed through or near Malmstrom AFB and again on their way back down the Missouri River and some of its tributaries. The lower and upper portage camp sites are listed as discontinuous properties comprising a National Historic Landmark, with the boundary of the Belt Creek portage property extending along the projected portage route to within 500 meters to the east of the Base Proper.

Permanent Euro-American trading posts, such as Fort Benton (northeast of Malmstrom AFB in Chouteau County), were established during the first half of the nineteenth century. Gold prospectors came to the region during the late 1850s and early 1860s, and cattle ranching spread to the area during 1860-1880. Following the fall of beef prices and severe winter of 1886-1887, sheep succeeded cattle as the major agricultural industry of the region. During the same year, the railroad (Great Northern) reached Great Falls. Between 1890 and 1910, homesteading and grain production became common across the region.

## 2.4 History of Malmstrom Air Force Base

Malmstrom AFB was originally founded in 1942 as the Great Falls Army Base, and occupied agricultural land which at that time was primarily used for livestock grazing and the cultivation of crops. The base was established to support Alaskan air bases and crew training for the B-17 Flying Fortress; Malmstrom AFB then became involved in World War II by transporting aircrafts and supplies to the Soviet Union as part of the Lend-Lease Program. As a result of providing the above materials, the United States acquired leases to several military bases in Allied Territory during the war. This included, but was not limited to the Soviet Union, Britain, France, China, and other nations. In 1948, Malmstrom AFB participated in the Berlin Airlift, while continuing to serve as a training facility for the Military Air Transport Service crews throughout the Korean War.

Arguably Malmstrom AFB's most prominent role entailed serving as an essential component in the United States' air defense strategies during the Cold War (USAF 2009). Included in this role was the



introduction of an air surveillance system, as well as the first Minuteman Intercontinental Ballistic Missile base in 1960, with construction beginning the following year. As a result of the Cuban Missile Crisis, in October 1962 during which President John F. Kennedy warned Soviet Premier Nikita Khrushchev of America's "Ace in the Hole" featuring the activated nuclear-armed Alpha-06 Minuteman I missile at Malmstrom AFB, Montana, the installation and deployment of these missiles was drastically accelerated. As time passed, more updated versions of missile defense systems were deployed at Malmstrom AFB; this included Minuteman II during the 1960s and Minuteman III during the 1970s and 1980s. The geographic location of Malmstrom AFB, which lies near transpolar routes to China, Europe, and Russia, undoubtedly played a large role in its development as a missile and air refueling tanker base.

## 2.5 Previous Archaeological Work

Prior to the beginning of archaeological fieldwork, a cultural resources file search was conducted by the Montana State Historic Preservation Officer (SHPO) for the APE and its direct vicinity. The APE included the Proposed Action site in addition to an area containing expected ground surface disturbances from the construction of the proposed C-130 ALZ. According to these records, there have been numerous previously recorded cultural resource sites and surveys documented within this immediate area.

There have been many archaeological and historic resource surveys conducted on and around Malmstrom AFB over the past 30 years (USAF 2009). One of the larger and more widespread surveys took place in 1996, which included an inventory of Cold War resources both on Malmstrom AFB and throughout the Missile Deployment Area (Table 1). This survey resulted in the evaluation of over 200 historic buildings, various structures, and missile facilities as being either "eligible" or "potentially eligible" for listing on the NRHP (Bard et al. 1997). Resulting from the findings of this survey, the Montana SHPO concurred with Malmstrom AFB that the 20 MAFs and 200 LFs were eligible for listing on the NRHP under Criterion g as "resources of exceptional significance." Facilities associated with the 564<sup>th</sup> Missile Squadron (5 MAFs and 50 LFs) were deactivated and adverse effects mitigated via Memorandum of Agreement in 2007. In addition to the MAFs and LFs recommended eligible, Bard et al (1997) recommended an additional 24 buildings located on Malmstrom AFB proper were not of exceptional significance regarding Criterion g, but were still "potentially significant." Of those 24 buildings (Bard et al (1997), only 18 remain in existence. According to a letter prepared by the Montana SHPO (2008), these buildings do not constitute a NRHP District nor are individually eligible for listing on the NRHP. Since historic properties have now surpassed 50 years of age, they are currently being re-evaluated for NRHP eligibility. These historic structures are all located approximately 365.8 to 609.6 meters (1,200 to 2,000 feet) to the northwest of the proposed C-130 ALZ, which is well outside of the current APE.

**Table 1. Previous Cultural Resource Inventories near the APE**

Date	Project	Author	CRABS #
May 25-29, 1987	Cultural Resources Survey of Approx. 1,250 Acres in the Vicinity of Malmstrom Air Force Base	Greiser – 1988b	CA 6 2085
May 17-18, 1988	Cultural and Paleontological Resources Survey on and Adjacent to Malmstrom Air Force Base	Greiser - 1989a	Unknown
Aug. 18-Oct. 20, 1987	Intensive Cultural Resources Survey of Selected Locations, Malmstrom Air Force Base...100 Acres Immediately North of Base Proper	Greiser - 1989b	Unknown
June 13-17, 1994	Prehistoric and Historic Resources at Malmstrom Air Force Base	Hoffecker and Greby - 1995	CA 6 17324
Spring 1996	Cold War Resource Survey at Malmstrom Air Force Base	Bard et al. - 1997	Unknown
May 10, 2001	Archaeological, Prehistoric and Historic Resources Survey at Malmstrom Air Force Base, Northwest Boundary Addition	French - 2001	Unknown

Hoffecker and Greby (1995) conducted a pedestrian survey, which included the removal of vegetation from selected areas of low visibility. This cultural resources inventory was conducted across 540 acres of Malmstrom AFB which focused on the identification of prehistoric and historic resources (see Table 1). Only one prehistoric archaeological site (24CA0449) was found within base boundaries. Site 24CA0449 (Table 2), which is located in the south-central portion of the installation, comprises a small lithic scatter containing primary and secondary flakes of chert, diabase, quartzite, and siltstone. Constituting the entirety of subsurface probing conducted in this investigation, 13 shovel test units were excavated to determine the depth and to delineate the boundaries of site 24CA449. Situated approximately 4,600 feet southeast of the southeast corner of the APE, the site was determined ineligible for listing in the NRHP. A few isolated finds were also documented in this vicinity; these resources are similarly considered not eligible for listing on the NRHP. Another isolated find, recovered less than 2,000 feet southeast of the APE consisted of three lithic artifacts (Greiser 1989a). Like those noted above, these resources are not eligible for listing in the NRHP.

An additional survey was conducted in anticipation of the proposed construction of military housing and a training center which identified three sites on and adjacent to Malmstrom AFB (see Table 1) (Greiser 1988b). Included were two Native American sites that are located adjacent, but off Malmstrom AFB property. Site 24CA0278 (Table 2) is a campsite containing a lithic scatter and fire-modified rock (FMR) and is located within a plowed field, approximately one-mile to the northeast of the northeast corner of the APE. The other prehistoric site, 24CA0279 (Table 2), which is also a campsite located off base, is located more than 1.4 miles to the southeast of the southeast corner of the APE and contains fire-cracked rock and flaked quartzite, and also lies within a plowed field context. Neither of these sites is considered eligible for listing in the NRHP. In addition to the above, Greiser (1988b) observed six isolated finds comprising FMR and quartzite shatter. As noted above, isolated finds do not meet NRHP eligibility criteria.

Lastly, Greiser (1988b) identified one additional site, (24CA0264), comprising a historic-period railroad grade bordering the northern edge of the base (Table 2). This site represents a section of the Chicago, Milwaukee, St. Paul, and Pacific Railway (aka Milwaukee Railroad) that was constructed in Montana between 1906 and 1909; the west segment of this railroad grade is still in use today, while the east segment was abandoned, with the rails having been removed. Greiser (1988b) recommended this section potentially eligible for listing on the NRHP; however, no determination was made. Formal recordation and NRHP evaluation is currently in progress.

**Table 2. Previously Recorded Sites Located within One Mile of the APE**

Site	Location (on or off base)	Site Type	Ownership	NRHP Eligibility	Description
24CA264	On base, forms the north edge of the base boundary; west segment still in use	Historic Railroad Grade	Malmstrom	Unevaluated	Partially operational segment of the "Milwaukee Railroad," built 1905-1909
24CA278	Off main base, ~200m east of base boundary, east and northeast of the runway	Prehistoric Lithic Scatter	Private	Not Eligible	Lithic scatter and Fire Modified Rock (FMR)
24CA279	Off main base, ~250m east of base boundary, east of horse stables	Prehistoric Lithic Scatter	Private	Not Eligible	Lithic scatter and Fire Modified Rock (FMR)
24CA449	On base, in southeast open area, west of horse stables	Prehistoric Lithic Scatter	Malmstrom	Not Eligible	Surface and subsurface lithic scatter

### 3.0 Archaeological Survey Results

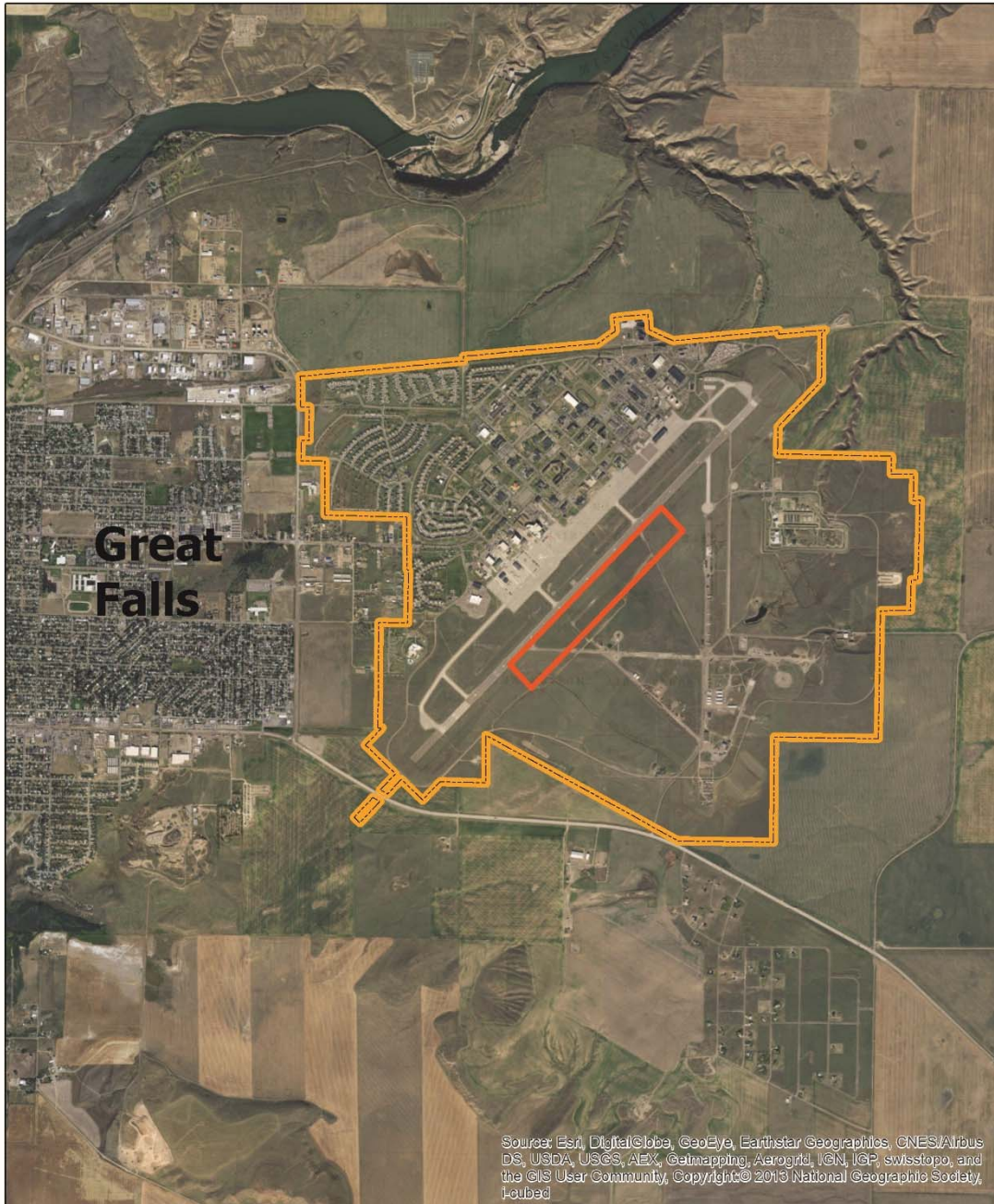
This chapter discusses the methods and results for the survey of the proposed project APE, which was conducted from November 30, 2016 through December 2, 2016. This section includes a discussion of the two Isolated Finds identified during the survey.

#### 3.1 Archaeological Survey Methods

Archaeological potential was considered limited in the APE based, in part, on prior disturbances including the construction of runways in the 1940s. For that reason, the interval between STPs ranged from between 100 and 200 meters (328 and 656 feet).

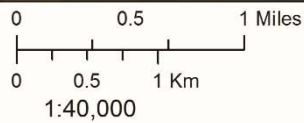
In addition to a surface reconnaissance resulting in the identification of four small concrete features housing runway lights, a total of 32 STPs positioned along three transects, were excavated throughout the APE. Placed along the centerline of the APE in the area of the proposed runway, Transect 1 (Figure 8) contained a total of 16 STPs spaced at 100-meter (328-foot) intervals. While the existing Helicopter Movement Area (HMA) required the offsetting of STPs 1-6 and 1-7 slightly to the southeast, both ends of the landing/skid area were still able to be tested (STPs 1-5 and 1-8). Transect 2 (Figure 9), placed 80 meters (262.5 feet) southeast of the centerline of the proposed runway, extended parallel to Transect 1 and contained eight STPs placed at 200-meter (656-foot) intervals. Transect 3 (Figure 4) was placed 80 meters (262.5 feet) northwest of the centerline and parallel with both Transects 1 and 2. Like Transect 2, Transect 3 included the excavation of eight STPs spaced at 200-meter (656-foot) intervals. Soil from STPs was sifted through 0.64-centimeter (0.25-inch)

hardware mesh for systematic artifact recovery.



**Legend**

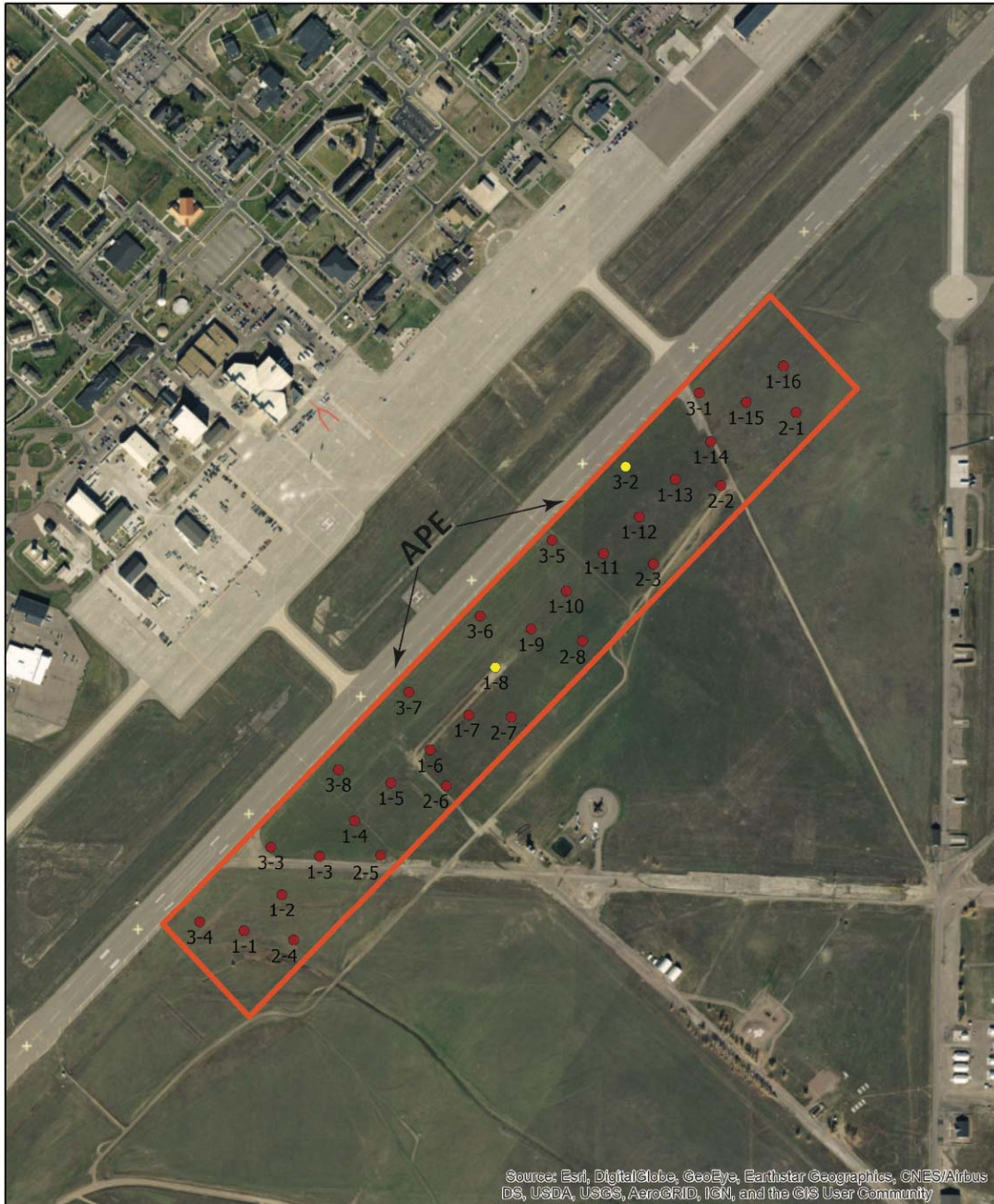
-  Malmstrom Boundary
-  APE





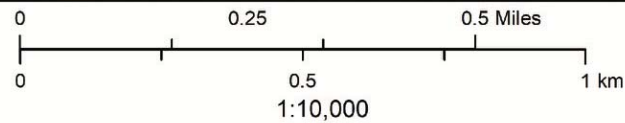
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**Figure 8. Overview of Malmstrom AFB with APE boxed off.**



**Legend**

- APE
- Positive STP
- Negative STP



**Figure 9. Map of APE with Location of all STPs.**



### 3.2 Survey/Shovel Test Pit Results

Upon completion, all but two of the 32 investigated STPs were found to be negative (Table 3). STP 1-8 contained a single piece of unidentifiable iron, while STP 3-2 contained one piece of oxidized metal (possible nail) and a piece of broken slate. Both of these positive STPs were found to have been highly disturbed, as evidenced by asphalt and gravels found in STP 1-8 and severely mottled soils in the B Horizon of STP 3-2. It appears, therefore, that the recovered materials date to no earlier than circa 1942 military construction activity. No other identifiable artifacts were observed in any of the investigated STPs.

All but three STPs (1-10, 1-11, 3-8) exhibited levels of moderate to extreme disturbance likely related to various roads that have traversed the project area at one time or another. All but these three STPs contained considerable gravels. In many STPs, direct evidence of this disturbance was observed with the occurrence of asphalt. This was especially the case in vicinity of the HMA and in Transect 1 along the proposed runway location. It should be noted that excavation was prematurely terminated in shovel test pits due to either encountering an asphalt surface (STPs 1-6, 2-3) or impenetrable clay (STPs 1-4, 3-6, 3-7). Additional STPs exhibiting evidence of especially high recent disturbance (assumed to be caused by military-related activities between 1942 and the present) include the positive STPs 1-8 and 3-2 and the negative STPs 1-9, 2-6, 3-1, and 3-8.

The project area can generally be broken down into three distinct areas based on observed soils. The southwestern portion of the APE typically comprised two shallow layers consisting of a sandy clay loam followed by a clay loam (B Horizon), both of which were somewhat mottled (likely disturbed). These strata superimposed a compacted clay layer encountered between 20 to 30 centimeters (7.9 to 11.8 inches) bgs. The center portion of the project area, particularly in vicinity of the HMA, was slightly lower in elevation and therefore contained slightly more moisture than other project areas. Soil horizons were similar to those identified above except the clay layer was typically observed at about 20 centimeters (7.9 inches) deeper, i.e., 40 to 50 centimeters (15.8 to 19.7 inches) bgs. Soils in the northeast part of the project area were similar to those in vicinity of Transect 1 along the APE centerline. However, due to its slightly higher elevation (leading to a manmade berm) soils were significantly drier than in the rest of the project area.

Owing to the presence of disturbed soils throughout the project area, along with a lack of any identifiable artifacts or cultural features, the area of the proposed ALZ exhibits limited potential for encountering significant archaeological resources. STPs in the northeast corner, i.e., along the ends of Transects 1 and 2, are less disturbed and thus may hold higher potential for containing intact cultural resources. However, all of these STPs were negative. Throughout the center and southwestern portion of the APE, moderately- to highly-disturbed soils were determined to characterize the majority of STPs. Consequently, the potential is especially low for encountering significant archaeological resources within and to the southwest of the HMA.

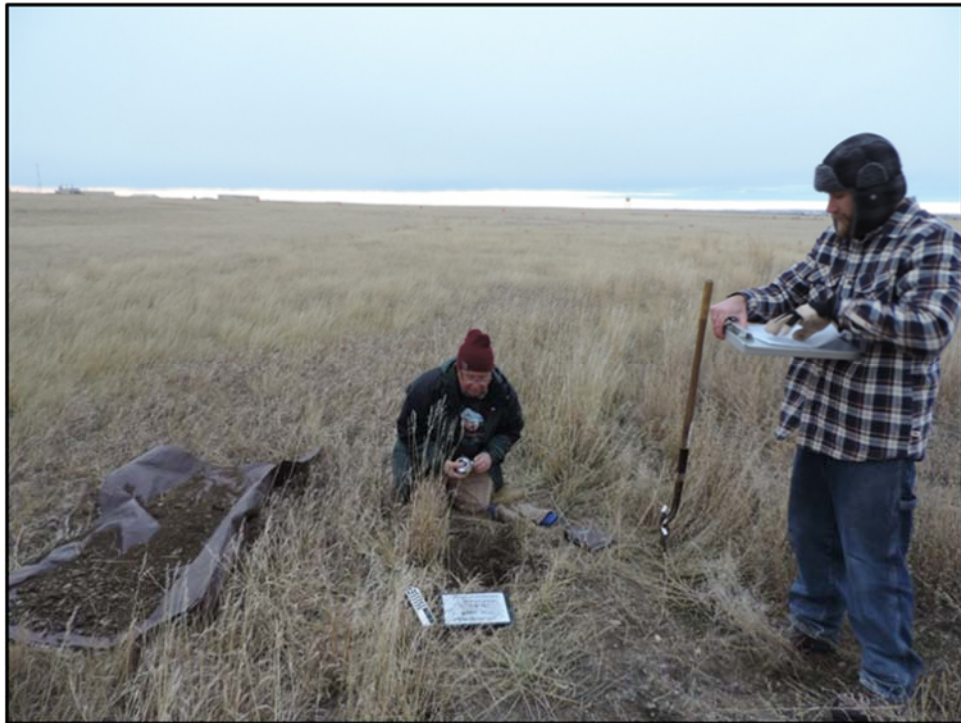
**Table 3. Summary of GPS Data for STP Locations and Artifacts**

STP	Northing	Easting	Positive/Negative	Artifact Description
1-1	362383	472634	Negative	N/A
1-2	362453	472706	Negative	N/A
1-3	362527	472778	Negative	N/A
1-4	362595	472845	Negative	N/A
1-5	362668	472914	Negative	N/A

STP	Northing	Easting	Positive/Negative	Artifact Description
1-6	362731	472989	Negative	N/A
1-7	362798	473064	Negative	N/A
1-8	362889	473115	Positive	One piece of unidentifiable deteriorated iron
1-9	362963	473183	Negative	N/A
1-10	363036	473251	Negative	N/A
1-11	363111	473318	Negative	N/A
1-12	363178	473390	Negative	N/A
1-13	363250	473460	Negative	N/A
1-14	363323	473528	Negative	N/A
1-15	363398	473596	Negative	N/A
1-16	363468	473667	Negative	N/A
2-1	363378	473691	Negative	N/A
2-2	363238	473547	Negative	N/A
2-3	363088	473417	Negative	N/A
2-4	362365	472728	Negative	N/A
2-5	362529	472895	Negative	N/A
2-6	362662	473021	Negative	N/A
2-7	362794	473145	Negative	N/A
2-8	362940	473282	Negative	N/A
3-1	363416	473505	Negative	N/A
3-2	363274	473364	Positive	One piece of oxidized metal (possible nail); one piece of slate
3-3	362545	472685	Negative	N/A
3-4	362400	472549	Negative	N/A
3-5	363133	473223	Negative	N/A
3-6	362988	473085	Negative	N/A
3-7	362842	472949	Negative	N/A
3-8	362693	472814	Negative	N/A

### **3.2.1 Isolated Find #1 (IF-1)**

Located at N 362889; E 473115, IF-1 consists of a single piece of unidentifiable deteriorated iron. This artifact was found within STP 1-8, in the top 10-20 cmbs. STP 1-8 is located along the centerline of the proposed C-130 ALZ, in the HMA (Figures 10 and 11); this is the northeast end of the landing/skid area. This center section of the project area was slightly lower in elevation than the other two sections, and therefore, contained slightly more moisture. Due to the moderate amount of asphalt present within the top two layers of this STP, it appears this artifact dates to no earlier than circa 1942 military construction activities. As this find was not diagnostic, and appears to be highly disturbed, no further work is recommended at this location.



**Figure 10. Crew analyzing the soils from IF-1/STP 1-8.**



**Figure 11. Jay Belew using a trowel to mark the different horizons in IF-1/STP 1-8.**



### 3.2.2 Isolated Find #2 (IF-2)

Located at N 363274; E 473364, IF-2 consists of one piece of oxidized metal (possible nail) and a piece of broken slate. The artifact and broken slate were both recovered from within STP 3-2. This STP is located north of the proposed centerline for the proposed C-130 ALZ, in the northeast third of the project area where the elevation is slightly higher, making the soils significantly drier than in the rest of the project area (Figures 12 and 13). Due to the severely mottled soils in the B Horizon of this STP, it appears the artifact recovered dates to no earlier than circa 1942 military-related construction activities; it should be noted that the piece of slate is not considered to be an actual artifact but, based on its difference from the rest of the soils and gravels/rocks observed in the project area demonstrate the amount of disturbance the area has undergone in the past. As this find was not diagnostic, and appears to be highly disturbed, no further work is recommended in this area.



Figure 12. Crew at location of IF-2/STP 3-2 beginning to dig.



Figure 13. Crew screening through soil from IF-2/STP 3-2.

## 4.0 Summary and Recommendations

The completed STP survey of the APE for the proposed C-130 ALZ Project at Malmstrom AFB (November 30, 2016 through December 2, 2016) yielded two positive STPs containing historic-period artifacts, both in the form of isolated finds. NRHP eligibility and effect recommendations for both the APE and isolated finds are detailed below.

### 4.1 Recommendations

#### 4.1.1 NRHP Eligibility

Based on the survey results and subsequent evaluation, the GAI team recommend that both of the positive STPs/isolated finds are not eligible for listing on the NRHP. Neither of the isolated finds contained sufficient information potential, nor do they maintain integrity. The dirt and asphalt roads that stretch across this area of the base date back to 1942. Disturbances occur throughout the entirety of the APE due to the excessive use of these roads within the base.

#### 4.1.2 Effect Recommendations

Based on the lack of NRHP-eligible cultural resources as well as extensive disturbances resulting in a loss of integrity of setting and association, we recommend that the project be allowed to proceed as no historic properties will be affected.

### 4.2 Summary and Conclusion

The GAI team conducted a Section 106 archaeological survey for the proposed C-130 ALZ Project at Malmstrom AFB, located in Great Falls, Cascade County, Montana. Survey results of the APE yielded two positive STPs each containing one historic-period artifact. Since these two positive units are situated approximately 470 meters apart, they collectively cannot be interpreted as a historic archaeological site. Upon completion of the evaluation of the archaeological results, we recommend that neither of the two isolated historic finds are eligible for listing on the NRHP because they lack integrity and the potential to produce important archaeological information. The lack of integrity is directly related to the presence of ground disturbance in this portion of the base (and specifically the HMA). Therefore, the GAI team recommends no further archaeological work. For this reason, no historic properties will be affected by the proposed action and the construction of the C-130 ALZ Project at Malmstrom AFB should proceed forward.



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*Historic Preservation  
Museum  
Outreach & Interpretation  
Publications  
Research Center*

October 31, 2017

Mr. Tony P. Lucas  
341<sup>st</sup> CES/CEIE  
39 78<sup>th</sup> Street North  
Malmstrom AFB, MT 59402-7536

Re: C-130 Assault Landing Zone  
Malmstrom Air Force Base, Montana

Dear Mr. Lucas:

Thank you for the additional information (received October 30, 2017) regarding the C-130 Assault Landing Zone project on the Malmstrom Air Force Base. We concur that this undertaking will have No Effect on Historic Properties.

If you have any questions or concerns, do not hesitate to contact me at (406) 444-0388 or [JBush2@mt.gov](mailto:JBush2@mt.gov). Thank you for consulting with us.

Sincerely,

A handwritten signature in blue ink that reads "Jessica Bush". The signature is written in a cursive, flowing style.

Jessica Bush, M.A.  
Review and Compliance Officer, Deputy SHPO  
Montana State Historic Preservation Office

File: DOD/Air Force – 2017 – 2017103009

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## **APPENDIX C**

### **USFWS Information for Planning and Consultation (IPaC) Letter**



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Montana Ecological Services Field Office  
585 Shepard Way, Suite 1  
Helena, MT 59601-6287  
Phone: (406) 449-5225 Fax: (406) 449-5339



In Reply Refer To:

August 16, 2017

Consultation Code: 06E11000-2017-SLI-0520

Event Code: 06E11000-2017-E-00921

Project Name: C-130 Assault Landing Zone - Semi-Improved

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

08/16/2017

Event Code: 06E11000-2017-E-00921

2

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

08/16/2017

Event Code: 06E11000-2017-E-00921

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## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Montana Ecological Services Field Office**  
585 Shepard Way, Suite 1  
Helena, MT 59601-6287  
(406) 449-5225

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08/16/2017

Event Code: 06E11000-2017-E-00921

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## Project Summary

Consultation Code: 06E11000-2017-SLI-0520

Event Code: 06E11000-2017-E-00921

Project Name: C-130 Assault Landing Zone - Semi-Improved

Project Type: MILITARY OPERATIONS / MANEUVERS

Project Description: The MAFB and MANG propose to construct an Assault Landing Zone for C-130 real world training on a Semi-Improved surface. Training operations would include up to 2 landings and take offs per weekday.

### Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/47.50398129190586N111.18492604282959W>



Counties: Cascade, MT

08/16/2017

Event Code: 06E11000-2017-E-00921

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## Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

### Mammals

NAME	STATUS
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5123">https://ecos.fws.gov/ecp/species/5123</a>	Proposed Threatened

### Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

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**APPENDIX D**  
**Air Emissions Calculations**



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# Air Emissions Calculations

## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

### 1. General Information

**- Action Location**

**Base:** MALMSTROM AFB  
**County(s):** Cascade  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Action Title:** C-130 Assault Landing Zone

**- Project Number/s (if applicable):**

**- Projected Action Start Date:** 7 / 2018

**- Action Purpose and Need:**

The Proposed Action is to construct a semi-improved (dirt) C-130 ALZ comprised of crushed recycled base adjacent and parallel to the southeast of the Malmstrom AFB decommissioned runway with dirt keyhole turnarounds on each end of the runway. The need is to accommodate USAF Aircrew assault landing training as part of the annual C-130 Aircrew requirements.

**- Action Description:**

Alternative 1 (Preferred Alternative) is the construction of the proposed C-130 ALZ adjacent to and parallel with the Malmstrom AFB decommissioned runway. Alternative 2 is the same as Alternative 1 except the C-130 ALZ would be connected to the existing decommissioned runway for use as a taxiway. Under the No Action Alternative, a C-130 ALZ would not be constructed at Malmstrom AFB. USAF C-130 active duty units would not have a regional ALZ available for training. The Montana ANG would lose the efficiencies gained by having a local training asset without incurring increased costs and impacts associated with travel to a remote training site.

**- Point of Contact**

**Name:** Thalax Rattanaxay  
**Title:** Contractor  
**Organization:** Aerostar SES LLC  
**Email:** trattanaxay@aerostar.net  
**Phone Number:** 251-432-2664

**- Activity List:**

	Activity Type	Activity Title
2.	Construction / Demolition	ALZ Construction
3.	Aircraft	C-130 Operations

### 2. Construction / Demolition

#### 2.1 General Information & Timeline Assumptions

**- Activity Location**

**County:** Cascade  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Activity Title:** ALZ Construction

**- Activity Description:**

Land clearing and grading

## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date  
 Start Month: 7  
 Start Month: 2018

- Activity End Date  
 Indefinite: False  
 End Month: 11  
 End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.544632
SO <sub>x</sub>	0.008331
NO <sub>x</sub>	4.467847
CO	2.233482
PM 10	14.495182

Pollutant	Total Emissions (TONs)
PM 2.5	0.164397
Pb	0.000000
NH <sub>3</sub>	0.009526
CO <sub>2</sub> e	895.6

### 2.1 Site Grading Phase

#### 2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date  
 Start Month: 7  
 Start Quarter: 1  
 Start Year: 2018

- Phase Duration  
 Number of Month: 5  
 Number of Days: 0

#### 2.1.2 Site Grading Phase Assumptions

- General Site Grading Information  
 Area of Site to be Graded (ft<sup>2</sup>): 288000  
 Amount of Material to be Hauled On-Site (yd<sup>3</sup>): 144000  
 Amount of Material to be Hauled Off-Site (yd<sup>3</sup>): 144000

- Site Grading Default Settings  
 Default Settings Used: No  
 Average Day(s) worked per week: 5

#### - Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Off-Highway Trucks Composite	1	8
Other Construction Equipment Composite	1	8
Rollers Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	8

- Vehicle Exhaust  
 Average Hauling Truck Capacity (yd<sup>3</sup>): 20  
 Average Hauling Truck Round Trip Commute (mile): 20

## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

**- Worker Trips**

Average Worker Round Trip Commute (mile): 0

**- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

### 2.1.3 Site Grading Phase Emission Factor(s)

**- Construction Exhaust Emission Factors (lb/hour)**

<b>Graders Composite</b>								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
<b>Off-Highway Trucks Composite</b>								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.1613	0.0026	1.0525	0.5634	0.0359	0.0359	0.0145	260.43
<b>Other Construction Equipment Composite</b>								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
<b>Rollers Composite</b>								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0682	0.0007	0.4484	0.3884	0.0290	0.0290	0.0061	67.198
<b>Rubber Tired Dozers Composite</b>								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
<b>Tractors/Loaders/Backhoes Composite</b>								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

**- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2e</sub>
LDGV	000.416	000.002	000.341	004.223	000.012	000.011		000.025	00331.583
LDGT	000.494	000.003	000.573	005.795	000.014	000.013		000.026	00428.300
HDGV	000.793	000.005	001.367	017.288	000.032	000.028		000.044	00746.165
LDDV	000.153	000.003	000.157	002.336	000.004	000.004		000.008	00320.983
LDDT	000.338	000.004	000.501	004.554	000.007	000.006		000.008	00467.809
HDDV	000.713	000.013	007.035	002.260	000.222	000.204		000.030	01514.905
MC	002.268	000.003	000.880	014.128	000.028	000.025		000.054	00398.791

### 2.1.4 Site Grading Phase Formula(s)

**- Fugitive Dust Emissions per Phase**

$$PM_{10FD} = (20 * ACRE * WD) / 2000$$

PM<sub>10FD</sub>: Fugitive Dust PM 10 Emissions (TONs)  
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)  
ACRE: Total acres (acres)  
WD: Number of Total Work Days (days)  
2000: Conversion Factor pounds to tons

## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

### - Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)  
NE: Number of Equipment  
WD: Number of Total Work Days (days)  
H: Hours Worked per Day (hours)  
EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)  
2000: Conversion Factor pounds to tons

### - Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)  
HA<sub>OnSite</sub>: Amount of Material to be Hauled On-Site (yd<sup>3</sup>)  
HA<sub>OffSite</sub>: Amount of Material to be Hauled Off-Site (yd<sup>3</sup>)  
HC: Average Hauling Truck Capacity (yd<sup>3</sup>)  
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)  
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
VM: Vehicle Exhaust On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons

### - Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
WD: Number of Total Work Days (days)  
WT: Average Worker Round Trip Commute (mile)  
1.25: Conversion Factor Number of Construction Equipment to Number of Works  
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
VM: Worker Trips On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons

## 3. Aircraft

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### 3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**County:** Cascade  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

- **Activity Title:** C-130 Operations

- **Activity Description:**  
C-130 training (landing/takeoff) will occur an average of 1.5 times per daytime and 0.5 times per nighttime for a today of 2 landings/takeoffs per weekday.

- **Activity Start Date**  
**Start Month:** 7  
**Start Year:** 2018

- **Activity End Date**  
**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

- **Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	7.555915
SO <sub>x</sub>	0.551501
NO <sub>x</sub>	2.613243
CO	11.400308
PM 10	0.396083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.335398
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	1690.2

- **Activity Emissions [Flight Operations (includes Trim Test & APU) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	7.555915
SO <sub>x</sub>	0.551501
NO <sub>x</sub>	2.613243
CO	11.400308
PM 10	0.396083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.335398
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	1690.2

### 3.2 Aircraft & Engines

#### 3.2.1 Aircraft & Engines Assumptions

- **Aircraft & Engine**  
**Aircraft Designation:** C-130H  
**Engine Model:** T56-A-15  
**Primary Function:** Transport - Bomber  
**Number of Engines:** 4

- **Aircraft & Engine Surrogate**  
**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

#### 3.2.2 Aircraft & Engines Emission Factor(s)

- **Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	794.00	24.15	1.06	3.90	32.00	0.83	0.75	3234

## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Approach	1185.00	14.26	1.06	4.40	22.20	0.97	0.87	3234
Intermediate	1825.00	0.58	1.06	9.20	2.40	0.51	0.46	3234
Military	2302.00	0.46	1.06	9.30	2.10	0.50	0.45	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

### 3.3 Flight Operations

#### 3.3.1 Flight Operations Assumptions

**- Flight Operations**

Number of Aircraft:	1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	524
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	24

- Default Settings Used: Yes

**- Flight Operations TIMs (Time In Mode)**

Taxi/Idle Out (mins):	9.2 (default)
Takeoff (mins):	0.4 (default)
Climb Out (mins):	1.2 (default)
Approach (mins):	5.1 (default)
Taxi/Idle In (mins):	6.7 (default)

**- Trim Test**

Idle (mins):	12 (default)
Approach (mins):	27 (default)
Intermediate (mins):	9 (default)
Military (mins):	12 (default)
AfterBurn (mins):	0 (default)

#### 3.3.2 Flight Operations Formula(s)

**- Aircraft Emissions per Mode for LTOs per Year**

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)  
TIM: Time in Mode (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
LTO: Number of Landing and Take-off Cycles (for all aircraft)  
2000: Conversion Factor pounds to TONs

**- Aircraft Emissions for LTOs per Year**

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>LTO</sub>: Aircraft Emissions (TONs)  
AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)  
AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)  
AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)  
AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)  
AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)



## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

### - Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)  
TIM: Time in Mode (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
TGO: Number of Touch-and-Go Cycles (for all aircraft)  
2000: Conversion Factor pounds to TONs

### - Aircraft Emissions for TGOs per Year

$$AETGO = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AETGO: Aircraft Emissions (TONs)  
AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)  
AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)  
AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)  
TD: Test Duration (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
NA: Number of Aircraft  
NTT: Number of Trim Test  
2000: Conversion Factor pounds to TONs

### - Aircraft Emissions for Trim per Year

$$AETRIM = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AETRIM: Aircraft Emissions (TONs)  
AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)  
AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)  
AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)  
AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)  
AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 3.4 Auxiliary Power Unit (APU)

### 3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

## DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Auxiliary Power Unit (APU) (default)**

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	GTCP 85-180L	

**3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)**

**- Auxiliary Power Unit (APU) Emission Factor (lb/hr)**

Designation	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
GTCP 85-180L	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

**3.4.3 Auxiliary Power Unit (APU) Formula(s)**

**- Auxiliary Power Unit (APU) Emissions per Year**

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU<sub>POL</sub>: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons