
4.0

ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

To assess the potential for and significance of environmental impacts from the proposed program, a list of activities was developed (chapter 2.0) and the environmental setting was described, with emphasis on any special environmental sensitivities (chapter 3.0). Program activities were then compared with the potentially affected environmental components to determine the environmental impacts of the proposed supplemental GMD VOC activities.

This chapter describes the potential environmental consequences of the proposed activities by comparing them with the potentially affected environmental components. Section 4.1 provides discussions of the potential environmental consequences of these activities. Potential impacts are discussed in terms of construction, operation, and cumulative impacts. The amount of detail presented in each section is proportional to the potential for impacts. Sections 4.2 through 4.10 provide discussions of the following with regard to proposed supplemental GMD VOC test site activities: cumulative impacts; environmental effects of the No-action Alternative; adverse environmental effects that cannot be avoided; conflicts with federal, state, and local land use plans, policies, and controls for the area concerned; energy requirements and conservation potential; irreversible or irretrievable commitment of resources; relationship between short-term use of the human environment and the maintenance and enhancement of long-term productivity; natural or depletable resource requirements and conservation potential; and *Federal Actions to Protection of Children from Environmental Health Risks and Safety Risks* (Executive Order 13045).

4.1 FORT GREELY

As discussed in chapter 2.0, the proposed additional GMD VOC activities at Fort Greely include:

- Construction of security fences around three areas: the cantonment area, the southern boundary area, and the Allen Army Airfield
- Extension of the Allen Army Airfield south-north runway (18/36) and the addition of turnarounds and approach lighting at each end
- Improvements to the east-west runway (9/27) to upgrade the runway surface, add turnarounds to each end, and add lateral lighting systems
- Designation of a hotspot at the north end of the 18/36 runway and the northeast end of the northeast-southwest runway (6/24)
- Provisions for deicing activities at the turnarounds at each end of the 18/36 and 9/27 runways
- Modifications to activities at Allen Army Airfield to include adding Class D to the existing Class E controlled airspace, reactivation of the control tower or construction of a new control tower, and installation and use of an ASR-11 or similar type airport surveillance radar

These activities are analyzed below by applicable resource. Resources that have a potential for impacts were considered in the analysis to provide the decisionmakers with sufficient evidence and analysis for evaluation of potential effects of the action.

Depending on funding and security requirements, the fences may be constructed in series or in parallel. The final designs and layouts have not been completed; therefore, minor changes to the requirements and site layout are possible. If changes are made, final plans would be compared to this supplemental EA to ensure that no additional environmental effects are introduced.

4.1.1 AIR QUALITY

This section addresses potential environmental impacts caused by changes to the air quality environment due to the proposed construction and operation of the supplemental GMD VOC activities on Fort Greely.

4.1.1.1 Construction—Air Quality

Security Fencing

Construction of security fencing around the cantonment area, the five alternative alignments around the southern boundary, and around the airfield would require vegetation clearing of 9.1 meters (30 feet) inside the fences and 3.7 meters (12 feet) outside the fences. An additional 3 meters (10 feet) of clearing may be necessary in order to windrow the cleared debris; therefore, the fence right-of-way would be a maximum of 15.8 meters (52 feet) wide. The fence alignments have been selected to take advantage of existing roads, trails, and rights-of-way to reduce the amount of clearing required. In some areas, no clearing would be needed and in others, it could range from a width of 6.7 to 15.8 meters (22 to 52 feet). Gates would be provided as needed. Construction would take place for 3 to 4 months in the April to October timeframe when the ground is not frozen. The year of actual construction would depend upon the availability of funding. The cleared areas would be reseeded with a grass mixture suitable for the area.

Emissions associated with construction activities include fugitive dust from ground disturbance and combustion byproducts from construction equipment. Although the construction would cause an increase in air pollutants, the impact would be both temporary and localized. Once construction ceases, air quality would return to its former levels. Construction would be conducted in accordance with the Air Quality Construction Permit (DEC Permit No. 238CP01, 14 August 2002) requirements.

Ground disturbance would generate dust in the immediate vicinity of the construction. The levels of dust generated would change through time depending on the level of activity, the weather, and the condition of the ground.

The north side of Fire Break Road has already been cleared in excess of the requisite 9.1 meters (30 feet). Therefore, the Preferred Southern Boundary Alignment and Alternative Alignment 2 would require less clearing than the other three alignments since no clearing would be required along the north side of Fire Break Road. Alternative Alignment 4 follows Fire Break Road, but on the south side; thus, only 6.7 meters (22 feet) of clearing would be required.

Increases in mobile emissions could also cause increases in ambient levels of some pollutants. Pollutants from mobile sources would include hydrocarbons, carbon monoxide, nitrogen oxides, and particle emissions. The primary pollutant of concern from mobile sources in Alaska is carbon monoxide.

It is anticipated that the proposed construction would not cause exceedances of the NAAQS or state standards beyond the immediate construction zone and would not have a long-term impact to air quality in the area. The implementation of standard dust suppression techniques and a vehicle maintenance program would minimize fugitive dust emissions and vehicle exhaust emissions and would help to maintain the area's current high air quality. Thus, activities associated with construction of the security fencing would not have a significant impact on air quality.

Airfield Modifications

Construction of the runway extensions, turnaround areas, and approach lighting for the 18/36 runway at Allen Army Airfield would require clearing, excavation, paving, and installation of light stands. Construction of the 9/27 runway improvements, turnaround areas, and lighting would also require clearing, excavation, and paving. Construction impacts would be similar to those discussed above. The increase in air pollutants (fugitive dust, combustion byproducts from construction vehicles and equipment, and possibly open burning of construction debris) would be both temporary and localized. Once construction ceases, air quality would return to its former levels; thus, no significant impacts to air quality would occur.

Construction would be conducted in accordance with the Air Quality Construction Permit (DEC Permit No. 238CP01, 14 August 2002) requirements. It is anticipated that the proposed construction would not cause exceedances of the NAAQS or state standards beyond the immediate construction zone and would not have a long-term impact to air quality in the area. The implementation of standard dust suppression techniques and a vehicle maintenance program would minimize fugitive dust emissions and vehicle exhaust emissions and would help to maintain the area's current high air quality.

Air Control

Construction and installation of the radar would require clearing and excavation for the radar structure and access road, and trenching for power and telecommunications lines. Construction impacts for each alternative radar site would be similar to those discussed above and would have minimal temporary impacts to air quality. Renovation of the existing control tower or construction of a new control tower would have negligible impacts to air quality.

4.1.1.2 Operations—Air Quality

Security Fencing

The only operations activities related to the fences would be maintenance and upkeep of the cleared areas (mowing) and fencing. These activities are not expected to result in impacts to air quality.

Airfield Modifications

The only operations activities related to the airfield modifications would be maintenance and upkeep of the cleared areas and runway. These activities are not expected to result in impacts to air quality.

Air Control

Operation and maintenance of the radar would include the use of oils and lubricants. Power and power backup would be provided by the existing installation system. Therefore, no backup generator would be needed. Thus, impacts to air quality would be minimal.

4.1.1.3 Cumulative Impacts—Air Quality

Emissions from mobile sources would add cumulatively to emissions from other mobile sources, on and off post, in the area, but these emissions would be temporary and are not anticipated to result in a measurable impact on air quality within the ROI. The implementation of standard dust suppression techniques, including grassing cleared areas once construction activities cease, would minimize the potential for cumulative impacts from fugitive dust. The construction and operation of security fences and airfield modifications would have relatively little impact on air quality and are not a potential source of cumulative impacts.

4.1.2 AIRSPACE

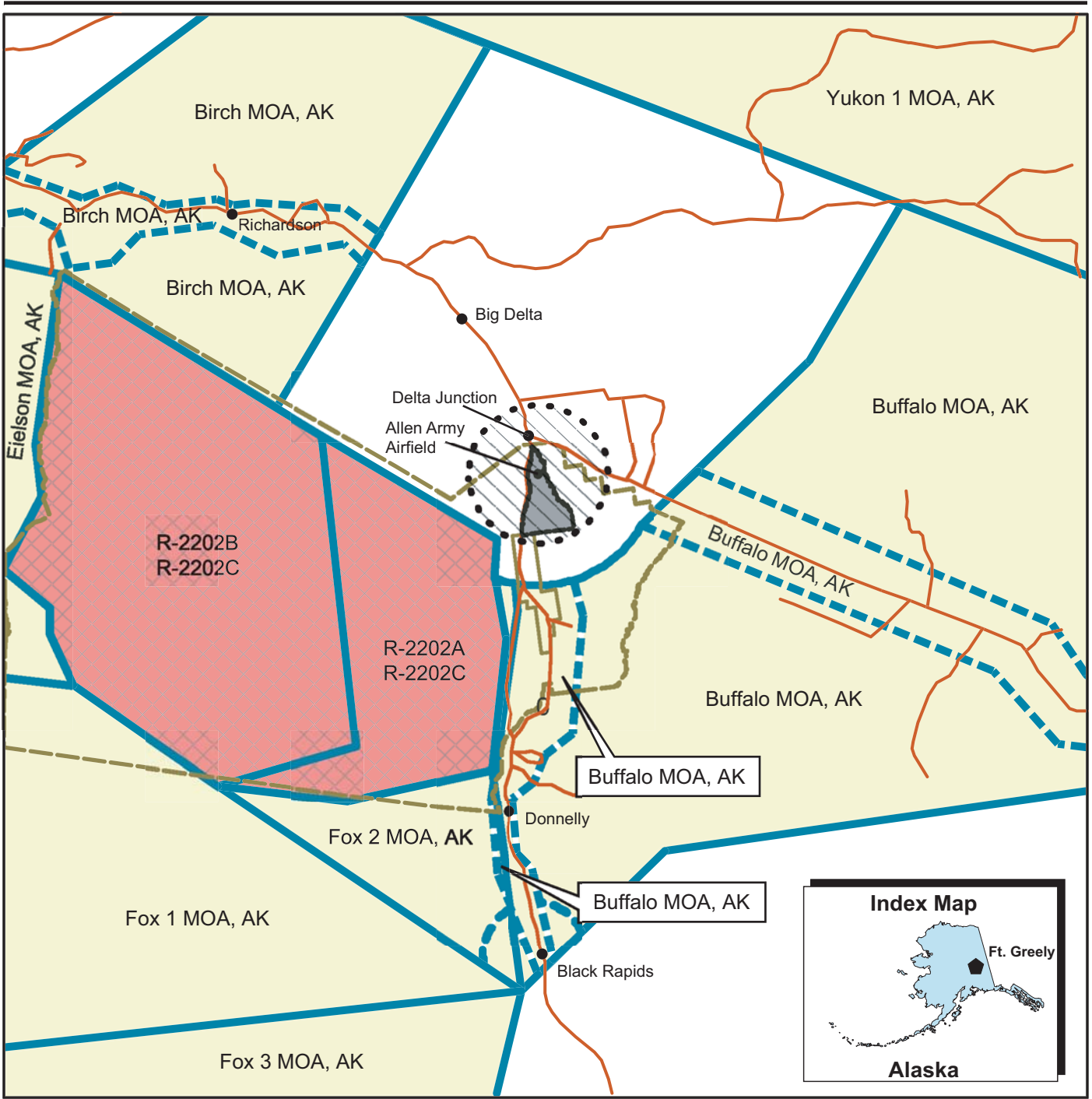
This section addresses potential impacts to airspace due to the proposed addition of Class D controlled airspace to the existing Class E airspace at Allen Army Airfield. Class D airspace is generally defined as the airspace from the surface to 762 meters (2,500 feet) above the airport elevation (charted in mean ground level), surrounding those airports that have an operational control tower. The configuration of each Class D airspace is individually tailored and would be designed to contain published instrument flight procedures. If it is decided to obtain Class D airspace, the process of pursuing this is contained in Army Regulation 95-2, *Air Traffic Control Airspace, Airfields, Flight Activities, and Navigation Aids*. The final design would be published in FAA Order 7400.9J. The elevation of the airfield is 389.2 meters (1,277 feet).

4.1.2.1 Construction—Airspace

Construction activities would not directly impact airspace activities.

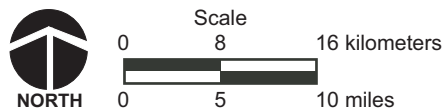
4.1.2.2 Operations—Airspace

Operation in Class D airspace requires a two-way radio capable of communicating with the control tower (in this case a VHF radio) with sufficient range to contact the control tower before entering a 7.4-kilometer (4-nautical-mile) radius area around the airfield and maintaining contact while operating within the area (figure 4-1). To staff an operational control tower at the airfield, it is estimated that 14 personnel would be required. Personnel could be military, FAA, or contractor personnel. Delta Junction airfield is located 5.2 kilometers (2.8 nautical miles) northwest of Allen Army Airfield. Therefore, Delta Junction Airport would probably be located within the Allen Army Airfield Class D airspace. Since Delta Junction airfield has no operating control tower, aircraft operating from this field would probably be under the operational control of



EXPLANATION

- | | | | |
|--|---------------------------------------------------------|--|---------------------------------|
| | Fort Greely Installation Boundary | | Towns |
| | Military Operating Area (MOA) | | Highway VFR Corridors |
| | Restricted Air Space | | Roads |
| | Unrestricted Air Space | | Donnelly Training Area Boundary |
| | Proposed Class D Controlled Airspace (4 nautical miles) | | |



**Proposed Class D
Controlled Airspace**

Fort Greely, Alaska

Figure 4-1

Allen Army Airfield while in the Class D airspace. However, since this Proposed Action would directly affect small aircraft aviation transiting the area at low altitude, it may require some aircraft pilots (at their expense) to upgrade their communications equipment.

To increase safety, an airport surveillance radar, such as an ASR-11, may be installed, which would have a positive impact to airspace management. The public would be required to contact the control tower when transiting the proposed Class D airspace for flight safety reasons. The controllers would then be able to advise civilian pilots as to their proximity to any military aircraft on approach or leaving Allen Army Airfield and what would be their safest action. The addition of a surveillance radar would allow a higher degree of advisor service, especially at night and/or in low-visibility conditions.

Impacts of the Proposed Action on the ROI area would be (1) a minor inconvenience to local pilots, (2) a potential minor expense to local pilots of maintaining or acquiring two-way VHF radio capability, and (3) an increase in flight safety due to the aviation advisory services available to pilots. Overall, no adverse environmental impacts are expected.

4.1.2.3 Cumulative Impacts—Airspace

Potential negative cumulative airspace impacts are not expected to occur in the vicinity of Fort Greely from the proposed activities. Adding Class D airspace would increase communications and radar observations and thus improve the air safety in the area.

4.1.3 BIOLOGICAL RESOURCES

This section addresses potential impacts to biological resources including vegetation, wildlife, threatened and endangered species, and environmentally sensitive habitat due to the proposed construction and operation of the supplemental GMD VOC activities on Fort Greely. Ground disturbance, habitat loss, noise from construction, and an increase in personnel during construction and operation could result in impacts to biological resources present in the area.

4.1.3.1 Construction—Biological Resources

Security Fencing

Measures would be implemented to minimize the potential for environmental impacts as discussed below.

Vegetation

Construction of the security fences would require clearing and grubbing of areas as described in chapter 2.0. It is estimated that the total disturbed area for the three fences would be approximately 25.9 hectares (64 acres), utilizing the Preferred Southern Boundary Alignment. The estimated amount of the proposed alignment clearing for each fenced area and associated alternative would be:

- Cantonment Fence 10.5 hectares (26 acres)
- Southern Boundary Fence, Preferred Alternative 7.3 hectares (18 acres)

– Southern Boundary Fence, Alternative 1	14.2 hectares (35 acres)
– Southern Boundary Fence, Alternative 2	6.9 hectares (17 acres)
– Southern Boundary Fence, Alternative 3	12.5 hectares (31 acres)
– Southern Boundary Fence, Alternative 4	9.7 hectares (24 acres)
■ Allen Army Airfield Fence	8.1 hectares (20 acres)

Rights-of-way along existing roads, trails, and the Trans-Alaska pipeline would be used where possible for the fencing construction. The Trans-Alaska Pipeline Right-of-Way User Guideline would be obtained from Alyeska Pipeline Service Company as needed for construction activities parallel to the pipeline. Any clearing of streamside vegetation would be done by hand to leave stumps and root systems in place to control bank erosion. All of the fencing and requisite clearing would be sited in areas composed of mixed forest and deciduous/high brush. No sensitive vegetation species have been identified within the proposed project area. Upon completion of the fence installation, the cleared area would be graded and reseeded with a seed mixture suitable for the area.

Wildlife

No designated anadromous streams would be impacted. Ground disturbance and equipment noise-related impacts would include a loss of a small amount of habitat, displacement of wildlife, increased stress, and disruption of daily/seasonal behavior. Noise rather than the sight of machines appears to cause disturbance to wildlife. Typical noise levels at 15 meters (50 feet) from construction equipment range from 70 to 98 dBA. The combination of increased noise levels and human activity would likely temporarily displace some small mammals and birds that forage, feed, nest, or have dens within a 15-meter (50-foot) radius of construction noise sources. However, additional similar habitat is adjacent to the proposed fence routes. The presence of personnel operating heavy equipment and erecting the fences may cause wildlife (moose, bison, caribou, lynx, and migrating and resident birds such as the olive-sided flycatcher, northern goshawk, and harlequin duck) to avoid the area, at least temporarily. Large mammals, primarily moose, would be herded from the fenced area before enclosing the fences to ensure their safety, as well as that of personnel.

Threatened and Endangered Species

No federal or state listed threatened or endangered species have been identified at Fort Greely. Protected bird species including the recently delisted peregrine falcon, migrate through the area during the spring and fall migration periods, and therefore could potentially be disturbed by construction-related noise. However, as stated in the GMD VOC EA, there have been no confirmed sightings within 16 kilometers (10 miles) of Fort Greely; thus, no adverse impacts to threatened and endangered species are anticipated.

Environmentally Sensitive Habitat

Palustrine Emergent wetlands exist southeast of the landfill. Construction of Southern Boundary Alternative Alignment 1 would cause minor impacts to the wetland. If upgrades to the trail crossing the wetlands are necessary, the filling of about 0.4 hectare (1 acre) of wetlands would be needed and a permit from the U.S. Army Corps of Engineers would be required. Culverts would be incorporated as necessary. No other fence alignment would directly affect wetlands.

Though not likely, any indirect disturbance to wetlands by the Proposed Action would be minimized by implementing appropriate techniques to control runoff and other BMPs, such as the use of hay bales to filter sediment from storm water runoff at construction sites. Selection of Southern Boundary Alternative Alignment 1 would be the only fence alignment that would directly impact wetlands.

Overall, the impacts of constructing the various proposed fences would not have a significant adverse effect on biological resources.

Airfield Modifications

Construction impacts would be similar to those discussed above. Measures would be implemented to minimize the potential for environmental impacts as discussed below.

Vegetation

The construction clearing for the 18/36 runway extensions, turnarounds, lateral safety distances, and approach lighting would be conducted primarily in areas composed of grassland, mixed forest and deciduous/high brush. Approximately 2.8 hectares (7 acres) of grassland would be cleared for the runway extensions and turnarounds, 6.9 hectares (17 acres) for the lateral safety zones, and 6.1 hectares (15 acres) would be cleared for the approach lighting. Clearing would meet the 50:1 slope requirement from the ends of the runway. Clearing streamside vegetation would only be done to the extent necessary to provide clearing required for the approach lighting and would not involve heavy equipment. Approach lighting would extend across Jarvis Creek 1.7 hectares (4.2 acres) into Donnelly Training Area East. However, the creek floodway is composed primarily of sand and gravel deposits that are devoid of vegetation; thus, construction of the approach lighting platforms would not impact wetland vegetation. Approximately 1.9 hectares (4.7 acres) of clearing south of the runway would cross Richardson Highway into Donnelly Training Area West. No sensitive vegetation species have been identified within these proposed project areas.

The clearing for the 9/27 runway turnarounds and lateral safety zones consists of approximately 0.2 hectare (0.5 acre) and 23.9 hectares (59 acres), respectively, to total 24.1 hectares (59.5 acres) of grassland, mixed forest, and deciduous/high brush. Clearing would meet the 50:1 slope requirement from the ends of the runway. No sensitive vegetation species have been identified within these proposed project areas, which are all located on Fort Greely.

Wildlife

No designated anadromous streams would be impacted. As discussed above, ground disturbance and equipment noise-related impacts could include a loss of a small amount of habitat, displacement of wildlife, increased stress, and disruption of daily/seasonal behavior. However, additional similar habitat is adjacent to the areas of disturbance.

Threatened and Endangered Species

No federal or state listed threatened or endangered species have been identified at Fort Greely. No adverse impacts to threatened and endangered species are anticipated.

Environmentally Sensitive Habitat

Riverine Unconsolidated wetlands exist in the Jarvis Creek streambed. Therefore, the construction of approach lighting platforms in Jarvis Creek would require a wetlands permit from the U.S. Army Corps of Engineers; however, the impacts of this activity would be minor and insignificant due to the nature of the creek. The work would also be done during the low flow season.

Disturbance to Jarvis Creek would be minimized by implementing appropriate techniques and BMPs to control erosion and runoff. These efforts could include hand clearing along the bank of Jarvis creek to minimize bank erosion, stabilizing fill slopes from erosion, and using hay bales to filter sediment from storm water runoff from construction sites.

Air Control

Vegetation

Construction of the airport surveillance radar at either alternative site would require clearing of approximately 0.4 hectare (1 acre) of mixed forest and deciduous/high brush. No sensitive vegetation species have been identified within the proposed project area. Upon completion of construction, the cleared area would be graded and reseeded with a seed mixture suitable for the area. No clearing of vegetation would be required in constructing a new control tower.

Wildlife

As discussed above, construction-related noise could cause temporary displacement of wildlife in the vicinity of the radar site. However, additional similar habitat is adjacent to the areas of disturbance.

Threatened and Endangered Species

No federal or state listed threatened or endangered species have been identified at Fort Greely. No adverse impacts to threatened and endangered species are anticipated.

Environmentally Sensitive Habitat

No environmentally sensitive habitats would be affected.

4.1.3.2 Operations—Biological Resources

Security Fencing

The only operations activities related to the fences would be maintenance and upkeep of the cleared areas and fencing.

Vegetation

No impacts to vegetation from mowing and upkeep of the cleared areas are anticipated during operation of the fencing system.

Wildlife

The fencing would pose a barrier to mammals, other than small rodents, and restrict their movement into the fenced areas. The fenced areas would prevent foraging by resident mammals; however, the amount of habitat lost would be minimal and would not be expected to adversely affect local populations of these species due to the vast amount of quality habitat areas nearby. As a result, the population of small mammals could increase in these areas as the habitat quality improves over time.

Portions of Fort Greely, including the areas proposed to be fenced, have vegetation covers that make them attractive forage for moose. Management of the moose population in the Fort Greely area is of special importance to the Alaska Department of Fish and Game. Based on an average of 1.6 to 2.5 moose per 2.6 square kilometers (1 square mile) in the area (Dubois, 2002), it is estimated that the number of moose displaced as a result of each of the fence enclosures would be:

■ Cantonment Fence	2 to 3 Moose
■ Southern Boundary Fence, Preferred Alignment	4 to 6 Moose
– Southern Boundary Fence, Alternative Alignment 1	7 to 11 Moose
– Southern Boundary Fence, Alternative Alignment 2	6 to 9 Moose
– Southern Boundary Fence, Alternative Alignment 3	5 to 8 Moose
– Southern Boundary Fence, Alternative Alignment 4	4 to 6 Moose
■ Allen Army Airfield Fence	3 to 5 Moose

The Proposed Action would prevent the use of 1,422 hectares (3,515 acres) of Fort Greely for foraging. According to the Alaska Department of Fish and Game, only a third of this area (474 hectares [1,171 acres]) is considered quality moose habitat (Ihlenfeldt, 2002). Based on the average of 1.6 to 2.5 moose per 2.6 square kilometers (1 square mile), an estimated 3 to 5 moose would be displaced out of a potential 6 to 10 moose over all of the current Fort Greely area. These numbers are based on fencing of the cantonment area, the airfield, and the Preferred Southern Boundary Fence Alignment. This impact is not considered significant due to the vast amount of quality habitat areas off the installation and the potential for the burned areas outside the fences to improve as moose habitat over the next 10 to 15 years.

Birds may be attracted to the fencing for perching. This could increase the potential hazard of birds interfering with airplane traffic and causing bird fatalities; however, steps would be taken to minimize this risk as needed. Birds of prey could also potentially use the fence wires for predation.

Threatened and Endangered Species

No impacts to threatened and endangered species are anticipated during operation and maintenance of the three fences.

Environmentally Sensitive Habitat

No impacts to sensitive habitat are anticipated during operation and maintenance of the three fences.

Airfield Modifications

The only operations activities related to the airfield modifications would be maintenance and upkeep of the cleared areas and runways.

Vegetation

Cleared areas for the approach lighting would be maintained below the 50:1 slope requirement from the ends of the runway. No impacts to vegetation from mowing and upkeep of the cleared areas are anticipated during operation and maintenance of the lateral safety zones.

Wildlife

The operation and maintenance of an additional 33.6 hectares (83 acres) of grassland would not adversely impact wildlife. Mowing of these areas would only occur once or twice a year. Nighttime lighting along the approach paths could facilitate predation. It could also interfere with activities of nocturnal species within the lighted area. However, since the lights would be directed upward and a vast amount of adjacent habitat is available, the effects on wildlife would be minimal.

Birds of prey could also potentially use the fence wires for predation, especially in the area of Jarvis Creek. Birds may be attracted to the lighting structures for perching. This could also increase the potential hazard of birds interfering with airplane traffic and causing bird fatalities; however, steps would be taken to minimize the risk, as needed. Overall, the impacts of airfield modifications on birds would be minimal.

Threatened and Endangered Species

No impacts to threatened and endangered species are anticipated during operation and maintenance of the runway and approach lighting.

Environmentally Sensitive Habitat

No impacts to sensitive habitats are anticipated during operation and maintenance of the runway and approach lighting.

Air Control

Vegetation

No impacts to vegetation are anticipated due to the operation of the radar system.

Wildlife

No significant adverse impacts to wildlife resources from electromagnetic radiation are anticipated during the operation of the proposed radar since the emissions are low and the radar rotates. Neither the height of the antennas (about 30.5 meters [100 feet] above the ground) nor the electromagnetic radiation would pose a substantial threat or adverse impact to birds flying through the area. Also, the surrounding fence would prohibit larger animals from entering the site where the radar would be located, protecting them from any potential electromagnetic radiation hazards.

Threatened and Endangered Species

No impacts to threatened and endangered species are anticipated during operation and maintenance of the radar.

Environmentally Sensitive Habitat

No impacts to environmentally sensitive habitats are anticipated during operation and maintenance of the radar.

4.1.3.3 Cumulative Impacts—Biological Resources

Impacts would include increased activity during construction and the loss of a small amount of habitat at Fort Greely. Given the small amount of loss of wildlife habitat in the region of Fort Greely from past and current development, the additional loss of habitat from the proposed fences would not result in a substantial cumulative reduction in habitat. Cumulative effects from other potential activities are considered minimal due to the small size of the projects when compared to the vast amount of undeveloped land remaining on Fort Greely and in the surrounding area.

4.1.4 CULTURAL RESOURCES

This section addresses the potential for impacts to cultural resources due to construction and operation of the supplemental GMD VOC activities at Fort Greely.

Potential impacts on historic properties occur through:

- Disturbance of a National Register-listed, potentially eligible, or eligible prehistoric or historic archaeological site or traditional cultural property
- Modification of or visual intrusion upon a National Register-listed, potentially eligible, or eligible historic building or structure
- Disturbance of a paleontological site

Archaeological surveys indicate that there are no known prehistoric or historic archaeological resources within the proposed areas of ground disturbance. Much of the area is heavily disturbed from previous clearing and operational activities, and the likelihood of historic properties being present is low.

Based on a 1997 survey, the entire cantonment area, including the area around the runway, was considered clear of cultural resource concerns due to the lack of subsurface artifacts (U.S. Army Corps of Engineers, 1997).

Prehistoric and historic archaeological sites, traditional cultural properties, and/or paleontological sites do have the potential to occur. If during the course of supplemental GMD VOC activities, cultural items are discovered, activities would cease in the immediate area and the SHPO and potentially affiliated Native Alaskan entities would be notified in accordance with the Fort Greely Environmental Procedures.

Review of the 1998 study by the Alaska SHPO and subsequent consultation between the U.S. Army and the SHPO indicate that there are 26 buildings and structures eligible for listing in the National Register. The proposed activities are not expected to affect any of these buildings.

No traditional cultural properties have been identified within the ROI or Alaska Native issues identified for the Proposed Action.

Paleontological remains have been recorded within the former Fort Greely area; however, none have been identified within the ROI. Given the topography of the site and the types of locations within which paleontological resources typically occur, the likelihood for them to be encountered during the course of the proposed activities is very low. Therefore, no effects are expected; however, should paleontological resources be discovered, the Fort Greely Environmental Procedures would be followed to protect the site and make appropriate notifications.

4.1.4.1 Construction—Cultural Resources

Security Fencing

Installing fence posts along the fence alignments has the potential to disturb unknown cultural resources. No cultural resources concerns have as yet been identified for any of the alternative routes. However, if during the course of the proposed activities, cultural items are discovered, activities would cease in the immediate area and the Alaska SHPO and potentially affiliated Native Alaskan entities would be notified in accordance with the Fort Greely Environmental Procedures through the host installation. Subsequent actions would follow the guidance provided.

Airfield Modifications

The proposed construction activities for runways 18/36 and 9/27 would take place in areas previously disturbed during original construction and in Jarvis Creek. Due to the lack of subsurface artifacts, the entire cantonment area, including the area around the runway, has been cleared of cultural resource concerns. No impacts to cultural resources are anticipated. However, if during the course of construction cultural items are discovered, activities would cease in the immediate area and the Alaska SHPO and potentially affiliated Native Alaskan entities would be notified in accordance with the Fort Greely Environmental Procedures. Subsequent actions would follow the guidance provided.

Air Control

Clearing activities for either radar site at the airfield has the potential to disturb unknown cultural resources. No cultural resources concerns have been identified in the proposed radar location east of the airfield. However, two known cultural resource sites exist in the vicinity of the alternative site on the knoll south of the airfield. The final siting of this alternative location would avoid these sites. If cultural items are discovered at either site during construction, activities would stop and the Alaskan SHPO and potentially affiliated Native Alaskan entities would be notified in accordance with the Fort Greely Environmental Procedures. Subsequent actions would follow the guidance provided. Construction of a new control tower would be on an existing hardstand that was disturbed during original construction. Therefore, no impacts to cultural resources are anticipated.

4.1.4.2 Operations—Cultural Resources

Security Fencing, Airfield Modifications, and Air Control

Personnel would be informed of the sensitivity of cultural resources and the types of penalties that could be incurred if sites are damaged or destroyed. No impacts to cultural resources are anticipated during operation of the supplemental GMD VOC activities at Fort Greely. However, if during operations any cultural items are discovered, activities would cease in the immediate area and the Alaska SHPO and potentially affiliated Native Alaskan entities would be notified in accordance with the Fort Greely Environmental Procedures. Subsequent actions would follow the guidance provided.

4.1.4.3 Cumulative Impacts—Cultural Resources

No cumulative impacts are expected as a result of the proposed supplemental GMD VOC activities.

4.1.5 GEOLOGY AND SOILS

This section addresses the potential impacts to geology and soils at Fort Greely due to the proposed construction and operation of the supplemental GMD VOC activities.

4.1.5.1 Construction—Geology and Soils

Security Fencing

Impacts to geology and soils along all three potential routes would be associated with disturbance to soils during trenching and pole emplacement, which would be short-term. Construction of the security fences would require clearing and grubbing 3.7 meters (12 feet) on the outside of the fence and 9.1 meters (30 feet) on the inside. An additional 3 meters (10 feet) could be cleared to windrow debris for a maximum of 15.8 meters (52 feet).

The total disturbed area for the fencing would be approximately 25.9 hectares (64 acres). The initial GBI VOC test site activities require up to 162 hectares (400 acres). Combined with the other proposed supplemental activities, the total disturbed area is less area than was analyzed for the NMD Deployment EIS (243 hectares [600 acres]). The NMD Deployment EIS determined that there was no significant impact to geology and soils around Fort Greely resulting from similar proposed activities.

The main issue during construction is associated with soil erosion from the site. However, at Fort Greely the soils are predominantly well drained sands and gravels overlaid with a thin layer of silt, surface relief is relatively flat, and the area receives minimal annual precipitation (33 centimeters [13 inches]) and light winds; therefore, minimal soil erosion to adjacent areas would be expected. BMPs would be used to reduce the potential for soil erosion. These measures could include limiting the amount of area cleared, installing silt fences or straw bale dikes, and adding protective covering to the slopes to enhance long-term stability and reseeding with a grass mixture suitable for the area after construction ceases.

Geotechnical studies conducted in the vicinity did not discover any ice lenses or other permafrost features; therefore, no impacts to permafrost would be expected.

Airfield Modifications

Construction impacts would be similar to those discussed above. The total disturbed area resulting from the 18/36 runway extensions, turnarounds, lateral safety zones, and approach lighting construction would be approximately 15.4 hectares (38 acres). Approximately 2.8 hectares (7 acres) would be for clearing and excavation associated with the runway extension. Approximately 6.1 hectares (15 acres) would be cleared for the approach lighting. The lateral safety zones would require approximately 6.9 hectares (17 acres) to be cleared. The total disturbed area for the runway 9/27 turnarounds and lateral safety zones would be approximately 24.3 hectares (60 acres). Approximately 23.9 hectares (59 acres) would be cleared for the lateral safety zones, and 0.3 hectare (0.5 acre) would be cleared for the turnarounds. The total acreage of disturbed area for the supplemental GMD VOC activities and the initial GBI VOC test site activities is less than that of the NMD Deployment EIS, which concluded that there were no significant impacts to geology and soils.

Soil erosion from the site would be a concern during construction. Minimal soil erosion would be anticipated due to excavation for the runway extension. Along the Jarvis Creek bank, BMPs would be used to reduce the potential for soil erosion from clearing activities for the approach lights. These measures could include hand clearing along the bank of Jarvis Creek and leaving stumps to minimize bank erosion, limiting the amount of area exposed, installing silt fences or straw bale dikes, and adding protective covering to the slopes to enhance long-term stability. Construction of five approach light platforms within the banks of Jarvis Creek would require the excavation of sand and gravel to form a suitable base for the platform. Construction would be at low flow periods so that little or no soil erosion would occur.

Air Control

A total of about 0.4 hectare (1 acre) would be cleared for either radar site. Soil erosion control during construction activities would follow standard BMPs for the area. After construction, the site would be grassed with a mixture suitable for the area. Construction of a new control tower would be on an existing hardstand area.

4.1.5.2 Operations—Geology and Soils

Once construction is complete and vegetation is stabilized, there should be little soil erosion from operation of the supplemental GMD VOC activities and no impacts to geology and soils are anticipated. Maintenance clearing for the approach lighting would continue to be performed by hand to minimize ground disturbance and soil erosion.

4.1.5.3 Cumulative Impacts—Geology and Soils

No significant cumulative impacts are anticipated as a result of the construction and operation of the supplemental GMD VOC activities. Construction would include measures to reduce soil erosion on the site and to limit the extent of the erosion. Once site vegetation is restored, no long-term cumulative impacts to soils would be expected from erosion at the site. Overall, no significant cumulative impacts to geology and soils in the area are expected from construction and operation activities at Fort Greely.

4.1.6 HAZARDOUS MATERIALS AND WASTE

This section addresses potential environmental impacts that could result from the storage and use of hazardous materials and the generation and disposal of hazardous waste associated with construction and operation of the supplemental GMD VOC activities on Fort Greely. It also addresses potential impacts to ongoing IRP activities.

4.1.6.1 Construction—Hazardous Materials and Waste

Security Fencing, Airfield Modifications, and Air Control

Construction activities would be centralized to the greatest extent possible and would occur at the project sites and on specified construction laydown areas and access roads. Temporary storage tanks and other facilities for the storage of hazardous materials would be located in protected and controlled areas designed to comply with site-specific spill prevention and countermeasure plans. Fort Greely's *Reporting and Responding to Spills Procedures* and the contractor's SWPPP would also be implemented.

Hazardous wastes generated during construction would consist of materials such as motor fuels, heating fuels, paint, used acetone and paint thinner, waste oils, hydraulic fluids, cleaning solvent, cutting fluids, used batteries, and waste antifreeze. These hazardous materials would be containerized and properly disposed of by the individual contractors in accordance with federal and state laws and regulations. Construction of the security fencing, runway extension, approach lighting, radar, and control tower would be expected to require and generate smaller quantities as compared to the GBI VOC activities and those considered in the NMD Deployment EIS. Nevertheless, there would be a small increase in the amount of hazardous waste generated on the installation.

Any spill or discovery of a hazardous material or hazardous waste during construction would be quickly reported and remediated in accordance with Spill Notification and Response component of the Fort Greely Environmental Procedures and the contractor's SWPPP and Project Spill Prevention, Control, and Countermeasure Plan. These procedures identify the appropriate points of contact to report an incident. All hazardous materials used and hazardous waste generated during construction would be handled in accordance with the Fort Greely Environmental Procedures, as well as applicable federal, state, and local regulations. (U.S. Army Space and Missile Defense Command, 2002b)

No hazardous waste treatment or disposal would occur at Fort Greely.

Fort Greely is preparing a Pollution Prevention Plan that is scheduled to be completed and implemented in fiscal year 2003.

The supplemental GMD VOC activities on Fort Greely are not anticipated to impact ongoing cleanup efforts. However, prior to beginning construction, activities would be coordinated with appropriate installation personnel and state regulators to minimize impacts to remediation efforts and program activities. In addition, construction contractors would be notified of known ground contamination before construction so appropriate health and safety measures could be taken to avoid human contact with any contaminated areas.

Modifications to the existing control tower would consider the potential presence of lead-based paint and asbestos. If present, all activities would be performed in accordance with the Fort Greely Environmental Procedures. There would not be any supplemental GMD VOC activities that would involve polychlorinated biphenyls or radon.

4.1.6.2 Operations—Hazardous Materials and Waste

Security Fencing, Airfield Modification, and Air Control

No significant hazardous material and waste impacts are expected from normal operations and maintenance activities of the proposed actions. Deicing fluids would be captured in a sump and collected for disposal. Use of bio-friendly deicing fluids is anticipated to potentially eliminate the creation of hazardous wastes. Any hazardous waste resulting from deicing activities would be easily handled through the existing hazardous waste disposal contract for Fort Greely.

4.1.6.3 Cumulative Impacts—Hazardous Materials and Waste

The construction and operation of the supplemental GMD VOC activities at Fort Greely, in combination with ongoing installation activities and future installation reuse activities, would result in an increase in the amounts of hazardous materials used and hazardous waste generated on Fort Greely. It is not anticipated that Fort Greely would return to its pre-installation realignment status as a large quantity generator of hazardous waste. Fort Greely has the mechanisms and management systems in place to store and manage the increased quantity of hazardous materials and hazardous waste. Overall, it is not expected that there would be any cumulative hazardous materials or hazardous waste management issues at Fort Greely.

4.1.7 HEALTH AND SAFETY

This section addresses the potential impacts to health and safety associated with construction and operation of the supplemental GMD VOC activities on Fort Greely. Impacts related to the potential for personnel exposure to radiological hazards are presented below. No significant impacts are anticipated with regard to chemical, biological, or physical hazards, other than may be routinely encountered during typical construction activities. Compliance with applicable laws, regulations, and Fort Greely procedures, would minimize health and safety hazards to personnel.

4.1.7.1 Construction—Health and Safety

Security Fencing

Design of the airfield fence would have to consider the Allen Army Airfield clear zones and requisite setback requirements. The proposed alignment avoids the clear zones.

The construction of new facilities is routinely accomplished for both military and civilian operations and presents only occupational-related effects on the safety and health of workers involved in the performance of construction activity. Construction materials would be delivered to the site by truck in accordance with U.S. Department of Transportation and Fort Greely regulations. Construction would be conducted in accordance with applicable regulations and permits and no impacts to health and safety are anticipated.

Airfield Modifications

Construction impacts would be similar to those discussed above. Appropriate procedures would be followed to ensure safety during the intermittent use of the airfield. Construction activities in Jarvis Creek would only occur during low flow periods. No impacts to health and safety are anticipated.

Air Control

Impacts from construction of the radar would be similar to those discussed above. No impacts to health and safety are anticipated.

4.1.7.2 Operations—Health and Safety

Security Fencing

The purpose in constructing the security fences is to provide force protection and program safety. The security fences, with the required clear zone of 9.1 meters (30 feet) on the inside and 3.7 meters (12 feet) on the outside of each fence, would enhance the safety of Fort Greely personnel. However, birds attracted to the fence for perching could increase the potential for interference with airplane traffic. Steps would be taken to ensure that the risk to airplane traffic due to potential bird strikes is minimal prior to takeoffs and landings.

Because the fire station is located near the proposed main gate to the cantonment area, the proposed fencing would not cause an impact to emergency personnel response time to most locations on Fort Greely. To reach the southern portion where the GBI VOC test site is located, as well as the airfield area, the same routes that are currently used would still be used if the fences are erected. Location and operation of gates would be such that emergency crews would be capable of expeditiously passing through in emergencies.

Airfield Modifications

The extension of the runway to provide overruns for aircraft and the installation of approach lighting to aid in navigation would provide a safer airfield during operations. Birds may be attracted to the lighting structures for perching. This may increase the potential for bird strikes by aircraft; however, this risk is considered minimal. The current level of fire protection services at Fort Greely is considered adequate to provide coverage of mission activities at Allen Army Airfield. Designation of hotspots and associated safety setback distances on runways 18/36 and 6/24 would not impact any inhabited buildings.

Air Control

Class D airspace designation and accompanying operational requirements would provide increased safety for flight operations for all airspace users.

Operation of an airport surveillance radar would generate electric and magnetic fields, including radio frequency radiation (RFR). Although the analysis below addresses the ASR-11 radar, another similar type radar could be used. The radar would be similar to those commonly used at airports nationwide. During operations, the radar is constantly rotating 360 degrees. The RFR generated by the ASR-11 would only be hazardous at close ranges, while the radar is operating. The area immediately below the radar would be in the spillover region, and would be

hazardous to humans while the radar is operating. The facility would be sited a sufficient distance from occupied buildings and recreational areas so that the radar operation would not pose a RFR hazard to personnel within the general vicinity of the radar site. To advise personnel in the area of the RFR hazard at close ranges, signs would be posted at the perimeter of the radar facility warning against approaching the antenna while it is in operation. There would be no RFR generated from the antenna, and therefore no RFR hazard, when the antenna is not in operation.

Since the ASR-11 would be mounted on a tower about 30.5 meters (100 feet) in height, persons at ground level would not be exposed to RFR levels exceeding the maximum permissible exposure standards. Since the closest occupied building at Allen Army Airfield is over 305 meters (1,000 feet) away from the proposed radar location, no impacts to nearby receptors are anticipated. At all locations near the radar, the ASR-11 signal would comply with the guideline levels for occupational exposure. As a precautionary measure, signs would be posted at the perimeter of the radar facility advising personnel and the public against approaching the radar facility during operation. (Federal Aviation Administration, 1997)

On infrequent occasions, the ASR-11 antenna would remain stationary and transmit a signal for maintenance and testing purposes. This type of operation is expected to occur no more than once every several months. In maintenance mode, the ASR-11 signal would be directed at a fixed location above the horizon for up to several minutes at a time. Because the beam would be stationary, average power densities would be higher than during normal operation. However, since the closest occupied building to the proposed site would be more than 305 meters (1,000 feet) away, no adverse impacts are anticipated.

4.1.7.3 Cumulative Impacts—Health and Safety

Potential negative cumulative health and safety impacts are not expected to occur at Fort Greely from the proposed activities. Some of the proposed activities would improve the health and safety of personnel.

4.1.8 INFRASTRUCTURE

This section addresses the potential for impacts to infrastructure due to the proposed construction and operation of the supplemental GMD VOC activities.

Fort Greely has been realigned and therefore the number of personnel assigned to Fort Greely has been reduced. This has resulted in a loss of approximately 700 personnel. This reduction in the number of personnel has resulted in an increase in available utility capacities. The combination of GMD VOC test site construction and operation activities have resulted in an increase of approximately 200 personnel, but excess utility capacity remains. The supplemental activities would further increase the personnel to approximately 275. Therefore, there would be sufficient utility capacity in the ROI and on the installation to handle the proposed activities.

4.1.8.1 Construction—Infrastructure

Solid Waste

The supplemental GMD VOC activities at Fort Greely would result in a small amount of construction debris being generated during construction activities. There is adequate landfill capacity to handle the increase in disposal needs, and thus, a minimal impact on solid waste disposal capacity.

Water

The existing potable water system at Fort Greely has sufficient available capacity to handle the water demands for construction activities; thus, no impacts are expected. This would include site watering and any batch plants, as well as for personnel. Nonpotable water may be used from Jarvis Creek for construction activities.

Wastewater

The only wastewater increase would be primarily from project management personnel living in housing on the installation. Portable wastewater facilities would be used for construction workers during the workday. The increase in wastewater generation would be well within the available capacity.

Electricity

Electricity would be provided by Golden Valley Electric Association. The existing airfield lighting vault and concrete encased duct bank would accommodate future lighting controls and electrical loads. The electrical service would be extended from the runway lighting to the approach lighting. The existing airfield control tower would be modified and fitted with the necessary surveillance equipment. The tower would be tied into the ASR-11 radar. About 610 meters (2,000 feet) of trenching would be needed to connect the radar facility to power (hard and emergency) and to the control tower. Similar activities would also be required if a new control tower is constructed. Adequate electrical power would be available for the approach lighting system and the radar, so there would be no adverse impacts on the electrical system.

Traffic

Erection of fencing would restrict vehicular access to the enclosed areas. During peak hours, minor delays could be encountered entering the security gates. This congestion would not affect off-post traffic and would only have a minimal effect to on-post traffic.

East-west access through Fort Greely for Donnelly Training Range personnel would be affected. The cantonment fence would not affect their routes. Southern Boundary Alternatives 1, 3, and 4 would include fencing that crosses Firebreak Road, their main east-west route between the east and west ranges. To maintain access for range personnel with these alternatives, the trail at the southern boundary could require clearing and upgrading to meet training requirements. Alternatives 2 and 5 would allow Firebreak Road to remain accessible. The airfield fence would preclude access to the range personnel, requiring them to detour to the north or south.

An existing unpaved access road would be used to access the radar site from the airfield taxiway. Overall, the impacts to traffic by the construction activities would be minimal.

Other Issues

Southern Boundary Fence Alternatives 1 and 2 are located along East Post Road. A dilapidated, abandoned Quonset hut is located along the road within the proposed buffer area. Therefore, the hut would require removal if one of those alternatives is chosen.

Construction, such as that for the chain link security fences, the runway extension, approach lighting, radar, and control tower, is routinely accomplished for both military and civilian operations. Institutional Controls, Excavation Clearances Procedures (U.S. Army Space and Missile Defense Command, 2002b) would be implemented to identify and avoid existing utilities during intrusive construction. These activities would include digging for fence pole or lighting structure installation and excavation for runway construction. During construction of the fences along the western boundary of Fort Greely, special care would be taken to avoid adverse impacts to the Trans-Alaska pipeline and the associated right-of-way. A Right-of-Way Use Guideline would be obtained from Alyeska Pipeline Services Company as needed for construction activities parallel to the pipeline.

No significant adverse impacts to infrastructure are anticipated due to fencing, airfield modifications, or air control activities.

4.1.8.2 Operations—Infrastructure

Security Fencing, Airfield Modifications, and Air Control

Operation of the supplemental GMD VOC activities is not expected to result in significant impacts to infrastructure at Fort Greely. Water, wastewater, and solid waste demands would increase minimally for the increased number of personnel to operate the control tower and manage the contracts. Electrical demands would increase minimally to operate the approach lighting, the control tower, and radar.

4.1.8.3 Cumulative Impacts—Infrastructure

The construction and operation of the supplemental GMD VOC activities would not exceed any of the operational capabilities of the existing infrastructure system and no cumulative impacts are expected.

4.1.9 LAND USE

This section addresses the potential impacts to regional and installation land use due to the construction and operation of the supplemental GMD VOC activities on Fort Greely.

4.1.9.1 Construction—Land Use

Security Fencing

The construction of security fencing would be consistent with other functions at Fort Greely. The proposed fencing would take place around the Main Cantonment Area; around the Southern Boundary area, which includes the GBI VOC test bed; and around the Allen Army Airfield. Adjacent land use and zoning is compatible with activities on Fort Greely. The surrounding training lands are primarily used as a non-firing maneuver area, air drops, training,

and troop maneuvers. All of the construction areas fall within the boundaries of Fort Greely and therefore have no conflicts with adjacent land uses or zoning. The land cover in the areas to be cleared would change from primarily mixed forest to grassland.

The Trans-Alaska pipeline right-of-way must be considered when constructing the fence on the western side adjacent to the pipeline. The right-of-way extends 12.8 meters (42 feet) east from the centerline of the pipeline. Clearing for the fence in this area would start at the edge of the right-of-way and extend eastward about 15.8 meters (52 feet) feet. Every attempt would be made to avoid the pipeline right-of-way; however, if access is required or additional clearing within the right-of-way is necessary, a Right-of-Way Use Guideline would be obtained from the Alyeska Pipeline Service Company to access the pipeline right-of-way.

There are no inhabited structures close to the construction sites. The closest inhabited structures, other than military, are in Delta Junction. Construction would not impact the use of Fort Greely by the U.S. Army as a test bed under the command of USASMDC. Donnelly Training Areas East and West would remain in use for troop training.

The airfield fence would not change any existing land uses and would take into account airfield safety and clear zones.

Airfield Modifications

Construction of the runway extension would be consistent with the existing land use at the airfield. Any modifications to the safety and clear zones would be within the confines of the airfield and would not affect adjacent land uses.

Construction of the approach lighting would require clearing at the north and south ends of the 18/36 runway. The north end approach lighting would extend into and across Jarvis Creek to Donnelly Training Area East, which is under the control of USARAK. A wetlands permit from the U.S. Army Corps of Engineers would have to be acquired for construction of light stands in the creek. The south end approach lighting would extend west of Richardson Highway to Donnelly Training Area West, also under the control of USARAK. The land on Donnelly Training Area is heavily forested and would require an agreement with USARAK to access, clear, construct, and operate the lights. Approximately 1.7 hectares (4.2 acres) would be cleared on Donnelly East and 1.9 hectares (4.7 acres) on Donnelly West. The conversion of these areas to a cleared state would not prevent the area from being used for troop training; however, the type of training may be altered to prevent damage to the approach lights. Overall, the impacts to the Donnelly Training Areas would be minimal.

Air Control

The construction of either radar alternative and the control tower would be consistent with other functions at Fort Greely. An area of approximately 0.4 hectare (1 acre) of mixed forest land would be cleared to grassland for the radar. All of the construction areas fall within the boundaries of Fort Greely and therefore have no conflicts with adjacent land uses or zoning.

4.1.9.2 Operations—Land Use

Security Fencing

The security fencing would not affect any of the existing facilities at Fort Greely or any of the surrounding land uses. In most areas, the fencing would be buffered from the public by trees, which would minimize the potential visual impacts. Unauthorized public access to Fort Greely is not permissible due to security concerns. There would be a loss of land used for recreational activities due to activation of the security fencing; however, the unfenced areas of Fort Greely would remain as natural areas. No hunting is currently permitted on Fort Greely property. There would be no impact on subsistence uses of Fort Greely.

Airfield Modifications

Operations of the runway extension would not affect any of the existing facilities at Fort Greely. The approach lighting structures may minimally affect visual aesthetics if they are visible from Richardson Highway. However, it would impact only a small portion of the forested boundary as viewed by the public. The operation of the approach lighting could change the use of the cleared area surrounding the light structures on Donnelly Training Area East and West. But the overall impact of the change in training use would be minimal to the training mission at Donnelly Training Area.

Air Control

The operation of the radar and control tower would not affect any of the existing facilities at Fort Greely or any of the surrounding land uses. The operation of both of these facilities would be consistent with existing land use at the airfield. Its remote location would eliminate a concern for visual aesthetics.

4.1.9.3 Cumulative Impacts—Land Use

Construction and operation of the supplemental GMD VOC activities would further limit access to Fort Greely by the general public. However, the area is designated for military use and is currently used to conduct military activities. It would create no zoning or land use conflicts. A small portion of Fort Greely would remain accessible from Donnelly Training Area. An agreement would be required for the use of land on Donnelly Training Area for approach lighting as well as the use of Fort Greely roads for training activities by various tactical units. Overall, the cumulative impacts to land use would be minor and insignificant. No other projects have been identified by Fort Greely that would contribute to cumulative land use impacts.

4.1.10 NOISE

This section addresses the potential impacts to the noise environment due to the construction and operation of the supplemental GMD VOC activities on Fort Greely.

4.1.10.1 Construction—Noise

Security Fencing, Airfield Modifications, and Air Control

Noise from construction equipment usually falls in the range of 70 dBA to 98 dBA at 15 meters (50 feet) from the source. Earth moving equipment is known to produce dBA readings in this range.

Construction could take place 24 hours per day during the summer months. Therefore, due to the 10 dBA penalty added to nighttime noise, the 65 dBA and 75 dBA contours are estimated to occur within approximately 1.9 kilometers (1.2 miles) and 0.8 kilometer (0.5 mile) from the construction site, respectively. However, since no noise sensitive receptors are known to exist within 1.9 kilometers (1.2 miles) of the proposed construction locations at Fort Greely, no impacts to the noise environment would be expected from construction equipment noise.

4.1.10.2 Operations—Noise

Security Fencing, Airfield Modifications, and Air Control

Operation of the supplemental GMD VOC activities is not expected to result in any adverse noise impacts near Fort Greely. The proposed use of the installation, including aircraft landings, would be less than when Fort Greely was a fully operational installation.

4.1.10.3 Cumulative Impacts—Noise

As no noise sensitive receptors have been identified in the vicinity of the construction areas, no cumulative impacts to the noise environment are anticipated.

4.1.11 SOCIOECONOMICS

This section addresses the potential impacts to regional socioeconomics due to construction and operation of the supplemental GMD VOC activities at Fort Greely.

4.1.11.1 Construction—Socioeconomics

Security Fencing, Airfield Modifications, and Air Control

Population

Supplemental GMD VOC construction would take approximately 3 to 6 months and employ between 10 and 35 construction personnel for each of the proposed activities. All of the construction would take place during the summer construction season, with the first activity being initiated in 2003, and depending on funding, could take place over several years. It is expected that many of the construction workers would move to the area on a temporary basis from outside the region. Fairbanks, the nearest community of any size, had just over 1,800 construction workers in 1996 but, with this exception, there is no major local pool of labor.

In previous projects at Fort Greely, about 70 percent of construction workers relocate to the area from outside of Alaska. However, for the proposed construction activities, which are relatively routine in nature, much of the labor force would likely come from the Fairbanks and Anchorage areas.

This project would not be expected to attract dependents. However, those bringing dependents with them for previous projects at Fort Greely have typically housed them in Fairbanks or Anchorage. The increased demand for temporary housing and hotel rooms in the Delta Junction area would likely aggravate the existing housing shortage. This condition is considered minor and short-term since the housing market will adjust to the demand over time.

Employment Income and Retail Impacts

The construction program would generate additional income in the local economy in two ways. The first is in the form of wages earned by the construction workers. A proportion of these wages would be spent locally on lodging, food, and transportation. Second, the construction program would include a proportion of locally purchased materials. These purchases, at local stores and from local suppliers, would generate additional income and jobs within the local economy.

While some non-contract jobs might be created in the communities surrounding Fort Greely, the majority would be in Fairbanks and Anchorage where much of the expenditure would be made.

The impact of construction program expenditures on retailers would be almost entirely concentrated in Fairbanks, as there are few retail outlets in the communities surrounding Fort Greely.

It is anticipated that the fence construction would be contracted to a local native Alaskan company. Each fence (cantonment, southern boundary, and airfield) would require 1 to 2 crews of 8 to 10 people each for a period of about 3 to 6 months during the summer construction season. Additionally, the contractor would be provided the option to salvage the timber as it is cleared.

The construction of the fence, while located adjacent to the Trans-Alaska pipeline on the western side of Fort Greely, would not adversely impact the operations of the Alyeska Pipeline Services Company.

Construction of the runway extension and the approach lighting would employ a crew of approximately 20 to 25 people over the course of a 4- to 6-month summer construction season.

Impacts on Housing, Education, and Health

Temporary housing is nearing short supply in the Fort Greely area. Most construction workers who have been involved in past projects at Fort Greely have been accommodated at the installation or have commuted from Fairbanks. Some have found housing in the surrounding communities of Delta Junction and Big Delta. Fort Greely has unaccompanied housing units available as a result of the recent realignment and associated decrease in the number of personnel employed at the installation. Additionally, an administrative mancamp may be established for Fort Greely that would provide living and dining facilities for 200 personnel. If construction contractors elect to house their workers in part by leasing or purchasing existing housing stock, the rental or purchase rate for housing may temporarily increase, which would be a beneficial impact to the local economy.

Primary emergency care would be provided to the construction personnel at the reopened health facility on Fort Greely. The hospital network in Fairbanks would deal with the more serious and longer-term care needs of the construction workers, as they arise. The medical facilities in Fairbanks are adequate to handle the increased demand.

It would not be expected that any additional enrollment in the local school districts would result from the construction activities.

Fiscal Impacts

The main fiscal impact arising from the construction phase would be as a result of purchases made by personnel. Negative fiscal impacts arising from construction activities would be limited to the potential for increased demands on the public safety services of fire, police, and ambulance.

4.1.11.2 Operations—Socioeconomics

Security Fencing, Airfield Modifications, and Air Control

Population, Employment Income, and Retail Impacts

The operational phase of the supplemental GMD VOC activities could result in employing up to 5 to 10 contract security personnel, potentially from the local area. Up to 11 full time personnel, most likely from outside of the local area, would be needed to staff the control tower at Fort Greely.

Impacts on Housing, Education, and Health

Although temporary housing off-post is limited, Fort Greely has unaccompanied housing available to operational personnel, as described for construction activities. The Delta Greely School District owns a school (Building 725) on 6 hectares (15 acres) of land leased from the U.S. Army in the cantonment area. It is not currently in use, with the exception of the gymnasium on an intermittent basis. Only a small number of accompanied personnel are anticipated to relocate to the area. Therefore, there would be a minimal addition to the enrollment at local schools. The Fort Greely swimming pool in Building 503 was closed during Base Realignment. Impacts to medical facilities would be similar to those described for construction activities. Installation of the cantonment fence would require special security arrangements for the public to access Fort Greely. However, this is considered to be a minor impact on the community.

4.1.11.3 Cumulative Impacts—Socioeconomics

The construction and operation of the supplemental GMD VOC activities at Fort Greely would have a positive cumulative economic impact. Combined with the socioeconomic benefits from the other GBI VOC test site activities, it would slightly mitigate the negative economic impact of Base Realignment activities.

4.1.12 WATER RESOURCES

This section addresses the potential impacts to water resources due to construction and operation of the supplemental GMD VOC activities on Fort Greely.

4.1.12.1 Construction—Water Resources

Security Fencing

Approximately 25.9 hectares (64 acres) of land would be disturbed during the construction of all three security fences, including the Preferred Southern Boundary Alignment. Windrows would be located to minimize impacts to surface drainage. Due to the relatively level topography and low precipitation, drainage patterns would only be altered slightly, and surface water runoff and erosion would be minimal. The cleared areas would be vegetated and no impervious areas would be constructed. Disturbance to stream channels, drainage patterns, and stream banks would be minimized to the extent practicable. A minor increase in sediment in surface waters is possible, but not likely due to the distance between the construction site and surface water bodies. BMPs would be used to reduce the potential for soil erosion into water resources from all fencing activities. These measures could include limiting the amount of area exposed, installing silt fences or straw bale dikes, and adding protective covering to the slopes to enhance long-term stability. Once construction is complete and vegetation is stabilized, there should be little soil erosion from operation of the site. A sediment erosion control plan would be prepared if needed and would address each of the measures. Minimal impacts to water resources during the site preparation activities are anticipated to occur from the proposed construction of the fences.

Potential impacts to water resources resulting from accidental spills of hazardous materials during construction would be minimized because all activities would follow Fort Greely's Environmental Procedures (U.S. Army Space and Missile Defense Command, 2002b), including the Spill Prevention, Control, and Countermeasures Plan and emergency response procedures.

Since construction would result in the disturbance of more than 2 hectares (5 acres) of land the activities would be subject to federal NPDES stormwater permitting requirements. The permitting process would involve coordination with both the EPA and the ADEC.

A minimal increase in water usage during construction would not impact the water supply aquifers and surface water sources at Fort Greely.

Airfield Modifications and Air Control

Construction impacts for the runway extensions, turnarounds, upgrades, control tower, approach lighting, and radar would be similar to those discussed above. The same measures would be employed to handle potential soil erosion. The same Spill Prevention, Control, and Countermeasures and emergency response procedures, as well as NPDES permitting requirements, would be implemented. A slight increase in water usage during construction would not impact the water supply aquifers and surface water sources at Fort Greely.

On the north extension, the approach lights would need to cross Jarvis Creek (four or five lights) a short distance into Donnelly Training Area East (two to three lights). For lights in or over the creek, construction of the approach light platforms would be conducted during the low-flow

season. A permit from the U.S. Army Corps of Engineers issued under section 404 of the Clean Water Act would be required. The lighting platforms would require construction that would withstand peak river flows and ice jams.

4.1.12.2 Operations—Water Resources

Security Fencing, Airfield Modifications, and Air Control

Once construction and landscaping is complete, there would be a low potential for erosion from the runway extensions, runway upgrades, and associated lateral clearing activities, since all cleared areas would be grassed. Deicing areas would be sloped to prevent deicing fluids from reaching surface water areas. A significant increase in stormwater runoff is not expected since the soils in the area are well-drained and the annual precipitation is low. Design of the approach lighting system would consider the strength of the support structures to withstand strong flows in Jarvis Creek, as well as ice jams. The radar site would be grassed after construction to control erosion and runoff. The impacts to water resources are expected to be minimal.

4.1.12.3 Cumulative Impacts—Water Resources

Increase in runoff and impacts to water quality levels would be minimal and no other future programs have been identified that when combined with the Proposed Action would contribute to cumulative water resources impacts. Upgrades to the stormwater collection system as part of airfield repairs were considered in the initial GMD VOC EA. BMPs discussed included storm water control measures such as retention areas, and constructed wetlands or ponds to contain runoff from the impervious areas. The specific BMPs to be implemented would be determined during design.

4.1.13 ENVIRONMENTAL JUSTICE

This section addresses the potential environmental justice impacts due to construction and operation of the supplemental GMD VOC activities at Fort Greely.

An environmental justice impact would be a long-term health, environmental, cultural, or economic effect that has a disproportionately high and adverse effect on a nearby minority or low-income population. Environmental justice concerns could be triggered where:

- The percentage of persons in low-income or minority populations in the census area meaningfully exceeds the percentage in the regions of comparison
- The percentage of low-income or minority population in the census area exceeds 50 percent
- The proposed activities would result in substantial adverse effects to one or both of the above populations

4.1.13.1 Construction and Operations—Environmental Justice

Potential environmental justice impacts at Fort Greely were addressed in the Alaska Army Lands Withdrawal Renewal Final Legislative EIS, the NMD Deployment EIS, and the GMD VOC EA, which concluded that there would be no disproportionately high and adverse environmental or human health effects on low-income or minority populations. Some of the contracts for construction would likely be awarded to Native Alaskan 8(a) (small and disadvantaged minority) firms.

4.1.13.2 Cumulative Impacts—Environmental Justice

No other projects or activities in the region have been identified that would contribute to potential cumulative environmental justice impacts.

4.2 CUMULATIVE IMPACTS

The following discussion summarizes the potential for cumulative impacts for supplemental GMD VOC activities at Fort Greely.

Emissions from mobile sources during construction would add cumulatively to emissions from other traffic sources in the area, but these emissions would be temporary and are not anticipated to result in a measurable impact to air quality within the ROI. The cumulative impacts of adding Class D airspace control would improve the air safety in the area. Biological impacts would include the loss of a small amount of habitat at Fort Greely, including moose habitat. Given the small amount of loss of wildlife habitat in the region of Fort Greely from past and current development and the vast amount of undeveloped land in the area, the additional loss of habitat from the proposed fences and airfield modifications would not result in a substantial cumulative reduction in habitat. Construction would include measures to reduce soil erosion on the site and to limit the extent of the erosion. Once site vegetation is restored, no long-term cumulative impacts to soils would be expected from erosion at the site. Overall, no cumulative impacts to geology and soils in the area are expected from construction and operation at Fort Greely.

The construction and operation of the supplemental GMD VOC activities at Fort Greely, in combination with ongoing Installation activities and future reuse activities, would result in an increase in the amounts of hazardous materials used and hazardous waste generated on Fort Greely. However, Fort Greely has the mechanisms and management systems in place to store and manage the increased quantity of hazardous materials and hazardous waste. Overall, it is not expected that there would be any cumulative hazardous materials or hazardous waste management issues at Fort Greely.

Potential negative cumulative health and safety impacts are not expected to occur at Fort Greely with the combination of the proposed activities and ongoing health and safety risk from current military activities. The proposed activities would provide safety improvements. The construction and operation of the supplemental GMD VOC activities would not exceed any of the operational capabilities of the existing infrastructure system and no cumulative impacts are expected. As no noise sensitive receptors have been identified in the vicinity of the

construction areas, no cumulative impacts to the noise environment are anticipated. The construction and operation of the supplemental GMD VOC activities at Fort Greely would have a positive cumulative economic impact. Combined with the socioeconomic benefits from the other GBI VOC test site activities, it would slightly mitigate the negative economic impact of the Base Realignment. An increase in runoff and water quality levels would be minimal and no other future programs have been identified that when combined with the Proposed Action would contribute to cumulative water resources impacts.

4.3 ENVIRONMENTAL CONSEQUENCES OF THE NO ACTION ALTERNATIVE

If the No-action Alternative is selected, no environmental consequences associated with the supplemental GMD VOC activities would occur. Present Fort Greely and GBI VOC test site activities would continue with no change in current operations and without the benefits of the supplemental GMD VOC actions, including the positive safety impacts of enhanced security for personnel and improved airfield conditions. The environmental consequences of the current GMD VOC activities were evaluated in the VOC EA and determined not to result in significant environmental effects to any resource area.

4.4 ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

Adverse environmental effects that cannot be avoided include the release of small amounts of pollutants into the atmosphere; minor noise impacts on wildlife and reduction in habitats; short-term impact to vegetation from construction activities; minor increased generation of hazardous materials; minor increased stormwater runoff and soil erosion during construction; and increased noise levels at program-related sites. However, through implementation of the program actions and BMPs described in chapter 2.0, these effects would be minimized. Overall, no significant individual or cumulative adverse environmental impacts are anticipated to result from the Proposed Action.

4.5 CONFLICTS WITH FEDERAL, STATE, AND LOCAL LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AREA CONCERNED

All of the proposed program activities would take place in existing facilities or locations on a DoD installation dedicated to training and testing activities. These activities would not alter the uses of the sites, which were in the past or currently are used to support training and testing activities. However, potential new training and testing areas within the range boundaries could be developed. No conflicts with land use plans, policies, and controls are anticipated.

4.6 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

Anticipated energy requirements of the supplemental GMD VOC activities would be well within the energy supply capacity of all facilities. Energy requirements would be subject to any established energy conservation practices at each facility, in accordance with Army Regulation 11-27, *Army Energy Program* and applicable Executive Orders.

4.7 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed activities would result in no loss of threatened or endangered species, and no loss of cultural resources, such as archaeological or historic sites. Moreover, there would be no changes in land use or preclusion of development of underground mineral resources that were not already precluded.

The amount of materials required for any program-related activities and energy used during the project would be small. Although the proposed activities would result in some irreversible or irretrievable commitment of resources such as various metallic materials, fossil fuels, minerals, and labor, this commitment of resources is not significantly different from that necessary for many other defense research and development programs carried out over the past several years. Proposed activities would not commit natural resources in significant quantities.

4.8 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Proposed supplemental GMD VOC activities would take advantage of existing facilities and infrastructure. The proposed upgrades to these facilities or locations would not alter the uses of the sites. Therefore, the Proposed Action does not eliminate any options for future use of the locations under consideration.

4.9 NATURAL OR DEPLETABLE RESOURCE REQUIREMENTS AND CONSERVATION POTENTIAL

Other than various structural materials and fuels, the program would require no significant natural or depletable resources. Salvage of timber during the construction activities would be an option to the contractor.

4.10 FEDERAL ACTIONS TO ADDRESS PROTECTION OF CHILDREN FROM ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS (EXECUTIVE ORDER 13045)

This EA has not identified any environmental health and safety risks that may disproportionately affect children, in compliance with Executive Order 13045.