PUBLIC ACCESS

Civilian ground and air access is currently permitted within the proposal area with the exception of several off-limits areas, including the DMPTR and the Stuart Creek Impact Area. Under this proposal, civilian ground and air access would be restricted during activation of R-2205.

Military Land. Access to areas underlying the proposed R-2205 shown in Figure 2-9 would be closed to civilians and nonparticipating military personnel during training activities. An increase in training activities would lead to more frequent closures of roads and trails (including the Salcha Caribou Sled Road (a RS-2477 trail) on YTA due to hazardous military activities. This may directly impact use of Manchu Road from Eielson AFB, Johnson Road from the Richardson Highway, and Salcha-Caribou Sled Road (a RS-2477 trail). Use of these routes is already limited by the military mission, but the proposal would further reduce their availability for gaining access onto YTA, and for through access to areas north of YTA. Impacts would be moderate, depending on the duration and timing of access closures. Working with ADNR and BLM, USAG-FWA will adjust restrictions as needed and disseminate information and maps to the public in order to reduce the risks of inadvertent incompatible public use (see Section 3.4.10.4).

No charted airports are located within the project area on military lands. Therefore, no direct impacts on air access would occur. The restricted airspace would continue to affect public air access across R-2205 within the project area during activation. An increase in training activities would lead to more frequent airspace closures for military purposes. Indirect impacts on temporal and spatial availability of airspace to public aviation are expected to minor.

Non-military Land. Direct impacts on public ground access on surrounding non-military land and associated roads, or trails, would not occur. No charted airports are located within the project area on non-military lands. Therefore, no direct impacts on air access would occur.

Navigable and Public Waters. No navigable and public waters are located within the project site. Two navigable rivers, The Salcha River and Chena Rivers, are located in the vicinity of the project area. However, access to these rivers will not be affected by the proposed action. Therefore, no direct or indirect impacts on navigable and public waters would occur.

RECREATION

Military Lands. No special use areas are located on military lands within the project area. Training frequency and closures within the project area would increase under this alternative. The amount of recreation that occurs in the proposal area is relatively low (Table 3-34) and current restrictions on use are already in effect.

The proposed training activities for DMPTR and YTA would greatly reduce the amount of time that training areas are available for public use and recreation. Even though training schedules are available on USARTRAK and the public can plan around them, substantially reduced access may have a minor adverse but not significant impact on recreation on YTA due to its relatively low use. Overall, the impact to land use, access, and recreation on YTA is moderate, but minor in the regional context.

Non-military Lands. There would be no impact to recreation from this proposal on surrounding non-military lands.

3.4.10.3.2 No Action Alternative

There would be no changes to the current project area under the No Action Alternative. Therefore, no additional impacts on land use, public access, or recreation would occur.

3.4.10.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse but not significant impacts. The following mitigations are proposed to manage these impacts.

- The military will maintain an open dialogue with ADNR, BLM, ADFG and USFWS to assess current conditions and needed adjustments in locations or temporal restrictions to avoidances and procedures put in place by the ROD for this EIS.
- The Army would expand enforcement to control trespass in YTA for the expanded R-2205 activities.

3.4.11 Infrastructure and Transportation (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for a general discussion of infrastructure and transportation. The ROI for the expansion of R-2205 does not intersect with ground-based transportation and utilities resources outside the boundary of military land that contain roads, circulation routes, and associated infrastructure to support training, logistics, operations, and maintenance within YTA. This proposal is therefore not further analyzed for this proposal.

3.4.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.4.12.1 Affected Environment

The proposed action would include areas under the airspace and nearby communities. DMPTR is located in YTA, which lies within the FNSB. Therefore, the ROI for DMPTR includes the portion of FNSB that is underneath the airspace and the surrounding communities.

POPULATION

The FNSB is located in the Interior Region of Alaska. There are 11 communities in that borough. The cities nearest to the area of the proposed action are Fairbanks and the city of North Pole, both less than 10 NM to the northwest of the proposed action. Fairbanks is the second largest city in the State and the heart of the Interior Region (FEDC 2010-1). In 2010, the total population of the FNSB was estimated at 97,581 persons. In 2009, Fairbanks had an estimated population of 32,506 persons, and the city of North Pole, 2,200 persons (ALARI 2011-5). There are approximately 166 persons under the proposed R-2205 expansion (Table 3-54).

Table 3-54. Population within the Defined Census Blocks under the Proposed Restricted Airspace, 2010

Region	Total Population[1]	Alternative A		Alternative B	
		Number	Percent	Number	Percent
Fairbanks North Star Borough	97,581	28	0.03	166	1.70

[1] GIS-derived calculations.

Source: USCB 2010-1.

KEY INDUSTRIES

This action primarily affects military land; thus, key industries in the Fairbanks North Star Borough that could be impacted by the proposed action recreation and tourism, military, and civilian aviation.

Recreation and Tourism

Outdoor recreation includes hunting, fishing, boating, hiking, camping, and observing wildlife. Recreational activities occur on Federal, State, and private land and contribute largely to the local communities. Businesses such as hunting and fishing guides, lodges, air taxis, and other tourist-related services benefit from recreational activities. TFTA and DTA have areas open to recreational users. Portions of the proposed action, in particular Parcel B (see Figure 2-9), cover the Chena River State Recreational Areas. For a more detailed description of recreation in the ROI, see Section 3.3.10.1, Recreation subsection.

Military

The military plays an important role in the economy of the FNSB. There are two military installations in the FNSB including Fort Wainwright and Eielson AFB. Approximately 8,000 military members and 10,000 family members and retirees contribute to the economy. The economic impact of the military in Fairbanks is estimated to reach $800 million annually (FEDC 2010-2).

Civilian Aviation

The Fairbanks International Airport is located in the FNSB and provides year-round air transportation for the borough residents. There are no public airports or private charted airfields within the area of the proposed R-2205 expansion, but there are several charted private airfields within the general region of the proposed airspace. Civilian aviation contributes significantly to the local economy and is heavily relied upon for travel, safety, firefighting, recreation, hunting, mining, oil and gas development, and supplies. For more detailed information on civilian aviation, see Section 3.4.1.1 of Airspace Management and Use.

3.4.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.4.12.3 Environmental Consequences

3.4.12.3.1 Proposed Action

The population within the defined census block of the proposed restricted airspace is 166 persons. Based on the census data, it is difficult to define how many persons under the proposed restricted airspace reside on military land or non-military land since the large size of the census block, in which the restricted airspace is included, covers both. Under the assumption that all 166 persons identified within the census block of the proposed restricted airspace do not reside within the military land, then there would be no persons exposed to noise levels exceeding 62 dB CDNL since these levels do not extend beyond the boundaries of DoD-owned land. The area affected by peak noise levels (exceeding 115 dB) would increase slightly. The non-DoD land area exposed to this noise level would not change in extent under this alternative.

Key economic industries in the area that could be impacted by VFR and IFR air traffic include recreation and tourism activities and military activities associated with Eielson AFB. The extent to which any VFR aircraft may occasionally operate within or near YTA for recreation, hunting, or other purposes is not known, however, the few scoping comments on this proposal suggest such flights are minimal and not affected by this active airspace.

As noted in the airspace management discussions, this proposal may have potential effects on Eielson AFB air traffic operations and other air traffic in the region. Means for managed this airspace and air traffic would require that processes be outlined in procedures and agreements to permit joint use of the airspace.

Potential civil aviation impacts associated with this action may include slightly increased flight distances and increased flight time in order to avoid the restricted airspace. To the extent that they would occur, these potential aviation impacts would result in economic impacts due to additional operating costs (primarily related to increased fuel use) associated with avoiding restricted airspace, and the costs of any expended efforts in tracking the airspace status through available advisory services. Such impacts would depend on civil air traffic densities/peak periods and the individual areas and time frames in which the proposed military flight activities would occur. As discussed in the airspace management analyses, the FAA and Air Force would address any impacts and mitigation measures to be taken before implementation of any airspace proposals.

The economic impacts of any military or other civil aviation aircraft being delayed or diverted to any extent around the proposed airspace when active cannot be quantified due to the many factors to be considered in estimating such impacts. These factors include aircraft type and weight, type and number of engines, an aircraft's phase of flight and altitude at the time of a diversion, air traffic conditions, the additional time/distance incurred by any diversion, etc. Other factors such as maintenance, labor, and aircrew costs would also have to be considered, as applicable, for commercial and general aviation impacts. Economic impacts to general aviation pilots would depend on routes of flight and decisions on whether to delay flight when the airspace is active or avoiding the active airspace. Fuel consumption rates for the different turboprop and jet aircraft types are identified in technical manuals and other documents that provide operators with a general basis for estimating fuel use for flight planning and other purposes. Fuel use alone is not the only factor to be considered in determining the cost of any flight diversion. Aircraft fuel and operating costs would have to be examined in much more depth and in consideration of many other factors for those aircraft types that could be potentially affected by flight diversions around the airspace.

3.4.12.3.2 No Action Alternative

Under the No Action Alternative, the creation of a restricted area over R-2202 in YTA would not be established, and there would be no changes or additional impacts to socioeconomic resources from current existing conditions.

3.4.12.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse but not significant impacts. No mitigations are identified for socioeconomics for this proposal. Mitigations for subsistence resources (see Section 3.4.13.4) would provide some benefit for local residents that supplement their household incomes with subsistence harvesting.

3.4.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.13.

3.4.13.1 Affected Environment

The ROI for the DMPTR restricted area is within the FNSB. As described in Section 3.2.13.1 and Figure 3-23, the ROI for this proposed action is within a State-identified nonsubsistence area (ADFG 2011-10). In addition, the Federal Subsistence Management Board has determined that the FNSB does not meet the requirements for a rural area, and thus that the residents of that borough do not qualify for Federal subsistence activities (USFWS 2010-1). As a result, no subsistence activities or resources would be in the ROI for this proposed action. However, as part of ongoing management of Army lands, USAG-FWA does provide opportunities for some subsistence harvesting on YTA and would continue to consult with subsistence parties as described in Section 3.4.13.4. Recreational hunting and fishing would still be permitted and managed in the area, as described in Section 3.4.9.4, Land Use.

3.4.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.4.13.3 Environmental Consequences

3.4.13.3.1 Proposed Action

Because the land for this proposed action is within a Federal nonrural area and a State nonsubsistence area, subsistence resources are not managed, and Alaska residents are not given priority to harvest resources within the area. Therefore, there would be no impacts on subsistence. Potential impacts on recreational activities are described in Section 3.4.9.4.

3.4.13.3.2 No Action Alternative

Under the No Action Alternative, subsistence activities would be the same as described in Section 3.4.13.1, Affected Environment.

3.4.13.4 Mitigations

The preceding analysis of effects on subsistence resources has not identified significant adverse impacts. However, as part of ongoing management of Army lands and good stewardship, USAG-FWA would undertake the following measures.

- Continue consultation efforts with subsistence parties to determine current subsistence use levels and areas on USAG-FWA lands as input into scheduling. Continue Tribal consultation efforts with subsistence users about hunting and fishing programs on USAG-FWA land. Continue to use a newsletter to provide information to subsistence users about existing and new military activities and the changes in access for subsistence users. Continue research and cooperative studies with Tribes to address possible effects of Air Force and Army activities on subsistence resources both directly within USAG-FWA installation boundaries and the outlying resources that may also be affected by military activities on DTA-West, DTA-East, YTA, and TFTA.

3.4.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.14.

3.4.14.1 Affected Environment

The affected environment for the DMPTR proposal includes the FNSB. Table 3-55 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

The percent minority in FNSB is 25.9 percent, which is lower than the 35.9 percent average for the State of Alaska. The percent low-income is 8 percent, which is lower than the 9.6 percent average for the State of Alaska. The percent Alaska Native is 7.0 percent, which is less than the 14.8 percent average for the State of Alaska. The percent of children is 25.6 percent, similar to the 26.4 percent average for the State.

3.4.14.2 Impact Assessment Methodology

General methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2.

Table 3-55. Minority Population, Low-Income Population and Children by Area

Digital Multi-Purpose Training Range (DMPTR) Restricted Area					
Area	**Total Population**	**Percent Low Income**	**Percent Minority**	**Percent Alaska Native**	**Percent Children**
Fairbanks North Star Borough	97,581	8.0	25.9	7.0	25.6
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Source: USCB 2010-1, 2010-2.

3.4.14.3 Environmental Consequences

3.4.14.3.1 Proposed Action

The proposed action would align the outer restricted area boundary with the government-controlled YTA lands to provide the expanded protective airspace needed for encompassing YTA hazardous activities, avoiding some land use impacts on non-military lands. Other resources considered for environmental justice analysis (e.g., noise, land use, socioeconomics) would have less than significant impacts with mitigation measures referenced in those resource sections. Impacts from the DMPTR proposal would not create disproportionately high and adverse environmental or health effects on minority or low-income populations or children.

3.4.14.3.2 No Action Alternative

Under the No Action Alternative, there would be no additional disproportionately high and adverse environmental or health effects on minority and low-income populations or children.

3.4.14.4 Mitigations

No mitigations are identified for this resource.

3.5 NIGHT JOINT TRAINING (DEFINITIVE)

The combination of Energy Policy Act of 2005 restrictions and the necessity to conduct night training flights after nautical twilight severely limits the capability of the Air Force to conduct any night MFEs during March and October, including the addition of night ordnance usage during one RED FLAG exercise per year. This proposal would extend operating hours to allow after-dark events for the Air Force during major exercises and routine training. Extended hours would need to be available for both existing and proposed future military training SUA in JPARC. The footprint for the NJT proposal is extensive, consisting of all MOAs in Alaska. (Refer to the gray-shaded area in the map to the right.) Less than 2 percent of this land is military-owned. The proposal does not involve any changes in the structure or dimensions of military airspace, with the exception of the Fox 3 MOA Expansion and New Paxon MOA proposals. The primary source of impact for this proposal is noise from military overflight at night. Based on this, potential for significant impacts on physical, water, cultural, and infrastructure and transportation resources are expected to be low.

Following the impact assessment for each resource, the final mitigations are listed that have been selected by the Army and Air Force to avoid, reduce, or implement management actions for potential significant adverse impacts from implementing the proposed action. These are included to provide the public and other agencies with necessary information on the final mitigations proposed by the Army and Air Force.

3.5.1 Airspace Management and Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.

3.5.1.1 Affected Environment

The following sections describe those airspace uses that may be affected by a proposal to extend the night training beyond the current 10:00 p.m. limitation established by the Alaska MOA EIS ROD.

MILITARY AIRSPACE USE

MOAs/ATCAAs and Restricted Areas

The airspace primarily used for accomplishing aircrew nighttime training requirements includes the Fox and Yukon MOAs/ATCAAs, the Paxon ATCAA, and both R-2202 and R-2205. Other MOAs/ATCAAs may also be used if needed to meet those requirements. The representative annual use of this airspace is noted in the previous airspace proposal discussions and Appendix D, *Airspace Management*. It is estimated that about 20–25 percent of these annual sortie-operations are typically conducted within the current evening hours of darkness. This proportion varies with the different months of the year and available hours of darkness. Currently, routine nighttime training requirements can normally be met during those times of the year when there are sufficient hours of darkness to complete this training by 10:00 p.m. MFEs typically end by 7:00 p.m. and relatively little nighttime training can be accomplished during these exercises due to the limited days/times of year they are conducted.

Other Military Airspace Uses

Other airspace uses in the region described in Section 3.1.1.1 would not change significantly with implementation of the extended hours, although there could be minor increases in some MTR use for those aircraft types that may transition from an MTR mission into one of the MOAs being used for joint night training.

CIVIL AVIATION AIRSPACE USE

Civil aviation trends suggest that fewer IFR flights and very few VFR flights generally operate during the later evening hours when the more-limited military nighttime training operations are conducted.

Federal Airways and Jet/RNAV Routes

Current military evening/nighttime training has minimal impacts on those Federal airways and jet/RNAV routes that are within the region where this training normally occurs. The reduced airway/route and military traffic during the evening hours and coordinated scheduling of these nighttime missions with the FAA minimize any potential impacts on air traffic transiting these routes or transitioning to/from Fairbanks International or other airfields in the region.

VFR Air Traffic

VFR air traffic is minimal during those times of the year and periods of darkness when military nighttime training operations are normally conducted; therefore, this training does not currently have any significant impacts on this aviation community.

Public Airports and Charted Private Airfields

Most evening/nighttime flight activities occur at Fairbanks and Anchorage International, with fewer operations occurring at other public airports and private airfields during those evening hours military night training normally occurs. Therefore, as noted above, the reduced number of airport/airfield and military flight operations during the evening periods minimizes any impacts of this training on airport arriving/departing air traffic.

3.5.1.2 Impact Assessment Methodology

The methodology described in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.1 was used to assess impacts of this proposal on other airspace uses in the affected region.

3.5.1.3 Environmental Consequences

3.5.1.3.1 Alternative A

MILITARY AIRSPACE USE

Proposed MOA and Restricted Area Use

Alternative A would extend the March and October MFE operations from 10:00 p.m. to 1:00 a.m. local time within the SUA typically used for these evening training missions, as well as the proposed new SUA. Aircraft base recoveries would be completed by midnight. With this extension, an NJT MFE such as RED FLAG–Alaska could fly in the MOAs and other JPARC airspace until midnight, with aircraft landing by 1:00 a.m. Of the 60 days annually MFEs can be conducted, it is anticipated that this night training would only occur 9 to 10 nights per year. A typical RED FLAG–Alaska includes about 70-plus participating aircraft in each of the morning and afternoon sessions. A night training session would

include fewer (50 plus sortie missions). Participating aircraft in all sessions include fighters, tankers, bombers, airlift, etc.

CIVIL AVIATION AIRSPACE USE

The MFE sortie-operations projected for the extended night hours should have minimal effects on civil aviation airspace uses as discussed below.

Federal Airways and Jet/RNAV Routes

This proposal would have minimal impacts on the Federal airways and jet/RNAV routes, considering the relatively fewer military and airway/route traffic that would occur during later hours and current Air Force and FAA procedures for coordinating night training missions and segregating these activities from IFR route air traffic. With such coordination, there should also be minimal impacts on aircraft transitioning between these airways/routes and an airport environment during those later hours.

VFR Air Traffic

The later evening military flights during hours of darkness in which VFR aircraft would not normally operate should have minimal impacts on this aviation sector. Those VFR flights that may occur during those later hours could obtain the active status of the MOAs and restricted areas being activated for those missions to be aware of those activities and plan their flight times/routes accordingly.

Public Airports and Private Airfields

This proposal would have minimal effects on the Fairbanks and Anchorage International airports and any other locations having flight activities during the later night hours. Recovery of the MFE aircraft to Eielson AFB and JBER after 11:00 p.m. would require the FAA to evaluate the manner in which air traffic is managed in the Fairbanks terminal airspace, since it currently reverts to the Anchorage ARTCC from 11:00 p.m. to 6:00 a.m. daily. The FAA aeronautical study of this proposal would examine means of managing this airspace and air traffic operations during those later hour flight missions.

3.5.1.3.2 Alternative B

MILITARY AIRSPACE USE

Proposed MOA and Restricted Area Use

Alternative B would include both MFE and routine training operations being conducted during the extended night hours, but not normally on the same evenings. Most routine night training requirements are met during those seasonal periods of darkness without the need for the extended hours; however, this alternative would provide that option as needed. Routine training during extended night time hours would be considerably less than the number of MFE operations to be conducted during those later hours. The scheduled use of those affected MOAs and restricted areas in which either MFE or routine NJT would occur would be published through the SUAIS.

CIVIL AVIATION AIRSPACE USE

The relatively small proportion of MFE or routine training sortie-operations that would occur during the extended night hours would have little impact on Federal airways, jet/RNAV routes, VFR air traffic, or public/private airfields, as discussed above for Alternative A.

3.5.1.3.3 No Action Alternative

The No Action Alternative would continue to limit MOA hours to 10:00 p.m. during all months of the year and would not pose any additional impacts on current airspace uses and ATC system capabilities.

3.5.1.4 Mitigations

The preceding analysis of effects on this resource has identified possible minor adverse impacts on Federal airways and public airports. Mitigations related to use of airspace are presented in Section 3.5.8.4 (Biological Resources), Section 3.5.10.4 (Land Use), and Section 3.5.12.4 (Socioeconomics). In addition, the following mitigation is proposed to reduce these impacts on Federal airways and public airports.

- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.5.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.5.2.1 Affected Environment

The affected environment includes areas beneath all JPARC SUAs. JPARC SUAs are used by a wide variety of aircraft, including aircraft based at installations in Alaska and visiting as part of training exercises. Under baseline conditions, approximately 20 to 25 percent of total annual sortie-operations are conducted at night, but all aircraft depart the MOAs prior to 10:00 p.m. Time-averaged baseline subsonic and supersonic military aircraft noise levels (L_{dnmr}) beneath these SUAs are listed in Table 3-56. Several noise-sensitive areas have been established in areas beneath JPARC SUAs, and pilots avoid these areas during training by specific vertical or horizontal distances. A map showing the location of these areas is presented as Figure B-3 in Appendix B.

The munitions training ranges at DTA and YTA would also be affected by the proposed NJT. Under baseline conditions, Air Force munitions training at these two ranges ceases prior to 10:00 p.m. In order to meet training requirements, the Army sometimes continues training into the late-night period after 10:00 p.m. and before 7:00 a.m. The public in nearby communities is notified of upcoming late-night munitions training. Baseline time-averaged noise levels (CDNL), which take into account current munitions training after 10:00 p.m., are shown in Figure 3-33 and Figure 3-34, for DTA and YTA, respectively. Baseline peak noise levels at the DTA and YTA (PK 15[met]) are shown in Figure 3-27 and Figure 3-31, respectively. The number of rounds of several types of large-arms munitions fired annually in YTA and DTA under baseline conditions are listed in Appendix E, *Noise*, in Table E-9 and Table E-10.

3.5.2.2 Impact Assessment Methodology

The methods used to assess subsonic and supersonic aircraft noise impacts associated with Fox 3 MOA Expansion and New Paxon MOA were also used to assess noise impacts associated with the proposed NJT. Noise models, noise metrics, and a brief description of methods used to interpret results are described in Section 3.1.2.2. For this analysis, noise impacts would be considered to be significant if airspace noise levels were to exceed 65 dB L_{dnmr} or 62 dB CDNL and increase by greater than 1.5 dB.

Noise impacts would also be considered potentially significant if substantial increases in noise level (i.e., greater than 10 dB) were to occur in areas that are currently relatively quiet.

Munitions noise impacts were assessed using the same methods used to assess such noise under the RLOD proposal (see Section 3.2.2.2). Noise impacts would be considered significant if noise levels exceeding 130 dB PK 15(met) or 62 dB CDNL were to impact areas not owned by the DoD and that were not already affected by these noise levels under baseline conditions.

3.5.2.3 Environmental Consequences

3.5.2.3.1 Alternative A

Under Alternative A, MFE operations would be permitted after 10:00 p.m. to midnight local time during the months of March and October. It is estimated that less than 3 percent of total sortie-operations during these two months would occur after 10:00 p.m. As described in Table 2-14, several types of munitions would be used during this late-night time period as well. Since the DNL metric includes a "penalty" of 10 dB for all events that occur between 10:00 p.m. and 7:00 a.m., this shift in the time of aircraft sortie-operations and munitions usage would result in an increase in DNL in affected areas. The shift in time of sortie-operations to after 10:00 p.m. would result in an increase of approximately 1 dB L_{dnmr} in all JPARC training airspace (see Table 3-56). Supersonic noise levels (CDNL) would also increase by about 1 dB beneath those airspace units that allow supersonic training. Noise levels experienced on the ground would be exactly the same as noise levels experienced currently, but noise events would occur at later times. The occurrence of operations during the late-night period between 10:00 p.m. and 7:00 a.m. would be expected to result in an increased likelihood of annoyance among affected persons. However, noise impacts would not exceed the significance thresholds established for this action.

As shown in Figure 3-33 and Figure 3-34, time-averaged munitions noise levels at DTA and YTA would increase slightly under NJT, but noise levels exceeding 62 dB CDNL would not extend beyond range boundaries. Increase would not be the result of additional munitions being fired, as the number of rounds fired per year would be expected to stay the same as under baseline conditions. Rather, the increase in CDNL would occur because of an increase in noise events after 10:00 p.m. and before 7:00 a.m. As described in Appendix B, *Definition of the Resources and Regulatory Settings*, the DNL noise metric applies a penalty to noise events occurring during the late-night time period.

Munitions would be delivered after 10:00 p.m. during one RED FLAG exercise per year, which would typically last for 9 to 10 nights. As described in Table 2-15, munitions used during RED FLAG exercises include bombs such as the Mk-82 (500 pound) and smaller weapons such as the 30-mm cannon. Most of the bombs dropped would be inert and would generate little or no noise during delivery. An estimated 12 live Mk-82 bombs, four live Mk-84 bombs, 1,000 rounds of 30-mm ammunition, and 1,000 rounds of 20-mm ammunition would be delivered annually after 10:00 p.m. and before 7:00 a.m. under NJT Alternative A. Approximately half of the munitions would be delivered at DTA and half at YTA.

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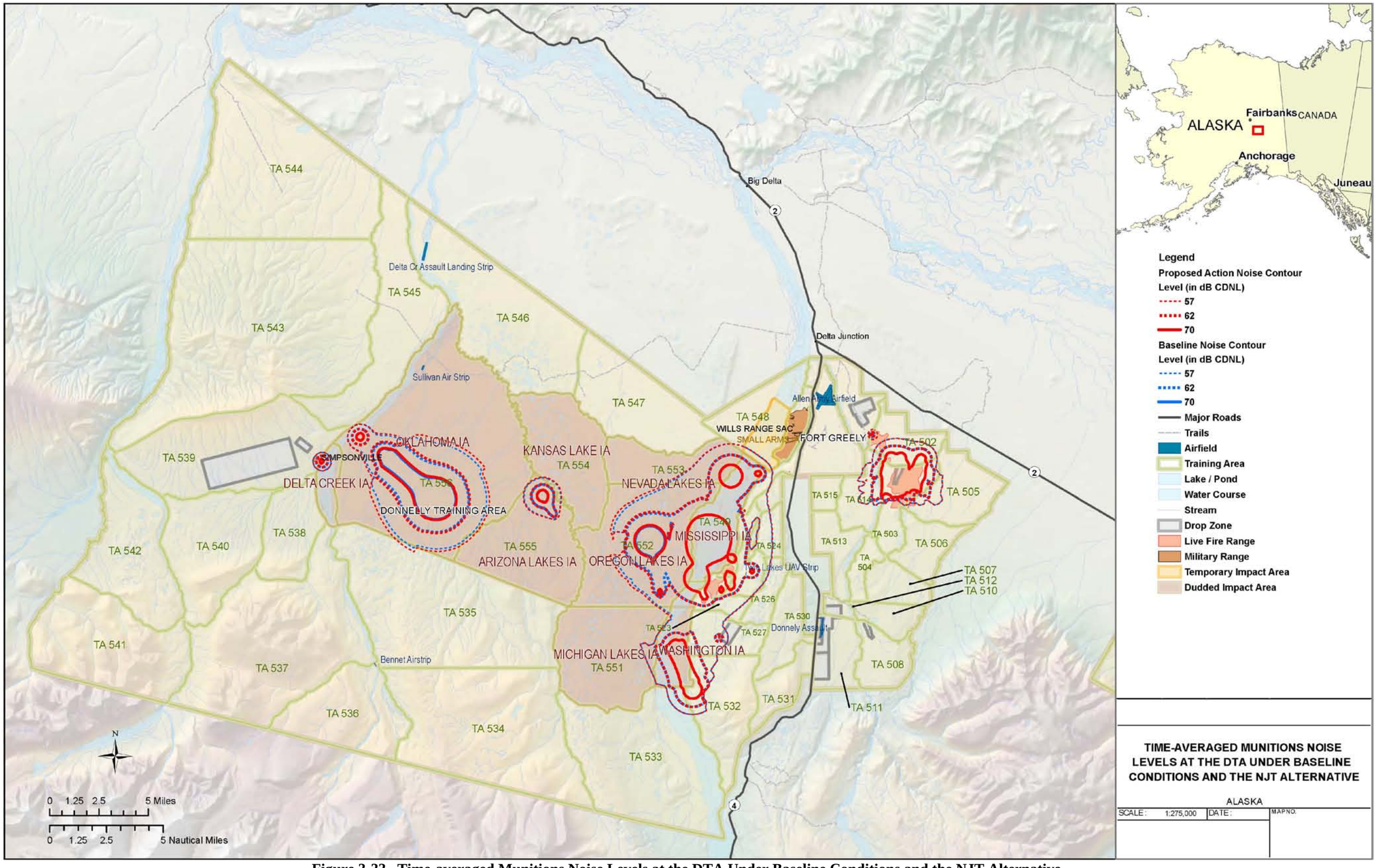


Figure 3-33. Time-averaged Munitions Noise Levels at the DTA Under Baseline Conditions and the NJT Alternative

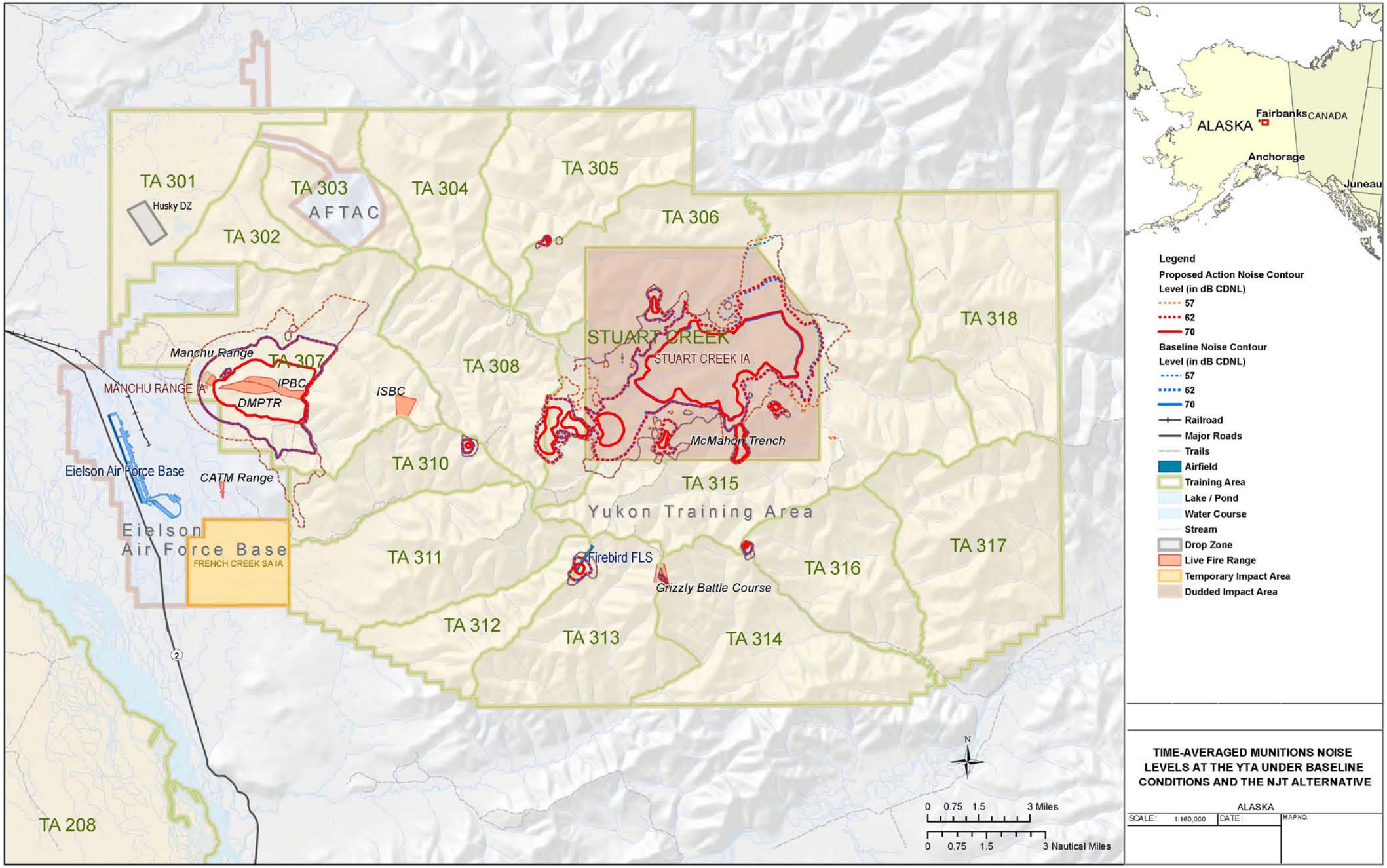


Figure 3-34. Time-averaged Munitions Noise Levels at the YTA Under Baseline Conditions and the NJT Alternative

Table 3-56. Noise Levels Beneath JPARC Airspace Areas Under Baseline Conditions and the Night Joint Training Action Alternative

Airspace Unit	Baseline			Proposed		
	Ldnmr	CDNL	Booms Per Day	Ldnmr	CDNL	Booms Per Day
Birch MOA[1]	61	N/A	N/A	62	N/A	N/A
Buffalo[1]	55	N/A	N/A	56	N/A	N/A
Delta MOA/ATCAA[2]	40	39	<0.1	41	40	<0.1
Eielson MOA/ATCAA[1]	59	N/A	N/A	60	N/A	N/A
Fox 1 MOA/ATCAA[3]	44	56	1.7	45	57	1.7
Fox 2 MOA/ATCAA[3]	52	56	1.7	53	57	1.7
Fox 3 MOA/ATCAA[3]	39	61	4.6	40	62	4.6
Paxon ATCAA[2]	37	61	4.6	37	62	4.6
Viper A/B MOA/ATCAA[1]	47	N/A	N/A	48	N/A	N/A
Yukon 1 MOA/ATCAA[3]	50	53	0.7	51	54	0.7
Yukon 2 MOA/ATCAA[4]	49	52	0.6	50	53	0.6
Yukon 3 High/3A Low MOA/ATCAA[5]	56	52	0.6	57	53	0.6
Yukon 3B MOA/ATCAA[5]	44	51	0.5	45	52	0.5
Yukon 4 MOA/ATCAA[5]	47	52	0.6	48	53	0.6
Yukon 5 MOA/ATCAA[5]	<35	51	0.5	<35	52	0.5
R-2202[5]	55	53	0.8	56	54	0.8
R-2205[1]	60	N/A	N/A	61	N/A	N/A
R-2211[1]	66	N/A	N/A	67	N/A	N/A

[1] Supersonic not permitted.
[2] Supersonic permitted above 30,000 feet MSL.
[3] Supersonic permitted above 12,000 feet MSL or 5,000 feet AGL (whichever is higher); no supersonic west of 146° 00' 08" west or north of R-2205.
[4] Supersonic permitted above 12,000 feet MSL or 5,000 feet AGL (whichever is higher); no supersonic west of 146° 00' 08" west.
[5] Supersonic permitted above 12,000 feet MSL or 5,000 feet AGL (whichever is higher).

Key: ATCAA= Air Traffic Control Assigned Airspace; CDNL=C-weighted day-night average level; L_{dnmr}= onset-rate adjusted day-night average sound level; MOA=Military Operations Area; N/A=not applicable.

Proposed late-night firing during the 2-week RED FLAG exercise could result in an increased likelihood of annoyance for persons living near the range boundary. However, the targets to which munitions are delivered as part of RED FLAG operations are located several miles from the nearest boundary of DoD-owned land and munitions noise attenuates to below 130 dB PK 15(met) prior to reaching the range boundary (see Figure 3-27 and Figure 3-31). As mentioned previously, the number and types of munitions would not change as result of NJT, and peak munitions noise levels would not change. Late-night munitions delivery would occur on ranges at which late-night munitions training already takes place. Noise impacts would not exceed significance thresholds established for this action.

3.5.2.3.2 Alternative B

Under Alternative B, JPARC MOA operating hours would be extended from 10:00 p.m. to midnight local for all months of the year, and would allow both MFE and routine training operations. No single night should have more bombing events after 10:00 p.m. than was calculated for Alternative A; however, since bombs could be dropped during routine training after 10:00 p.m., there may be more nights per month with some bombing events, primarily during the months of October and March. As mentioned previously, the number and types ofmunitions would not change as result of NJT, and peak munitions noise levels would not change. Late-night munitions delivery would occur on ranges at which late-night

munitions training already takes place. Noise impacts would not exceed significance thresholds established for this action.

3.5.2.3.3 No Action Alternative

Under the No Action Alternative, operations in the MOAs would continue to cease prior to 10:00 p.m. No additional noise impacts would occur under the No Action Alternative.

3.5.2.4 Mitigations

Users of JPARC airspace would continue to follow all existing mitigation procedures. No new mitigations are identified for this resource.

3.5.3 Safety

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.3.

3.5.3.1 Affected Environment

FLIGHT SAFETY

Those flight safety conditions and risks discussed in Sections 3.1.1 and 3.1.3 provide a general basis for all daytime and nighttime flight operations in the existing JPARC airspace. The number of operations currently conducted during hours of night flying is considerably fewer (by one-fourth) than those conducted during daytime hours which may, to a limited extent, reduce the level of flight safety risks. The risks of using airspace and operations associated with nighttime training (after dark) in the region is part of current conditions and airspace management. Procedures and processes are in place for preventing potential aircraft near misses and mishaps, including midair collisions, and avoiding areas where BASH risks are of most concern.

GROUND SAFETY

This alternative does not include activities that would pose ground safety hazards, such as air-to-ground or live-fire ordnance training. Consequently, impacts on ground safety are not expected.

3.5.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The impact assessment methodology discussed in Section 3.1.3.2 was used, as appropriate, to address the potential impacts of this proposal.

3.5.3.3 Environmental Consequences

3.5.3.3.1 Alternative A

FLIGHT SAFETY

This proposal would present very little added risk to flight safety while conducting the later night training operations. The reduced level of military operations and civil air traffic during those later hours would virtually eliminate the potential for interactions between military and civil aircraft, thus minimizing the risk of any near-misses or midair collisions. The potential for any bird/wildlife aircraft strikes during those later evening hours would always be a possibility, therefore those measures currently in place for

monitoring, reporting, and avoiding these hazards would continue to be followed for these night operations.

3.5.3.3.2 Alternative B

FLIGHT SAFETY

This proposal would also present very little added risk to flight safety for the reasons discussed for Alternative A.

3.5.3.3.3 No Action Alternative

The No Action Alternative would maintain nighttime flight operations within the timeframes and flight safety conditions that currently exist with those operations.

3.5.3.4 Mitigations

The preceding analysis does not identify potential for significant impacts for safety regarding night training. However, if JPARC proposals for the Fox 3 and new Paxon MOA are implemented, the following mitigation would apply and provide benefits for flight safety.

- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.5.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.

3.5.4.1 Affected Environment

The proposed NJT action would shift the times at which nighttime sorties are conducted and would not result in an increase in flight activity or a change in the location of these sorties. Flights will be spaced out over a longer period during the night, resulting in additional dispersion of the aircraft emissions over the region. No air quality impact analysis was conducted for this proposed action, as there would not be an overall change in the aircraft training emissions or to air quality in the affected region from current baseline conditions due to this action.

3.5.4.2 Impact Assessment Methodology

This section is not applicable, per Section 3.5.4.1.

3.5.4.3 Environmental Consequences

For each of the proposed action alternatives, the proposed NJT action would shift the times at which nighttime sorties are conducted and would not result in an increase in flight activities or a change in the location of these sorties. Since flights would be spaced out over a longer period of time during the night, it will result in additional dispersion of the aircraft emissions over the region and lower localized impacts.

An air quality analysis of the impacts from Alternatives A and B was not conducted for this proposed action, as there would not be an overall change in the aircraft training emissions or to air quality in the affected region from current baseline conditions due to this action.

3.5.4.3.1 Alternative A

See Section 3.5.4.3.

3.5.4.3.2 Alternative B

See Section 3.5.4.3.

3.5.4.3.3 No Action Alternative

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations. Therefore, the No Action Alternative would not result in any additional air quality impacts.

3.5.4.4 Mitigations

Since there are no air quality impacts from this action, no actions to reduce air quality impacts are being proposed.

3.5.5 Physical Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.5. The proposed action includes changes in air operations to nighttime hours in regional SUA and expending some portion of munitions during RED FLAG–Alaska exercises at Oklahoma and Stuart Creek Impact Areas at night (rather than during the daytime). Neither of these actions involves any change to conditions affecting physical resources; therefore, no further analysis is provided.

3.5.6 Water Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.6. The proposed action includes changes in air operations to nighttime hours in regional SUA, and expending some portion of munitions during RED FLAG–Alaska exercises at Oklahoma and Stuart Creek Impact Areas at night (rather than during the daytime). Neither of these actions involves any change to conditions affecting physical resources; therefore, no further analysis is provided.

3.5.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.7.

3.5.7.1 Affected Environment

The proposed NJT action would shift the times at which nighttime sorties are conducted and would not result in an increase in flight activity or a change in the location of these sorties. Although there would be no overall change in aircraft chaff and flares use, live and inert night ordnance use would occur during a two week period each year as a part of this action.

CONTAMINATED SITES

Contaminated sites are not applicable to this proposed action, as no ground activities would occur.

MUNITIONS-RELATED RESIDUE

The expenditure of live ammunition or detonations has the potential to release hazardous chemicals or other elements, such as heavy metals, into the environment. The proposed training and exercises would use existing impact areas within R-2202 in YTA and R-2205 in DTA-West. Munitions related baseline information is provided in Sections 3.4.7.1 and 3.2.7.1 for those areas, respectively.

3.5.7.2 Impact Assessment Methodology

Impact methodology would be the same as that described for Sections 3.1.7.2 and 3.2.7.2.

3.5.7.3 Environmental Consequences

3.5.7.3.1 Alternative A

GENERAL HAZARDOUS MATERIALS AND WASTE

General hazardous materials and waste are not applicable to this proposed action, as no ground activities would occur.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

There is the potential for munitions related hazardous materials impacts in association with this alternative. Munitions fragments and residues would be generated as a result of live-fire action. However, training would use existing impact areas for the discharge of ordnance from aircraft within the proposed restricted area, such that no adverse munitions-related chemical release impacts on the environment would occur. These impact areas would be managed in accordance with current Federal, State of Alaska, Air Force, and Army regulations for the management, safe handling, and disposal of hazardous waste and materials associated with live and inert ordnance and UXO, as the result of training exercises within R-2202 in YTA and R-2205 in DTA-West.

3.5.7.3.2 Alternative B

Impacts would be the same as those described for Alternative A.

3.5.7.3.3 No Action Alternative

JPARC MOA hours would not be extended past 10:00 p.m.; therefore, impacts would be similar to, but less, than those described for Alternative A.

3.5.7.4 Mitigations

No mitigations are identified for this resource.

3.5.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.5.8.1 Affected Environment

No ground effects are associated with the NJT proposed action; therefore, as no impacts on vegetation would occur, vegetation analyses will not be included in this section. Operations would occur in currently used JPARC MOAs between the Yukon 5 MOA on the north and Fox 3 MOA on the south. Primary biological issues may include new noise disturbances from training aircraft after dark affecting resident and migratory wildlife species.

Important known wildlife habitats that are present under the proposed NJT MOAs are presented in Table 3-57.

Approximately 2 million waterfowl migrate through TFTA and the Chena floodplain north of YTA each spring, followed by 5 million birds in the fall, peaking in May and September (USARAK 2004-1). An estimated 12,000 raptors also migrate through the area in spring (April–May) and fall (August–early October). More details on wildlife and/or wildlife habitat present in the Fox MOAs are available in Section 3.1.8; wildlife in TFTA, in Sections 3.8.8 and 3.7.8; and wildlife in YTA, in Sections 3.8.8 and 3.9.8.

Table 3-57. Wildlife Habitats Associated with the Night Joint Training Project

Project Area	Moose Winter Habitat	Moose Rutting Habitat	Moose Calving Habitat	Caribou Winter Habitat	Caribou Calving Habitat	Dall Sheep Winter Habitat	Waterfowl General Habitat	General Trumpeter Swan Habitat
	Acres (hectares)							
Yukon (all MOAs)	3,714,015 (1,503,009)	2,283,978 (924,294)	2,296,091 (929,196)	12,634,813 (5,113,128)	4,453,973 (1,802,459)	0	3,526,330 (1,427,055)	0
Eielson MOA	608,295 (246,168)	608,295 (246,168)	14,477 (5,859)	628,631 (254,398)	87,008 (35,211)	0	62,848 (25,434)	0
Birch MOA	42,908 (17,364)	42,908 (17,364)	15,271 (6,180)	154,710 (62,609)	1,283 (519)	0	124,003 (50,183)	0
Buffalo MOA	463,983 (187,768)	133,040 (53,839)	70,518 (28,538)	438,300 (177,374)	16,649 (6,738)	0	430,086 (174,049)	0
Fox MOAs	1,416,917 (573,406)	869,427 (351,845)	790,031 (319,714)	1,749,745 (708,097)	505,721 (204,658)	3,420 (1,384)	966,499 (391,128)	656,651 (265,737)
Viper MOAs	88,816 (35,942)	88,816 (35,942)	88,816 (35,942)	0	0	0	116,191 (47,021)	0
Delta MOAs	738,197 (298,738)	492,023 (199,115)	466,588 (188,821)	734,787 (297,358)	1,283 (519)	0	1,037,002 (419,660)	0

Key: MOA=Military Operations Area.
Source: RDI 2005-1, 2005-2, 2005-3, 2005-4, 2005-5.

3.5.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.5.8.3 Environmental Consequences

Because no infrastructure is needed, no ground effects are associated with the NJT proposed action; therefore, no impacts on vegetation would occur.

Important known wildlife habitats that are present under the proposed NJT MOAs were presented in Table 3-57. Where mapping information was available, those known wildlife habitats that may be sensitive to disturbances from the addition of nighttime low level aircraft noise and overflight have been identified and include caribou and moose calving areas, Dall sheep lambing areas, trumpeter swan and other waterfowl nesting habitat, and all waterfowl migration/stopover areas.

3.5.8.3.1 Alternative A

Under Alternative A, the JPARC flight operating hours would be extended to allow MFE tactical operations until midnight and landing by 1:00 a.m., local time, during March and October. Alternative A would allow extended nighttime operating hours only during March and October, with the number of evening sorties remaining the same and occurring during MFEs as is the current night flight training program. This would allow night training during March and October for a minimum of 1.5 hours to a maximum of 2.5 hours for each exercise. Such exercise sessions would occur up to 10 nights per year with the number of aircraft sorties participating in each session (50 or more) being somewhat less than each daytime session (50 to 70). Both existing and proposed future SUA would be used to accommodate night training while continuing to ensure noise-sensitive areas are avoided during those later-hour operations. Use of live and inert air-to-ground ordnance (bombs and use of 20- or 30-mm cannon) would be confined to Oklahoma Impact Area (DTA) and Stuart Creek Impact Area (YTA), which are existing impact areas where live ordnance is used and where night bombing is currently conducted. The ordnance use exercises would take place between 10:00 p.m. and 7:00 a.m. local time.

Under Alternative A in which the extended flight operations are proposed for March and October, actions would not be expected to coincide with the peak times of waterfowl migration (May and September) but would overlap more than do current operations. The greatest effect on waterfowl may be the increase in aircraft overflight at night roosting areas. Most raptors are daytime flyers and their peak migration periods (April–May and August to early October) would overlap slightly with extended flight operations, which would occur when the raptors would be roosting. However, with current avoidance restrictions in place and the addition of mitigation measures, disturbance incidents are expected to be minimal (see below and Sections 3.5.3.1 and 3.5.3.3.1, Safety).

In addition, bird-aircraft strike incidences have the potential to increase. Given the potential for loss or injury to aircrews and aircraft as a result of a bird-aircraft strike, extensive efforts are made by the Military to avoid bird-aircraft strikes (as described below and in Safety). Regarding wildlife impacts, the potential effects of unavoidable bird-aircraft collisions on populations of waterfowl or other wildlife would be negligible and would not be measurable.

Other potential wildlife concerns focus on terrestrial big game. Bears would not be emerging from hibernation until April and would begin hibernation by October; therefore, they should not be exposed to additional night flying and the possibility of being startled from flight activities. Animal responses to low-level flights have been characterized in recent studies (reviewed in Section 3.1.8.3) as minor. Studies have included ungulates such as caribou and Dall sheep during calving/lambing seasons and in winter (see discussion of potential overflight effects on wildlife under Fox 3/Paxon MOAs, Section 3.1.8.3).

Caribou and moose are in rut by October. It is likely that the extension of flight hours would not be noticeable to animals already accustomed to military training in the area with some level of military overflight after dark. In the interior of Alaska, caribou calves and Dall sheep lambs are typically born in mid to late May, well after the proposed extended flight hours for March under Alternative A. Therefore, Alternative A does not propose new threats to sensitive big game activities and would be expected to have little to no adverse effects to these species.

Overall impacts to biological resources from Alternative A are expected to be adverse but not significant, and would be further reduced given implementation of mitigation and impact avoidance measures summarized below.

3.5.8.3.2 Alternative B

Alternative B would extend flight operations, in all months and for all military users, until midnight with landing by 1:00 a.m. local time. Implementation of NJT under Alternative B has the potential for nighttime flying to coincide with the peak times of waterfowl migration. Most waterfowl migrations occur at night, intensifying shortly after sunset, peaking in the middle of the night, and declining thereafter (Humburg 2011). Therefore, Alternative B may present a somewhat higher potential for increased bird-aircraft strikes, this adverse impact would require more intensive planning among the BASH Team, pilots, and route planners to maintain safety. A review of research and experiments were inconclusive as to whether the routes of nocturnally migrating birds were affected when exposed to loud noises (Larkin et al. 1996). The review pointed out that loud, repetitive, acoustic stimuli used to scare birds from farms, orchards and runways, usually tend to rapidly lose their effect as birds habituate to them. In this way, if the night training follows a predictable pattern, it may have diminishing adverse effects to birds flying or roosting in the area of takeoffs and landings where the loudest noises would occur. The requirement to reduce adverse effects to roosting migratory and resident birds present under project area MOAs will be accomplished by continuing seasonal overflight restrictions in place for known large rivers, migration stopover habitats, and known raptor nests.

Many big game mammals are more active at dawn, dusk and at night and aircraft-ungulate strikes have been noted at many airports. Wright et al. (1998) found that the ungulate strike rates (number/hour) across 44 states were four to nine times greater at dusk than at night or dawn. Air Force safety protocols take this into account. Aircraft-wildlife strikes are a safety concern for the military but would not have a measurable effect on any wildlife populations. Published studies of effects of noise and other disturbance have largely concentrated on diurnal rather than nocturnal wildlife when animals can be more easily observed visually (Larkin et al. 1996). However, much military training activity takes place at night, most mammals are nocturnally active, and animals may rely more on or attend more to auditory cues at night than in daytime. The overflight restrictions in place over known sensitive areas, including large ungulate parturition areas, are expected to continue to provide the protection from potential disturbance required to reduce adverse effects to wildlife present under project area MOAs.

Overall impacts to biological resources from Alternative B are expected to be adverse but not significant, and would be further reduced given implementation of mitigation and impact avoidance measures summarized below.

3.5.8.3.3 No Action Alternative

Under the No Action Alternative, JPARC MOA hours would not be extended past 10:00 p.m.; therefore, wildlife resources would be expected to remain as under existing baseline conditions.

3.5.8.4 Mitigations

The preceding analysis has identified possible adverse but not significant impacts to biological resources. The following proposed mitigation would reduce impacts to birds along wild and scenic river corridors.

- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.
- **National Wild and Scenic Rivers Protection.** For the period of May 15 to September 30, expand the Gulkana (west, middle, and north forks) and Delta National Wild and Scenic Rivers' (and others, as designated) Flight Avoidance Areas to include portions within new MOA boundaries using a 5-NM buffer either side of the river centerline with 5,000 feet MSL minimum altitude. The river corridors will include their headwater lakes areas (Tangle Lakes and Dickey Lake).

3.5.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.5.9.1 Affected Environment

Archaeological and historic architectural resources under airspace, which are unlikely to be affected by aircraft overflights (see Section 3.1.9.2), were characterized using the records of the National Register and National Historic Landmarks. Archaeological sites under training airspace include Native burial grounds, village and settlement sites, and historic mining sites (Air Force 2006-1). Architectural resources under the proposed MOAs include structures relating to gold mining, trapping, or the railroad (Air Force 2006-1). In addition to National Register–listed sites, there are likely to be additional cultural resources that are either eligible or potentially eligible for National Register listing under airspace. Locations of Federally recognized Alaska Native tribes under or near the airspace discussed below are illustrated in Figure 3-10.

GALENA MOA

There are no National Register–listed cultural sites under the Galena MOA (NRIS 2011). However, connecting trails of the Iditarod National Historic Trail are under the MOA. The Iditarod Trail is a network of more than 2,300 trails that takes its name from an Athabascan Indian village. Trails used by the Ingalik and Tanaina Indians and Russian fur traders were improved by miners in the early 1900s. The trails were heavily used by miners until 1924 when airplanes came into use (BLM 2012). In 1925, dog teams and drivers gained national attention when they delivered diphtheria serum from Nenana to Nome in 127 hours along the trail. The annual Iditarod race retraces the route.

STONY A/B MOA

The Stony A and B MOAs lie above the Kolicachuk, Upper Kuskokwim, and Deg Hit'An language regions (ANKN 2011). There is one National Register–listed resource under the Stony A and B MOAs (see Appendix H, *Cultural Resources*). The Kolmakov Redoubt Site is in the Sleetmute area under Stony B (NRIS 2011).

Federally recognized Alaska Native tribes under or near the airspace include the Native Village of Crooked Creek, the Native Village of Georgetown, Lime Village, the Village of Red Devil, the Village of Sleetmute, and the Village of Stony River (BIA 2010).

Crooked Creek was reported by a Russian explorer in 1844 as "Kvikchapak" in Yup'ik and "Khottylno" in Ingalik (ADCCED 2011). At that time the site was used as a summer fish camp for the Kwigiumpainukamuit villagers. A permanent settlement was established there in 1909 as a way-station for the Flat and Iditarod gold camps. A trading post was founded in the upper village (upriver from the creek mouth) in 1914, and a post office and school were built in the late 1920s. The lower village was settled by Eskimo and Ingalik people. Native lifestyle is based on subsistence activities involving the harvest of salmon, moose, caribou, and waterfowl (ADCCED 2011). Both parts of the village remain today.

Georgetown is on the north bank of the upper Kuskokwim River in the Kilbuck-Kuskokwim Mountains. Europeans first entered the middle Kuskokwim area in 1844 when the Russian explorer Zagoskin sailed upriver to McGrath. At that time, Georgetown was a summer fish camp for residents of Kwigiumpainukamuit and was known as Keledzhichagat (ADCCED 2011). Gold was found along the George River in 1909, and the mining settlement of Georgetown was named for three traders: George Hoffman, George Fredericks, and George Morgan.

The town grew to about 200 cabins and several stores. By 1953, only one large structure from the mining era remained: a two-story cabin that belonged to George Fredericks. The present settlement developed in the 1950s. A state school was established in 1965 and remained until 1970. Georgetown is presently used as a seasonal fishing camp. It has no year-round residents (ADCCED 2011).

Lime Village is on the south bank of the Stony River south of McGrath. It is a Dena'ina Athabascan Alaska Native settlement that acquired Europeans settlers by in 1907. Residents of nearby Lake Clark used the location as a summer fishing camp (ADCCED 2011). The 1939 U.S. census called the settlement Hungry Village. Saints Constantine and Helen, a Russian Orthodox chapel, was built there in 1960, and a state school was constructed in 1974 (ADCCED 2011). Presently, subsistence is based on hunting and gathering, with some seasonal work in firefighting and trapping.

Red Devil is located on both banks of the Kuskokwim River at the mouth of Red Devil Creek. The village was named after the Red Devil mercury mine established in 1921. The mine continued to operate until 1971 (ADCCED 2011). The village is a mix of Eskimo, Athabascan, and nonnative inhabitants who supplement their income with subsistence activities.

Sleetmute is on the east bank of the Kuskokwim River. It is an Ingalik Alaska Native village that has also been known as Sikkiut, Steelmute, and Steitmute (ADCCED 2011). A Russian trading post was built at the nearby Holitna River junction 1.5 miles away, but was moved farther downriver in 1841. Another trading post was started at Sleetmute in 1906. A school and post office opened in the 1920s, and a Russian Orthodox church was built in 1931 (ADCCED 2011).

Stony River, also known as Moose Village and Moose Creek, is on the north bank of the Kuskokwim River near its junction with the Stony River. It began as a trading post and riverboat landing supplying mining operations to the north (ADCCED 2011). The first trading post and post office were opened during the 1930s, and area natives established residency there in the 1960s. The village is a mix of Athabascan and Eskimo people who depend heavily on a subsistence economy.

SUSITNA MOA

No National Register–listed cultural resources are under this MOA (NRIS 2011). No Federally recognized Alaska Native tribes are under Susitna airspace (BIA 2010).

NAKNEK 1/2 MOAS

There are no National Register–listed resources under the Naknek MOAs (NRIS 2011). One Federally recognized Alaska Native tribe, Koliganek, lies under the edge of Naknek 1 airspace (BIA 2010).

Koliganek is on the Nushagak River north of Dillingham. First contact with Europeans occurred in the early 19th century when Russian fur traders entered the area. Before being moved to its present location, the village was on Tikchik Lake near the headwaters of the Nuyakuk River (Koliganek 2005). After a flu epidemic, residents moved to the confluence of the Nuyakuk and Nushagak Rivers (Old Koliganek). A Russian Orthodox church, Saint Yako, was established in the village in 1870. The residents moved to another site in 1938 (Middle Koliganek) because of a decreasing supply of firewood near the village. The present site was established in 1964. Residents depend on the Bristol Bay commercial salmon fishery and fur trapping. The Koliganek Traditional Council is the governing body for the Native residents of Koliganek (Koliganek 2005).

FOX MOAS

Although there are no Federally recognized Alaska Native tribes within this area, there are scattered remote residences and BLM-managed recreation areas. The area is frequently used for subsistence and recreational hunting (BLM 2006). Additionally, the National Register–listed Tangle Lakes Archaeological district is located on lands underlying the Fox MOAs. The district contains more than 400 recorded archaeological sites spanning 10,000 years of human presence in the region (BLM 2006) (see Appendix H, *Cultural Resources*).

BIRCH, BUFFALO, EIELSON, AND VIPER MOAS

No Federally recognized Alaska Native tribes are under these MOAs. Rapids Roadhouse, also known as Black Rapids Roadhouse, in the Delta vicinity, underlies Buffalo MOA and is the only National Register–listed cultural resource under these MOAs (NRIS 2011) (see Appendix H, *Cultural Resources*).

DELTA MOA

There are three National Register–listed properties under the Delta MOA, all of which are architectural resources. They are the Big Delta Historic District (also known as Big Delta State Historical Park), Delta Junction; Rika's Landing Roadhouse (also known as Rika's Landing Site), Big Delta; and Sullivan Roadhouse, Delta Junction (NRIS 2011) (see Appendix H, *Cultural Resources*).

YUKON MOAS

The Yukon MOAs overlie a large area to the north and east of Fairbanks. Several Alaska Native tribes occur in this area, as well as 11 National Register–listed resources (NRIS 2011) (see Appendix H, *Cultural Resources*).

The small village of Healy Lake, home to the Federally recognized Alaska Native tribe of Healy Lake Village, is under the Yukon 1 MOA, 29 miles east of Delta Junction. Predominant activity in the area is the recreational use of Healy Lake during summer months.

The village of Circle, home to the Federally recognized Alaska Native tribe of Circle Native Community which underlies the Yukon 2 MOA, is on the south bank of the Yukon River at the edge of the Yukon Flats National Wildlife Refuge about 160 miles northeast of Fairbanks. The Federally recognized Circle Native Community is predominantly Athabascan. Circle, or Circle City, was established in 1893 as a supply point for goods shipped up the Yukon River and then to the gold mining camps. By 1896, Circle was the largest mining town on the Yukon, with a population of 700. Residents, some of whom are part-time, now number approximately 100. The Coal Creek Historic Mining District is among the 11 properties listed on the National Register.

Native Village of Eagle, a Federally recognized Alaska Native tribe, underlies the Yukon 3 MOA, and is 6 miles west of the Alaska-Canada border. It is located on the Taylor Highway on the left bank of the Yukon River at the mouth of Mission Creek. The area has been the historical home to Han Kutchin Indians, and was once known by non–Alaska Natives as "Johnny's," after a leader named John. The

adjacent community of Eagle saw its beginnings around 1874 as a log house trading station. Named "Belle Isle," the station continued to provide supplies and trade goods for prospectors who worked the upper Yukon and its tributaries until Eagle City was founded at the site in 1897. Fort Egbert was established adjacent to Eagle in 1899; a major accomplishment was construction of part of the Washington-Alaska Military Cable and Telegraph System in 1903. Eagle was incorporated in 1901, becoming the first incorporated city in the Interior. Several National Register properties occur in or near Eagle, including the Eagle Historic District, Woodchopper Roadhouse, Frank Slaven Roadhouse, Steele Creek Roadhouse, George McGregor Cabin, and Ed Beiderman Fish Camp (NRIS 2010). Eagle is listed in the National Register as the location of the Chicken Historic District, but it is 66 miles south of Eagle on the Taylor Highway.

The Chalkyitsik Village, a Federally recognized Alaska Native tribe, underlies the Yukon 5 MOA. Archaeological excavations indicate this region may have been first used as early as 12,000 years ago. This village on the Black River has traditionally been an important seasonal fishing site for the Gwich'in. Village elders remember a highly nomadic way of life: the people lived at the headwaters of the Black River from autumn into spring, and fished downriver in the summer. Contact with early explorers was limited, and the Black River Gwich'in receive scant mention in early records. The location of the village at its present site is due in part to low water in the Black River in the 1930s. A boat carrying materials intended for a school to be built in Salmon Village had to be unloaded at the Chalkyitsik seasonal fishing camp that then consisted of four cabins. Rather than reload the construction materials, the school was built at Chalkyitsik, and the Black River people began to settle around the school.

Although no traditional cultural resources have been specifically identified underneath the airspace, this does not mean that none are present. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed NJT ROI (see Section 1.6.5).

3.5.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed NJT action is the same as the methodology applied to the analysis of the Fox 3 MOA Expansion/Paxon MOA action (Section 3.1.9.2).

3.5.9.3 Environmental Consequences

3.5.9.3.1 Alternative A

Alternative A proposes to extend the JPARC flight operating hours to allow tactical operations until midnight and landing by 1:00 a.m., local time, during March and October. The number of nighttime sorties is expected to remain the same and occur during MFEs, as is the current night flight training program, but would be divided between the months of March and October. The proposal also includes night use of ordnance during one RED FLAG exercise in a given year at JPARC.

No impacts are anticipated to cultural resources from the proposed change in airspace operating hours and its training use. As described in Section 3.5.2, time-averaged noise levels greater than 62 CDNL would remain well within range boundaries, and would occur at later times. In compliance with Section 106 of the NHPA, ALCOM, on behalf of the Air Force, has completed all compliance requirements for consultation with the Alaska SHPO and determined that no historic properties will be affected by implementation of the proposed action. All compliance requirements for consultation with potentially affected Alaska Native tribes, ANCSA corporations, and Tribal government entities regarding ALCOM's

finding of no historic properties affected has been completed. In accordance with AFI 32-7065 (Air Force 2004-3), all NHPA Section 106 consultation has been completed.

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed change in airspace operating hours. In compliance with the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM, on behalf of the Air Force, has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed change in airspace operating hours.

3.5.9.3.2 Alternative B

Alternative B proposes to extend the JPARC flight operating hours to allow tactical operations until midnight and landing by 1:00 a.m., local time, during all months of the year. As with Alternative A, the number of nighttime sorties would remain the same and occur during MFEs, as is the current night flight training program.

Under Alternative B, impacts would be similar to Alternative A, with no significant impacts anticipated to cultural resources from the proposed change in airspace operating hours and its training use.

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed change in airspace operating hours. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed change in airspace operating hours(see Section 1.6.5).

3.5.9.3.3 No Action Alternative

Under the No Action Alternative there would be no change in operating hours in JPARC. Existing use of the airspace would continue under this alternative and resources would continue to be managed in compliance with Federal law and DoD policy and regulations.

3.5.9.4 Mitigations

No mitigations are identified for this resource for this proposal due to the lack of surface activity.

3.5.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.5.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

Land Status

The combined area covered by MOAs used for night training under this proposal is almost 30 million acres (excluding restricted airspace). The State of Alaska is the predominant owner at 52 percent, followed by the Federal Government at 32 percent, of which about 4 percent is military land. About 16 percent is privately held, almost entirely by Native corporations. Figure B-17 shows the general land ownership underlying this extensive area. A breakdown of land ownership and management in the proposed area for NJT is provided as Table 3-58.

Table 3-58. Land Status in the Night Joint Training Proposal Area

Landowner/Manager	Action Alternative (acres)
Federal	
Department of Defense	980,090
Department of Interior	7,711,750
State	
State-patented	12,052,000
State-selected	1,886,500
Private Land	
Private land	44,220
Native corporation (patented and selected)	4,259,040
Total	**26,933,600**

Source: ADNR 2011-2.

Land Management and Use

The underlying land is managed under various resource management and area plans of the appropriate Federal, State, and local jurisdictions. Much of the land underlying the MOAs is pristine and isolated. It supports a range of productive uses, isolated communities and settlements, and dispersed recreation and subsistence activities. Uses and activities largely reflect specific resources (e.g., energy resources, minerals, exceptional natural landscapes and settings). In particular, Federally and state-designated special use areas, communities and noise sensitive locations underlying the proposal airspace are listed in Table 3-59, and the locations are shown in Figures B-16 and B-17 in Appendix B, *Definition of the Resources and Regulatory Settings*. These are each described in Appendix I, *Land Use, Public Access, and Recreation*.

Due to the sensitive nature of some of these areas, some minimum altitude and horizontal flight restrictions are in place to avoid direct or low overflights by military aircraft. Table D–6 in Appendix D, *Airspace Management*, lists all the noise-sensitive flight avoidance parameters for each airspace affected by EIS proposals.

The affected area under the MOAs has forests and mineral interests and a full spectrum of energy and productive uses. For the most part, aircraft training has no effect on surface activities. The underlying lands have been used for these purposes successfully despite ongoing overflights. Of note are the areas with outstanding and superb wind energy potential, including the following MOAs: Birch, Buffalo, Delta 2 and 4, Eielson, Fox 1/2/3, and Yukon 1/2/3/3ALow/3B/4.

Most of the land underlying MOAs is remote and extremely sparsely populated. A minimum overflight altitude of 500 feet AFL is required for all inhabited structures. For several locations this standoff altitude (and often a lateral distance as well) has been increased to minimize noise effects from overflights (see Appendix D, Table D–6).

The proposal includes night bombing for one MFE, annually using Oklahoma Impact Area on DTA-West. Land uses on DTA-West are described in detail in Section 3.2.10.1. Land uses on YTA are described in detail in Section 3.4.10.1.

Public Access

Access to surface infrastructure, including roads, trails, airfields and airports, and navigable and public waterways would not change under this proposal.

Table 3-59. Noise Sensitive Locations – Night Joint Training Proposal Area

Airspace	Sensitive Location	Communities/Inhabited Areas
Birch MOA	Tanana Valley State Forest Birch Lake SRC	Clear Creek cabins Shaw Creek camp
Buffalo MOA	Delta Junction Bison Range Delta National Wild and Scenic River Donnelly Creek State Recreation Site Tanana Valley State Forest	Healy Lake Lake George area
Delta MOA	Birch Lake SRC Donnelly Creek SRC Harding Lake SRA Quartz Lake SRC Salcha River SRC Tanana Valley State Forest	Hardin Lake
Eielson MOA	Gold King airstrip	Homes in vicinity of Gold King airstrip
Fox MOAs	Caribou calving areas Gulkana National Wild River Nelchina Public Use Area Newman Creek and Sheep Lambing area	Wood River Lodge
Viper MOA	Tanana Valley State Forest	Eielson AFB Moose Creek Outskirts of North Pole Pleasant valley subdivisions
Yukon MOA	Birch Lake SRC Chena River SRA Chena River Springs Resort Cirque Lake Dall sheep areas Forty Mile Wild and Scenic River Kandik River Peregrine falcon areas Steese Highway Salcha River Recreation Areas Tanana Valley State Forest Yukon-Charley National Wild and Scenic River	Central Circle City Chicken Chena Hot Springs and resort Eagle Goodpastor River valley Pleasant Valley subdivisions Pogo Strip area (mine site)

[1] Table does not include R-2211, R-2205, and R-2202 since these overlie military land.
Key: AFB=Air Force Base; MOA=Military Operations Area; SRA=State Recreation Area; SRC=State Recreation Center.
Source: Air Force 2008-2.

Recreation

Special areas for recreation under the widespread MOAs used for night training are listed in Table 3-59. Descriptions of these areas are provided in Appendix I, *Land Use, Public Access, and Recreation*. Recreation on DTA-West is described in Section 3.2.10.1. Recreation on YTA is described in Section 3.4.10.1.

3.5.10.2 Impact Assessment Methodology

The general methodology for evaluating land use, public access, and recreation is described in Section 3.1.10.2. The methodology for evaluating impacts from munitions expenditures is provided in Sections 3.2.2.2 and 3.2.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The following are the primary impacts of this proposal on land use, including public access and recreation:

- Effects of military overflights on underlying uses and activities (primarily from aircraft noise), as described in Section 3.1.10.2
- Effects of weapons and munitions use on land uses, private and public access, and recreation, as described in Section 3.2.10.2

Land Status, Management, and Use. The assessment of noise impacts on land use focuses on uses, primarily residential, that are sensitive to nighttime noise that may interfere with the sleep, rest, and relaxation of local inhabitants. Also considered are areas highly valued for their pristine qualities where man-made intrusions are absent or negligible.

Public Access. Public access is not affected by this proposal.

Recreation. This assessment considers whether recreational sites used at night, such as campgrounds and remote areas valued for extreme outdoor challenges, are affected by increased noise levels resulting from this proposal.

3.5.10.3 Environmental Consequences

3.5.10.3.1 Alternative A

Land Use, Management and Use. As described in Section 3.5.2.3.1, average noise levels in affected MOAs would increase by approximately 1 dB. This change would result in imperceptible change in noise levels experienced on the ground currently, but noise events would occur later in the night (after 10:00 p.m.) during the months of March and October. These noise events could occasionally be loud enough to awaken or annoy a small percentage of persons. All existing flight avoidance procedures as listed in Table D-6 (Appendix D, *Airspace Management*) would continue. Minor impacts on land use and sensitive locations would result from this action. Noise levels for R-2211, already at 66 dB DNL would increase to 67 dB DNL. Underlying areas have no permanent residences. An increase from 61 dB CDNL (from supersonic noise) in Fox 3 MOA and Paxon ATCAA to 62 dB CDNL represents a potential adverse impact on underlying residential areas but does not trigger the threshold of significant impact (see Section 3.5.2.2). Existing noise avoidance procedures would continue to apply but some number of persons would likely be annoyed by aircraft overflights during 9 nights each year. Advance notifications of these activities generally reduces the level of annoyance on affected persons. Overall, these would not change underlying land uses in this region, but may be incompatible with the natural quiet surrounding remote communities. Existing avoidances would continue, and minimize some of this impact.

Conducting night bombing during one MFE (not in September, December, or January) using Oklahoma and Stuart Creek Impact Areas would slightly increase CDNL levels around these impacts areas (see Section 3.5.2.3.1). Impulsive noise levels can cause annoyance depending on the distance and loudness to the noise source. In this case, there are no inhabited areas near the impact areas. with the closest communities (Big Delta and Delta Junction) located over 20 miles from the impact areas. Some bomb drops may be audible, but the noise would diminish to levels that are not startling or likely to wake a sleeping person. The impact to some dispersed recreational use, such as camping and hunting in surrounding land, would also be minimal. Overnight campers outside the DTA-West boundary may experience loud noise during the 2-week period of the exercise, and this may annoy some campers without prior knowledge of the events. Most local residents understand that military operations occur on DTA-West and public notifications about MFEs allows outdoor users to plan their activities to avoid times when military activities could conflict with their experience. Overall, this proposed activity would have minor impacts on land use and recreation.

Public Access. Under this proposal there would be no change to public access, either on the surface or air. No impact would occur to public access infrastructure. No impacts on any navigable or public waters would occur since no change public access would occur.

Recreation. Minimal change in night noise under restricted airspace over military lands would have no impact on recreation use. Occasional overflights at night over extensive public lands where dispersed public use occurs may disturb persons who are in remote settings. This would be a negligible change in the quality of these areas and have minimal impact on recreational use. There would be no change to public access either on the surface or air access under this proposal; therefore, no indirect impacts on the use of recreational areas would occur. The effect of night bombing during one exercise each year on recreational use is described above.

Overall, implementation of night joint training under Alternative A would have no adverse effects on land use, access, and recreation.

3.5.10.3.2 Alternative B

Land Use, Management and Use. Impacts on land use under Alternative B are essentially the same as those projected for Alternative A. The projected noise increase (of 1 dB for affected MOAs) and numbers of additional events at night for Alternative A assumed those of an MFE month, whatever month it occurred. As such, the projected impact could occur during other months (not just March or October), but would be similar as described for Alternative A. From July through September, many people participate in outdoor recreation and camping. These times would be more sensitive to night operations in MOAs, although the projected change from current noise levels and night operations (10 percent increase for an MFE) is relatively minor. MFEs and associated proposed night activities would not take place in the months of September, December, and January.

The benefits of expanding the flight avoidance area over the wild and scenic rivers under the expanded Fox 3 and new Paxon MOAs (see Section 3.5.10.4), would reduce potential noise impacts on these valuable resources, and lessen the intrusion for persons using these areas at night, such as campers and hunters. Similarly, avoidance of areas of concentrated activity would reduce the potential for overflight and disturbance on communities at night.

Public Access. Under this proposal there would be no change to public access, either on the surface or air. No impact would occur to public access infrastructure. No impacts on any navigable or public waters would occur since no change public access would occur. If a decision supports the expansion of the Fox 3 and new Paxon MOAs, a mitigation to provide a VFR corridor over the Richardson Highway would provide for air access for communities under that corridor would also apply at night time.

Recreation. Minimal change in night noise under restricted airspace over military lands would have no impact on recreation use. Noise impacts on recreation would be similar to Alternative A. There would be no change to public access either on the surface or air access under this proposal; therefore, no indirect impacts on the use of recreational areas would occur.

Overall, implementation of night joint training under Alternative B would be similar to Alternative A, and would have no adverse effects on land use, access, and recreation.

3.5.10.3.3 No Action Alternative

For the No Action Alternative, there would be no change in night operations in MOAs and selected restricted airspace from current levels, and no change or additional impacts would result.

3.5.10.4 Mitigations

The preceding analysis of effects on land use, public access, and recreation has identified potential minor adverse impacts. The following mitigations are proposed to manage future impacts on land use from night training.

- Land Use – Management
  - **National Wild and Scenic Rivers Protection.** For the period of May 15 to September 30, expand the Gulkana (west, middle, and north forks) and Delta National Wild and Scenic Rivers' (and others, as designated) Flight Avoidance Areas to include portions within new MOA boundaries using a 5-NM buffer either side of the river centerline with 5,000 feet MSL minimum altitude. The river corridors will include their headwater lakes areas (Tangle Lakes and Dickey Lake).
- Land Use – Management, Recreation
  - **Concentrated Activity Areas.** Comply with flight avoidance areas established by the 11th AF Airspace and Range Team and listed in the 11th AF Airspace Handbook. Areas not specified by the ROD may be added, increased, decreased, or removed by the 11th AF Airspace and Range team as situations dictate (e.g., a mine and its air operations cease to exist).
- Land Use – Management, Access, Recreation
  - **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.5.11 Infrastructure and Transportation (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for a general discussion of infrastructure and transportation resources in the region. The proposed action does not involve any new activities that would affect access and use of public roadways or infrastructure. This resource is not further analyzed for this proposal.

3.5.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.5.12.1 Affected Environment

The affected environment would include all or portions of the nine census-defined areas as described in Appendix B, Section B.12, Socioeconomics.

3.5.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics described in Section 3.1.12.2.

3.5.12.3 Environmental Consequences

3.5.12.3.1 Alternative A

Potential impacts on socioeconomic resources and activities could result from changes in noise and resulting impacts on residential areas and evening recreational users. In addition, night training could impact civilian aviation from an increase in the amount of night operations in the Alaska airspace, which in turn could result in economic impacts. However, it is anticipated that a change in flight operations to night hours would not substantially change noise levels under the airspace and would not be expected to adversely impact residential or recreational users (as described in Section 3.5.2.3, Noise, and Section 3.5.10.3, Land Use). In addition, current night time training activities within the affected environment would not be anticipated to present a significant impact on civilian air traffic since trends suggest that fewer IFR flights generally occur during the later evening hours and very little VFR flights occur during hours of darkness (Section 3.5.1.3). Similarly, night bombing at two existing impact areas on DTA-West and YTA does not represent a change in activities (where some night bombing already occurs). Resulting noise levels of concern (62 dB CDNL and below and 130 dB PK 15 [met]) would remain within military boundaries and away from existing population centers. Therefore, the potential for impacts on socioeconomic resources from night training are anticipated to be low.

3.5.12.3.2 Alternative B

Under Alternative B, the number of nighttime sorties is expected to remain the same and occur during MFEs, as is the current situation, but would be divided between the months of March and October and would extend the operating hours until midnight and landing by 1:00 a.m. Under Alternative B, impacts on socioeconomic resources are anticipated to be similar to those described under Alternative A. Therefore, the potential for impacts to socioeconomic resources under Alternative B are anticipated to be low to medium.

3.5.12.3.3 No Action Alternative

Under the No Action Alternative, socioeconomic resources would remain under current existing conditions, as described in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.1.

3.5.12.4 Mitigations

The preceding analysis of effects on this resource has identified potential minor adverse but not significant impacts. The following mitigation are proposed to reduce these impacts.

- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.
- **Concentrated Activity Areas.** Comply with flight avoidance areas established by the 11th AF Airspace and Range Team and listed in the 11th AF Airspace Handbook. Areas not specified by the ROD may be added, increased, decreased, or removed by the 11th AF Airspace and Range team as situations dictate (e.g., a mine and its air operations cease to exist).

3.5.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.5.13.1 Affected Environment

The NJT proposed action includes all of the areas underlying existing Alaska SUA. This ROI is described in Appendix B, Section B.13.3.

3.5.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.5.13.3 Environmental Consequences

3.5.13.3.1 Alternative A

Potential impacts on subsistence resources and activities would include impacts on wildlife species as a result of noise changes in connection with increased night operations, including night bombing, in the Alaska airspace. These impacts are described in detail in Sections 3.5.2 and 3.5.8. Under Alternative A, the change in flight operations, including bombing, to night hours would not substantially change noise levels under the airspace and is not expected to adversely impact wildlife species. Therefore, no significant impacts, as defined by ANILCA, on subsistence resources or activities are expected.

3.5.13.3.2 Alternative B

Potential impacts on subsistence resources and activities would be the same as those described under Alternative A.

3.5.13.3.3 No Action Alternative

No changes in times of flight are proposed under the No Action Alternative. Therefore, subsistence resources would be the same as under current existing conditions, as described in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.1.

3.5.13.4 Mitigations

The preceding analysis does not indicate potential impacts on subsistence resources. If the Air Force implements the proposal to expand the Fox 3 and create the new Paxon MOAs, the following mitigation would benefit access for subsistence users of the regional airspace.

- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.5.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.14.

3.5.14.1 Affected Environment

The affected environment for NJT proposal includes four boroughs and one census area in which some portion of the proposal footprint is located. Table 3-60 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas comprising the proposal area.

Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

Table 3-60. Minority Population, Low-Income Population and Children by Area

Night Joint Training (NJT)					
Area	**Total Populations**	**Percent Low-Income**	**Percent Minority**	**Percent Alaska Native**	**Percent Children**
Fairbanks North Star Borough	97,581	8.0	25.9	7.0	25.6
Valdez-Cordova Census Area	9,636	8.1	27.9	13.6	24.4
Matanuska-Susitna Borough	88,995	10.3	17.2	5.5	28.9
Bethel Census Area	17,013	18.2	89.1	82.9	36.5
Dillingham Census Area	4,847	18.3	82.4	71.6	32.9
Lake and Peninsula Borough	1,631	22.1	77.8	65.1	30.2
Denali Borough	1,826	6.1	11.6	3.6	22.5
Southeast Fairbanks Census Area	7,029	11.6	21.3	11.5	26.3
Yukon-Koyukuk Census Area	5,588	24.1	78.2	71.4	27.8
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Sources: USCB 2010-1, 2010-2.

3.5.14.2 Impact Assessment Methodology

General Methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2.

3.5.14.3 Environmental Consequences

3.5.14.3.1 Alternative A

For NJT Alternative A, night flying and additional night bombing (until 1:00 a.m.) during MFEs would be permitted in the months of March and October only. No significant adverse impacts are identified. Mitigations are identified to reduce the effects of some adverse impacts in the preceding sections for this proposal. Therefore, impacts from this NJT proposal would not create disproportionately high and adverse environmental or health effects on minority or low-income populations or children.

3.5.14.3.2 Alternative B

Under Alternative B, night flying would be similar to Alternative A but would occur during all months of the year during MFEs. Therefore, impacts from NJT Alternative B would not create disproportionately high and adverse environmental or health effects on minority or low-income populations or children.

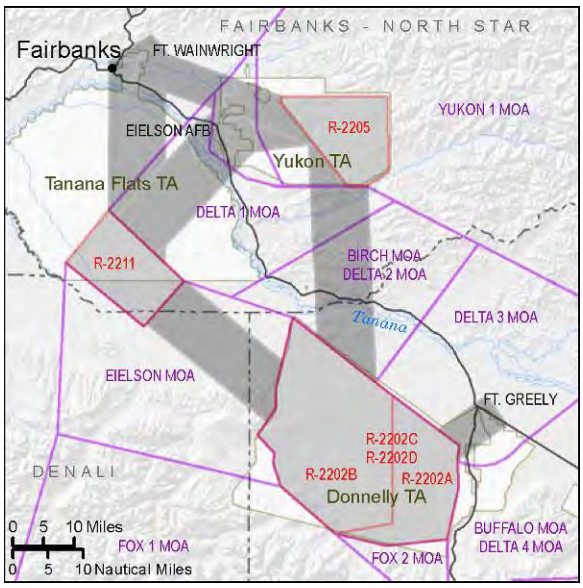
3.5.14.3.3 No Action Alternative

For the No Action Alternative, operations would continue to cease before 10:00 p.m. in JPARC MOAs. There would be no additional disproportionately high and adverse environmental or health effects on minority and low-income populations or children.

3.5.14.4 Mitigations

No mitigations are identified for this resource.

3.6 UNMANNED AERIAL VEHICLE ACCESS (DEFINITIVE)



UAVs conduct reconnaissance, surveillance, and other important activities; UAV access throughout the JPARC ranges and airspace is critical to enhance JPARC training and exercises. It is essential to integrate them with other forms of military activities to ensure seamless operations. The UAV composite footprint overlies an estimated 742,430 acres (1,160 square miles) between Fairbanks and Delta Junction. (Refer to the gray-shaded area in the map to the right.) Almost half this area is military-owned. The proposed transit corridors for UAVs would not involve air operations considered hazardous or munitions use. Based on this, the potential for significant impacts on physical, water, cultural, infrastructure and transportation, and socioeconomics is estimated as low. In response to future mission change and force structure modernization, it is likely that the Army and other Services currently training in Alaska will be required to adapt their training and testing on JPARC lands and ranges. The Army will evaluate any additional modernization and enhancement of JPARC capabilities based on future Service requirements in accordance with NEPA.

Following the impact assessment for each resource, the final mitigations are listed that have been selected by the Army and Air Force to avoid, reduce, or implement management actions for potential significant adverse impacts from implementing the proposed action. These are included to provide the public and other agencies with necessary information on the final mitigations proposed by the Army and Air Force.

3.6.1 Airspace Management and Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.

3.6.1.1 Affected Environment

Figure 3-35 depicts the location of each corridor proposed to link the different UAV launch locations and the restricted areas through which the UAVs would transit during their flight missions. Table 2-15 indicates the proposed dimensions, proposed altitudes, and estimated use of each corridor. Each corridor may be stratified as illustrated in Figure 3-35 to permit activation of only the altitude layer(s) needed to support the individual UAV types shown in Table 2-15. The following sections describe the current uses of those areas where each corridor is being proposed.

Scoping comments expressed concerns over the safe operation of unmanned aircraft (see Section 3.6.3, Flight Safety) and the potential impacts of the restricted area corridors on those areas where aviation uses are currently unrestricted.

MILITARY AIRSPACE USE

MOAs and Restricted Areas

The affected airspace environment for the proposed UAV corridors includes the MOAs, airfields, and Class D airspace within or near the corridors that would link launch points and R-2202, R-2205, and

R-2211. The representative use of these restricted areas and MOAs was addressed previously for the other airspace proposals.

Corridors may be used by UAVs to fly from/to any one of the locations serviced by the corridors. Mission profiles may require UAVs to loiter inside restricted airspace to conduct military operations and then proceed to other areas. The airfield locations from which the different UAV types would be launched include Eielson AFB, Allen AAF, and Ladd AAF. Each airfield is located within Class D airspace with a control tower being responsible for airfield operations. The proposed corridors would border this Class D airspace as shown in Figure 2-11. The Fairbanks TRACON provides approach/departure control services to Eielson AFB and Ladd AAF (Fort Wainwright), while Anchorage ARTCC serves Allen AAF. While Eielson AFB and Ladd AAF are used exclusively for military aircraft, Allen AAF also serves civilian aircraft with prior permission and approval with the vast majority of the airfield operations being military aircraft. This airfield is frequently used for practice assault landings by JBER cargo aircraft. All three airfields have instrument approach capabilities, as needed, for conducting IFR operations.

Other Military Airspace Uses

Other airspace uses in the region, described in Section 3.1.1, would not be affected by the proposed corridors and therefore are not discussed any further in the analyses of these proposals.

CIVIL AVIATION AIRSPACE USE

The overall uses of the airspace flown by IFR and VFR aircraft in the affected environment where the proposed corridors would be located were generally discussed in Sections 3.1.1 through 3.4.1. The following sections note any additional uses within those corridor locations.

Federal Airways

The Federal airways noted in the following table (Table 3-61) transit within or in close proximity to the proposed corridors. The average daily use of each airway by IFR aircraft, as reported by the FAA, is listed in Table 3-3. While some airways do not transit within the proposed corridors, aircraft transitioning between these airways and the Fairbanks Class D airspace may transit through areas where the UAV corridors are proposed.

Table 3-61. Potentially Affected Federal Airways

Proposed Corridors	Federal Airways
Corridor between Eielson AFB and R-2211	V-444
Corridor between Eielson AFB and R-2205	None
Corridor between Allen AAF and R-2202	V-444
Corridor between R-2202 and R-2205	V-444
Corridor between R-2205 and R-2211	V-444
Corridor between Fort Wainwright and R-2211	V-444, B26
Corridor between Fort Wainwright and R-2205	None

Key: AAF=Army Air Field; AFB=Air Force Base.

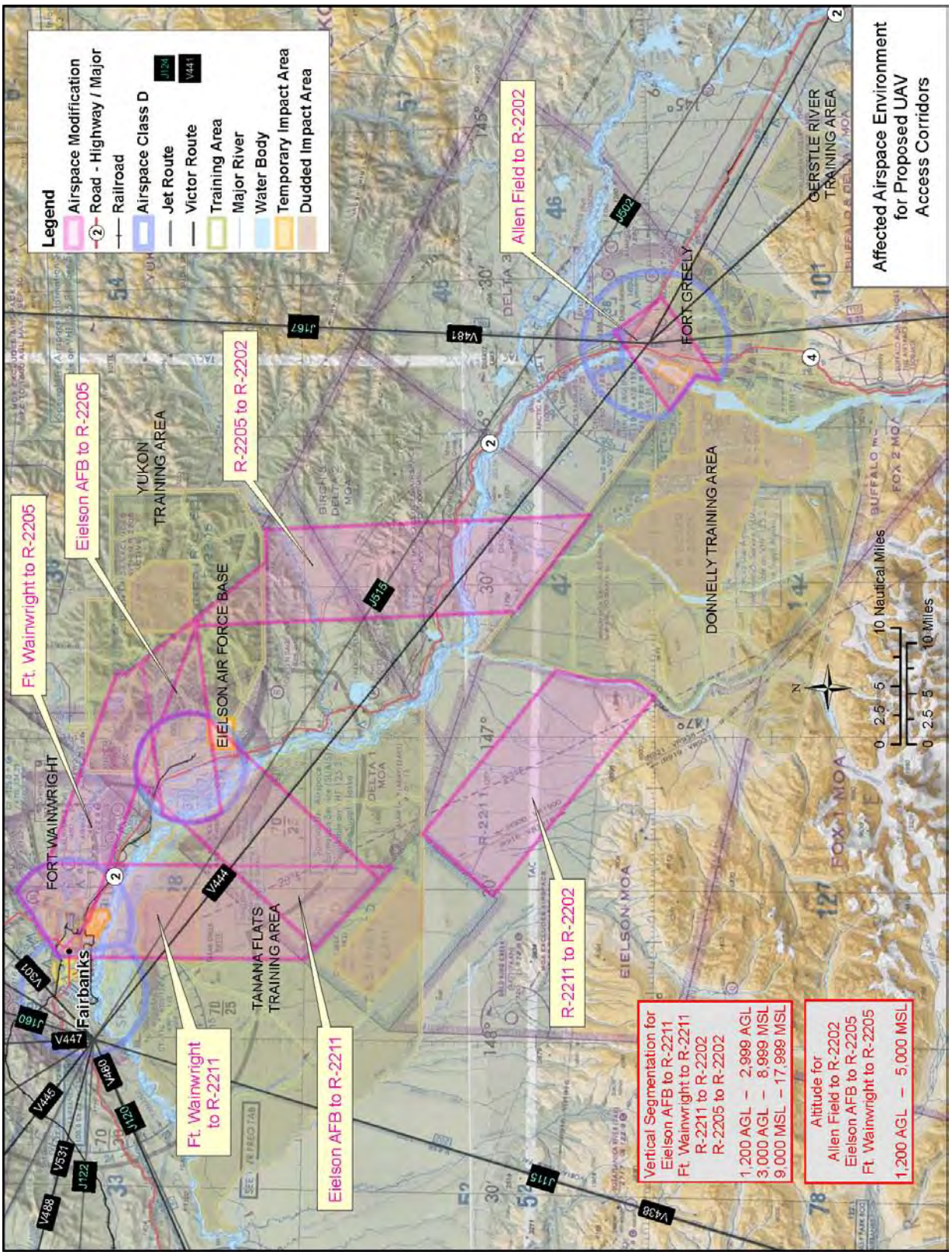


Figure 3-35. Affected Airspace Environment for Proposed Unmanned Aerial Vehicle Access Corridors

Jet and RNAV Routes

The jet routes noted in the following table (Table 3-62) lie above and within close proximity of the proposed corridors. The average daily use of each jet/RNAV route, as reported by the FAA, is shown in Table 3-3. While these routes are established at altitudes above the proposed corridor altitudes, aircraft climbing and descending between any one route and the Fairbanks International Airport may transit through those areas proposed for the UAV corridors.

Table 3-62. Potentially Affected Jet/RNAV Routes

Proposed Corridors	Jet/RNAV Routes
Corridor between Eielson AFB and R-2211	J502-515
Corridor between Eielson AFB and R-2205	NCA 22
Corridor between Allen Army Airfield and R-2202	J502-515
Corridor between R-2202 and R-2205	J502-515
Corridor between R-2205 and R-2211	J502-515
Corridor between Fort Wainwright and R-2211	J502-515
Corridor between Fort Wainwright and R-2205	NCA 22

Key: AFB=Air Force Base; RNAV=Area Navigation.

VFR Air Traffic

Sections 3.1.1 through 3.4.1 describe the VFR flight activities throughout the airspace environments generally affected by the individual airspace proposals that generally include those areas proposed for the UAV corridors. Currently, VFR aircraft can transit through these areas relatively unrestricted and at altitudes that present minimal interactions with military aircraft. There is extensive VFR traffic along those commonly used highways/flyways where several of these UAV corridors are proposed. VFR flights also occur to some extent in areas where the other corridors are proposed to include the Chena River, the Chena Lakes recreation site and the areas encompassing TFTA. While the number of VFR flights and seasonal timeframes these aircraft typically operate throughout each of these proposed areas is unknown, scoping comments suggest many of these flights serve important business, recreation, and subsistence purposes.

Public Airports and Charted Private Airfields

The different public airports and private airfields located within the affected regions of these proposed corridors are included among those listed and shown in Appendix D, *Airspace Management*. As noted previously, many of these airports/airfields are used for business, recreational, and subsistence purposes by both IFR and VFR air traffic. While none are beneath or immediately adjacent to the affected airspace areas, several VFR flyways, airways/jet routes, and other flight courses used by VFR and IFR aircraft and ATC while operating to/from regional airfields transit through or near the areas/altitudes proposed for these corridors. Currently, military operations have little impact on these flyways/routes.

3.6.1.2 Impact Assessment Methodology

The methodology described in Section 3.1.1.2 was used to assess impacts of each corridor proposal on other airspace uses in each of the affected regions.

3.6.1.3 Environmental Consequences

The FAA and DoD continue to discuss the most efficient and effective means of integrating UAV operations, including both the aircraft and ground support systems, into the National Airspace System so

as to provide for the safety of all airspace uses. Pending future decisions on this matter, assessing the impacts of a restricted area designation for each corridor proposal considers the most restrictive option for how this may impact other airspace uses.

The general purpose and use of all proposed corridors are similar in that they are designed to provide protective airspace for transiting unmanned aircraft directly between the different launch points and existing restricted areas. They are not intended to be used for any prolonged training activities while transiting these corridors. The UAV types using these corridors travel at airspeeds averaging 120 knots and each would have to be equipped with a Mode C transponder and FAA-approved lighting that would enable radar tracking and observation of these aircraft during hours of darkness.

The proposed structure and estimated use of each proposed corridor discussed in the sections below are summarized in Table 2-15 and depicted in Figure 3-35. Figure 2-11 provides a general representation of how each corridor would be structured with the three altitude layers that may be activated individually or simultaneously, as needed to accommodate the planned flights. The estimated use of each corridor is based on the minimum training requirements pilot-operators must meet to maintain proficiency for each UAV type and associated flight mission activity. Scheduled use of each corridor/altitude layer(s) is estimated to occur four times daily, two days per week (Monday through Friday) between 7:00 a.m. and midnight. Corridor(s) required for mission execution would be announced via the SUAIS, NOTAM system, and other communications, as appropriate, to ensure the safety of the flying public. One or more corridors may be activated concurrently in some cases to permit the launching and transition of UAVs among the different target areas such as would occur with the proposed link between R-2202 and R-2211.

The planned use of each corridor would be coordinated in advance between the responsible USARAK or Air Force functions, controlling FAA ATC facility, and the respective airfield managers, to best schedule those mission activities around those timeframes of other higher density/priority military and civil air traffic operations. The corridor restricted area would typically remain active during an entire training mission to facilitate a return to base upon mission completion, changing weather conditions, or an emergency situation where an immediate recovery may be required. Therefore, the duration of this active airspace would vary with each mission but would be kept to the minimum necessary. In all cases, this restricted airspace would be under the positive control of the Fairbanks TRACON or Anchorage ARTCC to ensure separation between the UAV flight activities and nonparticipating IFR air traffic and to provide priority for any emergency flights requiring access through this airspace. The scheduled use of all corridor activations would be provided via the SUAIS and other advisory services/sources.

Public and agency scoping comments expressed concerns over the potential effects the UAV corridor proposals may have on both IFR and VFR air traffic within the region of each corridor. The specific nature and extent of such impacts on all airspace uses will be closely examined in the FAA aeronautical study of each corridor proposal. Until this Study is completed and decisions are made between the FAA and military on how airspace needs for unmanned aircraft can most effectively be managed, the extent of any impacts these proposals may have on both IFR and VFR aviation and how they could be mitigated cannot be specifically determined and addressed in this EIS. Therefore, the following sections provide a more general assessment of how those airspace uses may be affected by each proposal.

3.6.1.3.1 Link Between Eielson AFB and R-2211

3.6.1.3.1.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The proposed restricted area would adjoin the ceiling of the Eielson AFB Class D airspace and would require that UAV flights be separated, as appropriate, from other airfield operations while transitioning

between the runway environment and the overlying corridor. Procedures would be outlined in a formal agreement among the responsible UAV functions, Eielson AFB airfield management, and the Fairbanks/Anchorage ATC facilities to define how this airspace would be integrated with the Class D airspace structure and uses, when active. Procedures and responsibilities in this agreement would have to ensure the UAV these operations would be segregated from airfield operations and other air traffic in the surrounding area on a real-time basis so as not to conflict with traffic operating within the terminal airspace serving Eielson, AFB, Ladd AAF, and Fairbanks International.

CIVIL AVIATION AIRSPACE USE

Federal Airways

The Federal airway potentially affected by this proposal is the V444/T232/A2/A15 segment that intersects this corridor. An average of two IFR flights transits this airway daily with typical assigned altitudes at 8,000 feet MSL and above. This is within the range of altitudes proposed for this corridor use. Depending on those days and time periods this restricted area is activated, there may be a minimal impact on these fewer daily flights if they must be delayed or other rerouted around this corridor by the FAA. Rerouting would require an extensive distance to the north of Eielson AFB or south of R-2211 to remain clear of this corridor. Since this active corridor would require positive ATC control at all times, Fairbanks TRACON and/or Anchorage ARTCC may be able to coordinate transit of IFR flights through this corridor on a case by case basis while UAV aircraft are in R-2211 and sufficiently clear of this nonparticipating air traffic.

Jet/RNAV Routes

Jet route J502-515 transits above the proposed corridor airspace with 6 to 12 average daily IFR flights typically operating at assigned altitudes of FL200 unless climbing/descending through lower altitudes between this route and Fairbanks International. Therefore, en route air traffic remaining at the upper altitudes would not be impacted by this active corridor. Airport arriving/departing air traffic may require rerouting, altitude restrictions, or other measures, as deemed necessary by ATC, to avoid transit through this restricted airspace.

VFR Air Traffic

This proposal has the greater potential to adversely affect VFR air traffic operating along the highways, flyways, and other flight paths commonly flown between Fairbanks and points south and southeast where they would typically operate through the area of this proposed restricted area. VFR aircraft would not be able to access the corridor's restricted airspace when active and the ability to transit beneath this airspace when active would depend on the altitude layer(s) being activated on a daily/individual basis relative to the lower altitudes needed by a VFR pilot. Activation of the low and mid layers would limit VFR flights beneath 1,200 feet AGL which may be problematic for some operations. The only options would be to circumnavigate this airspace for a considerable distance to the north or south of this corridor or delay planned flights until this airspace becomes available. VFR pilots would have to learn the scheduled and real-time active status of this restricted airspace via the NOTAM system, SUAIS, and other available advisory services prior to planning any flights through this airspace. The flight limitations and inconveniences this corridor may pose on VFR air traffic could have a significant impact on this aviation community.

Public Airports and Private Airfields

The only charted airfields in the immediate vicinity of the proposed corridor are the Clear Creek, and Blair Lake airstrips which are not for public use. Otherwise, Fairbanks International, Bradley, and several other more distant public and private airfields in the general area may be potentially affected by the ability for based aircraft to transit to/from destinations where their routes of flight would normally require transit through this proposed airspace. Fairbanks International is the only airport in this affected area

having published instrument arrival and departure routes with established "gates" for transferring control of air traffic between Fairbanks TRACON and Anchorage ARTCC. As noted by the FAA in the scoping comments, this corridor would have the potential to affect the routing and sequencing of Fairbanks arriving and departing traffic. It was also noted that the Fairbanks TRACON airspace provides flight training opportunities for both VFR and IFR flight training that could be also affected by this proposal.

3.6.1.3.1.2 Alternative B

As noted previously, the FAA and DoD are addressing all options for integrating UAV operations into the National Airspace System that may include other airspace designations and operational aspects/stipulations that would better accommodate all airspace uses where UAV flights are conducted. Currently, a Certificate of Authorization (COA) is used as an alternative to establishing a restricted area for limited UAV types and operational needs. USARAK currently uses this option as needed to support their limited UAV requirements. Because of the restrictive nature of a COA, the potential effects of establishing this type designation was considered to be the same as discussed above for Alternative A relative to the limitations and restrictions the active status of this corridor may have on other civil aviation airspace uses.

3.6.1.3.1.3 No Action Alternative

Under this alternative, no restricted area or other designated airspace would be considered for a UAV corridor; therefore, there would be no additional impacts on civil aviation use of this airspace.

3.6.1.3.2 Link Between Eielson AFB and R-2205

3.6.1.3.2.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The manner in which this corridor would be scheduled, coordinated, and managed relative to other air traffic and airspace requirements in this area would be the same as discussed above for the proposed Eielson AFB and R-2211 link. Activation of this proposed corridor would be independent of or in conjunction with the proposed R-2205 DMPTR expansion, as appropriate and necessary, to integrate/ accommodate compatible USARAK and Air Force flight activities in R-2205, YTA, and Stuart Impact Area. In all cases, this airspace would be under the positive control of the Fairbanks TRACON or Anchorage ARTCC to ensure separation is maintained between this corridor use and other nonparticipating IFR air traffic in region. Procedures for integrating this corridor airspace with the Eielson AFB Class D airspace and segregating UAV operations from other air traffic would be defined in an agreement among all responsible entities.

CIVIL AVIATION AIRSPACE USE

Federal Airways

No Federal airways transit within or close proximity to this proposed corridor, therefore, the potential direct impacts of this restricted airspace on airway traffic would be minimal. However, as noted by the FAA, there may be indirect impacts on any airway traffic that would normally be directed by ATC through this affected airspace while transiting to/from Ladd AAF, Eielson AFB, or Fairbanks International. The FAA also noted the potential impact this corridor may have on a pilot's use of the Chena radio beacon navigational point (fix) if, for any reason, it becomes necessary to execute a missed approach while approaching Fairbanks International during any weather conditions, training, or other conditions that would dictate use of this missed approach procedure.

Jet/RNAV Routes

The only route transiting the affected area is the NCA 22 track which is used primarily by en route air traffic operating at FL290 and above which would not be impacted by use of this restricted airspace corridor. As discussed for the Federal airways, the only potential effect may be the need to climb/descend aircraft through the restricted area altitudes while transitioning any route traffic to/from the Fairbanks International terminal airspace.

VFR Air Traffic

Public input suggests that the majority of VFR air traffic flights operate west of the Eielson AFB and adjacent YTA region with this corridor having minimal impact on this aviation community. VFR aircraft having a need to operate within this airspace would be restricted from doing so when this corridor was active, depending on the altitudes layer(s) activated. Pilots would need to check the SUAIS or other available sources prior to conducting any flight activities through this area.

Public Airports and Private Airfields

No public airports or private airfields are located in close proximity to this proposed corridor. The airfields in the general region, to include Bradley, Lakewood, and Greg'n Sage, would not be directly affected by this airspace proposal and most aircraft operating from these airfields would normally fly west of this airspace. As noted above, this proposal may affect some arrival and departure routes used by Fairbanks TRACON to manage air traffic flows within the Class D airspace surrounding Ladd AAF, Eielson AFB, and Fairbanks International.

3.6.1.3.2.2 Alternative B

The potential effects of establishing a COA or other FAA designated airspace would be the same as discussed above for Alternative A relative to the limitations and restrictions the active status of this corridor would have on other civil aviation airspace uses.

3.6.1.3.2.3 No Action Alternative

Under this alternative no restricted area or other designated airspace would be considered for establishing this UAV corridor, therefore, there would be no additional impacts on civil aviation use of this airspace.

3.6.1.3.3 Link Between Allen Army Airfield and R-2202

3.6.1.3.3.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The manner in which this shorter corridor would be scheduled, managed, and used is the same as previously discussed for all corridors. This corridor would provide the restricted airspace environment required to transit UAV aircraft between Allen AAF and R-2202.

Allen AAF serves Fort Greely military aviation activities while permitting civil aircraft to operate at this airfield on a prior permission required basis. This airfield has an operating control tower and three intersecting runways with the vast majority of the airfield operations being military, to include the JBER cargo aircraft practicing assault landings. Instrument approaches area established for two runways. Anchorage ARTCC is the controlling ATC facility for this airfield and would be providing positive control over the use of the proposed corridor when active to ensure separation is maintained between UAV operations and other nonparticipating IFR air traffic in region. Procedures for integrating this

corridor airspace with the Allen AAF Class D airspace and segregating UAV operations from other air traffic would be defined in an agreement among all responsible entities.

CIVIL AVIATION AIRSPACE USE

Federal Airways

This proposed restricted area corridor is located within or near V-444/T-232, V-515, and V-481/T226/B25 which all converge at Delta Junction. FAA data indicate the daily average use of these routes is two to three IFR flights. Therefore, potential impacts of this restricted area on the lower density use of these airways and any other off-route air traffic in this region should be minimal, depending upon the flight times/altitudes and the activated corridor times/altitudes use which would be under the positive control of the Anchorage ARTCC.

Jet/RNAV Routes

The daily average of three IFR flights en route along the J-167 segment transiting this region would be above those altitudes proposed for the restricted area corridor and therefore unaffected by this action. There also should be minimal impacts on any IFR air traffic operating through the corridor altitudes while transitioning between this and other routes in the area and the Fairbanks or Anchorage airports. As noted above, all IFR aircraft transiting this area and UAV use of the proposed restricted area would be under the positive control of the Anchorage ARTCC.

VFR Air Traffic

This proposed restricted area would cross the Richardson Highway flyway commonly used by VFR aircraft to transit between the Fairbanks area and points south of the Allen AAF. During those times this airspace is active, VFR flights would be restricted from operating through this area and would need to either delay their flights or circumvent Allen AAF to the west to remain clear of this corridor. This impact would be increased during any time periods that both this corridor and the proposed BAX restricted area are active. Such impacts could be considered significant depending upon the extent to which one or both restricted areas are activated and at what altitudes and those mitigation measures to be considered by USARAK to minimize impacts on this aviation community.

Public Airports and Private Airfields

Several airfields are located in the immediate area to include Delta Junction, and six to eight private airfields within about a 10-NM radius of the Allen AAF. Many of these airfield operations would be VFR flights which, as noted above, may be potentially impacted by restricted airspace crossing the Richardson Highway flyway. Civilian aviation use of the Allen AAF would continue to require prior planning and coordination to avoid those timeframes when UAV flights operating to/from the restricted airspace overlie that airfield's class D airspace.

3.6.1.3.3.2 Alternative B

The potential effects of establishing a COA or other FAA designated airspace would be the same as discussed above for Alternative A relative to the limitations and restrictions the active status of this corridor would have on other civil aviation airspace uses.

3.6.1.3.3.3 No Action Alternative

No restricted area or other designated airspace would be established to support any UAV operations; therefore, there would be no additional impacts on the current uses of this airspace.

3.6.1.3.4 Link Between R-2202 and R-2211

3.6.1.3.4.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The manner in which this corridor would be scheduled, managed, and used is the same as discussed previously for all corridors. This corridor would enable UAV training flights to transit between the two restricted areas so as to maximize use of their respective range capabilities. Scheduled use of this corridor would likely occur in conjunction with the launch site corridors to accommodate these interactive range missions.

CIVIL AVIATION AIRSPACE USE

Federal Airways

There are no Federal airways transiting within the proposed airspace although V-438/T227, V-481/T226, and V-444/T232 are located adjacent to one or both of the restricted areas proposed to be linked by this corridor. Traffic operating along these airways would not be directly affected by the proposed restricted area. However, it was noted by the FAA that the airspace and transfer points (gates) used by ATC to transition aircraft arrivals/departures between airways and the Fairbanks and Anchorage airports could be affected to some extent when this corridor is active.

Jet/RNAV Routes

No jet/RNAV routes are located within or near the proposed corridor and those altitudes used on these routes are above the proposed ceiling altitude of the corridor's restricted area. As noted above, this proposal could affect IFR flights transitioning through the airspace and gates used by ATC for Fairbanks or Anchorage arriving/departing traffic.

VFR Air Traffic

The potential impacts of this corridor would be similar to that discussed for the Realistic Live Ordnance Use Alternative B (restricted area linking R-2202 and R-2211). Depending on the altitudes activated for this corridor, VFR air traffic may be unable to transit through this area at the lower altitudes required to remain below this active airspace. Depending on the lesser volume of VFR aircraft that operate within this area, it cannot be determined to what extent this restriction would impact this aviation community. Those VFR pilots having a need to operate within this area may have to delay or otherwise alter their flights to avoid this restricted area when active. The active status of this airspace would be provided via the SUAIS and other advisory services.

Public Airports and Private Airfields

No public or private airfields are located within close proximity to this proposed corridor with Gold King Creek and a few other public/private airfields being more distant (20 to 30 NM) from this affected area. While this proposal has no direct effects on these airfields, based aircraft operating in this region that encompasses the existing Eielson MOA may be affected to the extent that they must transit this area to reach their destination.

3.6.1.3.4.2 Alternative B

The potential effects of establishing a COA or other FAA designated airspace would be the same as discussed above for Alternative A relative to the limitations and restrictions the active status of this corridor would have on other civil aviation airspace uses.

3.6.1.3.4.3 No Action Alternative

No restricted area or other designated airspace would be considered for UAV operations; therefore, there would be no additional impacts on current civil aviation use of this airspace.

3.6.1.3.5 Link Between R-2205 and R-2202

3.6.1.3.5.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The manner in which this lengthier corridor would be scheduled, managed, and used is the same as generally discussed for proposed corridors. As noted previously for the R-2211 and R-2202 proposal, this corridor would be used for those training missions where UAV may transition between these restricted areas and use the range impact areas within each. It would also most likely be activated concurrently with other proposed corridors to accommodate this interactive range use.

CIVIL AVIATION AIRSPACE USE

Federal Airways

This proposed corridor would cross V-444/T232 and could encompass those altitudes assigned by ATC for this route air traffic. Therefore, this proposal may have moderate potential impacts on the reported two to three average daily flights using this airway and any transition of these aircraft to/from Fairbanks International or other destinations within in this region. The extent of any impacts would depend on the activation periods relative to the airway traffic altitudes and any airport arrivals/departures transitioning to this airway or others in the area. If necessary, ATC may have to reroute or delay nonparticipating aircraft from this active corridor, when necessary. Such potential impacts and mitigation measures will be examined by the FAA.

Jet/RNAV Routes

The two jet/RNAV routes transiting within or near this proposed corridor are J502-515 and J167. The daily average 6-12 IFR flights on J520-515 and 3 IFR flights on J-167 would normally transit at altitudes above the corridor ceiling and, therefore, not be impacted by this active restricted area. Any traffic transitioning between either one of these routes and Fairbanks International climbing/descending through the corridor airspace/altitudes may be impacted if it became necessary for ATC to direct this traffic around this airspace. The extent of such impacts would depend on the timing of those flights relative to corridor activation times and ATC options for routing this traffic through or outside of the corridor airspace.

VFR Air Traffic

This corridor may have the potential for moderate to significant impacts on those VFR aircraft that frequently operate along those highway, river, and pipeline flyways commonly flown by this traffic between the Fairbanks and Delta Junction areas and points in between since this corridor would intersect those routes. The extent of such impacts would depend on the corridor activation times/altitudes as the UAV use of the higher altitudes layer(s) may have little impact on this aviation community. If necessary to activate the low altitude layer, this may require flight delays or rerouting, as necessary, to avoid this restricted airspace. Pilots would need to obtain the active status of this airspace through NOTAMs, the SUAIS, and other available advisory services prior to conducting a flight through this area.

Public Airports and Private Airfields

A number of public and private airfields are located in the Fairbanks and Delta Junction areas that, while not directly affected by this proposal, may have based aircraft that would be subject to flight restrictions, delays, and other inconveniences if their route of flight transited this proposed airspace. The extent of any impacts would be as discussed above for both IFR and VFR flight routes.

3.6.1.3.5.2 Alternative B

The potential effects of establishing a COA or other FAA designated airspace would be the same as discussed above for Alternative A relative to the limitations and restrictions the active status of this corridor would have on other civil aviation airspace uses.

3.6.1.3.5.3 No Action Alternative

No restricted area or other designated airspace would be considered to support UAV operations; therefore, there would be no additional impacts on civil aviation use of this airspace.

3.6.1.3.6 Link Between Fort Wainwright and R-2211

3.6.1.3.6.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The manner in which this corridor would be scheduled, managed, and used is the same as discussed initially. This restricted area would cross the TFTA which has some limitations on the public use of the land areas encompassing this training area. The corridor would adjoin the class D airspace overlying Fort Wainwright (Ladd AAF) and would therefore require a coordinated effort in planning UAV takeoffs, landings, and transition to the restricted area corridor be appropriately segregated from other airfield operations and missions within and outside of this terminal airspace. Procedures for integrating this corridor airspace with the Ladd AAF Class D airspace and segregating UAV operations from other air traffic would be defined in an agreement among all responsible entities.

CIVIL AVIATION AIRSPACE USE

Federal Airways

This proposed corridor would cross V-444/T232 and have the potential for impacts on this airway traffic as discussed previously for the other corridors proposed to intersect this airway. Active use of this corridor may also affect the airspace and altitudes used by ATC within the Fairbanks terminal radar service area to route traffic to/from Fairbanks International, Ladd AAF, and Eielson AFB. The extent to which this corridor would impact control and management of air traffic operations in this airspace environment will be further examined in the FAA aeronautical study.

Jet/RNAV Routes

En route air traffic in level flight at the higher altitudes on J502-515 and other routes transiting within/near this affected area would not be impacted by this proposed corridor. As discussed for the previous proposals having corridors beneath this jet route, any impacts that may exist would be on those aircraft climbing/descending through the active corridor altitudes while being directed by ATC to/from Fairbanks International. As the positive controlling agency for this airspace, Anchorage ARTCC would take those actions necessary to ensure separation between nonparticipating IFR aircraft and the active corridor. The extent to which this may cause any delays or rerouting to avoid this restricted airspace

would depend on the corridor activation times/altitudes relative to the Fairbanks air traffic densities during those periods.

VFR Air Traffic

The potential impacts this proposed corridor may have on VFR air traffic would be the same as discussed previously for other restricted airspace proposals crossing those commonly used VFR flyways.

Public Airports and Private Airfields

The location of this corridor within the Fairbanks terminal airspace and its close proximity to Fairbanks International, Eielson AFB, the Bradley airport, and several private airfields in this general area may impact the ATC options for routing air traffic arrivals/departures through this airspace environment. Any potential impacts this proposal may have on this terminal airspace environment, arrival/departure routes and gates, and instrument procedures would be the focus of the FAA aeronautical study.

3.6.1.3.6.2 Alternative B

The potential effects of establishing a COA or other FAA designated airspace would be the same as discussed above for Alternative A relative to the limitations and restrictions the active status of this corridor would have on other civil aviation airspace uses.

3.6.1.3.6.3 No Action Alternative

No restricted area or other designated airspace would be considered to support UAV operations; therefore, there would be no additional impacts on civil aviation use of this airspace.

3.6.1.3.7 Link Between Fort Wainwright and R-2205

3.6.1.3.7.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The manner in which this corridor would be scheduled, managed, and used is the same as discussed previously to link Fort Wainwright with R-2211. Similarly, procedures for integrating this corridor airspace with the Ladd AAF Class D airspace and segregating UAV operations from other air traffic would be defined in an agreement among all responsible entities.

CIVIL AVIATION AIRSPACE USE

Federal Airways

This corridor would not intersect any Federal airways and therefore would not have any direct impacts on airway traffic. The location of this corridor could indirect impact the airspace used by ATC to route Fairbanks International air traffic to/from those airways that converge on the Fairbanks navigational aid (VORTAC).

Jet/RNAV Routes

This corridor would also not intersect any jet routes in the area and therefore not impact this en route traffic other than potentially any transitioning of this route traffic between a jet route and Fairbanks International as discussed previously for these potential impacts. Positive control of this corridor and both the en route and terminal airspace environments by either the Fairbanks TRACON or Anchorage ARTCC would ensure separation between the UAV operations and IFR air traffic.

VFR Air Traffic

This proposed corridor would be more distant from those areas and flyways where VFR air traffic more frequently operate and may therefore have less impact on this aviation community. Those VFR aircraft operating from public and private airfields in this locale and having a need to travel within the affected area may be impacted during those periods this airspace is active. The extent of any impacts on these aircraft would depend on the corridor activation times/altitudes. Preplanning and awareness of the scheduled and real-time use of this corridor would be required for any VFR flights requiring transit through this airspace.

Public Airports and Private Airfields

This corridor would have generally the same potential effects on the Fairbanks terminal airspace in which all air traffic in this area is managed by ATC for Fairbanks International, Fort Wainwright (Ladd AAF), and Eielson AFB as discussed for other corridors potential affecting this airspace environment.

3.6.1.3.7.2 Alternative B

The potential effects of establishing a COA or other FAA designated airspace would be the same as discussed above for Alternative A relative to the limitations and restrictions the active status of this corridor would have on other civil aviation airspace uses.

3.6.1.3.7.3 No Action Alternative

No restricted area or other designated airspace would be considered to support UAV operations; therefore, there would be no additional impacts on civil aviation use of this airspace.

3.6.1.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigation is proposed to reduce these impacts.

- Pending the FAA's study of the preferred airspace proposal alternatives to determine specific impacts and mitigation measures to be taken to minimize any impacts on VFR and IFR air traffic, other existing mitigations would continue to be relevant in addressing potential impacts of the airspace proposals.

3.6.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.6.2.1 Affected Environment

The affected area comprises the areas beneath the proposed restricted area airspace corridors. The proposed corridors connecting Fort Wainwright to R-2211, R-2211 to Eielson AFB, and Eielson AFB to R-2205 are located almost entirely in DoD training areas. The sound environment in the training areas is characterized by military training, noise including munitions firing and detonation and ground and air vehicle maneuvers. The corridors linking R-2205 to R-2202, R-2211 to R-2202, Fort Wainwright to R-2205, and Allen AAF to R-2202 include substantial quantities of land area not owned by DoD. However, with the exception of the corridors linking Fort Wainwright to R-2211 and Fort Wainwright to R-2205, these areas are included entirely beneath military SUA. Baseline time-averaged noise levels (L_{dnmr}) beneath JPARC SUA are listed in Table 3-56.

3.6.2.2 Impact Assessment Methodology

The methods used to assess noise impacts associated with Fox 3 MOA Expansion and New Paxon MOA were also used to assess noise impacts associated with proposed UAV training. Noise models, noise metrics, and a brief description of methods used to interpret results are described in Section 3.2.2.2. Scoping results indicated that the population in the ROI is concerned about noise, and particularly about noise in areas that are currently quiet. For this analysis, noise impacts would be expected to be perceived as significant if airspace noise levels were to exceed 65 dB L_{dnmr} or 62 dB CDNL and increase by greater than 1.5 dB. Noise impacts would also be considered potentially significant if substantial increases in noise level (i.e., greater than 10 dB) were to occur in areas that are currently relatively quiet.

The UAV aircraft proposed for use in JPARC include several propeller-driven aircraft and several rotorcraft. The aircraft are designed to be able to loiter on location for extended periods of time. To support this requirement, the aircraft are equipped with relatively small and fuel-efficient engines, Noise levels generated by UAV aircraft have not been added to the NOISEMAP noise database. Therefore, surrogate aircraft were selected to represent noise levels for noise modeling purposes. The Cessna 172 *Skyhawk* (160-hp engine) was selected to represent the propeller-driven UAV aircraft, which all use smaller engines and which would be expected to generate less noise. The Bell 222 (618-shaft-hp engine) was selected to represent the rotorcraft UAVs. The Bell 222 is equipped with a larger engine than the UAVs proposed to be used, and the UAVs would be expected to generate less noise than the Bell-222.

3.6.2.3 Environmental Consequences

3.6.2.3.1 Alternative A

It is estimated that the proposed UAV corridors would be used up to four times per day on 2 days per week. The corridors would have a floor altitude of 1,200 AGL. Overflight noise levels would be similar to noise levels generated by common civilian aircraft. Time-averaged noise levels in the corridors were calculated under the highly conservative assumption that all UAVs would follow a single flight track and would fly at the lowest altitude permitted. Under this scenario noise levels generated by the proposed UAV operations would be approximately 35 dB L_{dnmr}. UAV overflight could potentially result in annoyance, but noise impacts would not exceed significance thresholds established for this action.

3.6.2.3.2 Alternative B

Under Alternative B, the same UAV operations would occur, but would not take place in designated restricted area airspace. Noise levels generated would be expected to be the same as under Alternative A.

3.6.2.3.3 No Action Alternative

Under the No Action Alternative, restricted area UAV corridors would not be established and UAV activity would continue to occur as it does under baseline conditions and no additional noise impacts would occur.

3.6.2.4 Mitigations

No mitigations are identified for this resource.

3.6.3 Safety

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.3.

3.6.3.1 Affected Environment

FLIGHT SAFETY

The success of military UAV deployments and the increasing interest in UAV use by both military and civilian interests have also increased concerns over operating those unmanned aircraft in the National Airspace System. Such concerns were of particular interest in the public scoping comments and, as noted previously, this matter is under study by the FAA and DoD. Analyses of UAV flight safety data and operational studies take into account the reliability of these UAV systems and their potential accident risks. While the accident rates for UAVs can be correlated to manned-aircraft Class A mishap rates, they differ fundamentally from other aircraft mishaps in that they have historically proven to be attributable to human, material, and communication factors, with human-related factors being the most common. UAV accident rates have decreased since introduction of these aircraft by the U.S. military in 1987; technologies have advanced, operators have become more experienced with enhanced training techniques, and command and control procedures have improved. Many of the UAV mishaps in recent years have been under combat conditions. A projection of the recent UAV mishap trends suggests that accident rates will approach those of general aviation and manned military aviation (Air Force Air Mobility Command 2010).

FAA regulations (JO 7610.4, *Special Operations*) (FAA 2009), require that remotely operated aircraft must provide an equivalent level of safety and comparable see-and-avoid capabilities as are required of manned aircraft to operate in the National Airspace System. The FAA continues to assess the potential flight risks of unmanned aircraft to other airspace uses and has limited military UAV operations to restricted airspace or COA corridors that separate these operations from those of other aircraft. Significant progress is being made on technologies such as GPS navigation and collision avoidance systems that provide "sense and avoid" capabilities and provide ground-based pilots with information on conflicting aircraft in the area. However, until such technologies can provide an equivalent level of flight safety as manned aircraft using "see and avoid," UAV operations outside protected airspace is not permitted.

To ensure an equivalent level of safety while operating within the proposed airspace, the UAV would have to either be under primary radar coverage, have forward or side-looking cameras, have electronic detection equipment, or be observed from ground sites or chase aircraft. The UAV aircraft would always operate under IFR procedures with direct communications maintained between ATC and the pilot-operator. The UAV position, altitude, airspeed, and direction of flight would be constantly monitored using its onboard transponder and automated ATC equipment.

UAV flight over populated areas is not permitted; therefore, the probability of a UAV mishap in a populated area is extremely low. However, as with other aircraft, it cannot be totally discounted. The general areas proposed for the UAV corridors have relatively little or no population. This, coupled with the unique nature of UAV operations and their relatively small size and slow speeds, would lessen the impact of a potential mishap. If an accident were to occur, local emergency response teams would respond, as they would to any mishap, to contain any damage. Ground crews operating the UAV are trained to respond to any aircraft emergencies that could occur.

GROUND SAFETY

UAV armaments described in Table 2-15 would not be used within these corridors; therefore, this alternative does not include activities that pose ground safety hazards, such as air-to-ground or live-fire ordnance training. Consequently, impacts on ground safety are not expected.

3.6.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The impact assessment methodology discussed in Section 3.1.3.2 was used, as appropriate, to address the potential flight safety impacts of UAV operations on other airspace uses.

3.6.3.3 Environmental Consequences

3.6.3.3.1 Alternative A

FLIGHT SAFETY

The following flight safety considerations would be the same for all seven proposed UAV corridors:

Aircraft Mishap Potential

The potential risk of an aircraft mishap for UAV operations under this alternative would be low. As discussed previously, mishap rates for UAV aircraft continue to decline as technologies, pilot-operator experience, and other advances provide for the enhanced command, control, and operation of these flight activities. While the potential for a mishap cannot be discounted, FAA requirements and restrictions for operating these aircraft and the protective corridors within which these UAV activities are proposed would segregate these aircraft from nonparticipating aircraft while avoiding overflight of populated areas. In the event an accident were to occur, immediate emergency response by military and local civilian agencies would help contain any damage resulting from this mishap.

Near Miss/Midair Collision Potential

The potential for a near miss/midair collision between UAV and other military or civilian aircraft would be minimal since these operations would be contained within protective airspace that separates these activities from other aircraft. The positive control of this airspace by Anchorage and/or Fairbanks ATC would help ensure other nonparticipating aircraft do not enter this airspace unless required separation can be maintained, if necessary to permit IFR transit through an active corridor. VFR pilots would have to remain clear of the active restricted airspace corridors and the altitude layer(s) activated for their use on a daily basis. This would require pilot awareness of the active status of this restricted airspace through the SUAIS and other available sources providing this information. Additionally, USARAK would continue to comply with formal flight safety programs that dictate the aircrew responsibilities and practices aimed at operating all manned and unmanned aircraft safely in existing and proposed new SUA.

Bird/Wildlife-Aircraft Strike Hazards

Since UAV aircraft operate at much lower speeds and has a smaller profile than manned aircraft, the potential for bird-strike damage causing catastrophic damage is extremely low. The potential for any bird/wildlife-aircraft strikes during low-altitude flights in this affected area and the measures already in place for maintaining awareness of any heightened bird activities would help minimize this potential.

3.6.3.3.2 Alternative B

FLIGHT SAFETY

The flight safety considerations for this Alternative for aircraft mishaps, near misses/midair collisions, and bird/wildlife-aircraft strikes would be the same as discussed for Alternative A.

3.6.3.3.3 No Action Alternative

No UAV activities or protective airspace for their operations would be considered under the No Action Alternative; therefore, there would be no additional impacts or added flight or ground safety concerns associated with this alternative.

3.6.3.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts to flight safety. The following mitigations are proposed to reduce these impacts.

- Safety – Ground
  - Conduct sandhill crane surveys during spring and fall migration periods.
- Safety – Flight Safety
  - Continue efforts to comply with the respective Service formal flight safety programs, outlined in directives/regulations with supplements, that dictate those aircrew responsibilities and practices aimed at operating all manned and unmanned aircraft safely in existing modified and new SUAs.

3.6.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.4.

3.6.4.1 Affected Environment

The proposed corridors for UAV training areas would primarily be located in FNSB and Southeast Fairbanks Census Area, though a small portion of the proposed corridors between R-2202 and R-2211 would be located in Denali Borough. The proposed UAV corridors between Fort Wainwright and R-2211 and Fort Wainwright and R-2205 would both be partially within the $PM_{2.5}$ nonattainment and carbon monoxide maintenance areas of FNSB. The remaining corridors would be established in areas within FNSB and in Southeast Fairbanks Census Area that are in attainment of the NAAQS. Table B-12 in Appendix B, Section B.4.3 provides a summary of the estimated 2008 annual emissions for the three affected areas (EPA 2010).

3.6.4.2 Impact Assessment Methodology

All seven of the proposed corridors would have aircraft operations below 3,000 feet that require analysis. This includes the flights that would occur within the Fort Wainwright to R-2205 and Fort Wainwright to R-2211 corridors that would result in an increase in emissions in the nonattainment and maintenance areas of FNSB as a result of the addition of these corridors. There are no construction activities associated with this proposed action.

The analysis followed the methodology described in Appendix B, Section B.4.5. With respect to the EPA's Conformity Rule, for activities that would occur in the nonattainment and/or maintenance areas, the increases in emissions were compared with the applicable conformity *de minimis* thresholds, which are 100 tons per year of $PM_{2.5}$ and carbon monoxide. To be conservative all impacts in the project regions were compared to the conformity *de minimis* thresholds.

PSD CLASS I AREA IMPACT ANALYSIS

The PSD Class I area of concern for this proposed action is Denali National Park, which is approximately 55 miles from the closest proposed UAV corridor. Due to the proximity of the proposed action to a pristine PSD Class I area, this EIS provides a qualitative analysis of the potential for proposed activities to affect visibility within this area.

3.6.4.3 Environmental Consequences

3.6.4.3.1 Alternative A

CONSTRUCTION

There would be no construction activities associated with Alternative A for the proposed UAV corridors, as these proposed actions would only involve airspace training activities.

OPERATIONS

Table 3-63 presents estimates of the changes in annual operational emissions that would occur from the various proposed UAV corridors that involve aircraft operations under 3,000 feet for Alternative A. Emissions were estimated for all seven of the proposed corridors as they all would allow aircraft operations below 3,000 feet. There are no current activities and thus no baseline emissions within these corridors.

As indicated above, the corridors between Fort Wainwright and R-2205 and Fort Wainwright to R-2211 would be located in an area that is designated as a nonattainment area for $PM_{2.5}$ and as a maintenance area for carbon monoxide. Consequently, the conformity *de minimis* thresholds for each of these pollutants, 100 tons per year, would apply for both areas. To be conservative, the total emissions of $PM_{2.5}$ and carbon monoxide from all seven corridors were compared to the conformity *de minimis* thresholds. Since the project area is in attainment of all other NAAQS, the total emissions for the rest of the pollutants (i.e., NO_x, SO_x, VOCs, and PM_{10}) were compared with their applicable PSD major source thresholds of 250 tons per year.

The data in Table 3-63 show that the increases in $PM_{2.5}$ and carbon monoxide emissions from proposed operations in the seven UAV corridors would not exceed their applicable *de minimis* conformity thresholds of 100 tons per year. Thus, air quality impacts from Alternative A would not be considered significant, and a conformity determination is not necessary. Additionally, the data in Table 3-63 show that the increases in emissions of the other criteria pollutants (NO_x, SO_x, VOCs, and PM_{10}) from Alternative A would not exceed their applicable PSD significance thresholds of 250 tons per year. Details of the operational data and emission factors used to estimate emissions from Alternative A are included in Tables F–12 through F–17 of Appendix F, *Air Quality*, of this EIS. Tables F–18 through F–25 of Appendix F show the change in emissions in the affected airspace from Alternative A.

Combustive emissions from the operation of UAVs in the corridors would contain HAPs that could potentially impact public health. However, as indicated by the low level of criteria pollutant emissions, UAV operation in the corridors as proposed under Alternative A would not be expected to result in significant impacts on public health, as the mobile and intermittent nature of these sources and the wide geographic regions of proposed operations would produce minimal impacts of HAPs in a localized area.

IMPACTS ON DENALI NATIONAL PARK

As the increases in emissions that would result from operations under Alternative A would be minimal, the impacts from proposed emissions under this alternative on air quality–related values in Denali

National Park would be expected to be negligible. In addition, due to the transport distance of at least 55 miles, these emissions would further disperse on transport to this pristine PSD Class I area. As a result, the proposed action would not produce a significant amount of emissions, as defined in section 40 CFR 52.21(b)(23)(iii) of the PSD regulation.

Table 3-63. Annual Operational Emissions Resulting from Implementation of Alternatives A and B

Corridor	Criteria Pollutant Emissions (tons per year)						GHG Emissions (metric tons per year)
	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Corridor Between Eielson AFB and R-2211	0.46	0.60	1.27	0.16	0.16	0.16	267.74
Corridor Between Eielson AFB and R-2205	0.30	0.40	0.84	0.10	0.11	0.11	178.49
Corridor Between Allen Army Base and R-2202	0.15	0.20	0.42	0.05	0.05	0.05	89.25
Corridor Between R-2202 and R-2211	0.46	0.60	1.27	0.16	0.16	0.16	267.74
Corridor Between R-2205 and R-2202	0.53	0.70	1.48	0.18	0.19	0.19	312.36
Corridor Between Fort Wainwright and R-2211	0.53	0.70	1.48	0.18	0.19	0.19	312.36
Corridor Between Fort Wainwright and R-2205	0.23	0.30	0.63	0.08	0.08	0.08	133.87
Total Emissions	**2.66**	**3.51**	**7.39**	**0.91**	**0.95**	**0.94**	**1,561.81**
Applicable Significance Thresholds	**250**	**100**	**250**	**250**	**250**	**100**	**N/A**

Key: AFB=Air Force Base; CO_2e=carbon dioxide equivalent equivalent; CH_4=methane; GHG=greenhouse gas; N/A=not applicable; NO_x=nitrogen oxide; $PM_{2.5}$=particulate matter 2.5 microns or less in diameter; PM_{10}=particulate matter 10 microns or less in diameter; SO_2=sulfur dioxide; VOC=volatile organic compound.

3.6.4.3.2 Alternative B

Operations would be the same in the proposed COA under Alternative B as they would be in the restricted airspace proposed under Alternative A. Thus, the emissions from Alternative B are expected to be the same as the emissions from Alternative A for this action. See Section 3.6.4.3.1 for the estimated emissions that would occur from changes in operations due to Alternative B for this proposed action. Impacts to Denali National Park under Alternative B would be similar to those from Alternative A as described in Section 3.6.4.3.1.

3.6.4.3.3 No Action Alternative

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated by existing operations in the affected areas. Therefore, the No Action Alternative would not result in any additional air quality impacts.

3.6.4.4 Mitigations

Since the impacts of the two alternatives are expected to be insignificant, no actions to reduce air quality impacts are being proposed.

3.6.5 Physical Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.5. The proposed action involves no disturbance of the land surface; therefore, no beneficial or adverse impacts of this action on various physical resources within the study area would occur and it is not further analyzed.

3.6.6 Water Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.6. The proposed action involves no disturbance of the land surface; therefore, impacts on water resources would not occur. Therefore, it is not further analyzed.

3.6.7 Hazardous Materials and Waste (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.7. The proposed action involves no potential releases of hazardous materials or waste, as this proposed action involves only the establishment of air corridors to provide for the transit of UAVs from their launch sites into existing JPARC airspace (e.g., MOAs, restricted areas) to participate in various training exercises. Therefore, no beneficial or adverse impacts of hazardous materials or waste would occur and it is not further analyzed.

3.6.8 Biological Resources (No Analysis Needed)

This proposed action and its alternatives address UAV flights in restricted area corridors, with altitude minima of 1,200 feet AGL or higher. Such activities would have no substantial impacts on vegetation or wildlife and, therefore, biological resources analysis will not be conducted for any of the airspace links considered under this proposed action.

3.6.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.6.9.1 Affected Environment

The ROI for the UAV Access is portions of TFTA, YTA, and DTA; Viper A and B MOAs; Delta 1, 2, and 3 MOAs; Eielson MOA; Birch MOA; and the land beneath the proposed corridor that would connect Fort Wainwright and R-2211 (Figure 2-10). The DTA, TFTA, and Eielson MOA portions of the UAV affected environment are the same as described in Section 3.2, Realistic Live Ordnance Delivery. The YTA portion of the UAV affected environment is the same as described in Section 3.4, DMPTR.

Review of the Alaska Heritage Resource Survey identified approximately two dozen archaeological sites under the restricted airspaces, although not all of the area appears to have been surveyed (USAG-FWA 2012).

BIRCH AND VIPER MOAS

No Federally recognized Alaska Native tribes are under these MOAs. No National Register–listed properties are under these MOAs (NRIS 2011).

DELTA MOA

There are four National Register–listed properties under the Delta MOA, all of which are architectural resources. They are the Big Delta Historic District (also known as Big Delta State Historical Park), Delta Junction; Rika's Landing Roadhouse (also known as Rika's Landing Site), Big Delta; Rapids Roadhouse (also known as Black Rapids Roadhouse), Delta; and Sullivan Roadhouse, Delta Junction (NRIS 2011).

Although no traditional cultural properties have been specifically identified underneath the airspace, this does not mean that none are present. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed UAV corridor ROI (see Section 1.6.5).

PROPOSED FORT WAINWRIGHT TO R-2211 CORRIDOR

There are 16 National Register–listed properties under the proposed corridor that would connect Fort Wainwright and R-2211 (NRIS 2011). All of the listed properties are architectural resources in Fairbanks, and consist of individual houses, commercial buildings, civic buildings, a church, and a cemetery (see Table H-3 in Appendix H, *Cultural Resources*).

3.6.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed UAV access action is the same as the methodology applied to the analysis of the Fox 3 MOA Expansion/Paxon MOA action (Section 3.1.9.2).

3.6.9.3 Environmental Consequences

3.6.9.3.1 Alternative A

Alternative A proposes to establish the UAV corridors described in Table 2-15 of restricted or other suitable airspace as determined by the FAA.

No impacts are anticipated to cultural resources from the proposed establishment of the UAV corridors and their training use. As described in Section 3.6.2.3 the time-averaged noise levels in the corridors generated by the proposed UAV operations would be approximately 41 dB L_{dnmr} in corridor sectors with a floor altitude of 1,200 AGL and approximately 33 dB L_{dnmr} in corridor sectors with a floor altitude of 3,000 AGL. The corridor sectors with a 1,200-foot altitude are primarily over military land with existing SUAs, and therefore have existing noise from military aircraft. Outside of SUAs, civilian aircraft operations currently expose underlying areas to some degree of noise from individual overflights. UAVs would sound similar (or quieter) than most civilian aircraft. UAV overflight would not have direct or indirect impacts on historic properties beneath the proposed transit corridor.

In compliance with Section 106 of the NHPA, the Army has completed consultation with the Alaska SHPO, who has concurred with the Army's determination of no adverse effect to historic properties (see in Appendix L). All compliance requirements for consultation with potentially affected Alaska Native tribes, ANCSA corporations, and Tribal government entities has been completed.

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed establishment of the UAV corridors and their training use. In compliance with DoD

Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed establishment of UAV corridors and their training use (see Section 1.6.5).

3.6.9.3.2 Alternative B

Alternative B proposes to establish the UAV corridors described in Table 2-15 authorized by a COA for transiting the UAVs.

No impacts are anticipated to cultural resources from the proposed establishment of the UAV corridors and their training use. Alternative B would have the same noise effects as Alternative A. UAV overflight would not have direct or indirect impacts on historic properties beneath the propose transit corridors.

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed establishment of UAV corridors and their training use. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed establishment of the UAV corridors and their training use (see Section 1.6.5).

3.6.9.3.3 No Action Alternative

Under the No Action Alternative there would be no expansion of restricted areas for the proposed UAV access corridors, no UAV corridors or a operations would occur between various elements of SUA in the JPARC and impacts on cultural resources would be as under current existing conditions.

3.6.9.4 Mitigations

No mitigations are identified for this resource at this time.

3.6.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.10.

3.6.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

Land Status

Land ownership within the UAV proposal area is tabulated in Table 3-64. The ownership patterns in this area are illustrated in Figure 3-36. About half of the 800,300 acres within the footprint of the proposed corridors is Federally owned, and about 46 percent is State-owned. The remaining land (3 percent) is privately held, with only 1 percent in Native ownership.

Table 3-64. Land Status in the Unmanned Aerial Vehicle Proposal Area

Landowner/ Manager	Corridor Between Eielson AFB and R-2211	Corridor Between Eielson AFB and R-2205	Corridor Between Allen Army Airfield and R-2202	Corridor Between R-2202 and R-2211	Corridor Between R-2205 and R-2202	Corridor Between Fort Wainwright and R-2211	Corridor Between Fort Wainwright and R-2205
	A	B	C	D	E	F	G
Federal (% of total)	83%	79%	65%	0%	8%	75%	46%
State (% of total)	16%	20%	29%	100%	89%	11%	35%
Private land (% of total)	1%	1%	7%	0%	3%	14%	18%
Total[1]	**152,605**	**65,908**	**32,971**	**138,253**	**182,946**	**178,414**	**100,300**

[1] Percentages may not total to 100 percent due to rounding of values.

Key: AFB=Air Force Base; UAV=unmanned aerial vehicle.

Federal = Federal land in the action areas including land owned by Department of the Interior and the Department of Defense.

State = State land in the action area including State Trust lands, State patented and State tentatively approved.

Private = Private land includes Native patented, Native Interim Conveyed, State land disposals, and privately owned land.

Source: ADNR 2011-2.

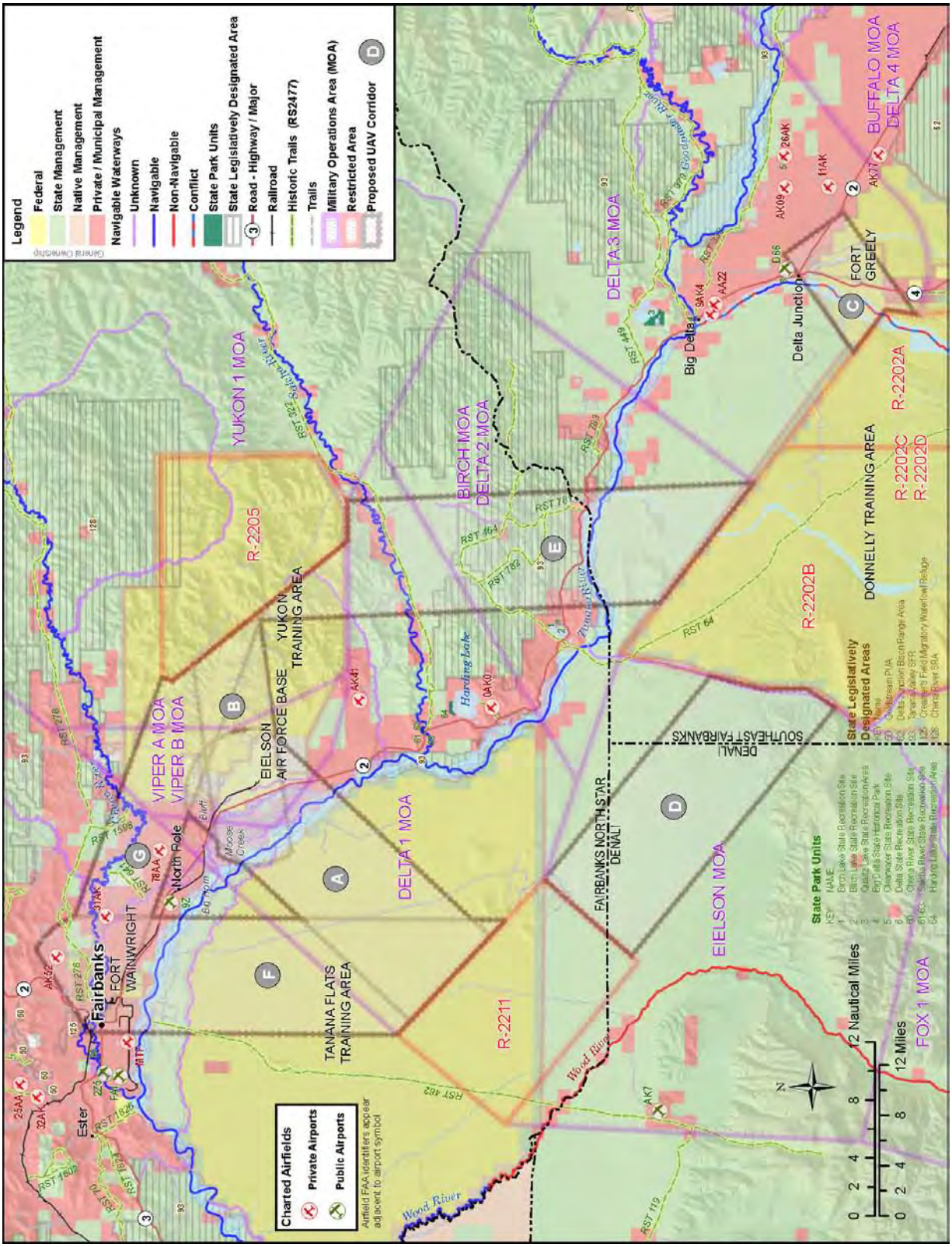


Figure 3-36. Land Status and Special Use Areas in the Unmanned Aerial Vehicle Proposal Area
Source: ADNR 2007, ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2011-2, ADNR 2011-3, ADNR 2011-13

Land Management and Use

The proposal airspace overlies both military and non-military land in the Fairbanks North Star and Delta Junction area. All Federal land in the proposal study area is owned and managed by the DoD. Management and use of these lands are overseen by USAG-FWA in accordance with applicable regulations and plans governing safe, compliant, and sustainable use. Land management planning for non-Federal land is under the State and local jurisdictions. Applicable plans include Eastern Tanana Area Plan (under development), Yukon Tanana Area Plan (ADNR 2009-1), Fairbanks North Star Borough Regional Comprehensive Plan, and Fairbanks North Star Borough Joint Land Use Study (JLUS).

The proposal area is one of the more populated areas of Alaska, including urbanized areas of Fairbanks, North Pole, Delta Junction, and Big Delta. Delta Junction is adjacent to the Fort Greely cantonment area and AAF. A few scattered residences and homesteads lie along the Alaska Highway northwest of the DTA-East. Big Delta is a community just north of Delta Junction. This community, like Delta Junction, is sparsely populated, with only a few nonresidential uses. Most of the land outside the urban and developed areas is open and rural. North Pole is located west of Eielson AFB along Richardson Highway. This incorporated area has a population of about 2,200, but is outside the proposal footprint.

Residential use is also found in locations along the Richardson Highway between Fairbanks and Delta Junction, including Eielson AFB (population 5,400, Federal reservation), Fox (population 300, unincorporated), Harding-Birch Lakes (population 216, unincorporated), Moose Creek (population 542, unincorporated), Salcha (population 854, unincorporated), Pleasant Valley (population about 750, unincorporated), and Two Rivers (population 482, unincorporated). The smaller communities are predominantly residential in character, with a limited mixture of other uses (commercial, light industrial, agriculture).

Special Use Areas. Special use areas in land underlying the UAV proposal areas are listed in Table 3-65, and the locations are shown in Figure 3-36. There are no Federal special use areas in the underlying footprint of the corridors. Descriptions of these areas are provided in Appendix I, *Land Use, Public Access, and Recreation*. In addition, there are 25 FNSB parks within the Alternative A corridor, and five underlying the Alternative B corridor.

Table 3-65. Special Use Areas Unmanned Aerial Vehicle Proposal Area and Surrounding Areas

Special Use Area	Designation	Alignments[1]			
		C	E	F	G
Delta	State Recreational Site	X			
Birch Lake	State Recreation Site		X		
Harding Lake State Recreation Area	State Recreation Area		X		
Creamer's Field	Migratory Waterfowl Refuge/State Game Refuge			X	X
Tanana Valley	State Forest		X		

[1] C=Allen Army Airfield to R-2202: E=R-2205 to R-2202; F=Fort Wainwright to R-2205; G=Fort Wainwright to R-2205.
Source: ADNR 2011-3.

Resource and Productive Use. Most of the non-military land within the UAV footprints is in the Fairbanks North Star and Delta Junction area. Most of the land is State-owned, within the East Tanana planning area, and managed for its habitat value, with recreation as a secondary use. The proposal footprints include about 8,725 acres of State Mental Health Trust lands, which generally have productive resource potential, with an expectation of revenue-producing value. Federal and State land managers prioritize the use of lands based on resources, attributes, and local values. Habitat values are the predominant land management priority for State lands, with some recreational land. A microwave tower is located on north side of the Richardson Highway under the R-2202–R-2205 corridor. There are six

power plants underlying the corridors including two on Eielson AFB, one on Fort Greely, one on Fort Wainwright and two in Fairbanks (Aurora Energy).

Private and Native Lands. Private parcels and residential lands account for 27,620 acres of the proposal area. The area is essentially rural and remote and has few permanent dwellings. Private lands often have seasonally used hunting cabins. This proposal would not affect uses related to subsurface interests (oil and gas development, mining and mineral activities). Further discussion of Native-owned lands and resources is provided in Section 3.1.13.2 of Subsistence.

Locations of Interest

During public scoping for this EIS, members of the public commented on the use of airspace under this proposal. Several locations were identified, and are depicted in Figure A–1 and listed in Table A–7, Appendix A, *Public Scoping Summary*. For specific alignments these include:

- Alignment A: Areas underlying Eielson AFB flight paths, Eielson Farm Road, Moose Creek
- Alignment C: Tyone Lake
- Alignment D: Bonnifield Mining District
- Alignment E: Birch Lake, areas west of Delta Junction, Richardson Highway
- Alignment F: Eureka, Tanana Flats, residential areas in south part of Fairbanks and east of Fort Wainwright, areas designated as urban and preferred residential in the FNSB comprehensive plan
- Alignment G: Urban and residential areas in east part of Fairbanks and North Pole, State Mental Health Trust lands, areas designated as preferred residential in the FNSB comprehensive plan

PUBLIC ACCESS

Land Access

The trails, including RS 2477–designated routes, within the ROI for this proposed action and alternatives are listed in Table 3-66. The locations of these routes are shown on Figure 3-36.

Table 3-66. Public Access Infrastructure Within the Unmanned Aerial Vehicle Proposal Area

Public Access	Designation/RST	Length (miles)
Chena Lakes Trail	RS 2477/ RST 1598	3
Fairbanks – Chena Hot Springs	RS 2477/ RST 278	10
Salcha-Caribou Sled Road	RS 2477/ RST 322	10
Bonnifield Trail	RS 2477/ RST 462	4
Richardson Highway (Birch Lake) – Caribou Creek Trail	RS 2477/ RST 464	13
Chena Lowlands Winter Trail Connections	RS 2477/ RST 641	4
Richardson Telegraph Station – Ridge (also known as Banner C)	RS 2477/ RST 781	7
Redmond Creek – Banner Creek Trail	RS 2477/ RST 782	11

Key: RST=indicates a trail number.
Source: ADNR 2009-2.

Aerial Access

A list of the public and private airports and airstrips in the UAV Proposal area is provided below. These are shown on Figure 3-36.

- Alignment A: Clear Creek Airport
- Alignment F: Clear Creek Airport, Moen's Airport
- Alignment G: Lakewood Airport, Dalrymple's airport, Moen's Ranch Airport

Navigable and Public Waters

This proposal does not affect access to navigable and public waters.

RECREATION

Federal and State special use areas in the UAV proposal area are listed in Table 3-65. The recreational use associated with these areas is described for each area in Appendix I, *Land Use, Public Access, and Recreation*. State lands are primarily managed for habitat value and recreation, and support the general range of recreational uses permitted by ADNR.

3.6.10.2 Impact Assessment Methodology

The general methodology for evaluating land use, public access, and recreation is described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The following are the primary sources of impact of this proposal on land use, including public access and recreation:

- Effects of military overflights on underlying uses and activities (primarily from aircraft noise), as described in Section 3.1.10.2
- Indirect effects of limited civilian air access on land use and recreation, as described in Section 3.1.10.2

3.6.10.3 Environmental Consequences

3.6.10.3.1 Alternative A

The primary source of impact to surface uses is from noise from UAVs, and perceptions of safety concerns. The projected noise levels for UAV operations in the corridor sectors with a minimum floor altitude of 1,200 feet AGL of 41 dB L_{dnmr} and of 33 dB L_{dnmr} for those with floor altitudes of 3,000 feet is below thresholds of concern for any land use. The corridor sectors with a 1,200-foot altitude (B, C, and G) are primarily over military land with existing SUA, and therefore have existing noise from military aircraft. Outside of SUAs, civilian aircraft operations currently expose underlying areas to some degree of noise from individual overflights. UAVs would sound similar (or quieter) than most civilian aircraft. Overall, there would be no impact to land uses or recreation from noise under any of the proposed corridors.

When planning new corridors for use by military aircraft it would be prudent to avoid locations where people congregate and inhabited areas (including clusters of cabins, churches, schools, and local businesses). Table 3-67 identifies known special areas and inhabited areas underlying or near to each of the proposed corridors. Other locations may warrant avoidance.

Operations of UAVs would not inhibit access to any roads, trails or locations on the ground. Consequently, this proposal would have no effect on public ground access.

UAV operations would not preclude access to airfields and airports underlying proposed corridors or surrounding areas as pilots could fly beneath the corridors. These facilities and the communities and areas they serve would remain accessible.

3.6.10.3.2 Alternative B

Alternative B would have the same noise effects as Alternative A and the various proposed corridors (A through G); therefore, no impacts on land use would result. In addition, no impact to ground access to roads, trails and surface locations would result.

Under this alternative, there would be no officially designated corridors. Therefore, no particular avoidance locations could be specified. Since no particular effects from UAV operations are anticipated, this is not a concern.

3.6.10.3.3 No Action Alternative

Under the No Action Alternative, no UAV corridors or a operations would occur between various elements of SUA in the JPARC. No changes or additional impacts affecting land use, public access or recreation would occur.

Table 3-67. Sensitive Locations In and Around the Proposed Unmanned Aerial Vehicle Corridors

Proposed Corridor	Communities (proximity)	Scoping Location of Interest[1]	Land Use Characteristics
A Eielson/R-2211	Moose Creek Salcha	Areas underlying Eielson AFB flight paths Eielson Farm Road Moose Creek	Tanana Valley State Forest Eielson AFB power plant Military land
B Eielson/R-2205	Eielson AFB North Pole Moose Creek	Tyone Lake	Eielson AFB power plant Predominantly Military land
C Allen AAF/R-2202	Delta Junction		Military land Fort Greely power plant Delta State Recreation Site
D R-2202/R-2211	None	Bonnifield Mining District	State land – habitat values
E R-2205/R-2202	Harding Lake	Birch Lake Areas west of Delta Junction Richardson Highway corridor	Harding Lake SRC Birch Lake SRC Tanana Valley State Forest
F FWA/R-2211	Fairbanks	Tanana Flats Tanana River Eureka Areas designated as urban and preferred residential in FNSB comprehensive plan	Predominantly Military land Creamers Field Migratory Waterfowl Range Tanana Valley State Forest Urbanized and residential areas in south part of Fairbanks and east of Fort Wainwright
G FWA/R-2205	Pleasant Valley Two Rivers North Pole Fairbanks	State Mental Health Trust lands, areas designated as preferred residential in FNSB comprehensive plan	Military land Creamers Field Migratory Waterfowl Range Urban and residential areas in east part of Fairbanks and North Pole

[1] Underlying or in proximity to the alignment.

Key: AAF=Army Air Field; AFB=Air Force Base; FNSB=Fairbanks North Star Borough; SRC=State Recreation Center; UAV=unmanned aerial vehicle.

3.6.10.4 Mitigations

The preceding analysis of effects on land use, public access, and recreation does not indicate any potential adverse impacts. No mitigations are identified for land use.

3.6.11 Infrastructure and Transportation (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for a general discussion of infrastructure and transportation resources. The UAV proposed action only involves establishing new airspace components and does not intersect with ground-based transportation and utilities resources. As a result, no impacts on this resource are expected and it is not further analyzed.

3.6.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.6.12.1 Affected Environment

The proposed areas for UAV access would include areas under the airspace and nearby communities. The proposed action covers parts of the FNSB, Southeast Fairbanks Census Area, and Denali Borough. Therefore, the ROI for the UAV Access Proposed Alternatives are the portions of the two boroughs and one census area that are underneath the airspace as well as the surrounding communities.

POPULATION

The nearest cities to the proposed action include Fairbanks, the city of North Pole, Big Delta, and Delta Junction. The FNSB had the largest population of the three regions in the ROI, with a total population of 97,581 persons in 2010. The Southeast Fairbanks Census Area had a total of 7,029 persons in the same year, while the Denali Borough had the smallest population, 1,826 persons. GIS-derived data on the total population underneath the airspace for each link or corridor are listed in Table 3-68.

Table 3-68. Population Under the Airspace, 2010

Region	Total Population[1]	Population Under the Airspace[1]						
		Link Between Fort Wainwright and R-2211	Link Between Fort Wainwright and R-2205	Link Between Eielson AFB and R-2211	Link Between R-2202 and R-2211	Corridor Between Eielson AFB and R-2205	Link Between R-2205 and R-2202	Link Between Allen Army Airfield and R-2202
Denali Borough	1,826	N/A	N/A	N/A	2	N/A	N/A	N/A
Fairbanks North Star Borough	97,581	27,988	15,822	4,425	0	3,085	181	N/A
Southeast Fairbanks Census Area	7,029	N/A	N/A	N/A	0	N/A	333	997

[1] GIS-derived calculations.
Key: N/A=Not Applicable.
Source: USCB 2010-1.

HOUSING

During public scoping, a concern was expressed that property values would be impacted by UAV flights. For a detailed description of baseline noise conditions in the area see Section 3.6.2.1. Many factors affect the market value of real property. While qualities of the property itself, surrounding properties, and the local real estate market are primary determinants of value, ambient noise levels could also play a role in determining market value. Several studies have analyzed property values as they relate to military and civilian aircraft noise. These studies, however, only consider properties near an airfield, not necessarily properties within an airspace as would be the case with properties within the area of the proposed action. In one study (Fidell et al. 1996), a regression analysis of property values as they relate to aircraft noise at two military installations was conducted. This study found that, while aircraft noise at these installations may have had minor impacts on property values, it was difficult to quantify that impact. Another study (Nelson 2003) analyzed 33 other studies attempting to quantify the impact of noise on property values. The result of the study supports the idea that the potential for an adverse impact on property values as a result of aircraft noise exists, and that the value of a specific property could be reduced between 0.5 and 0.6 percent per decibel when compared with a similar property that is not affected by aircraft noise. Additional data indicate that the reduction in property values as a result of noise would be greater for noise levels above 75 dB DNL, which the EPA considers incompatible with residential use.

ECONOMIC ACTIVITY

See Section 3.2.12.1 for a detailed description of economic activity in the ROI.

KEY INDUSTRIES

See Section 3.2.12.1 for a detailed description of key industries in the ROI.

3.6.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.6.12.3 Environmental Consequences

3.6.12.3.1 Alternative A

Under the proposed action, overflight noise levels generated by the proposed UAV operations would approximately be 35 dB L_{dnmr}. It is assumed that any noise impacts (as discussed in Section 3.6.2.3.1) would potentially affect the total population under the airspace as shown above in Table 3-68. Noise levels generated under the proposed action are comparable to the noise levels generated by common civilian aircraft and are below the threshold in which adverse noise effects to human populations are expected. Thus, minimal impacts to the population from noise are anticipated under the proposed action. In addition, the complex nature of property valuation factors makes any estimation of the potential effects of noise on land values highly speculative. Other socioeconomic factors, such as business activity, employment, interest rates, land scarcity (or availability), and the nature of the local housing market are much more likely to affect property values than noise levels generated by UAV operations.

One comment received during public scoping expressed concern that UAV access would affect general aviation, and thereby potentially result in economic impacts to regional business and communities from delays or fuel costs associated with rerouting. Impacts to civil aviation would potentially occur only during times when the corridors are activated. The extent of any impacts would depend on the corridor activation times/altitudes. Potential civil aviation impacts (described in Section 3.6.1.3.2.1) may include slightly increased flight distances and increased flight time when the corridor is active and pilots either elect not to transit the corridors, or if pilots flying to and from private airports or airfields were directed

by ATC to divert their flight routes to avoid the UAV activities. To the extent that they would occur, these potential aviation impacts would result in economic impacts due to additional operating costs (primarily related to increased fuel use) associated with avoiding active airspace, and the costs of any expended efforts in tracking the airspace status through available advisory services.

Such impacts would depend on civil air traffic densities/peak periods and the individual areas and time frames in which the proposed UAV flight activities would occur. The FAA and Air Force would address any impacts and mitigation measures to be taken before implementation of any airspace proposals. This would include advanced coordination between military scheduling agencies and the Air Force, to avoid those time periods and altitudes that are most problematic for the ATC system. In addition, commercial and general aviation routinely experience flight diversions due to weather, airport delays, air traffic congestion, air traffic deconflictions, flight safety, and other such conditions that are unrelated to military airspace use.

The economic impacts of any commercial or other civil aviation aircraft being delayed or diverted to any extent around the proposed corridors when active cannot be quantified due to the many factors to be considered in estimating such impacts. These factors include aircraft type and weight, type and number of engines, an aircraft's phase of flight and altitude at the time of a diversion, air traffic conditions, the additional time/distance incurred by any diversion, etc. Other factors such as maintenance, labor, and aircrew costs would also have to be considered, as applicable, for commercial and general aviation impacts. Economic impacts to general aviation pilots would depend on routes of flight and decisions on whether to delay flight when the corridor is active versus flying through or avoiding the corridors. Fuel consumption rates for the different turboprop and jet aircraft types are identified in technical manuals and other documents that provide operators with a general basis for estimating fuel use for flight planning and other purposes. Fuel use alone is not the only factor to be considered in determining the cost of any flight diversion. Aircraft fuel and operating costs would have to be examined in much more depth and in consideration of many other factors for those aircraft types that could be potentially affected by flight diversions around the airspace.

3.6.12.3.2 Alternative B

Alternative B for the corridors analyzed under Alternative A would be established through a COA. Potential impacts on socioeconomic resources would be similar to those described under Alternative A in Section 3.6.12.3.1.

3.6.12.3.3 No Action Alternative

Under the No Action Alternative, there would not be any means of operating UAVs between Eielson AFB and R-2211. Therefore, no changes to existing socioeconomic resources are anticipated.

3.6.12.4 Mitigations

The preceding analysis of effects has identified potential indirect adverse impacts on civil aviation and economics. Mitigations presented for Airspace Management (Section 3.6.1.4) would benefit the use of airspace for civil aviation and commerce.

3.6.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.6.13.1 Affected Environment

The ROI for this proposed action includes the areas over which the proposed restricted areas would be established and the communities dependent on subsistence resources in the vicinity of these overflown areas. Since the proposed restricted areas are narrow corridors overlying various areas, the ROI for each corridor is described separately.

Proposed Restricted Area Corridors Between Eielson AFB and R-2211, Eielson AFB and R-2205, Fort Wainwright and R-2211, and Fort Wainwright and R-2205. These proposed restricted area corridors are contained within a State nonsubsistence area and a Federal nonrural area described in Section 3.2.13 and shown in Figure 3-23 (ADFG 2011-10; USFWS 2010-1). Recreational hunting and fishing would still be permitted and managed as described in Section 3.6.10, Land Use.

Proposed Restricted Area Corridor Between Allen Army Airfield and R-2202. Communities within the vicinity of this proposed corridor include Delta Junction, Big Delta, Healy Lake, Dry Creek, and Dot Lake. Delta Junction, Big Delta, and Dry Creek are included in the State nonsubsistence area depicted in Figure 3-23 (ADFG 2011-10). These communities conduct subsistence activities under Federal subsistence regulations within GMU 20D. Within this GMU, rural Alaska residents harvest the following subsistence resources in the stipulated seasons with appropriate permits: black bear, brown bear, caribou, moose, sheep, beaver, coyote, fox, hare, lynx, muskrat, wolverine, grouse, and ptarmigan (USFWS 2010-1). These areas are also included in the Yukon-Northern subsistence area for subsistence fishing under Federal regulations (USFWS 2010-2). The communities of Healy Lake and Dot Lake also participate in subsistence activities in the Federal subsistence areas described above. These communities also participate in subsistence activities and areas regulated by the State. Subsistence resources and estimated harvests under the State regulations for these communities are included in Table 3-69. Information on subsistence harvests on Federal public land near these communities is not available. More-detailed information on species and habitats in the ROI is provided in Section 3.1.8.1, Biological Resources.

Proposed Restricted Area Corridor Between R-2202 and R-2211. This proposed restricted area corridor overlies the same area as the proposed RLOD location. Therefore, the affected environment for subsistence resources for this corridor would be the same as that described for the proposed RLOD in Section 3.2.13.1. Information on subsistence harvests on Federal public land near these communities is not available. More-detailed information on species and habitats in the ROI is provided in Section 3.6.8, Biological Resources.

Proposed Restricted Area Corridor Between R-2205 and R-2202. Communities within 20 NM of this proposed restricted area corridor include Big Delta and Delta Junction. Other communities in the vicinity include Healy Lake and Dry Creek. As described previously, Big Delta, Delta Junction, and Dry Creek are within a State nonsubsistence area (see Figure 3-23) (ADFG 2011-10). These communities conduct subsistence under Federal regulations applicable to GMU 20 and the Yukon-Northern subsistence area for fishing as described above. Similarly, Healy Lake and Dot Lake communities participate in subsistence activities within the above Federal subsistence areas and in areas regulated by the State. Subsistence resources and estimated harvests under the State regulations for these communities are included in Table 3-69. Information on subsistence harvests on Federal public land near these communities is not available. More-detailed information on species and habitats in the ROI is provided in Section 3.6.8, Biological Resources.

Table 3-69. State and Federal Subsistence Resources for the Communities of Healy Lake and Dot Lake

Village	2010 Population	Percent Alaska Native	Percent of Households Participating in Subsistence	State Subsistence			Federal Subsistence
				Most Representative Year	Species	Estimated Harvest (lb)	Hunting and Fishing Subsistence Areas
Dot Lake	62	73.70	100	1987	Salmon (varying species)	1,329	Yukon-Northern Area Subsistence Fishing
					Non-Salmon Fish (varying species)	2,094	
					Large Land Mammals (black bear, caribou, moose)	3,177	Unit 20D-Fairbanks-Central Tanana
					Small Land Mammals (beaver, fox, red fox, hare, lynx, marten, mink, porcupine, weasel, wolverine)	308	
					Birds and Eggs (includes migratory birds)	148	
					Vegetation (berries, plants, greens, mushrooms, wood)	499	N/A
Healy Lake*	13	73.0	28.6	N/A	Birds and Eggs (includes migratory birds)	44	Unit 20D-Fairbanks-Central Tanana

Note: Data are from 2000 survey which is not the most representative year and may not accurately reflect subsistence use and dependency in Healy Lake. Data from the most representative year are not available.
Key: lb=Pound; N/A=Not Applicable.
Source: ADCCED 2011; ADFG 2011-3, 2011-4; USFWS 2010-1, 2010-2.

3.6.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.6.13.3 Environmental Consequences

Healy Lake, Dot Lake, and Dry Creek are ranked as high in dependence on subsistence resources. Therefore, analysis of impacts on subsistence from this proposed action focuses on the proposed UAV restricted area corridors between Allen AAF and R-2202, between R-2202 and R-2211, and between R-2205 and R-2202. The remaining proposed corridors, as described in Section 3.6.13.1, are within a Federal nonrural area and a State nonsubsistence area. Therefore, no subsistence priority is given to Alaska residents, and management of subsistence resources is not performed. Impacts on recreational activities, including hunting, are described in Section 3.6.10.3.

3.6.13.3.1 Alternative A

Impacts on civil aviation are described in Section 3.6.1. As the narrow corridors of restricted airspace would be active for a maximum of 50 days per year, it is not expected that access to subsistence resources by aircraft would be impacted, and thus that harvest of subsistence resources would not be delayed to such a degree that the communities ranked as high in dependence on subsistence resources would be adversely impacted. Additionally, public access to the area beneath the restricted airspace corridors would not be restricted, and individuals would continue to participate in subsistence resources as they are currently practiced. Therefore, no significant impacts to subsistence resources as defined by ANILCA would be expected. USAG-FWA, as part of their ongoing resource management is proposes to continue to consult with subsistence parties and tribes as described in Section 3.6.13.4 below. This will benefit subsistence uses in the underlying areas.

3.6.13.3.2 Alternative B

Alternative B for the corridors analyzed under Alternative A would be established through a COA. Potential impacts on subsistence resources would be the same as those described under Alternative A in Section 3.6.13.3.1.

3.6.13.3.3 No Action Alternative

Under the No Action Alternative, no new restricted airspace or COA airspace would be established. Subsistence activities would continue as they are currently practiced.

3.6.13.4 Mitigations

The preceding analysis of effects on this resource has identified no adverse impacts on subsistence resources. However, USAG-FWA, as part of their ongoing resource management, proposes to manage potential effects on subsistence resources.

- Continue consultation efforts with subsistence parties to determine current subsistence use levels and areas on USAG-FWA lands as input into scheduling. Continue Tribal consultation efforts with subsistence users about hunting and fishing programs on USAG-FWA land. Continue to use a newsletter to provide information to subsistence users about existing and new military activities and the changes in access for subsistence users. Continue research and cooperative studies with Tribes to address possible effects of Air Force and Army activities on subsistence resources both directly within USAG-FWA installation boundaries and the outlying resources that may also be affected by military activities on DTA-West, DTA-East, YTA, and TFTA.

3.6.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.14.

3.6.14.1 Affected Environment

The affected environment for the UAV proposal includes two boroughs and one census area in which some portion of the proposal footprint is located. Table 3-70 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas comprising the proposal area. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

The average percent minority in the proposal area ranges from 11.6 percent in Denali Borough to 25.9 percent in FNSB, which is lower than the 35.9 percent average for the State of Alaska. The average

percent low-income ranges from 6.1 percent in Denali Borough to 11.6 percent in Southeast Fairbanks Census Area, compared to 9.6 percent for the State of Alaska. The average percent Alaska Native ranges from 3.6 percent in Denali Borough to 11.5 percent in Southeast Fairbanks Census Area, less than the 14.8 percent average for the State. The average percent of children ranges from 22.5 percent in Denali Borough to 26.3 percent in Southeast Fairbanks Census Area, similar to the 26.4 percent average for the State.

3.6.14.2 Impact Assessment Methodology

General Methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2.

Table 3-70. Minority Population, Low-Income Population and Children by Area

Unmanned Aerial Vehicle (UAV)					
Area	**Total Population**	**Percent Low-Income**	**Percent Minority**	**Percent Alaska Native**	**Percent Children**
Fairbanks North Star Borough	97,581	8.0	25.9	7.0	25.6
Denali Borough	1,826	6.1	11.6	3.6	22.5
Southeast Fairbanks Census Area	7,029	11.6	21.3	11.5	26.3
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Source: USCB 2010-1, 2010-2.

3.6.14.3 Environmental Consequences

3.6.14.3.1 Alternative A

For the UAV proposal, restricted area access corridors would be established. Public access to the area beneath the restricted airspace corridors would not be restricted. Based on a review of environmental consequences for other related resources, potentially significant impacts would be reduced through proposed mitigations and other management actions. No disproportionately high and adverse environmental or health effects on minority and low-income populations or children would occur.

3.6.14.3.2 Alternative B

Restricted area corridors would be established through COAs but impacts would be the same as for Alternative A.

3.6.14.3.3 No Action Alternative

No restricted airspace or COA airspace would be established and conditions and practices in the area would continue as they currently exist.

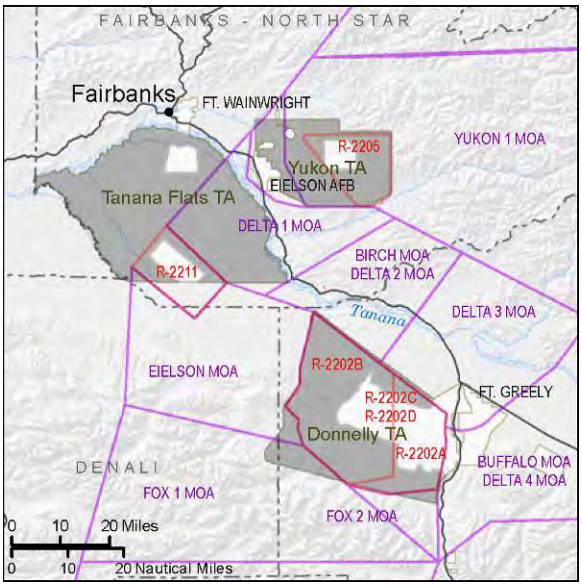
3.6.14.4 Mitigations

No mitigations are identified for this resource.

3.7 ENHANCED ACCESS TO GROUND MANEUVER SPACE (PROGRAMMATIC)

As stated above in Section 3.0, the ROD will not adopt mitigations for the programmatic proposals evaluated in Chapter 3.0. However, it may provide recommendations for future planning that concern siting, criteria, measures, and recommended mitigations that might apply based on those used for similar actions by the various military Services and the analysis in the EIS. These recommendations are included in the impact assessments of the various resources for the programmatic proposals and may be considered and applied in future planning for these actions.

This proposal would provide year-round accessibility, internal circulation, and enhanced maneuver space to support brigade-level events with battalion-size training occurring in TFTA, YTA, and DTA. Brigade units would interact with Joint Interagency, Intergovernmental, and Multinational (JIIM) components in order to provide a realistic training environment. The training frequency at this time is planned to support seven combat maneuver battalions that would train within TFTA, DTA, and YTA. Each battalion would train for a 10-to-14 day event at least once per year per battalion. Specific alternatives for direct access to DTA, YTA, and TFTA have not yet been developed to the point where a specific decision can be made. As such, year-round access, internal circulation, integration with proposed ISBs, and expanded maneuver space in DTA, YTA, and TFTA will be treated in a programmatic manner in this EIS.



The Enhanced Ground Maneuver proposal has a composite footprint of just over 1.2 million acres (1,892 square miles), entirely on military land. (Refer to the gray-shaded area in the map to the right.) The proposal is entirely ground-based, and in itself, does not involve hazardous operations requiring changes to, or use of, airspace. It involves construction of training roads, trails, and open maneuver areas. Based on this, the potential for significant impacts on airspace management and flight safety is expected to be low. In response to future mission change and force structure modernization, it is likely that the Army and other services currently training in Alaska will be required to adapt their training and testing on JPARC lands and ranges. The Army will evaluate any additional modernization and enhancement of JPARC capabilities based on future service requirements in accordance with NEPA.

3.7.1 Airspace Management and Use (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.1. The activities proposed for the ground maneuver space access would not affect the management, use, or structure of the MOAs overlying different portions of the maneuver areas. Therefore, it is not further analyzed for this proposal.

3.7.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.2.

3.7.2.1 Affected Environment

The affected environment includes all lands within DTA, TFTA, and YTA that are not designated dudded munitions impact areas. These areas are affected by noise generated during military training, including weapons firing and detonation, ground vehicle maneuvers, and aircraft training activities.

3.7.2.2 Impact Assessment Methodology

The same methods used to assess impacts associated with the TFTA access road were used to assess the proposed EGMS.

3.7.2.3 Environmental Consequences

3.7.2.3.1 Proposed Action

Noise impacts would be similar to impacts associated with the proposed construction and use of the TFTA access road (see Section 3.8.2.3). Ground unit maneuvering within TFTA would generate temporary disturbances among wildlife. However, ground vehicle noise levels are less intense than noise levels generated by aircraft and munitions usage in the same areas and are not considered in detail in this analysis (see Appendix E, *Noise*, Table E-2 and Table E-4).

3.7.2.3.2 No Action

Under the No Action Alternative, no additional roads or circulation routes would be constructed, and ground maneuver operations would continue to occur as they do under baseline conditions.

3.7.2.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.7.3 Safety

FLIGHT SAFETY

This proposal does not include any airspace actions or flight activities beyond those that currently exist within the surrounding airspace environment; therefore, there would not be any additional flight safety concerns associated with the proposed actions.

3.7.3.1 Affected Environment

FLIGHT SAFETY

The activities identified for this proposal do not include any changes to the use or structure of the airspace associated with the ground maneuvering space. The general flight safety considerations for the airspace overlying portions of this land area are as discussed in Section 3.1.3.

GROUND SAFETY

For this alternative, the environment affected by activities involved in range safety and control, UXO and munitions safety, public access control, and fire and emergency response would not differ from that previously described for RLOD Alternative A in Section 3.2.3.1.

3.7.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The assessment methodology for flight safety impacts addressed in Section 3.1.3.2 was used, as appropriate, for the airspace activities conducted in the areas overlying this maneuver area as discussed in Section 3.1.3.

GROUND SAFETY

Impact assessment methodology is the same as in Section 3.2.3.2.

3.7.3.3 Environmental Consequences

3.7.3.3.1 Proposed Action

GROUND SAFETY

Range Safety and Control – There are no environmental impacts associated with range safety and control for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Unexploded Ordnance and Munitions Safety – There are no environmental impacts associated with UXO and munitions safety for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Public Access Control – There are no environmental impacts associated with public access control for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Fire and Emergency Response – There are no environmental impacts associated with fire and emergency response for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

3.7.3.3.2 No Action

Under the No Action Alternative, the new access would not be constructed, and therefore, emergency response would continue as under existing conditions. Improved emergency response capabilities would not occur. No other impacts on public health and safety would occur under the No Action Alternative.

3.7.3.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.7.4 Air Quality

Reference also Appendix B, Definition of the Resources and Regulatory Settings, Section B.4.

3.7.4.1 Affected Environment

The proposed enhancements to ground maneuver space would occur primarily in FNSB and Southeast Fairbanks Census Area, and a small portion of these activities would occur in Denali Borough. Southeast Fairbanks Census Area and Denali Borough are both in attainment of all NAAQS. None of the proposed locations for access enhancement lie within the $PM_{2.5}$ nonattainment area or the carbon monoxide maintenance area of FNSB. Table B-12 in Appendix B, Section B.4.3 provides a summary of the estimated 2008 annual emissions for the three affected areas.

3.7.4.2 Impact Assessment Methodology

Currently, this action is in its developmental stages and sufficient data is not available to analyze air quality impacts. Once sufficient data is available, the air quality analysis will include an estimation of the construction emissions and the magnitude of changes in operational emissions that would occur from the proposed EGMS, in accordance with the methodology described in Appendix B, Section B.4.5. Since all of the affected project region is in attainment of all NAAQS, the analysis will use the PSD new major source threshold of 250 tons per year for each pollutant as an indicator of significance or nonsignificance of projected air quality impacts.

PSD CLASS I AREA IMPACT ANALYSIS

The PSD Class I area of concern for this proposed action is Denali National Park, which is approximately 40 miles from the closest proposed enhancement area under this action. Due to the proximity of the proposed action to a pristine PSD Class I area, the potential for proposed activities to affect visibility within this area will need to be analyzed.

3.7.4.3 Environmental Consequences

3.7.4.3.1 Proposed Action

Air quality impacts of construction activities related to the proposed EGMS action would occur from (1) combustive emissions due to the use of fossil-fuel-powered equipment, and (2) fugitive dust emissions (PM_{10} and $PM_{2.5}$) due to the operation of equipment on exposed soil. Increases in emissions due to changes in operations for the EGMS would occur primarily from combustive emissions due to the use of fossil-fuel-powered equipment.

Information needed to calculate air emissions resulting from the proposed construction activities associated with the ground maneuver space action includes the following:

- The type, horsepower, and daily and annual usage rates of fossil-fuel-powered equipment used to construct the roads associated with the proposed action
- The usage of water trucks during construction for dust control
- The surface type, length, and width of the proposed roads
- The distance that the trucks would travel to the materials and dumping sites

Operational information needed to calculate the air emissions resulting from increased activities associated with the EGMS action include:

- The type, horsepower, and daily and annual usage rates of fossil-fuel-powered equipment associated with increased training activities related to the proposed action

- Information regarding any increase in munitions expenditures associated with the proposed action, including the types of munitions, and the baseline and expected utilization of each munition type

The emissions factors needed to derive construction source emission rates are found in *Compilation of Air Pollution Emission Factors* (EPA 1995) and emissions inventory data produced by the mathematical models: OFFROAD2007 for off-road construction equipment (Air Resources Board [ARB] 2006-1) and the EMFAC2007 Model for on-road vehicles (ARB 2006-2).

Emission reduction strategies that can be incorporated during construction activities related to the EGMS action include the following:

- Use water trucks to keep areas of vehicle movement damp enough to minimize the generation of fugitive dust.
- Minimize the amount of disturbed ground area at a given time.
- Minimize ground-disturbing activities in proximity to the construction area boundary.
- Discontinue proposed ground-disturbing activities within 3 miles upwind of the construction area boundary when winds exceed 25 miles per hour or when visible dust plumes emanate from the site and then stabilize all disturbed areas with water application.
- Designate personnel to monitor the dust control program and to increase dust suppression measures (e.g., watering), as necessary, to minimize the generation of dust.

3.7.4.3.2 No Action

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations at YTA, TFTA, and DTA. Therefore, the No Action Alternative would not result in any new air quality impacts.

3.7.4.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.4.3.1.

3.7.5 Physical Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.5.

3.7.5.1 Affected Environment

TOPOGRAPHY

TFTA is located within a broad depression known as the Tanana-Kuskokwim Lowland and is bordered to the south by the Alaska Range. Topography on TFTA slopes upward to the southeast, with elevations increasing from just under 400 feet MSL in the northwestern area of the installation, closest to the Tanana River, to just over 1,100 feet MSL on the southern boundary. Topographic features of note on TFTA include the Clear Creek Butte and Wood River Buttes, each at just under 1,000 feet in elevation. The highest points on TFTA are found on several small unnamed peaks at just over 1,400 feet in the area surrounding Blair Lakes.

YTA is located in the Yukon-Tanana Uplands, and is largely mountainous, with elevations rising 500 to 1,500 feet above the valley floors. Rounded ridges (elevations from 3,000 to 5,000 feet) with gentle side slopes and valley floors from 0.25 to 0.50 miles wide are common features. Low elevations are seen in the western portions of the installation closest to the course of the Tanana River and in the numerous river valleys spread throughout YTA.

DTA is located in the northern foothills of the Alaska Range to the south and on alluvial plains just north of the foothills. Much of DTA area is level or gently sloping; elevations range from 1,200 to 1,600 feet. In the southern portion of DTA, elevations range from 2,000 to 4,500 feet, where flat-topped, east-trending ridges are found. The highest elevations in DTA are located in the southwestern areas, where elevations range from 4,000 to 6,200 feet. Prominent topographic features in DTA include Molybdenum Ridge (5,993 feet) and Donnelly Dome (3,910 feet). The Delta River flows through the eastern portion of DTA, and the Little Delta River forms the western boundary.

GEOLOGIC HAZARDS

TFTA, YTA, and DTA have each been affected in the past by earthquakes generated by the Denali Fault and are in a region classified by the U.S. Geological Survey (USGS) as moderate to high for earthquake hazard potential (USGS 2002). Seismic activity near TFTA is associated with an area known as the Fairbanks seismic zone, which experiences an average of five to six earthquakes per year, and micro-earthquakes are frequently felt. YTA and the northwest corner of DTA are located in the Salcha seismic zone, an area characterized by a northeast-trending cluster of earthquake epicenters about 200 miles wide and 30 miles long, extending from Fairbanks to Prince William Sound to the south (USARAK 2004-1).

A magnitude 7.9 earthquake in November 2002 (the largest recorded in the region, ground movement was being felt from Fairbanks to the Kenai Peninsula south of Anchorage), with an epicenter approximately 90 miles south of Fairbanks, resulted in minor to moderate damage to roads, runways, and some buildings in each training area. Portions of the Richardson Highway were damaged, and support structures for the Trans-Alaska pipeline were damaged, though the pipeline itself remained intact (USARAK 2004-1).

In addition to the major Denali Fault, several smaller, localized faults are close to TFTA and YTA, including the Mystic Mountain and Healy Faults. DTA lies to the west of the Granite Mountain, Donnelly Dome, Mt Pillsbury, and Canteen Faults (GSA 1993).

SOILS

In general, soils on TFTA were formed from various unconsolidated materials, with deposits varying from coarse gravel nearest the Alaska Range at the heads of alluvial fans to sand and silt at the fan bases in northern portions of the training area. Soils containing coarser sediments on the upper fans are generally more well-drained than the fine-grained sediments found in lower areas of alluvial fans (USARAK 2004-1). In general, soils on TFTA are extremely acidic to neutral, have moderate to high potential for frost action, and present limitations to development, due to depth to permafrost, depth to the high water table, and high organic matter content (USDA 2005).

On the southern slopes of mountainous areas of YTA, soils generally consist of well-drained silt loams varying from shallow gravelly silt near the tops of ridges, to silt loams at mid-slope areas, to moist silt loams in areas of lower slope. Depressional areas and the bottoms of drainages usually contain shallow gravelly silt loam covered by a thick layer of peat. North-facing slopes usually contain shallow gravelly silt loams overlain with thick peat (USARAK 2004-1).

Soils in the northern, west-central, and eastern portions of DTA-West are categorized as silt loam associations and soils in DTA-East are categorized as shallow silt loam, over gravelly sand. Soils in river floodplains are alternating layers of sand, silt loam, and gravelly sand. Soils in boggy areas are very

organic, wet, and close to the high water table. Upland soils are moist and loamy, as compared with mountainous soils, which are rocky, nonvegetated, and steep. Soils in lowlands generally have low wind and water erosion potential; soils at foothills and higher elevations have greater erosion potential (USARAK 2004-1). In general, soils in DTA are extremely to moderately acidic, have moderate to high potential for frost action, and present limitations to development due to depth to permafrost, depth to the high water table, and high organic matter content (USDA 2005).

PERMAFROST

Much of the land area on TFTA is underlain by continuous or discontinuous layers of permafrost. Permafrost is not found in areas closest to and under rivers and lakes, but is commonly found where there is no surface water or actively circulating groundwater. The active permafrost layer can be found at only 1 foot below the surface in some places, but can extend to 23 to 50 feet in others. The presence of permafrost is often a function of vegetative cover, topography, elevation, and local soil type. TFTA is experiencing widespread permafrost degradation (estimated at over 40 percent of the total land area), which is expressed on the surface as various thermokarst features (USARAK 2004-1).

YTA is located in a region of discontinuous permafrost; permafrost is continuous and thickest in valley bottoms and on lower mountain slopes. As a large portion of YTA is rugged and mountainous, much of the area is classified as unfrozen (less than 10 percent permafrost). Permafrost can extend to the summits of north-facing slopes, but is absent on hilltops and most south-facing slopes. Sediments under the floodplains of the Tanana and Chena Rivers can be frozen to depths of up to 265 feet, but unfrozen zones can be found beneath most deep lakes and medium to large rivers (USACE 1999; USARAK 2004-1).

Permafrost conditions in DTA are irregular, particularly in areas where there are rapid elevation transitions. Permafrost tends to occur in DTA on north-facing slopes and valley bottoms, but is absent on south-facing slopes, in coarse-grained sediments, and in areas of groundwater movement (USACE 2001). A large portion of DTA contains discontinuous permafrost, but areas below existing and abandoned river channels, lakes, wetlands, and other low-lying areas are likely free of permafrost. Isolated areas of permafrost can be found in sandy gravels from 2 to 40 feet below ground. Degradation of permafrost is not widespread on DTA; areas of such degradation are generally expressed on the surface by thaw ponds. Permafrost underlying gravelly soils is less likely to be susceptible to permafrost degradation, whereas areas dominated by loess or other silty sediments would be more vulnerable (USARAK 2004-1).

3.7.5.2 Impact Assessment Methodology

SOILS AND PERMAFROST

The impact assessment methodology for soils and permafrost would be the same as that described in Section 3.2.5.2.

GEOHAZARDS

Impacts associated with geologic hazards, including faulting, earthquakes, and permafrost, have been evaluated with respect to the potential for damage to proposed structures and related infrastructure. Impacts associated with volcanic activity has been generally evaluated with respect to potential injury or loss of life.

3.7.5.3 Environmental Consequences

This section analyzes the potential impacts related to physical resources (including soils, permafrost, and seismicity) associated with the proposed action. Baseline conditions in areas potentially affected by the proposed action were addressed in Section 3.7.5.1.

3.7.5.3.1 Proposed Action

The proposed action includes the enhancement of maneuver areas (including the construction of associated maneuver area infrastructure) to allow year-round accessibility, improved internal circulation, and maneuver space necessary to support at least battalion-size training events in each training area. Brigade-level events conducted by the SBCT, Airborne Brigade Combat Team (ABCT), Combat Aviation Brigade, and Engineer Brigade would conduct battalion operations in each training area while interacting with JIIM components. The proposed new ground maneuver areas would be located within a supportable distance of existing and proposed ISBs (see Section 3.10.5). The proposed ground maneuver area could be used to train a Stryker company in accessible off-road areas outside existing hazard footprints. The location of the enhanced ground maneuver space and necessary infrastructure construction/improvement are to be determined.

Since soil conditions vary greatly between and within DTA, YTA, and TFTA, potential impacts associated with the construction of access roads or infrastructure would be dependent upon localized soil characteristics in areas of disturbance. Impacts from construction activities would be considered direct and short-term. The primary impact associated with roadway/infrastructure construction would be increased potential for erosion during preliminary grading activities, while soil is exposed, before application of roadbed and roadway material, as well as from the actions of construction equipment. However, the proposed action would utilize existing roads where possible and thereby minimize impacts on soils.

Potential impacts on permafrost during construction of access roads/infrastructure would result from removal of upper soil layers or vegetative mat, leading to a possibility of permafrost degradation and subsequent creation of thermokarst features (land surfaces characterized by very irregular surfaces of marshy hollows and small hummocks). As with soils, the extent and location of permafrost beneath the surface at DTA, YTA, and TFTA is variable and thus the extent of impacts on permafrost would be dependent upon permafrost extent at site of access road (or infrastructure component) construction. Permafrost, however, is present in all three areas to some extent. General permafrost conditions and trends for each training area are described in Section 3.7.5.1.

Training activities would result in the potential for significant adverse impacts, depending upon where and upon what soil types training occurs; however, the majority of terrain on all three training areas are considered off limits in warmer months for certain types of training activities (i.e., Stryker maneuvering) due largely to lack of accessibility (USARAK 2004-1). This lack of accessibility would greatly reduce the possibility of significant impacts on soils. Primary impacts on soils would result from ground maneuver activities and use of Stryker vehicles in off-road capacity. The type and severity of impacts associated with such uses would be dependent upon soil characteristics and type in the maneuver space.

The 2004 *USARAK Transformation EIS* assessed the use of Stryker vehicles on DTA, TFTA, and YTA. Prior to completion of that document, Stryker maneuver training had not occurred in Alaska. The EIS evaluated the ability of the Stryker to maneuver off-road and predicted terrain impacts, assessing both the mobility and maneuverability of vehicles and the trafficability of soils. For purposes of evaluation, mobility is defined as the ability of a vehicle to cross terrain, taking into consideration vehicle type, soil trafficability, obstacles in terrain, and access. Maneuverability indicates vehicle mobility on applicable/accessible land. Trafficability is defined as the ability of soils to physically support the weight of military vehicles. Areas considered non-trafficable include year-round wetlands and areas with slopes greater than 30 percent (USARAK 2004-1).

The effects of vehicle traffic on soils are dependent upon vehicle characteristics and local site conditions (Ayers 1994). Shape and size of contact area, surface pressure, total vehicle weight, track/wheel design, vehicle speed, turning radius, and driving patterns are vehicle characteristics that can determine the

potential extent of soil damage. Soil characteristics that determine the extent and type of damage include soil type, moisture content, climate conditions, vegetation types, and soil strength (USACE 2000). Soils most susceptible to damage from training activities (especially off-road use) include fine-grained, wet or hydric soils in low lying areas, soils with high erosion potential, and soils with fine sandy or silty loam surface layers. General soil conditions and trends for each training area described in Section 3.7.5.1.

In general, soil disturbances from military vehicles result in environmental impacts by way of increased erosion and decreased plant/vegetation development. Consequences of vehicle traffic can include reduced soil strength and structure, formation of ruts, soil puddling, displaced surface layers, increased soil density, decreased pore space, restricted water movement, and physical damage to root systems (USACE 2000). One potential impact from the activities of the SBCT and other vehicles associated with the proposed action is the rutting of soil resulting from repeated passes over a given terrain. Rutting is defined as the soil surface surrounding a vehicle track that has been displaced, compacted, or lost strength, due to reshaping caused by traffic. Rutting is associated with vegetation loss, soil exposure, increased erosion, soil compaction, and root damage (USACE 2000).

For Stryker maneuvers on unfrozen soils, no beneficial or adverse impacts are anticipated in areas where soil strength is high (on well-drained, gravelly or sandy soils), potentially adverse, but not significant impacts are expected on soils with moderate soil strength (wet or poorly-drained sand or silty soils), and significant impacts would be associated with soils having low soil strength (saturated or waterlogged sands, silts, and organic soils). On soils with very low strength, potential rut depths can range from 6 to 18 inches (USARAK 2004-1). Vehicles such as the Stryker are more limited in unfrozen soil conditions (i.e., summer months) in comparison to other vehicles used for maneuvers and other purposes on USAG-FWA, due largely to soil strength and slope conditions.

Terrain that is normally untrafficable ("No Go") in warmer months often requires a substantial layer of frost (not permafrost) before vehicle operations are permissible. One study found that on a soil type vulnerable to damage (soft peat), a frost depth of 28.3 inches is required to support a Stryker vehicle under dry conditions and 18.1 inches under wet conditions. For comparison, a frost depth of 52.0 inches would be needed to support an M1A2 Abrams under dry conditions (33.2 under wet conditions) and 12.2 inches of frost depth for an HMMWV (7.8 under wet conditions) (USARAK 2004-1).

On DTA, all areas west of the Delta River are considered a "No Go" for Stryker maneuvering in summer months and much of the area east of the river is either "No Go" or "Slow Go." All of TFTA is categorized as "No Go" during the summer months, but is considered fully accessible for Stryker training in winter months. Much of YTA is rated either "No Go" or "Slow Go" for year-round training, due largely to slope considerations; however, eastern portions of YTA are considered acceptable for year-round maneuverability (USARAK 2004-1).

There is the potential for significant impacts on permafrost from ground maneuver training and off-road Stryker use, as permafrost is particularly vulnerable to the effects of ground disturbance. With removal of overlying insulating vegetative mat, permafrost can begin to melt, resulting in thermokarst features, land subsidence, and the formation of standing water/ponds, leading to areas largely impassible to vehicle traffic and limited usefulness for other training activities, including construction of infrastructure.

TFTA, YTA, and DTA are located within an area classified by the USGS as moderate to high for earthquake hazard potential. Effects from the 7.9 earthquake in November 2002 were felt on TFTA, YTA, and DTA; structures and infrastructure (including roads) on TFTA incurred some damage as a result of ground acceleration and other effects associated with the earthquake.

3.7.5.3.1.1 Site Selection Criteria and Best Management Practices

Training activities and roadway/infrastructure construction would adhere to all applicable DoD and Army guidelines for protection of soils, prevention of soil erosion, and prevention of permafrost degradation. See Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures,* for information on how the Army manages natural resources on Army lands in Alaska and ongoing measures that would apply to the proposed action.

Pre-planning for siting of new infrastructure or new activities at ranges or on training areas requires coordination between the (Air Force/proponent/user) and the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location that is suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations as well as information from the ITAM program would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up.

3.7.5.3.2 No Action

Under the No Action Alternative, year-round maneuver space on DTA, YTA, and TFTA would not be created or operated and conditions would remain as described in Section 3.7.5.1.

3.7.5.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.5.3.1.

3.7.6 Water Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.6.

3.7.6.1 Affected Environment

The affected environment for EGMS would be limited to TFTA, YTA, and DTA. This section provides descriptions of the water quality and quantity, floodplains, and wetlands within TFTA, YTA, and DTA.

Since 2000, USAG-FWA has managed the wetlands within TFTA, YTA, DTA by limiting military maneuvering or other activities to upland and certain wetland areas based on a potential for environmental damage (USARAK 2004-1). From 2000 to 2005, the wetlands are managed under a five-year permit with the USACE where USAG-FWA could not damage more than 40 acres (16.2 hectares) of wetland per year. Restoration of all damage to wetlands was mandatory (USARAK 2004-1). Environmental overlays were developed which restricted activities based on the presence of wetlands. The use of the overlays will continue under any new permit. For management purposes, USAG-FWA classifies wetlands as either "higher function" or "other," a distinction not mandated by Federal or State policy. "Higher function" wetlands include riverine areas, permanent emergent areas, semipermanent emergent areas, riparian areas, and other sensitive wildlife habitats that lie within any wetland area; the "other" category includes all other wetland types.

TANANA FLATS TRAINING AREA

TFTA is within the Tanana River watershed, and the Tanana River constitutes the northern and eastern boundaries of TFTA. Wood River, Crooked Creek, Willow Creek, Clear Creek, Dry Creek, McDonald

Creek, and Bear Creek drain TFTA, and all of them drain into the Tanana River directly or by way of Salchaket Slough. Numerous small lakes and ponds covering 2,178 acres (881 hectares) exist on TFTA. The only significant bodies of open standing water on Tanana Flats are the Blair Lakes, a group of lakes near the southern boundary of the training area. Due to TFTA's remote location, surface water quality data are not collected for much of the area. Water quality of the nearby Wood River downstream and the Tanana River upstream of TFTA meet all applicable water quality standards (USARAK 2004-1). TFTA is underlain by an alluvial aquifer fed primarily by percolation from source waters along the Alaska Range. Fort Wainwright draws its water supply from groundwater in this Tanana Basin alluvium. Groundwater flows from wells can reach 3,000 gallons (11,356 liters) per minute. Groundwater in the Fort Wainwright area contains high levels of metals, especially iron. Elevated arsenic levels are prevalent in the upland areas. These are naturally occurring levels and are not related to human-caused pollution. Industrial activity on Main Post at Fort Wainwright, in particular activity associated with underground storage tanks (UST), chemical storage facilities, and chemical dump sites, has caused groundwater pollution. The areas of these facilities have been identified and are monitored intensively. Pollution at the sites is localized, and monitoring indicates no deep groundwater pollution (USARAK 2004-1).

Floodplain maps are not available for the waterways in TFTA. The USGS maintains a gaging station on the Tanana River near Fairbanks. As this river is glacier-fed, high flows usually occur in July, at the peak of glacial melt, and average 52,900 cubic feet per second. The highest recorded flow on the Tanana River was on August 16, 1967, at 125,000 cubic feet per second (USGS 2011).

Wetlands constitute approximately 74 percent (483,500 acres [195,668 hectares]) of TFTA. Most are classified as Lowland Wet Needleleaf Forest and Lowland Forest and Scrub Thermokarst Complexes (USARAK 2004-1). Also present are thermokarstic complexes, which consist of marshy hollows and small hummocks that form as permafrost thaws.

YUKON TRAINING AREA

Northern and northeastern portions of YTA are drained by the Chena River and its tributaries: the South Fork Chena River, Hunts Creek, and Horner Creek. The southern portion of YTA is drained by Ninetyeight Creek, a tributary of the Salcha and Little Salcha Rivers. Streams draining the western portion of YTA flow directly or by way of Piledriver Slough into the Tanana River. All streams originating on YTA have their headwaters in the Yukon-Tanana Uplands, in rolling, glacier-free terrain. Many small lakes and wetlands lie in the northwestern portion of YTA. The largest of these include Horseshoe and Machu Lakes, which cover approximately 498 acres (202 hectares). Due to lack of human development and activity on the training area, surface waters on YTA are relatively pristine. All of YTA's surface waters have low rates of primary and secondary productivity and high water quality. Groundwater in the hills and uplands of YTA is limited; however, the floodplain deposits in the creek and river valleys have large quantities of groundwater. Although there are no groundwater monitoring wells in the area, groundwater in nearby wells at Fort Wainwright have high concentrations of metals. Iron concentrations exceed secondary water quality standards, and some wells in the uplands also have higher concentrations of arsenic from naturally occurring sources. Groundwater wells downstream of YTA along the Chena River provide the water supply for the city of Fairbanks.

Floodplain mapping is not available for the waterways in YTA. The USGS maintains a gaging station on the Chena River 11 miles (17.7 km) from its confluence with the Tanana River. The high flows usually occur in May, when flows average 3,500 cubic feet per second. However, the highest recorded peak flow occurred on August 16, 1967, at 74,400 cubic feet per second (USGS 2011).

Approximately 17 percent (42,600 acres [17,240 hectares]) of YTA is classified as wetlands. The prevalent wetland types include Shrub Wetlands, Lowland Wet Needleleaf Forest, and Riverine and

Lacustrine Complexes. Most middle and lower portions of north-facing slopes in the wetland/upland complex of YTA are probably wetlands (USARAK 2004-1).

DONNELLY TRAINING AREA

DTA lies entirely within the Tanana River drainage basin. A majority of the larger streams flowing through the area, such as the Delta River and Jarvis Creek, are glacier-fed. Principal glaciers lying along or south of DTA's southern boundary include Canwell, Castner, and Black Rapids, which drain into the Delta River. Jarvis Creek is fed by meltwater from glaciers on Mount Silvertip. The Delta River and Jarvis Creek have broad, braided channels flowing over permeable alluvial fan deposits. Large quantities of streamflow infiltrate through the sediments into the groundwater table, resulting in decreasing stream flow in a downstream direction. The State of Alaska has designated the streams on DTA for all use classes. Lakes and ponds are abundant, covering 8,752 acres (3.54 hectares) of DTA. ADFG manages 16 lakes for recreational fishing. Bolio Lake is the largest of these at approximately 2.5 miles (4.0 km) in length. Surface water quality values on DTA meet the State's primary drinking water standards. However, aluminum, iron, and manganese concentrations are higher than the State's secondary standards. High iron concentrations are typical in streams that drain wetland areas high in organic matter (USARAK 2004-1). Regions of DTA that have the greatest amount of groundwater are the floodplain deposits along the Little Delta River, Delta Creek, and the broad alluvial fan extending along the north flanks of the Alaska Range. Groundwater in DTA is within State standards for water quality. The Fort Greely water supply comes from a single well in Mainside near the Delta River.

Floodplain mapping in DTA is limited to Jarvis Creek. Since most of the waterways in DTA are glacier-fed, peak flows typically occur in the summer (June and July) at the height of glacial melting.

Approximately 68 percent (431,940 acres [174,801 hectares]) of DTA is wetlands. The Delta River glaciated lowlands, lower Delta Creek lowlands, and upper Delta Creek lowlands ecosections support most of the wetlands on DTA. Most wetlands are classified as Lowland Wet Low Scrub, Lowland Tussock Scrub, and Bog Lowland Wet Forests (USARAK 2004-1).

3.7.6.2 Impact Assessment Methodology

The general methodology for evaluating water resources is described in Section 3.2.6.2.

3.7.6.3 Environmental Consequences

3.7.6.3.1 Proposed Action

The proposed action would have adverse impacts on surface water quality, primarily resulting sedimentation from off-road maneuvering, land disturbance during road construction and establishment of new or increased use of water crossings. By implementing the site selection criteria and BMPs in the following section, the adverse impacts on surface water quality could be reduced to not significant.

The proposed action would have a potential for adverse impacts but not significant impacts to groundwater recharge. Off-road maneuvering compacts the soil which could result in an increase in overland flow and reduced groundwater recharge. The minor impacts on groundwater recharge could be reduced by allowing some training areas to rest for a full freeze-thaw cycle, which would reduce the amount of soil compaction.

The proposed action would have potentially adverse impacts but not significant impacts on floodplains. Year-round access roads would require vehicle crossings of creeks and rivers. In some instances, this may require altering the channel bottom or installing bridges to ensure year-round access. USAG-FWA

would submit an ADNR Essential Fish Habitat (EFH) application, detailing exact locations of surface water crossings and proposed crossing designs for streams used by anadromous fish species. As a condition for receiving these permits, the Army would comply with all permitting conditions designed to mitigate impacts on water resources.

The construction of new roads could impact the surface hydrology and alter the drainage patterns. Roads' culverts can focus water flow into selected channels while cutting off overland flow and flow through wetlands. The increase in flow in selected locations at culvert can have downstream impacts through the incision of the channel and streambank erosion. The decrease in overland flow and decreased water flow through wetlands can alter the hydrologic regime by decreasing flood retention of the watershed and decreasing the travel time of stormwater runoff. Hydrologic investigations are needed to ensure that culverts installed along the proposed roads would not produce a discernable change in the hydrologic flow regime of the area. Without additional details on the road alignments and hydrologic investigation of the road alignments, it is not possible to determine the significance of the potentially adverse impacts by the proposed action on the surface hydrology.

The proposed action would have impacts on wetlands, primarily resulting from the conversion and filling of wetlands associated with building new training roads and upgrading existing routes to year-round access roads. The proposed action would utilize existing roads where possible and minimize impacts on wetlands. Nonetheless, in some portions of the training areas wetlands are the predominant landscape feature (72 percent in TFTA). In the wetland-rich areas it would be difficult to avoid filling or converting wetlands. To have year-round access, raised road beds would likely be required which may result in the filling and conversion of wetlands and could alter wetland hydrology. In addition, military damage to wetlands can occur from off-road maneuvers, staging, and extensive foot maneuver during the summer when wetlands have thawed. The off-road impacts are less harmful during the winter when wetlands are frozen and snowpack protects vegetation. As result of wetland disturbance and degradation the surrounding environment can be affected by increase in peak flow during runoff events, decrease in flow volumes during low flow, loss of erosion control, loss of fish and wildlife habitat, and loss of filtering capacity of sediments and pollutants in the system.

If the proposed action area is within a wetland area as confirmed by the existing wetland inventories and site visit, USAG-FWA Environmental Resources Division staff would request a Jurisdictional Determination by the USACE. The USACE may conduct a site visit and complete a wetland delineation or require one be conducted by USAG-FWA. The USACE would recommend the type of wetland permit application to submit. As a condition for receiving these permits, USAG-FWA would comply with all permitting conditions designed to mitigate impacts on wetlands. By implementing the following site selection criteria and BMPs the adverse impacts on wetlands could be reduced.

The following measures and siting criteria are recommended for this proposal:

Surface water quality (sedimentation)

- Avoid designing roads and trails in the general direction of preferential water flow and at ground level.
- Design culverts to accommodate general local snowmelt runoff each spring and rainfall events throughout the year. As necessary, conduct hydrological investigations, improving road designs to minimize alteration of the hydrologic regime that could occur by the concentration of surface water flows through culverts and the cutoff of overland flow and water flow through wetlands.
- Where possible, conduct vegetation clearing activities during the winter months when soils are frozen.
- Adhere to the SWPPP during construction of the roads for the enhanced vehicle maneuver access.

- Control sediment transport though the utilization of BMPs for erosion and sediment control, which could include but is not limited to, silt fencing, straw waddles, and stormwater retention/detention basins during construction.
- Keep all construction staging, fueling, and servicing operations at a minimum of 100 feet from surface waters.
- Employ SPPCP measures to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources.
- Stabilize all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- Schedule most off-road maneuvering during the winter, when the soil is frozen and the vegetation is covered by a protective snowpack, which limits the ground disturbance and the resulting erosion potential for the soils.
- Rehabilitate maneuver trails and areas on a rotational basis to allow the freeze and thaw process to eliminate compaction and reduce the chance of channelized flow.

Floodplains and waterways

- Construct permanent low-water crossings (i.e., ingress and egress ramps) or other features at designated vehicular stream crossings to prevent bank erosion, widening of waterways, and increased sediment in streams.
- Harden approaches to fords and ice bridges on anadromous creeks and rivers within training areas. Ensure that crossing would occur only at these approaches. Hardened approaches would reduce the amount of bank-side erosion and sedimentation occurring at crossings.

Wetlands

- Site new training roads and upgrades to existing routes to avoid construction in wetlands as much as practicable. Construction should remove the least amount of vegetation possible to avoid melting permafrost.
- Planning for alignments should consider both the direct impacts to wetlands through filling and conversion and the indirect downstream impacts of altered wetland hydrology. Higher function wetlands that impact the overall hydrologic regime should have greater protection requirements than other wetlands to avoid altering the overall hydrologic regime. As part of the planning process, a baseline assessment of wetland and stream water budgets should be conducted to evaluate the impacts to wetland hydrology and downstream impacts.
- Complete the delineation of wetlands prior to the final design of the enhanced maneuver areas. After wetland delineations have been completed, the route designs should be modified based on the wetland delineations to avoid impacting wetlands as much as possible.
- Narrow/confine trail widths in sensitive wetland habitats, or when possible, widen trails to the upland direction to avoid wetland impact.
- Use of a hydro-ax within wetlands to reduce impacts on hydric soils and low-lying vegetation.
- Fill areas would be minimized for wetlands through site-specific design and limiting construction staging to upland areas.
- Where necessary, maintain natural drainage patterns via the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.

- No stockpiling of fill or construction materials in wetlands or waters of the U.S. without obtaining necessary permits. All equipment operation would be confined to the project footprint to prevent unnecessary damage to adjacent wetlands and vegetation.
- Conduct all additional avoidance, mitigation, and compensation as required by terms and conditions in the USACE Section 404 permit

However, without detailed wetland surveys of the road alignments and estimates of the expected increase in training activities, it is not possible to determine the significance of the potentially adverse impacts on wetlands.

3.7.6.3.2 No Action

The No Action Alternative would not allow the creation and operation of a year-round maneuver space in DTA, YTA, and TFTA. Use of DTA, YTA, and TFTA would continue in the winter season when impacts on surface water quality and wetlands are reduced due to the protective snowpack that overlies the soil and vegetation.

3.7.6.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.6.3.1.

3.7.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.7.

3.7.7.1 Affected Environment

The ROI for the EGMS action includes DTA, YTA, and TFTA. DTA is a 623,585-acre training area in the Tanana River Valley, YTA is a 249,552-acre training area just east of Fairbanks, and TFTA is a 653,746-acre training area south of the city of Fairbanks.

MUNITIONS RELATED RESIDUE

This proposed action does not include live-fire training exercises.

CONTAMINATED SITES

There are no CERCLA Superfund sites listed on the National Priorities List in DTA, YTA, or TFTA EGMS ROI. The ADEC CSP lists one site within the DTA portion of the ROI: Site 4309, Oklahoma Range Hillbilly Lake Blivit Failure (Figure 3-37 and Table 3-71). There is also only one CSP site in the YTA portion of the ROI: Site 1682, listed as Fort Wainwright (2P) Nike Sites B and C. There are two CSP sites in the TFTA portion of the ROI: Site 561, Gold King Creek Radio Relay Station, and Site 1136, Fort Wainwright (OU-1) Blair Lakes FTWW-024 (ADEC 2011). No sites are listed in the Army Environmental Restoration database for this ROI (USAEC 2010).

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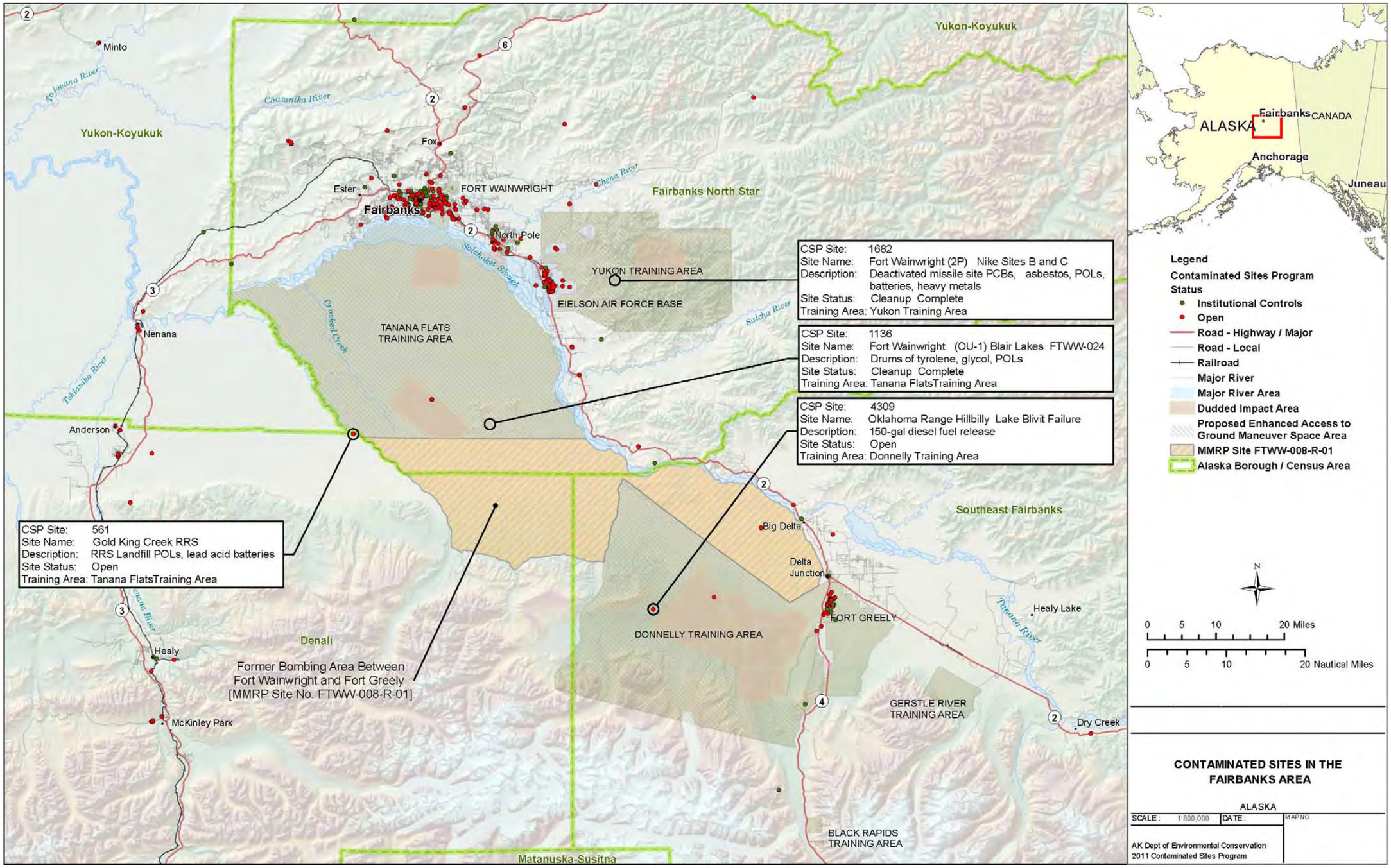

Figure 3-37. Contaminated Sites in the Fairbanks Area

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Table 3-71. Contaminated Sites in the Enhanced Access to Ground Maneuver Space Region of Influence

CSP Site #	Site Name	Description	Site Status	Training Area
4309	Oklahoma Range Hillbilly Lake Blivit Failure	150-gal diesel fuel release	Open	DTA
1682	Fort Wainwright (2P) Nike Sites B and C	Deactivated missile site PCBs, asbestos, POLs, batteries, heavy metals	Cleanup Complete	YTA
561	Gold King Creek RRS	RRS Landfill POLs, lead acid batteries	Open	TFTA
1136	Fort Wainwright (OU-1) Blair Lakes FTWW-024	Drums of tyrolene, glycol, POLs	Cleanup Complete	TFTA

Key: DTA= Donnelly Training Area; FTWW=indicates an environmental restoration site; PCB=polychlorinated biphenyl; POL=petroleum, oil, and lubricant products; ROI=region of influence; RRS= indicates an environmental restoration site; TFTA=Tanana Flats Training Area; YTA=Yukon Training Area.

3.7.7.2 Impact Assessment Methodology

The general methodology for evaluating hazardous materials and waste is described in Sections 3.1.7.1 and 3.1.7.2.

3.7.7.3 Environmental Consequences

3.7.7.3.1 Proposed Action

GENERAL HAZARDOUS MATERIALS AND WASTE

This proposal would provide year-round accessibility, internal circulation, and expanded maneuver space to support brigade level events with battalion-size training occurring in DTA, YTA, and TFTA. There are four known ADEC CSP sites in the ROI of the proposed action.

See Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, with respect to existing mitigations that would be applicable to the proposed action. As part of those existing mitigations, the project proponents would utilize the range Institutional Control maps to avoid these locations when siting construction and maneuver areas. If the sites could not be avoided, established BMPs and SOPs would be followed. Project proponents would coordinate with range Environmental Clean Up personnel to gain proper regulatory approval for work in the contaminated site prior to construction activities. A pre-construction environmental survey would be completed to reduce the potential for construction to encounter petroleum and/or hazardous waste contamination. Construction activities associated with this action could also lead to the discovery of previously unidentified contaminated soils. If contaminated soils were encountered during construction activities, work would stop immediately and IRP/Defense Environmental Restoration Program (DERP) personnel would respond and initiate cleanup.

POL would be used by equipment and vehicles involved in the construction of access roads and training activities associated with this action. As a result, there is the potential for accidental chemical release from refueling or vehicle emergency maintenance activities. Spills of petroleum products or hazardous waste could potentially penetrate into on-site soils resulting in soil and/or groundwater contamination. The Army would manage hazardous materials/waste in accordance with AR 200-1, *Environmental Protection and Enhancement* (Army 2007), which provides guidance on oil and hazardous substance spills, hazardous materials management, and the IRP. In addition, AR 200-1 requires development of a

spill prevention, control, and countermeasures plan, which would provide protective and corrective measures for accidental releases of hazardous substances or petroleum products. Range personnel may apply regulations in addition to AR 200-1 that are not designed to supersede, but rather work as a complement to those policies and procedures. BMPs would be followed by range personnel, which would limit refueling activities and storage within 100 feet of any stream, lake, or river crossing. Other BMPs currently in place would address hazardous materials and waste management and mitigate the effects of contaminants on soil and surface waters at training locations.

In addition to the relevant Army regulations, Range personnel would comply with Federal regulations that govern hazardous waste, including RCRA, CERCLA, Toxic Substances Control Act, and the CWA, as well as State of Alaska regulations, including 18 AAC 62-Hazardous Waste, 18-AAC75-Oil and Other Hazardous Substances Pollution Control, and 18 AAC 75.341-Soil Cleanup Levels.

Pre-planning for siting of new infrastructure or new activities at ranges or on training areas requires coordination with the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location that is suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations as well as information from the ITAM, RTLA, and LRAM programs would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up. The risk of petrochemical spills is expected to increase over baseline conditions under the proposed action, due to the need to transport fuel and perform refueling operations in the field during construction and training operations. However, no beneficial or adverse impacts would occur, due to the infrequency of such activities, combined with existing procedures and controls.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

No beneficial or adverse hazardous materials impacts would occur in association with munitions use, as training and operations would not include live fire.

3.7.7.3.2 No Action

Under the No Action Alternative, there would be no creation and operation of year-round maneuver space in DTA, YTA, and TFTA. Therefore, hazardous material related impacts would not occur.

3.7.7.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.7.3.1.

3.7.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.7.8.1 Affected Environment

The proposed project area for EGMS is being assessed in a programmatic manner because exact access and space requirements have not yet been determined. Proposed areas for the addition of summer use (where currently only winter access is possible) under this alternative include DTA, TFTA, and YTA. General biological resources of DTA-East have been described in Section 3.3.8, and TFTA resources are described in Section 3.8.8. Sensitive resources present during the summers, and thus subject to new

levels of military activity in these areas, will be reiterated for this alternative to be used in a constraints-type analysis for the Environmental Consequences section.

VEGETATION

YTA occurs in the Yukon-Tanana Uplands ecoregion briefly described in Section 3.4.8 (see Figure B-11 in Appendix B). Vegetation present varies dramatically by aspect, elevation, and slope. Forest communities cover 83 percent of YTA, and conifers and broadleaf trees are present across most of the project area. Classifications that predominate within the EGMS study area include open and closed spruce forests; broadleaf, and mixed forests; and tall and low shrub communities. Land type acreages for all study areas are presented in Table 3-72.

Spruce-dominated forest—classified as open spruce, spruce and broadleaf, and open and closed spruce forest—covers approximately 41 percent of TFTA within the EGMS study areas (Table 3-72). Additional details on vegetative cover classes and species present in TFTA are described in Section 3.8.8.

Open and closed spruce forest is the most prevalent vegetation class in the EGMS project study area within DTA, providing about 36 percent of the cover. Various other spruce-dominated forests make up the majority (45 percent) of other vegetation classes in DTA, with tall and low shrub contributing approximately 10 percent of the cover classes. Additional details on vegetative cover classes present within DTA are described in Section 3.3.8.

WILDLIFE

DTA occurs primarily within the Tanana-Kuskokwim Lowlands ecoregion, and, similar to TFTA, is quite rich in wildlife resources. The training area is covered almost entirely by habitats mapped as wetlands. As such, DTA is used extensively by moose during rutting, calving, winter, and summer seasons (see Figure B-16 in Appendix B). Waterfowl use the Delta River and the entire northern boundary of the training area for resting and migratory stopover as well as for part of their migration corridors (see Figure B-14 in Appendix B).

A large portion of floodplain along the Delta and Tanana River tributaries, including Delta Creek and Little Delta River in DTA, have been identified as important roosting or rest areas for migrating sandhill cranes (USARAK 2006-2; USARAK 1999-1). ADFG identified additional areas along Delta Creek near the Delta Creek Assault Landing Strip as important for migrating sandhill cranes. This sandhill crane habitat has been designated as a USARAK Special Interest Management Area, which places limits on disturbance each year from April 25 through May 15 and from September 1 through September 30 (USARAK 2006-2). The Army can conduct military activities in these areas if they first consult with ADFG.

DTA is used extensively by the Delta caribou herd during winter into spring calving season, after which they move off DTA, primarily to the west for summer range (see Figure B-13 in Appendix B). The cooperative agreement between the Army and ADFG identified 12 parcels on DTA as important calving and postcalving areas for caribou (USARAK 2006-2). The Army agreed to suspend activities or operations that would adversely affect sensitive areas from May 15 through May 31, without having to consult with ADFG. Restrictions in these areas are in effect only when caribou are present. In addition, all development and military actions in the caribou calving grounds will be conducted only under winter conditions when there is sufficient snow cover and the ground is adequately frozen to minimize the damage to vegetation and soils.

Table 3-72. Land Types Associated with the Enhanced Access to Ground Maneuver Space Project

Project Area	Spruce and Broadleaf Forest	Open and Closed Spruce Forest	Spruce Woodland / Shrub	Open Spruce and Closed Mixed Forest Mosaic	Open Spruce Forest/ Shrub/Bog Mosaic	Closed Mixed Forest	Closed Spruce Forest	Gravel Bars	Alpine Tundra and Barrens	Dwarf Shrub Tundra	Tall and Low Shrub	Tall Shrub
	Acres (hectares)											
YTA	131,891 (53,374)	24,019 (9,720)	15,445 (6,250)	0	25,684 (11,408)	0	1,481 (599)	0	0	0	2,654 (1,074)	20,789 (8,413)
TFTA	141,625 (57,314)	91,049 (36,846)	3,284 (1,329)	10,366 (4,195)	332,796 (134,678)	4,498 (1,820)	0	6,858 (2,775)	0	53 (22)	66 (27)	5,679 (2,298)
DTA	34,520 (13,970)	139,412 (56,418)	53,806 (21,775)	282 (114)	87,327 (35,340)	0	0	19,879 (8,045)	2,238 (906)	6,172 (2,498)	41,051 (16,613)	5,523 (2,235)

Key: DTA=Donnelly Training Area; TFTA=Tanana Flats Training Area; YTA=Yukon Training Area.
Source: USGS 1991.

Dall sheep also utilize a small area in the south-central portion of DTA for winter range and then move to the south to access mineral licks and for summer range. After emerging from hibernation, brown bear access the Delta River and other streams in the southern portions of DTA for fishing in spring (see Figure B-16 in Appendix B).

As described for vegetation communities, common wildlife species present in the Yukon-Tanana Uplands ecoregion where YTA occurs are tied to specific elevations, often seasonally, and include caribou and moose, usually found in lowland areas in all but the summer season, and snowshoe hare, marten, and lynx in higher elevations. Black and brown bear are plentiful throughout the ecoregion. The area's abundant cliffs provide important habitat for peregrine falcons and other raptors. High-use areas for moose for all seasons occur to the north, west, and south of YTA as well as in the eastern portion of the training area (see Figure B-16 in Appendix B, *Definition of the Resources and Regulatory Settings*). Specific areas known for moose use include Moose Creek and the Chena River floodplain, Hunts Creek, Horner Creek, Beaver Creek, Ninetyeight Creek, and the Little Salcha River drainage as it enters the YTA boundary (USARAK 2004-1).

The Fortymile herd of caribou also uses YTA, but the herd has been in decline over the last 50 to 60 years. Currently, important caribou wintering habitat has been identified primarily off YTA to the northeast but overlapping within a northeastern portion of the training area. Medium to small furbearing mammals—wolverine, coyote, lynx, red fox, pine marten, wolves, snowshoe hare, and beaver—are also found in YTA. The clear headwater streams in the Yukon-Tanana Uplands ecoregion are important spawning areas for Chinook, chum, and coho salmon. However, anadromous fish are typically not present in YTA because the major waterways used by these fish occur off the training area to the north, west, and south. As discussed in more detail in Section 3.8.8, approximately 2 million waterfowl migrate through TFTA and the Chena floodplain north of YTA each spring, followed by 5 million birds in the fall, peaking in September (USARAK 2004-1). As with the sensitive fish, most of the identified sensitive waterfowl habitat occurs outside YTA along major waterways to the north, west, and south (see Figure B-15 in Appendix B).

Important wildlife issues for TFTA include the fact that the Tanana River serves as a major migratory waterfowl corridor as well as resting/stopover and nesting habitat through interior Alaska and supports anadromous fish and raptor nests. Bald eagle nests are common on the Tanana River and usually occur within 328 feet (100 meters) of a shoreline. Active nests are generally spaced from 12 to 16 miles apart. Data that was available for eagle nests are presented in Figure B-12. Potentially suitable nesting habitat for bald eagles, based on proximity to water and tree presence, was modeled and is shown on the figure. As indicated by the dates given, only a fraction of the nests shown would be active during any one year. Individual pairs of swans may nest anywhere on TFTA in a given season. Swans are known to nest on the northern and western portions of TFTA. These nests have been monitored over 30 years (USARAK 2004-1). The lowlands of this region are also important as large ungulate habitat. Moose use the entire TFTA for rutting in fall, calving in spring, and for winter foraging, especially in high-snow-depth years (see Figure B-16 in Appendix B). Spring and summer moose densities increase two- to four-fold in TFTA including migrations from other watersheds and the northern foothills of the Alaska Range (USARAK 2004-1). Caribou use approximately the southern quarter of TFTA for winter foraging (see Figure B-13 in Appendix B).

Approximate acreages used by wildlife for known important life stages that occur within the study areas of the EGMS ROI are presented in Table 3-73.

Migration routes are difficult to accurately quantify but are essential to wildlife, as they allow access to seasonal ranges and rutting/breeding areas.

Table 3-73. Wildlife Habitats Associated with the Enhanced Access to Ground Maneuver Space Project

Study Area	Moose Winter Habitat	Moose Rutting Habitat	Moose Calving Habitat	Caribou Winter Habitat	Caribou Calving Habitat	Dall Sheep Winter Habitat	Waterfowl General Habitat
	Acres (hectares)						
YTA	72,877 (29,492)	72,877 (29,492)	72,877 (29,492)	20,325 (8,225)	0	0	14,424 (5,837)
TFTA	595,509 (240,994)	595,509 (240,994)	591,866 (239,520)	106,570 (43,127)	0	0	549,964 (222,562)
DTA	345,653 (139,881)	301,804 (122,136)	361,113 (146,137)	379,712 (153,664)	289,665 (117,223)	11,155 (4,514)	134,126 (54,279)

Key: DTA=Donnelly Training Area; TFTA=Tanana Flats Training Area; YTA=Yukon Training Area.
Source: RDI 2005-1, 2005-2, 2005-3, 2005-4, 2005-5, 2005-6.

3.7.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.7.8.3 Environmental Consequences

3.7.8.3.1 Proposed Action

Actions that may include ground-disturbance and consequently, vegetation clearing within the proposed study locations (DTA, YTA, and TFTA) include: construction of additional access roads to provide training area circulation routes and integrate the proposed ISBs, construction of other supporting infrastructure, and expansion of maneuver space. Ground disturbance and land clearing would result in vegetation and wildlife habitat losses.

Recommended siting criteria include minimizing construction in the following known sensitive habitats in the project study areas (different avoidance seasons apply; see the biological resources mitigations table in Appendix G, *Biological Resources,* and Figures B-11, B-13, and B-14 in Appendix B):

- Bogs and other wet habitats
- Moose calving, rut and winter habitats
- Caribou calving, rutting, and winter habitats and migration routes
- Dall sheep winter habitat and migration routes
- Waterfowl general, migration stopover/resting, and nesting areas
- Swan habitats
- Brown bear seasonal habitat and fish streams
- Sensitive bison habitat

Existing amounts of vegetation classes that were mapped within the EGMS proposed study areas are given in Table 3-72 (above). Wet areas occur on all training areas and are mapped as plant communities with "bog" vegetation classes (Open Spruce Forest/ Shrub/Bog Mosaic). Avoidance of these areas by proper project component siting would substantially reduce permitting and mitigation requirements, as well as expenses that accompany the need to fill wetlands for road and other facility construction. Overall

direct project impacts on vegetation would be the reduction in area of the vegetation types that occur within the permanently developed construction footprints. These effects would be localized and vegetation communities as a whole would not be expected to be adversely affected. The vegetation classes present in the study locations are not unique or considered sensitive communities but are widespread across the project region.

Temporary effects would occur to vegetation cleared or trampled in areas needed for construction access, work areas, and equipment staging and storage. These areas would be reclaimed and/or revegetated according to established BMPs and SOPs.

Noxious weed/invasive plant species introduction and spread is a common impact of construction projects. In addition to the controls outlined in the USARAK 2007–2011 INRMP, USAG-FWA recommends monitoring sites soon after construction has ceased, monitoring source materials and keeping them weed-free, and requiring contractors to wash equipment before coming on to post (Fort Wainwright 2008). Established programs and measures to prevent and minimize weed spread are also given in the biological resources mitigations table in Appendix G, *Biological Resources*.

With the all-season access provided by the proposed EGMS roads, there is a potential for physical damage to vegetation, soils, and wildlife habitat from off-road vehicular and troop maneuvering when the ground surface is not frozen. This potential is exacerbated by the extensive wet habitats present throughout the study areas (see Water resources). Application of appropriate siting criteria and BMPs will be necessary to manage and minimize the potential for long term habitat damage during operations. The Army also has developed a general approach to address land impacts from training as part of the ITAM program, as discussed in Appendix B, *Definition of the Resources and Regulatory Settings*.

The USARAK military mission works to foster relatively healthy, stable ecosystems (Fort Wainwright 2008). USAG-FWA also has a commitment to natural resources management, including minimizing and mitigating military mission damage. This commitment is beneficial for both natural resources in general and people who use them, while not conflicting with the training mission. A review of applicable mitigation measures for this project is given below.

Approximate acreages of known wildlife habitat of importance within the three study areas are presented in Table 3-73 (above). New road and other facility construction as part of EGMS would not be expected to reduce the amounts of available habitat of any one type to a substantial degree. However, fragmentation of larger habitats and/or migration routes by corridor-type roads and utilities, and large facilities may occur, impeding access to specialized habitat for important life stages such as breeding or calving. Construction activities can also cause animal mortality, especially for smaller, young, and less mobile species. No known endangered or threatened wildlife species are present on the project study areas and known wildlife habitats are generally widely available within the project region. As specified in the Description of Proposed Action and Alternatives (DOPAA), project proponents would work closely with the ADFG prior to specific site selection to avoid adverse effects to sensitive wildlife populations or habitats that may be present. Those important wildlife habitats that are known and mapped in the three project study areas are discussed below.

Approximately 2 million waterfowl migrate through TFTA and the Chena River floodplain north of YTA each spring followed by 5 million birds in the fall, peaking in September (USARAK 2004-1). Major migration routes for waterfowl are associated with the Tanana and Delta river corridors (see Figure B-15 in Appendix B, *Definition of the Resources and Regulatory Settings*). Bald eagle nests are common on the Tanana River and usually occur within 328 feet (100 m) of a shoreline. Active nests are generally spaced from 12 to 16 miles apart. Data available for eagle nests are presented in Figure B-12. To protect migratory birds and their active nests where areas of land need to be cleared for construction projects, the

USFWS developed timing guidelines for vegetation clearing in interior Alaska to assist in compliance with the MBTA. These are presented in Table 3-74.

Table 3-74. Vegetation Clearing Timing Guidelines for Migratory Bird Treaty Act Compliance

Habitat Type	Timing Guidelines for No Vegetation Clearing
Forest or woodland[1] (i.e., trees present)	May 1 – July 15[2]
Shrub or Open (i.e., shrub cover or marsh, pond, tundra, gravel, or other treeless/shrubless habitat)	May 1 – July 15[2]
Seabird colonies (including cliff and burrow colonies)	May 1 – July 20[3]
Raptor and raven cliffs	April 15 – August 1

[1] Owls may begin to nest earlier than these guidelines and surveys prior to May tree-clearing may be necessary to protect active owl nests.
[2] In Canada geese and swan habitat, begin April 20.
[3] Seabird colonies in interior Alaska refer to terns and gulls.
Source: USARAK 2006-2; USARAK 2008-1.

Active nests encountered at any time including before, during and after vegetation clearing windows must be protected from destruction. "Active" is indicated by presence of intact eggs, live chicks, or an adult bird on the nest (USARAK 2006-2).

Wildlife seasonal habitats that support specific spring through fall life cycle activities located on TFTA include duck, geese, and swan resting, migratory stopover (general habitat), nesting and migration routes (Figure B-14 in Appendix B, *Definition of the Resources and Regulatory Settings*), and moose rutting and calving habitats (Figure B-16). For terrestrial species during sensitive life stages (e.g., calving) and for more sensitive wildlife species, the noise and sudden appearance of vehicles may be startling enough that individuals abandon activities and flee an area. This type of behavior would primarily be expected initially after new activities are introduced (refer to Section 3.1.8.3 for discussion on noise effects to wildlife). However, for wildlife species that already occur on the training areas and have experience encountering military training activities, reactions would be expected to diminish as individuals habituate to repetitive noises that prove to be harmless.

Spring through fall wildlife life cycle activities known to occur on DTA-East that may be disturbed include moose rutting, calving, and summer seasons. The Delta Caribou Herd remains on DTA for calving and DTA provides important post-calving habitat prior to travel to summer range (Figure B-13 in Appendix B, *Definition of the Resources and Regulatory Settings*). Waterfowl use the Delta River in eastern DTA and along the northern boundary for resting/stopover, migration corridors, and nesting (Figure B-15). After emerging from hibernation, brown bears access the Delta River and other streams in the southern portions of DTA for fishing during spring (Figure B-16). Sandhill crane roosting areas and migratory stopover habitat that occur along the three primary river floodplains across DTA-West are protected by USARAK as special interest management areas, which include restrictions on military training when cranes are present along the Delta River and Delta Creek (USARAK 2006-2) (see the biological resources mitigations table in Appendix G, *Biological Resources*).

Spring through fall wildlife life cycle activities on YTA include moose rut and calving habitats, primarily in the eastern portion of the training area (Figure B-16 in Appendix B). Most of the identified sensitive waterfowl habitat used for resting/stopover and migration primarily occurs outside YTA along major waterways to the north, west and south (Figure B-15 in Appendix B).

Potential indirect effects to wildlife that often accompany construction activities include the addition of noise, dust, trash, and potential spills. General BMPs and SOPs are normally applied by the Army to reduce these potential effects and provide contingency plans in case of hazardous spills.

Beyond the direct effects of habitat loss and fragmentation, of particular concern for the EGMS project implementation would be the proposed new activity types, amounts, frequencies, and timing of ordnance and vehicle use and human presence introduced into wildlife habitat following the construction of new road access. These activities, especially the change in season of human activity to include spring through fall months (beyond the winter-only access possible in the past), may adversely affect resident and migratory wildlife behavior or activities during seasonal life stages such as calving, nesting, breeding, or critical winter range use by populations that are accustomed to being undisturbed during these seasons. Most adverse disturbance effects would be expected to be localized and temporary, after which the species would be expected to habituate to the activities or to move out of the area. The amount of wildlife activity that currently occurs in the proposed project study areas reflects habituation to some exposure of the animals to existing military activity. With careful planning and mitigation, the impacts on biological resources including wildlife from the EGMS seasonal access project could be reduced by adopting applicable mitigation measures listed in the biological resources mitigations table in Appendix G, *Biological Resources*.

However, even with the application of adequate siting criteria, seasonal restrictions for sensitive life stages, and application of other appropriate measures and BMPs, uncertainties about biological impacts exist for this programmatic project because the locations and specifics of construction at each training area and the biological resources that would be affected by the project are not presently known. Due to the amount and extensiveness of ground disturbance required for EGMS project construction, and operation effects that include allowing all-season vehicle and human access to areas previously accessible only during winter, impacts to vegetation communities and wildlife populations from the implementation of the EGMS project would be adverse and likely to be significant.

3.7.8.3.2 No Action

The current amount of localized ground disturbance (from training, vehicles and live fire) would be expected to continue and wildlife using the area would be expected to remain active in occupied habitats.

3.7.8.4 Considerations for Future Planning

In addition to siting criteria and vegetation clearing guidelines listed in Section 3.7.8.3, other measures, BMPs, and SOPs that should be applied to ground-disturbing activities are included in Appendix G, *Biological Resources.*

3.7.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.9.

3.7.9.1 Affected Environment

The ROI for the EGMS action consists of DTA, TFTA, and YTA (Figure 2-12). The DTA and TFTA portions of the EGMS affected environment are the same as described in Section 3.2, Realistic Live Ordnance Delivery. The YTA portion of the EGMS affected environment is the same as described in Section 3.4.9.1, Expand Restricted Area R-2205.

3.7.9.2 Impact Assessment Methodology

Analysis of potential impacts on cultural resources on the ranges considers both direct and indirect impacts. Direct impacts may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting a resource to the extent that it deteriorates or is destroyed. Direct impacts are assessed by identifying the types and locations of proposed activity and determining the location of cultural resources that could be affected. Indirect impacts result primarily from the effects of project-induced population increases and the need for construction to accommodate population growth. Construction activities and the subsequent use of the facilities can impact cultural resources.

Archaeological and historic architectural resources at the ranges were characterized using existing survey and analysis information from installation ICRMPs, historic preservation plans, archaeological survey reports, historic buildings survey reports, local histories, and the records of the National Register of Historic Places and National Historic Landmarks Program. These documents provided information on known locations of significant resources and identified areas with a high potential for unrecorded cultural resources.

The potential for traditional resources at the ranges was identified using ICRMPs, historic preservation plans, and information provided by installation cultural resource management staff. In addition, potentially interested Alaska Native groups were contacted to request information on potential concerns about the proposed action.

3.7.9.3 Environmental Consequences

3.7.9.3.1 Proposed Action

This Action would allow for the creation and operation of year-round maneuver space in DTA, YTA, and TFTA. This proposal would provide year-round accessibility, internal circulation, and enhanced maneuver space to support brigade-level events with battalion-size training occurring in TFTA, YTA, and DTA. Brigade units would interact with JIIM components in order to provide a realistic training environment.

There is the potential for impacts on cultural resources from the construction of roads, establishment of maneuver areas, and training associated with this action. Prior to implementation of any element of this proposed action, the Army would comply with NHPA Section 106, including identification of historic properties, and assessment and resolution of adverse effects through consultation with Alaska SHPO and potentially affected Federally recognized tribes.

There is the potential for impacts on traditional cultural resources or Alaska Native activities from the proposed action. Although no traditional cultural properties have been specifically identified in the ROI, this does not mean that none are present. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has initiated government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed establishment of year-round maneuver space in DTA, YTA, and TFTA (see Section 1.6.5). Consultation will continue as the proposal progresses toward a definitive action.

3.7.9.3.2 No Action

Under the No Action Alternative there would be no establishment of maneuver areas in DTA, YTA and TFTA. Existing use of the ranges and airspace would continue under this alternative and resources would continue to be managed in compliance with Federal law and Army regulations.

3.7.9.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.9.3.1.

3.7.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.7.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

This proposal only involves military land comprising DTA, TFTA, and YTA. The military uses on these areas are described in Sections 3.2.10.1 (DTA and TFTA), 3.3.10.1 (DTA-East), and 3.4.10.1 (YTA). TFTA, DTA-West, and YTA have a combined total of about 5,360 square kilometers (km^2) of maneuver area, of which about 13 percent is designated for heavy maneuver. Currently, use of maneuver areas is limited because access is restricted by few bridges over major rivers. This increases driving and insertion time, resulting in little time for training in the field. During winter months, frozen rivers allow easier crossing. During summer months, wet and untrafficable conditions further reduce accessibility to maneuver land by about 10 percent (USARAK 2010-5).

Table 3-75 lists the special use areas in areas surrounding the proposal area. Figure 3-38 illustrates the military uses, special use areas, general land status, productive uses, and public infrastructure trails in and around the proposal areas. The predominant public use of both military and surrounding land is for recreational hunting and fishing, as well as subsistence hunting, fishing, trapping, and harvesting, with no ongoing mineral extraction and productive uses. Habitat conservation and vegetation management are also important undertakings on military and State lands, including forestry (primarily on State land). There is no mining and energy resource extraction on military lands; however, rights-of-way, leases, and permits for regional and national infrastructure traverse Army lands. These mostly linear infrastructure corridors limit surface activities that could damage associated equipment, pipelines, and transmission lines.

Table 3-75. Special Use Areas Within Enhanced Access to Ground Maneuver Space Proposal Area

Special Use Area	Designation	Alternative	
		Action Alternative	No Action
Tanana Valley State Forest	State Forest	X	N/A
Chena River	State Recreation Area	X	N/A

Key: N/A=not applicable.
Source: ADNR 2011-3.

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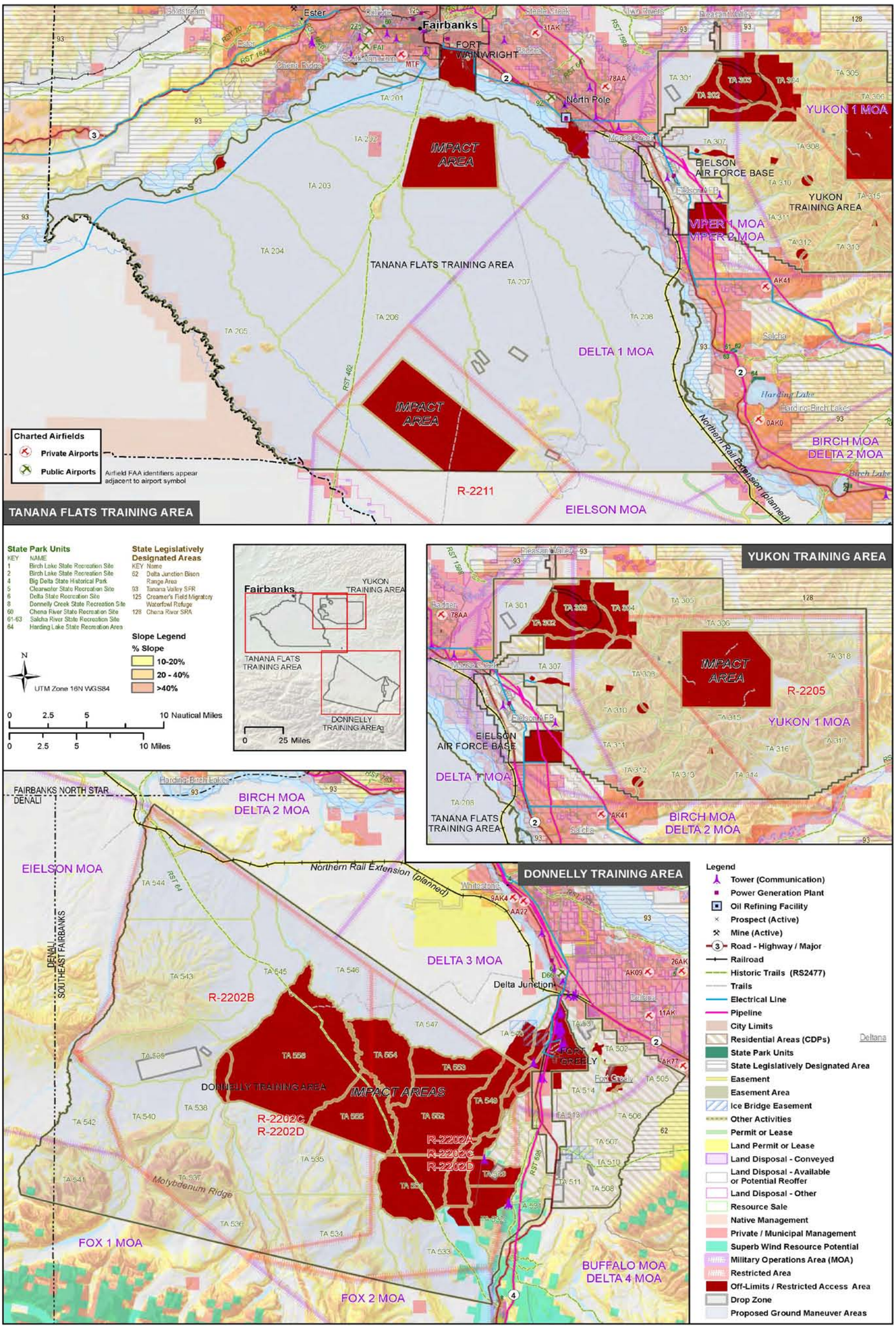

Figure 3-38. Military Uses, Special Use Areas, General Land Status and Productive Uses – Enhanced Ground Maneuver Proposal Area (include trails)

Source: ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2009-4, ADNR 2011-2, ADNR 2011-3, ADNR 2011-4, ADNR 2011-7, AWS TrueWind/NREL 2003, FNSB 2006, NGA no date, SAIC 2011-3, USCB 2010-1, USGS 2005-1, USGS 2005-2

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PUBLIC ACCESS

Land Access

Access and use to military lands under consideration for enhanced ground maneuvers are described in Section 3.2.10.1 (for DTA and TFTA), Section 3.3.10.1 (for DTA-East), and 3.4.10.1 (for YTA). RS 2477 trails within the area of influence of this proposal include Bonnifield Trail (RST #462), Donnelly Dome: Old Valdez Trail Segment (RST# 695), and Donnelly-Washburn (RST #64). These trails are listed in Table 3-76. These trails extend beyond the boundaries of military land and are important for public access into remote areas not accessible by road.

Table 3-76. Public Access Infrastructure Within the Enhanced Access to Ground Maneuver Space Proposal Area

Public Access	Designation/RST #	Length (Miles)
Bonnifield Trail	RS 2477/ RST 462	32
Donnelly Dome: Old Valdez Trail Segment	RS 2477/ RST# 695	<1
Donnelly-Washburn	RS 2477/RST #64	26

Source: ADNR 2009-2

Aerial Access

Public aerial access to these training areas is described in Sections 3.2.10.1 and 3.3.10.1 (for DTA and TFTA), and Section 3.4.10.1 (for YTA).

Navigable and Public Waters

There are no designated navigable waters on any of the three USARAK training areas considered in this proposal, but TFTA is partially bordered by navigable segments of the Wood and Tanana Rivers.

RECREATION

Federal and State designated recreation lands within the ROI for this proposed action and alternatives are listed in Table 3-31 and Table 3-44 and shown in Figure 3-38.

Recreation on Military Land. Recreation on military lands is described in Sections 3.2.10.1 (DTA and TFTA), 3.3.10.1 (DTA-East), and 3.4.10.1 (YTA).

Recreation on Non-military Land. There are no Federally designated recreation lands within the ROI of this proposal. State designated recreation lands within the ROI for this proposed action are listed in Table 3-75 and include the Tanana Valley State Forest near TFTA and Chena River State Recreation Area north of YTA.

3.7.10.2 Impact Assessment Methodology

General methodology pertaining to evaluating land use, public access, and recreation are described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The primary sources of impact on land use, including public access and recreation, from this proposal include:

- Effects of training operations involving heavy pedestrian traffic both on and off roads and trails, bivouacking, vehicle operations on both roads and trails, and limited off-road maneuvering.

- Effects of developing new facilities and infrastructure on existing land uses, access, and recreation.
- Effects of using new facilities and infrastructure on existing land uses, access, and recreation.

Land Status, Management and Use. The assessment reviews the physical and operational requirements for establishing additional ground maneuver areas on Army lands. The analysis assumes that:

- Maneuver areas (both light and heavy) would be confined to existing military land within DTA, TFTA, and YTA;
- Development would include construction of roads and trials capable of supporting heavyweight military vehicles either for training or access purposes;
- Selection of suitable areas would consider environmental criteria (defined in other sections of this EIS), and operational safety;
- A new "traffic bridge" between DTA and TFTA is a possible future enhancement in order to achieve adequate contiguous operating area for battalion and brigade-sized training requirements.

The assessment considers siting and other functional parameters to include in planning future proposals to minimize potential impacts on land use, public access, and recreational use.

Public Access. The assessment considers possible changes in access from construction of maneuver road networks and closures during training periods. It also identifies any potential long-term changes in access from future maneuver training activities. These may be either detrimental or beneficial, particularly if the project itself provides new infrastructure for multiple users.

Recreation. The analysis of impacts on recreation follows a similar approach as the land use analysis, focusing on displacement or qualitative change to recreational resources or sites near the proposed project.

For programmatic proposals, proposed siting criteria are the basis for assessment. Where these are not specified or are not developed, the investigation identifies measures that would reduce conflicts with land use, access, and recreation, including identification of agencies and parties to include in a project-planning process.

3.7.10.3 Environmental Consequences

3.7.10.3.1 Proposed Action

The current USARAK RTLP Development Plan identifies over 1.3 million acres for combined maneuver, of which about 244,652 acres is designated for "heavy" maneuver on DTA, YTA, and TFTA (USARAK 2010-5). The proposal implies that most of the land identified for maneuver training on the three training areas would support some level of maneuver. Large contiguous areas would support light and heavy maneuver training for an additional 98 days per year, concentrated in seven periods of 14 consecutive days of use. Additionally, JIIM utilization of the training areas can be up to 242 days annually. This would significantly reduce the amount of time when training areas are available for public access. The intensive activity of maneuver training could also alter vegetation and could reduce game abundance or redistribute the areas where game is typically found.

The Sikes Act provides for the sustainable multipurpose use of natural resources (hunting, fishing, trapping, and non-consumptive uses) on military lands, subject to safety requirements and military

security. This translates into goals and efforts to provide public access to the training areas for recreation and subsistence purposes, as described in the USARAK INRMP (USARAK 2006-2). Implementing this proposal would greatly alter natural resource management objectives and the availability for multipurpose use on Army lands. A potential positive benefit could result from expanding the network of roads that could open up inaccessible areas not only for military activities, but also for public use (primarily hunting) and range management tasks.

Below, a pre-planning process and a set of recommended project siting criteria are described specific to land use management, access continuity, and recreational opportunity. The extent to which these (and other environmental criteria) are feasible and incorporated into future maneuver enhancement proposals would influence the potential degree of impact. Without including these measures, the potential for significant adverse impacts on land use, access, and recreation is high.

- During future enhancement project pre-planning phase, the proponent should identify and coordinate with other potentially affected landowners or managers (including State, borough, or Federal managers and private owners, permit holders, or leasees). This process would identify sensitive locations and areas of concern to avoid or buffer on either adjacent lands, or lands within a project area boundary. Discussions would provide for exchange of information and for identifying reasonable joint-uses and feasible operational adjustments to accommodate ongoing uses and interests.
- Subsequently, USAG-FWA could work with ADFG and ADNR to notify and publish training schedules well in advance so that public users can plan their hunting options accordingly.
- To the extent possible, future proposals should identify the intended training schedule and patterns. To minimize impacts on public recreational use as well as hunting and other subsistence uses on the installation, future ground maneuver proposals should incorporate schedule and timing limitations that would ensure public access during the most important times for public purposes. Patterns of use taken from current and past USARTRAK data can provide information for these screening criteria, as well as input from ADFG. Scheduling brigade-sized maneuver events outside of popular hunting areas and seasons would reduce potential impacts. Strategies to achieve these criteria also include rotating or selecting areas for training that have lower value or less overlap with public uses and hunting.
- Planning for future ground maneuver areas should evaluate how integrated, multi-echelon training may expand or shift noise exposure footprints exposed to 62 dB CDNL or above. This may be particularly important for activities and firing points closest to range boundaries and more urbanized areas around Fort Greely and Delta Junction. Confining noise exposures of 62 dB CDNL within military land boundaries would reduce potential conflicts with surrounding jurisdictions and landowners.
- Sites for new bridges and roads should avoid existing low-water river crossings used for public access for hunting and recreational uses.
- New road alignments should avoid displacing existing trails that currently provide access for public recreational use unless they can serve both users. Proposals could include replacement trails if necessary, or allow joint-use of enhancement infrastructure for non-military access when it does not interfere with the military mission.
- Avoid using areas for maneuver training near stocked lakes that provide a recreational and subsistence benefit.
- Where possible, new access roads and maneuver training should avoid using or encumbering lands with high productive use potential. There are no ongoing commercial productive uses on

DTA, YTA, and TFTA, so potential for impacts are minimal. Applying planning overlays depicting productive use feasibility zones (based on resource potential for forestry, geothermal or wind energy, and minerals, for example) would allow for planning new road alignments that are compatible with long-term sustainability and allocation of land resources.

- New roads and maneuver areas should avoid existing rights-of-way, easements, pipelines, and other range infrastructure that are prone to damage from surface operations or ground disturbance.
- Selection of lands for enhanced maneuver training should apply criteria base on ability to sustain and support vehicular activity or construction, in order to minimize environmental degradation that could indirectly impact hunting, fishing, and gathering of subsistence products;
- New roads should avoid truncating, displacing, or overlapping with existing RS trails and other trails, and special use areas with legislated purposes or protection, both on and off-range.
- Construction for new roads and trails could extend over several years. Where construction overlaps spatially with locations that have natural resource value or recreational and public use value, timing restrictions may be warranted. Construction activities (e.g., noise and traffic generating) should be minimized during times that are sensitive for a particular resource.
- For future enhancements involving off-range areas (such as a wide traffic bridge linking DTA-West to TFTA), proposals should, to the extent possible, avoid private or municipal land, State land conveyed or permitted for specific purposes to other entities (such as cabin sites for year-round commercial recreational use), and locations with existing mineral claims, leases, or active operations. Specifically, USAG-FWA already holds an existing easement between these two ranges that could provide an alignment for a more robust connection. Any future link between these two areas would require coordination with the selected alignment of the new Northern Rail Extension. Future proposals involving adjacent off-range lands should involve ADNR in early pre-planning.

3.7.10.3.2 No Action

Under the No Action Alternative, ground maneuver training would continue using existing designated portions of the training lands at current levels of use. No impact to current land use, access, or recreational use would result.

3.7.10.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.10.3.1.

3.7.11 Infrastructure and Transportation

Transportation routes, electricity, water, sewage, and natural gas are necessary to support various missions as well as to maintain the residences of military personnel. Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for additional information regarding resources throughout this region.

3.7.11.1 Affected Environment

INFRASTRUCTURE

Electrical Transmission

In 2007, a 50-year contract was awarded to Doyon Utilities for assumption of ownership, operation, and maintenance of the electric power generation and distribution systems, central heat and heat distribution systems, natural gas distribution systems, potable water distribution systems, and wastewater collection systems of USAG-AK facilities, including JBER, Fort Wainwright, and Fort Greely. Aurora Energy serves as a subcontractor for the operation of electrical and heat utilities and power generation assets. In addition to the three installations listed above, the contract includes three remote sites: Black Rapids, Bolio Lakes, and YTA.

An extensive existing system supplies facilities within the proposed EGMS training area. The majority of this infrastructure is within the facilities at JBER, Fort Wainwright, Eielson AFB, and Fort Greely.

YTA is supplied with power from GVEA and by the Eielson AFB power plant (GVEA 2011). Electrical distribution lines extend northeast into and around the Chena River Research Site and along primary roads within the training area. Where overhead power is not available, constant-run generators are used for power generation.

Electric power distribution within DTA is limited to the area east of the Delta River. Even within the area east of the Delta River, not all range facilities have electric power. DTA falls within the GVEA service area.

Currently no commercial power is available in TFTA. GVEA's Northern Intertie is routed along the northwestern and northern sections of TFTA (GVEA 2011).

Water Supply and Wastewater Treatment

Doyon Utilities has assumed ownership, operation, and maintenance of the potable water distribution systems and wastewater collection systems of USAG-AK facilities, including JBER, Fort Wainwright, and Fort Greely. In addition to these three installations, the contract includes three remote sites: Black Rapids, Bolio Lakes, and YTA. Regulations covering water appropriation are contained in the AAC at 11 AAC 93.010-970. Neither the Alaska Constitution nor the Water Use Act differentiates between surface and groundwater uses.

Natural Gas and Oil Pipelines

A total of 2.25 miles of natural gas pipelines are present within the proposed maneuver space areas within YTA. Doyon Utilities has assumed ownership, operation, and maintenance of the central heat, heat distribution, and natural gas distribution systems of USAG-AK facilities, including JBER, Fort Wainwright, and Fort Greely. Aurora Energy serves as a subcontractor for the operation of heat utilities assets. In addition to the three installations listed above, the contract includes three remote sites: Black Rapids, Bolio Lakes, and YTA.

TRANSPORTATION

Roads, Bridges and Trails

There is a bridge in the YTA on Manchu Lake trail within the maneuver areas proposed action area. Approximately 83 miles of roads are present within the Maneuver Areas Proposed Action boundaries. Nearly all of these roads fall within the current YTA, with one road within DTA. Individual roads and their distances and names are presented in Table 3-77.

Table 3-77. Roads in Maneuver Areas

Project Area	Miles	Road Name
Maneuver Areas Donnelly	0.71	Old Richardson Highway
Maneuver Areas Yukon	12.84	Beaver Creek Road
Maneuver Areas Yukon	17.22	Brigadier Road
Maneuver Areas Yukon	1.25	DMPTR Road
Maneuver Areas Yukon	6.53	Johnson Road
Maneuver Areas Yukon	2.13	Loop Road
Maneuver Areas Yukon	1.57	LZ Access Road
Maneuver Areas Yukon	6.09	Manchu Road
Maneuver Areas Yukon	9.90	North Beaver Creek Road
Maneuver Areas Yukon	12.87	Quarry Road
Maneuver Areas Yukon	6.21	Skyline Road
Maneuver Areas Yukon	5.47	Transmitter Road

Key: N/A=not applicable.

Approximately 155 miles of trails are present within the Maneuver Areas Proposed Action boundaries. These trails fall within the current YTA, DTA, and TFTA. Individual trails and their distances and names (where available) are presented in Table 3-78.

Table 3-78. Trails in Maneuver Areas

Project Area	Miles	On Facility	Trail Name
Maneuver Areas Donnelly	14.60	Donnelly Training Area	N/A
Maneuver Areas Donnelly	6.64	Donnelly Training Area	Winter Trail
Maneuver Areas Tanana Flats	0.01	Tanana Flats Training Area	N/A
Maneuver Areas Tanana Flats	15.65	Tanana Flats Training Area	Bonnifield Trail
Maneuver Areas Tanana Flats	68.61	Tanana Flats Training Area	N/A
Maneuver Areas Tanana Flats	2.91	Tanana Flats Training Area	Tractor Trail
Maneuver Areas Yukon	38.65	Yukon Training Area	N/A
Maneuver Areas Yukon	7.55	Yukon Training Area	Tractor Trail

Key: N/A=not applicable.
Source: ADNR 2009-2, ADNR 2009-3.

Rail

Railroad infrastructure includes the Alaska Railroad Northern Rail Extension Project which is currently scheduled for completion in August 2014.

3.7.11.2 Impact Assessment Methodology

The general methodology for evaluating infrastructure and transportation is described in Section 3.2.11.2.

3.7.11.3 Environmental Consequences

3.7.11.3.1 Proposed Action

TRANSPORTATION

Within the current study area, there are 60 miles of existing road and 155 miles of trail. Extensive rail access is planned for these areas with new rail lines are included in the Access to Joint Tanana Military Training Complex and the Denali Park Passenger Train Turnaround Track. The Northern Rail Extension project would construct a new line between North Pole and Big Delta (ADOT&PF 2010-1). Despite this infrastructure, there is a current lack of accessibility due to limited access roads within training areas and intervening areas (including Soldier training areas in TFTA, DTA, and YTA). Environmental conditions prevent access to transiting vehicles year-round.

This proposal would provide year-round accessibility, internal circulation, and enhanced maneuver space to support brigade-level events with battalion-size training occurring in TFTA, YTA, and DTA. Brigade units would interact with JIIM components in order to provide a realistic training environment. Siting considerations for additional access would include minimizing the cost of additional roads by using existing roadway corridors where possible.

In general, to meet mission goals improvements to internal road networks, and supporting infrastructure and expansion of maneuver space, along with the integration of the proposed ISBs within the JPARC are important actions to be undertaken. Specific alternatives for direct access to DTA, YTA, and TFTA are not developed to the point where specific decisions or plans can be made.

The Richardson Highway runs through this project area and is approximately 368 miles in total length, providing a north-south connection between Fairbanks and Valdez. The Richardson Highway provides access to five other Alaskan highways. Year 2030 traffic volumes are forecast along most segments of the Richardson Highway between 1,500 and 4,500 AADT. Based on these forecast traffic volumes, a qualitative planning level assessment of the Richardson Highway by ADOT&PF revealed no major roadway capacity constraints over the near- and long-term (ADOT&PF 2010-1).

INFRASTRUCTURE

Most permanent electrical infrastructure is within the facilities at Fort Wainwright, Eielson AFB, and Fort Greely. In the past, if Fort Greely electrical loads exceed the 2.5-MVA transformer rating, diesel generators were used to meet peak loads. Doyon Utilities recently constructed a new 138 kV Switching Station, new 138 kV Substation with 20 MVA transformer to increase energy capacity at Fort Greely (Doyon 2011-1).

The Fort Greely Potable Water Distribution System consists of wells, treatment equipment, pumps, ancillary structures, fire hydrants, valves, meters, and piping. Potable water is supplied by an underground aquifer that is recharged from the Delta River and Alaskan Mountain Range winter snowmelt. There are currently nine raw water supply wells for all potable and non-potable water requirements with no outside ties to the city of Delta Water System. There are approximately 4.6 miles of pipe within the system. The wastewater system at Fort Greely consists of lagoons or septic tanks. All wastewater generated on FGA is collected and treated on FGA. The average daily flow of wastewater varies between 120,000 to 180,000 gallons per day (Doyon 2011-1).

Fort Wainwright has a coal-fired plant that generates steam and electricity to meet the heating and electricity demands of the base. The plant currently has 20 megawatts electrical (MWe) installed capacity, but only 18 MWe effective capacity. There is currently a plan to double power generation

capacity at Fort Wainwright and wheel power to the other two military bases. Current plans also involve a major upgrade to the electrical and boiler control systems at the existing plant (Doyon 2011-2).

Water wells are the source for all potable and non-potable water at Fort Wainwright. Fort Wainwright has 19 raw water supply wells, with two primary source wells for the water plant and two backup supply wells to the water plant. Five wells are classified as fire protection wells and provide water for fire protection use during a fire demand condition. The Fort Wainwright Wastewater Collection System includes lift stations, manholes, force mains, and gravity piping (Doyon 2011-2).

Within the ground training areas, electrical distribution lines extend northeast into and around the Chena River Research Site and the area east of the Delta River as well as along the northwestern and northern sections of TFTA. No commercial power is available in TFTA. Specific alternatives for electrical requirements for DTA, YTA, and TFTA are not developed to the point where specific decisions or plans can be made.

Within the project area there are 2.5 miles of natural gas transmission lines. When locations for additional roads, access points, maneuver space, and ISBs are determined, avoidance buffers and crossing points to prevent damage to pipeline are required.

3.7.11.3.2 No Action

No impacts on infrastructure and transportation would occur under the No Action Alternative.

3.7.11.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.12.3.1.

3.7.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.7.12.1 Affected Environment

The location of the proposed action includes TFTA, the expansion of YTA, and the expansion of DTA. The three training areas are within the FNSB, the Denali Borough, and the Southeast Fairbanks Census Area. Therefore, the ROI for the proposed action includes the portions of these two boroughs and the census area within the ground maneuver areas and the surrounding communities. The affected environment for the EGMS proposed action is similar to the area described in Section 3.2.12.1, Affected Environment, with the exception of the population under the airspace.

3.7.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.7.12.3 Environmental Consequences

3.7.12.3.1 Proposed Action

This proposal has a composite footprint of just over 1.2 million acres (1,892 square miles), entirely on military land. The proposal is entirely ground-based, and in itself, does not involve hazardous operations

requiring changes to, or use of, airspace; thus, no economic impacts associated with commercial or general aviation are anticipated. The proposal does involves construction of training roads and trails and some ORV operations. In general, construction activities are anticipated to result in temporary and beneficial socioeconomic impacts during the construction phase. Based on the economic activity in the region, it is anticipated that labor and supplies would be provided by the surrounding areas. The direct and indirect socioeconomic impacts associated with this action are dependent on the construction expenditures, which are unavailable at this time, but should be taken into consideration during the siting criteria.

Within TFTA, any changes in recreational or public access (described in Section 3.7.10.3.1), could have economic impacts. Specific alternatives for direct access to DTA, YTA, and TFTA have not yet been developed to the point where a specific decision can be made; thus a thorough quantitative economic analysis cannot be performed. However, based on a review of environmental consequences for other resources, potential for high or significant adverse impacts related to the action would be mitigated based on SOPs, BMPs, and continuation of mitigation measures used previously for the Alaska MOAs. Thus, the potential for significant economic impacts are anticipated to be low.

3.7.12.3.2 No Action

Under the No Action Alternative, socioeconomic resources would remain as described under baseline conditions.

3.7.12.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.7.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.7.13.1 Affected Environment

The existing training areas of DTA, TFTA, and YTA are being considered programmatically for the location of EGMS. TFTA and YTA are located within a State nonsubsistence area and a Federal nonrural area, as depicted in Figure 3-23 (ADFG 2011-10; USFWS 2010-1). USAG-FWA does allow access to these ranges for recreational use (described in Section 3.7.10); however, resources are not managed or given subsistence priorities. DTA is also within a State nonsubsistence area; however, Federal subsistence harvests are permitted. DTA is also within GMU 20D, and rural communities participating in subsistence under Federal regulations in the vicinity of DTA include Big Delta, Delta Junction, Healy Lake, and Dry Creek. Within this unit, rural residents may engage in subsistence hunting for bison, black bear, brown bear, moose, sheep, coyote, fox, hare, lynx, wolf, wolverine, grouse, and ptarmigan (USFWS 2010-1). For fishing, the ROI is located in the Yukon-Northern subsistence area, which allows for the harvesting of a variety of fish species, including salmon (USFWS 2010-2). Information on subsistence harvests on Federal public land near these communities is not available. More-detailed information on species and habitats in the ROI is provided in Section 3.7.8, Biological Resources.

3.7.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2. As a programmatic proposed action, that methodology is used as a guideline for further analysis requirements and siting criteria.

3.7.13.3 Environmental Consequences

3.7.13.3.1 Proposed Action

As described in Section 3.7.13.1, areas of TFTA and YTA that are accessible to the public are not managed for subsistence resources and Alaska residents are not given priority access to subsistence resources. Therefore, the siting of an enhanced ground maneuver area within either of these areas is not expected to affect subsistence activities. However, such action may affect recreational access and public access, which are described and considered in Section 3.7.10. The proposal for an enhanced maneuver area in DTA may impact subsistence resources. Additional consideration or development of the proposal should address the accessibility of the ground maneuver area to the public, the avoidance of traditional use areas for nearby communities, and the monitoring of impacts of activities within a proposed maneuver area on the population and distribution of subsistence wildlife and vegetation.

3.7.13.3.2 No Action

Under the No Action Alternative, subsistence activities would continue as currently practiced and as described in Section 3.7.13.1.

3.7.13.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.13.3.1.

3.7.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.14.

3.7.14.1 Affected Environment

The affected environment for the EGMS proposal includes two boroughs and two census areas in which some portion of the proposal footprint is located. Table 3-79 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas comprising the proposal area. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

The average percent minority in the proposal area ranges from 11.6 percent in Denali Borough to 78.2 percent in Yukon-Koyukuk Census Area, compared to the 35.9 percent average for the State of Alaska. The average percent low-income ranges from 6.1 percent in Denali Borough to 24.1 percent in Yukon-Koyukuk Census Area, compared to 9.6 percent for the State of Alaska. The average percent Alaska Native ranges from 3.6 percent in Denali Borough to 71.4 percent in Yukon-Koyukuk Census Area, compared to a 14.8 percent average for the State. The average percent of children ranges from 22.5 percent in Denali Borough to 27.8 percent in Yukon-Koyukuk Census Area, compared to the 26.4 percent average for the State.

Table 3-79. Minority Population, Low-Income Population and Children by Area

Area	Total Population	Percent Low-Income	Percent Minority	Percent Alaska Native	Percent Children
Fairbanks North Star Borough	97,581	8.0	25.9	7.0	25.6
Denali Borough	1,826	6.1	11.6	3.6	22.5
Southeast Fairbanks Census Area	7,029	11.6	21.3	11.5	26.3
Yukon-Koyukuk Census Area	5,588	24.1	78.2	71.4	27.8
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.

Source: USCB 2010-1, 2010-2.

3.7.14.2 Impact Assessment Methodology

General methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2. For the six programmatic proposals addressed in Sections 3.7.14.3 through 3.12.14.3, the environmental consequences discussion for environmental justice briefly discusses potential impacts at a general level of detail, consistent with what is currently known about each programmatic proposal. It then identifies siting and operational criteria that should be considered when developing the proposal to a more definitive level. In addition, environmental justice topics requiring further study during the tiered environmental process are identified, when appropriate.

3.7.14.3 Environmental Consequences

3.7.14.3.1 Proposed Action

Based on a review of environmental consequences for other related resources, potential for significant adverse impacts could, in many cases, be reduced based on application of siting and operational criteria, SOPs, BMPs, and mitigation measures used previously; however, further study would be needed in some cases and is identified in the 13 resource sections above.

Siting or use of an enhanced maneuver area in DTA could adversely affect communities with high dependence on subsistence resources, including Healy Lake and Dry Creek. Section 3.7.13.3.1 identified the following subsistence-related criteria for consideration: accessibility of the ground maneuver area to the public, avoidance of traditional use areas for nearby communities, and monitoring impacts of activities within a proposed maneuver area on the population and distribution of subsistence wildlife and vegetation.

Consideration of the siting and operational criteria below could further reduce the potential for disproportionately high and adverse environmental or health effects related to possible subsistence, cultural resources, and other impacts.

- To reduce potential for both subsistence impacts and any related disproportionately high and adverse environmental or health effects, consider siting an enhanced maneuver area in either YTA or TFTA; these training areas are located in a Federal nonrural area and State nonsubsistence area and could reduce subsistence impacts in DTA.
- If adverse impacts on traditional cultural resources or Alaska Native activities in or near the enhanced maneuver area are identified, develop case-specific mitigations in compliance with

NHPA, Section 106, and the DoD American Indian and Alaska Native Policy (DoD 1998) that can be evaluated during the tiered environmental process (i.e., to reduce cultural resources impacts and any related effects on Alaska Natives).

- If tiered environmental documents identify adverse impacts to human populations from military operations in areas with a meaningfully higher percent of either minority or low-income populations compared to the general population, or could adversely affect children, additional mitigations may be needed to reduce potential for disproportionate effects. For example, Southeast Fairbanks Census Area and Yukon-Koyukuk Census Area both have a higher percentage of low-income population than the State of Alaska overall, especially Yukon-Koyukuk Census Area, which has the highest percentage of low-income population of any borough or census area in the JPARC study area (22.7 percent—more than twice that of the State of Alaska overall). In addition, Yukon-Koyukuk Census Area has more than twice the percentage of minority population compared with the State of Alaska (78.2 percent compared to 35.9 percent) (see Table 3-79).

3.7.14.3.2 No Action

Under the No Action Alternative, no additional roads or circulation routes would be constructed and ground maneuver operations would continue to occur as presently conducted. No disproportionately high and adverse environmental or health effects would occur and no siting criteria or other measures are recommended.

3.7.14.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals for EGMS are provided above in Section 3.7.14.3.1.

3.8 TANANA FLATS TRAINING AREA ROADWAY ACCESS (PROGRAMMATIC)

The primary purpose of studying proposed new roadway access within TFTA is to provide year-round training access to the advantageous training areas on higher ground away from the Tanana river basin and important use and training areas in TFTA, such as the Blair Lakes Impact Area. Besides year-round access, other proposed facilities and additional enhanced ground maneuver actions, this project would provide better internal circulation, expanded maneuver areas, ISBs and supporting infrastructure.

The affected environment includes areas within TFTA east of the Blair Lakes Impact Area. These areas are currently used for military ground training when weather conditions permit. Noise sources in the affected area include munitions firing and detonation, ground vehicle maneuvers, and aircraft training activities.

The proposal is entirely on military land within the TFTA. (Refer to the map above.) The proposal is entirely ground-based and involves construction of a new road to handle a mix of military vehicle types and weights. Based on this, the potential for significant impacts on airspace management, noise, and flight safety is expected to be low.

3.8.1 Airspace Management and Use (No Analysis Needed)

This proposal does not include any aviation activities and would therefore not result in any impacts on the management and use of the existing airspace environment discussed in the other proposals. Therefore, this resource is not further analyzed for this proposal.

3.8.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.8.2.1 Affected Environment

The affected environment includes areas within TFTA east of the Blair Lakes Impact Area. These areas are currently used for military ground training when weather conditions permit. Noise sources in the affected area include munitions firing and detonation, ground vehicle maneuvers, and aircraft training activities.

TFTA is used for several types of military training, including weapons firing and detonation, ground vehicle maneuvers, and aircraft training activities. When training is not under way, natural sounds are dominant.

3.8.2.2 Impact Assessment Methodology

Construction noise levels were assessed using the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (DOT 2006). Noise levels at various distances from the construction activity were quantified using the metric DNL. Maximum noise levels generated by military vehicles transiting

the completed access road were also listed. Because the action is assessed programmatically, the impacts of expected noise levels are not assessed against a specific set of locations, but rather against types of locations, such that the information can be used for route planning purposes.

3.8.2.3 Environmental Consequences

3.8.2.3.1 Proposed Action

Under the proposed action, access roads would be constructed in TFTA. Heavy equipment would be the primary noise source during construction. Noise levels generated by several common pieces of construction equipment are listed in Table 3-80.

Table 3-80. Construction Equipment Noise Levels

Equipment	L_{max} at 50 Feet (in dB)
Backhoe	78
Ground Compactor	83
Crane	81
Dozer	82

Key: L_{max}=maximum noise level; dB=decibel.
Source: DOT 2006.

Construction is expected to occur over an extended timeframe, and at any one time only one or two pieces of heavy equipment would be expected to be operating in any one location. Noise levels were calculated using the FHWA's Roadway Construction Noise Model (DOT 2006) for a scenario in which all the equipment listed in Table 3-80 is operating simultaneously at one construction site (see Table 3-81). Noise levels would decrease to below 65 dB DNL at less than 400 feet from the edge of the site. Noise generated by construction equipment would be temporary and localized, lasting only the duration of the construction project and limited to the area in the immediate vicinity of the road being constructed.

Table 3-81. Noise Levels at Varying Distances from Construction Activity

Distance from Site Edge (in feet)	DNL (in dB)
100	76
200	70
300	66
400	64
500	62

Key: DNL=day-night average sound level; dB=decibel.
Source: DOT 2006.

Noise levels generated by tactical vehicles typical of those that could use the access roads once they are complete are listed in Table 3-82. Noise generated by vehicles using the access roads would be intermittent, and would affect the area immediately surrounding the road.

Table 3-82. Tactical Vehicle Noise Levels

Type	Distance (feet)	Speed (mph)	Noise Level (dB)
Stationary Stryker	20	0	78
Moving Stryker	60	50	85
Bradley Fighting Vehicle	98	20	80

Key: dB=decibel; mph=miles per hour.
Source: USARAK 2004-1.

3.8.2.3.2 No Action

Under the No Action Alternative, the access roads would not be constructed and ground maneuvers would continue to be conducted as they are currently.

3.8.2.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.8.3 Safety

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.3.

3.8.3.1 Affected Environment

FLIGHT SAFETY

The activities identified for this proposal do not include any changes to the use or structure of the existing airspace associated with the programmatic alignments for the TFTA Access Road. The flight safety considerations for the airspace overlying portions of this land area are as discussed in Section 3.1.3.

GROUND SAFETY

For this alternative, the environment affected by activities involved in range safety and control, UXO and munitions safety, public access control, and fire and emergency response would not differ from that previously described for RLOD Alternative A in Section 3.2.3.1.

3.8.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The methodology for flight safety impacts assessment addressed in Section 3.1.3.2 was used, as appropriate, for the airspace activities conducted in the areas overlying the JAGIC proposed areas.

GROUND SAFETY

The impact assessment methodology is the same as that described in Section 3.2.3.2.

3.8.3.3 Environmental Consequences

3.8.3.3.1 Proposed Action

GROUND SAFETY

Range Safety and Control – There are no environmental impacts associated with range safety and control for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Unexploded Ordnance and Munitions Safety – There are no environmental impacts associated with UXO and munitions safety for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Public Access Control – There are no environmental impacts associated with public access control for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Fire and Emergency Response – There are no environmental impacts associated with fire and emergency response for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

3.8.3.3.2 No Action

Under the No Action Alternative, year-round access would not be provided and therefore emergency response would continue as under existing conditions. Improved emergency response capabilities would not occur. No other impacts on public health and safety would occur under the No Action Alternative.

3.8.3.4 Considerations for Future Planning

No measures to reduce impacts on ground safety are identified for this proposal.

3.8.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.

3.8.4.1 Affected Environment

The access roads for this proposed action are all located in TFTA, which is located in FNSB. The affected areas for this proposed action are not within the nonattainment or maintenance portions of the borough. Table B-12 in Appendix B, Section B.4.3, provides a summary of the estimated 2008 annual emissions for FNSB.

3.8.4.2 Impact Assessment Methodology

Currently, this action is in its developmental stages and sufficient data is not available to analyze air quality impacts. Once sufficient data is available, the project air quality analysis will evaluate construction and operational emissions that would occur from the proposed construction and utilization of access roads in TFTA in accordance with the methodology described in Appendix B, Section B.4.5. The common approach is to assess the emissions for the worst-case scenario (the longest proposed access

road), and to use this information as an indication of the impacts from other options that are being considered. Since the affected project region is in attainment of all NAAQS, the PSD new major source threshold of 250 tons per year of each pollutant will be used as an indicator of significance or nonsignificance of projected air quality impacts.

PSD CLASS I AREA IMPACT ANALYSIS

The closest PSD Class I area to TFTA is Denali National Park, which is approximately 40 miles from TFTA. Due to the proximity of the proposed action to a pristine PSD Class I area, the potential for proposed activities to affect visibility within this area will need to be analyzed.

3.8.4.3 Environmental Consequences

3.8.4.3.1 Proposed Action

Air quality impacts of construction activities related to the proposed TFTA access roads would occur from (1) combustive emissions due to the use of fossil fuel–powered equipment, and (2) fugitive dust emissions (PM_{10} and $PM_{2.5}$) due to the operation of equipment on exposed soil. Increases in emissions due to changes in operations related to construction of TFTA access roads would occur primarily from combustive emissions due to the use of fossil fuel-powered equipment.

Operational information needed to calculate air emissions resulting from the proposed construction activities associated with the access road action includes the following:

- The type, horsepower, and daily and annual usage rates of fossil fuel-powered equipment used to construct the roads associated with the proposed action;
- The usage of water trucks during construction for dust control;
- The surface type, length, and width of the proposed roads; and,
- The distance that the trucks would travel to the materials and dumping sites.

Operational information needed to calculate the air emissions resulting from the utilization of the proposed Tanana Flats access roads includes the type, horsepower, and daily and annual usage rates of fossil fuel-powered equipment associated with increased training activities for the proposed action.

The emissions factors needed to derive the construction emission rates are found in *Compilation of Air Pollution Emission Factors* (EPA 1995) and in emissions inventory data produced by two mathematical models: OFFROAD2007 for off-road construction equipment (ARB 2006-1), and EMFAC2007 for on-road vehicles (ARB 2006-2).

Emission reduction strategies that can be incorporated during construction of the roadways include the following:

- Use water trucks to keep areas of vehicle movement damp enough to minimize the generation of fugitive dust.
- Minimize the amount of disturbed ground area at a given time.
- Minimize ground-disturbing activities in proximity to the construction area boundary.
- Discontinue proposed ground-disturbing activities within 3 miles upwind of the construction area boundary when winds exceed 25 miles per hour or when visible dust plumes emanate from the site and then stabilize all disturbed areas with water application.

- Designate personnel to monitor the dust control program and to increase dust suppression measures (e.g., watering), as necessary, to minimize the generation of dust.

3.8.4.3.2 No Action

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations in TFTA. Therefore, the No Action Alternative would not result in any new air quality impacts.

3.8.4.4 Considerations for Future Planning

No measures to reduce impacts are identified for on ground safety are identified for this proposal.

3.8.5 Physical Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.5.

3.8.5.1 Affected Environment

TOPOGRAPHY

TFTA is located within a broad depression known as the Tanana-Kuskokwim Lowland and is bordered to the south by the Alaska Range. Topography in the area of the proposed action gradually increases in elevation from north to south, with elevations ranging from just over 850 feet MSL in the vicinity of the Blair Lakes to just under 600 feet MSL where all proposed road alignments reach the Northern Rail Extension Tanana River Crossing. Notable physiographic features in the area include three terraces in the vicinity of Blair Lakes, the easternmost of which is Hill 1406, and the Tanana River, which forms the eastern and northern boundaries of TFTA.

GEOLOGIC HAZARDS

TFTA is located in an area that has been affected by earthquakes generated by the Denali Fault and is in a region classified by the USGS as moderate to high for earthquake hazard potential (USGS 2002). Seismic activity near TFTA is associated with an area known as the Fairbanks Seismic Zone, which experiences an average of five to six earthquakes per year, and micro-earthquakes are frequently felt. In November 2002, a magnitude 7.9 earthquake (the largest recorded in the region, ground movement being felt from Fairbanks to the Kenai Peninsula south of Anchorage), with an epicenter approximately 90 miles south of Fairbanks, resulted in minor to moderate damage to roads, runways, and some buildings in TFTA (USARAK 2004-1). In addition to the major Denali Fault, several smaller, localized faults are close to the proposed action, including the Mystic Mountain and Healy Faults (GSA 1993).

SOILS

In general, soils on TFTA were formed from various unconsolidated materials, with deposits varying from coarse gravel nearest the Alaska Range at the heads of alluvial fans to sand and silt at alluvial fan bases in northern portions of the training area. Soils containing coarser sediments on the upper fans are generally more well-drained than the fine-grained sediments found in lower alluvial fan areas (USARAK 2004-1).

The road alignments for the proposed action cross over multiple soil types, each of varying characteristics and considerations. Full soil coverage data are not available for the entire length of all road alignments for that portion of the area of the proposed action running parallel to the Tanana River, but the majority of soil types to be encountered in the Project Area can be addressed. Soils nearest to Blair Lakes and the

associated uplands are composed of residual weathered soils from the surrounding hills on upper slopes, and retransported deposits on middle and lower slopes. In the lowlands in and around Dry Creek, soils are formed from alluvial fan deposits, riverbed deposits, and material from dissected terraces associated with past glacial activity. Progressing northeast toward the Tanana River, soils are dominated by abandoned floodplain deposits with substantial amounts of lowland loess and organic deposits; flat bogs can be prevalent. In the lowlands closest to the river, soils are composed of abandoned floodplain riverbed deposits with thin, fine-grained overbank deposits (USACE 1999).

Table 3-83 provides characteristics of the soil types commonly found in the Project Area. Those soil types, generally speaking, are highly organic, wet, cold soils, which are frost-free for a period ranging from 80 to 120 days per year. Many of the soil types present are hydric, thus prone to ponding, but few are prone to flooding; a fair number of soils are 12 inches or less from the high water table. Several of the soil types found in the Project Area are also susceptible to wind and water erosion, especially those at slopes of three percent or higher (USDA 2006).

PERMAFROST

Much of the land area on TFTA is underlain by continuous or discontinuous layers of permafrost. The presence of permafrost is often a function of vegetative cover, topography, elevation, and local soil type; on TFTA, permafrost is not found in areas closest to and below rivers and lakes, but is commonly found where this is no surface water or actively circulating groundwater. The active permafrost layer can be found at only 1 foot below the surface in some places, but can extend to 23 to 50 feet in others. TFTA is experiencing widespread permafrost degradation (estimated at over 40 percent of the total land area), which is expressed on the surface as various thermokarst features. Land area covered by the proposed action is underlain by variable permafrost conditions, ranging from continuous (90 percent and greater frozen area) to unfrozen (less than 10 percent permafrost). Permafrost is largely continuous nearest to Blair Lakes Impact Area, but permafrost conditions become highly variable along the courses of the four proposed road alignments. Through the middle portions of all road alignments, permafrost is likely continuous and ice wedge polygons may be evident in some areas. Close to the Tanana River and along the course of the Alaska Railroad Corporation Service Road, permafrost conditions are either discontinuous (50–90 percent frozen) or unfrozen (USACE 1999).

3.8.5.2 Impact Assessment Methodology

Impact assessment methodology pertaining to the impacts of physical resources is described in Section 3.2.5.2.

3.8.5.3 Environmental Consequences

3.8.5.3.1 Proposed Action

The proposed action includes the construction of a road within TFTA, providing year-round training access to the Blair Lakes Impact Area. This action requires a road of eight miles or more, traversing from the Blair Lakes Impact Area to a connection with the Northern Rail Extension, in order to cross the Tanana River. Road direction would be roughly southwest to northeast; however, the path and alignment of the road is yet to be determined. The desired road surface would be a 35-foot-wide aggregate surface, sufficient to allow simultaneous passage of two Stryker vehicles, which have a gross vehicle weight of 18 to 20 tons or more, depending on equipment and armoring.

Table 3-83. Characteristics of Representative Soils Found in the Area of Tanana Flats Training Area Road Alignments

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
9	Histels	Flats on terraces, depressions on terraces, valleys	16 to 24	Water: slight Wind: slight	Negligible	Very poorly drained	None/ frequent	0	Yes	3.9	Black spruce woodland
20	Mosquito peat	Depressions on alluvial flats	14 to 31	Water: slight Wind: slight	High	Very poorly drained	Rare/ frequent	0	Yes	4.1	Black spruce and tamarack woodland
21A	Goldstream peat, 0 to 3 percent slopes	Floodplains, valleys	14 to 24	Water: slight Wind: slight	Negligible	Very poorly drained	None/ frequent	0 to 8	Yes	3.6	Black spruce woodland
22	Tanacross peat	Floodplains	10 to 28	Water: slight Wind: slight	High	Very poorly drained	Rare/ frequent	0	Yes	3.0	Black spruce woodland
25	Tanana silt loam	Terraces	16 to 47	Water: slight Wind: slight	High	Poorly drained	Rare/ frequent	0 to 12	Yes	5.2	Black spruce forest
39A	Nenana silt loam, 0 to 3 percent slopes	Stream terraces	–	Water: slight Wind: moderate	Low	Well drained	None/ occasional	>72	No	5.9	White spruce, quaking aspen, and paper birch forest
40B	Chatanika silt loam	Hills	12 to 39	Water: moderate Wind: severe	Very high	Poorly drained	None/ frequent	0 to 8	Yes	4.3	Black spruce forest
41B	Minto silt loam, 3 to 7 percent slopes	Hills	–	Water: moderate Wind: severe	Medium	Moderately well drained	None/none	4 to >72	No	12.6	Paper birch and white spruce forest
41C	Minto silt loam, 7 to 12 percent slopes	Hills	–	Water: severe Wind: severe	Medium	Moderately well drained	None/none	4 to >72	No	12.6	Paper birch and white spruce forest
44B	Steese silt loam, 3 to 7 percent slopes	Hills	–	Water: moderate Wind: severe	Medium	Well drained	None/none	>72	No	6.1	Paper birch, white spruce, and quaking aspen forest
44C	Steese silt loam, 7 to 12 percent slopes	Hills	–	Water: severe Wind: severe	Medium	Well drained	None/none	>72	No	6.1	Paper birch, white spruce, and quaking aspen forest

Table 3-83. Characteristics of Representative Soils Found in the Area of Tanana Flats Training Area Road Alignments *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
44D	Steese silt likaoam, 12 to 20 percent slopes	Hills	–	Water: severe Wind: severe	Medium	Well drained	None/none	>72	No	6.1	Paper birch, white spruce, and quaking aspen forest
44E	Steese silt loam, 20 to 30 percent slopes	Hills	–	Water: severe Wind: severe	High	Well drained	None/none	>72	No	6.1	Paper birch, white spruce, and quaking aspen forest
46C	Eutrocryepts, 7 to 12 percent slopes	Hills	–	Water: severe Wind: severe	Medium	Well drained	None/none	>72	No	9.8	Paper birch, white spruce, and quaking aspen forest
51B	Saulich peat, 3 to 7 percent slopes	Valley sides	14 to 24	Water: slight Wind: slight	Very high	Very poorly drained	None/ frequent	0 to 8	Yes	3.6	Black spruce forest with low shrubs and moss
66	Eielson fine sandy loam	Floodplains	–	Water: slight Wind: severe	Low	Moderately well drained	Occasional/ frequent	0 to 47	No	12.3	White spruce and balsam poplar forest
69	Typic Cryaquents-Eielson complex	Floodplains	–	Water: slight Wind: slight	Low	Poorly drained	Occasional/ frequent	0	Yes	13.9	White spruce and paper birch forest
70A	Volkmar-Richardson complex, 0 to 3 percent slopes	Stream terraces	–	Water: slight Wind: moderate	Low	Moderately well drained	None/ frequent	0 to >72	No	8.7 to 12.5	White spruce, black spruce, and paper birch forest
70B	Volkmar-Richardson complex, 3 to 7 percent slopes	Stream terraces	–	Water: moderate Wind: moderate	Low	Moderately well drained	None/ frequent	0 to >72	No	8.7 to 12.5	White spruce, black spruce and paper birch forest
71	North Pole-Mosquito-Liscum complex	Floodplains, depressions on alluvial flats	14 to 31	Water: slight Wind: slight to severe	Negligible to high	Very poorly drained	Rare/ frequent	0 to 8	Yes	4.1 to 11.9	Sedges, grasses, black spruce, and tamarack woodland

Table 3-83. Characteristics of Representative Soils Found in the Area of Tanana Flats Training Area Road Alignments *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
72F	Eutrocryepts, 7 to 45 percent slopes	Escarpments on terraces	–	Water: severe Wind: severe	Medium	Well drained	None/none	>72	No	9.8	Paper birch, white spruce, and quaking aspen forest
212	Goldstream-Histels complex, 0 to 3 percent slopes	Floodplains, valleys	14 to 24	Water: slight Wind: slight	Negligible	Very poorly drained	None/ frequent	0 to 8	Yes	3.6	Black spruce woodland
411B	Minto-Chatanika complex, 3 to 7 percent slopes	Hills	12 to 39	Water: moderate Wind: severe	Low to very high	Poor to moderately well drained	None/ frequent	0 to 8	No	4.3 to 12.6	Black spruce, white spruce, and paper birch forest
411C	Minto-Chatanika complex, 7 to 12 percent slopes	Hills	12 to 39	Water: severe Wind: severe	Low to very high	Poor to moderately well drained	none/ frequent	0 to 8	No	4.3 to 12.6	Black spruce, white spruce, and paper birch forest
452	Gilmore-Steese complex, 3 to 15 percent slopes	Backslopes, summits	–	Water: moderate Wind: severe	Medium	Well drained	None/none	>72	No	2.9	Black spruce, paper birch, white spruce, and quaking aspen forest

Source: USDA 2006, 2011.

Primary impacts associated with roadway construction would be increased potential for erosion during preliminary grading activities and subsequent soil exposure before application of roadbed and aggregate roadway material. Additionally, construction equipment activity adjacent to the roadway alignment presents a potential for increased soil degradation and subsequent erosion.

After construction of the access road, primary impacts on soils would be potential erosion from surface runoff, the degree of which would be a function of localized soil erosion characteristics. As noted in Section 3.7.5.1, soils in TFTA have a wide profile of erodibility, ranging from erosion resistant to highly erodible by both wind and water.

The assessment of potential impacts on soils operates on the assumption that road material (aggregate) and underlying roadbed material would be of a type and composition to allow the highest degree of permeability and as such would reduce surface water runoff/release of sediment to nearby waterways to minimal levels. Assessment of potential impacts also assumes that Stryker (and other) vehicles would not leave the road surface except in emergency circumstances. If Stryker vehicles should for any reason leave the road surface, potential impacts on soils would include: localized compaction, increased erosion/release of sediment to waterways, reduced soil strength, and vegetation disturbance, as described in Section 3.7.5.3.1. For Stryker maneuvers on unfrozen soils, no beneficial or adverse impacts are anticipated in areas where soil strength is high (on well-drained, gravelly or sandy soils), potentially adverse, but not significant impacts are expected on soils with moderate soil strength (wet or poorly-drained sand or silty soils), and significant impacts would be associated with soils having low soil strength (saturated or waterlogged sands, silts, and organic soils).

Significant impacts on permafrost could occur during road construction. Removal of upper soil layers or vegetative mat would lead to increased possibility of permafrost degradation and creation of thermokarst features, which in turn could result in the potential for subsequent damage to the roadway, largely from differential settling of underlying ground. As with soils, the extent and location of permafrost beneath the surface at TFTA and in areas of the proposed action is variable. Generally, permafrost is more likely to be found in areas closer to Blair Lakes Impact Area and less likely to be found in low-lying areas closest to the Tanana River and in the flat areas between Dry Creek and McDonald Creek.

No beneficial or adverse impacts would occur to permafrost subsequent to roadway construction, assuming that construction adheres to guidelines and engineering practices designed to ensure the stability of underlying permafrost: application of suitably insulated roadbed, use of (light colored) aggregate as roadway material, heat extraction, and general minimization of heat transfer to permafrost. Without proper construction techniques, increased heat transfer from the roadway could potentially lead to permafrost degradation and subsequent road surface instability.

The proposed road would be located within an area classified by the USGS as moderate to high for earthquake hazard potential. Structures and infrastructure on TFTA (including roads) experienced some damage as a result of a 7.9 earthquake in November 2002. Potential geologic hazards such as seismically-induced ground failure would be addressed through a standard, site-specific geotechnical investigation before road construction begins.

3.8.5.3.1.1 Site Selection Criteria and Best Management Practices

Roadway design would be consistent with EPA and State of Alaska Construction General Permit SWPPP Requirements as well as Fort Wainwright's SWPPP, in order to minimize runoff contamination. In addition, roadway construction would adhere to all applicable DoD and Army guidelines for protection of soils, prevention of soil erosion, and prevention of permafrost degradation. See Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, for information on how the Army manages

natural resources on Army lands in Alaska and ongoing measures that would apply to the proposed action.

Pre-planning for siting of new infrastructure or new activities at ranges or on training areas requires coordination with the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location that is suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations as well as information from the ITAM program would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up.

3.8.5.3.2 No Action

Under the No Action Alternative, the TFTA access road would not be constructed and conditions would remain as described in Section 3.8.5.1.

3.8.5.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.8.5.3.1.

3.8.6 Water Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.6.

3.8.6.1 Affected Environment

All potential alignments of the TFTA access road are in the Tanana River watershed and traverse Dry Creek and McDonald Creek. Dry Creek is a meandering, braided stream in the general vicinity of alignments. Dry Creek loses its water as it traverses the alluvial fan and disappears before reaching the flats (USACE 1999). McDonald Creek is a thickly vegetated, meandering stream in the general vicinity of the alignments. The surface and groundwater meet State standards for water quality. The area is predominately covered by wetlands. There are numerous bogs, fens, and collapsed bog scars associated with thermokarstic topography, where melting permafrost has created irregular surfaces of marshy hollows and small hummocks. The general area where the TFTA access road would be located is covered by 65 percent wetlands. (This wetland coverage estimate is a composite of the estimates for all alignment corridors.) Owing to the potential for environmental damage, USARAK has since 2000 limited military maneuvering or other activities in TFTA to upland and certain wetland areas. Wetlands provide valuable benefits to the overall hydrologic regime by water retention, flood attenuation, aquifer recharge, and sediment/pollution retention.

3.8.6.2 Impact Assessment Methodology

The general methodology for evaluating water resources is described in Section 3.2.6.2.

3.8.6.3 Environmental Consequences

3.8.6.3.1 Proposed Action

The proposed action would have adverse impacts on surface water quality, primarily from sedimentation due to land disturbance during road construction, establishment of new or increased use of water

crossings, while allowing better access and increasing ground maneuver activity in the area surrounding the TFTA roadway access. By implementing the site selection criteria and BMPs in the following section, the potential adverse impacts on surface water quality could be reduced to not significant.

The proposed action would have potential adverse but not significant impacts on floodplains. Year-round access roads would require vehicle crossings of McDonald Creek and Dry Creek. By implementing the site selection criteria and BMPs in the following section, the impacts on floodplains could be reduced.

The construction of the new roads could impact the surface hydrology and alter the drainage patterns. Roads culverts can focus water flow into selected channels at while cutting off overland flow and flow through wetlands. The increase in flow in selected locations at culvert can have downstream impacts through the incision of the channel and streambank erosion. The decrease in overland flow and decrease water flow through wetlands can alter the hydrologic regime by decreasing flood retention of the watershed and decreasing the travel time of storm water runoff. Hydrologic investigations are needed to ensure that culverts installed along the proposed roads would not produce a discernable change in the hydrologic flow regime of the area.

The proposed action would have adverse impacts on wetlands, primarily resulting from the disturbance and filling of wetlands associated with building a road and increased maneuver activities as a result of the increase in access. The proposed action would utilize existing roads where possible and minimize impacts on wetlands and critical habitat. Nonetheless, in some portions of the training areas, wetlands are the predominant landscape feature (65 percent in the TFTA access road area). In the wetland-rich areas it would be difficult to avoid filling or converting wetlands. To have year-round access, raised road beds would likely be required which may result in the filling and disturbance of wetlands and could alter wetland hydrology by cutting off wetlands from their water source. The filling of one portion of a wetland could have in the indirect effect of degrading wetland downstream of the filled wetland by altering the overall flow pattern of water through the wetland. Since the proposed action area would traverse wetland areas, the USAG-FWA Environmental Resources Division staff would need to request a Jurisdictional Determination by the USACE. The USACE will request a wetland delineation to be completed for the permit application. The USACE would recommend the type of wetland permit application to submit. As a condition for receiving these permits, USAG-FWA would comply with all permitting conditions designed to mitigate impacts on wetlands. By implementing the site selection criteria and BMPs in the following section, the impacts on wetlands could be reduced. However, detailed wetland surveys along the potential road alignment will be required to determine the significance of the potential adverse impacts of the proposed action on wetlands.

The following site selection criteria and BMPs would reduce the impacts on surface water quality, floodplains, and wetlands.

Surface water quality (sedimentation)

- Avoid designing roads and trails in the general direction of preferential water flow and at ground level.
- Design culverts to accommodate general local snowmelt runoff each spring and rainfall events throughout the year. As necessary, conduct hydrological investigations, improving road designs to minimize the alteration of the hydrologic regime that could occur by the concentration of surface water flows through culverts and the cutoff of overland flow and the cutoff of water flow through wetlands.
- Where possible, conduct vegetation clearing activities during the winter months when soils are frozen.
- Adhere to the SWPPP during construction of the roads for the enhanced vehicle maneuver access.

- Control sediment transport though the utilization of BMPs for erosion and sediment control which could include but is not limited to silt fencing, straw waddles, and stormwater retention/detention basins during construction.
- Keep all construction staging, fueling, and servicing operations at a minimum of 100 feet from surface waters.
- Employ SPPCP measures to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources.
- Stabilize all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.

Floodplains and waterways

- Construct permanent low-water crossings (i.e., ingress and egress ramps) or other features at designated vehicular stream crossings to prevent bank erosion, widening of waterways and increased sediment in streams.
- Harden approaches to fords and ice bridges on anadromous creeks and rivers within training areas. Ensure that crossing would occur only at these approaches. Hardened approaches would reduce the amount of bank-side erosion and sedimentation occurring at crossings.

Wetlands

- Site new training roads and upgrades to existing routes to avoid construction in wetlands as much as practicable. Construction should remove the least amount of vegetation possible to avoid melting permafrost.
- Planning for alignments should consider both the direct impacts to wetlands through filling and disturbance and the indirect downstream impacts of altered wetland hydrology. Higher function wetlands that impact the overall hydrologic regime should have greater protection requirements than other wetlands to avoid altering the overall hydrologic regime. As part of the planning process a baseline assessment of wetland and stream water budgets should be conducted to evaluate the impacts to wetland hydrology and downstream impacts. Complete the delineation of wetlands prior to the final design of the TFTA access road. After wetland delineations have been completed the route design should be modified based on the wetland delineations to avoid impacting wetlands as much as possible.
- Narrow/confine trail widths in sensitive wetland habitats or when possible, widen trails to the upland direction to avoid wetland impact.
- Use of a hydro-ax within wetlands to reduce impacts on hydric soils and low-lying vegetation.
- Fill areas would be minimized for wetlands through site-specific design and limiting construction staging to upland areas.
- Maintain natural drainage patterns by the installation of culverts and road swales of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.
- No stockpiling of fill or construction materials in wetlands or waters of the United States without obtaining necessary permits. All equipment operation would be confined to the project footprint to prevent unnecessary damage to adjacent wetlands and vegetation.
- Conduct all additional avoidance, mitigation and compensation as required by terms and conditions in the USACE Section 404 permit.

3.8.6.3.2 No Action

The No Action Alternative would not provide for the construction and operation of a year-round access to provide maneuver space in TFTA. TFTA would continue to be used in the winter season when the impacts on surface water quality, floodplains, and wetlands are limited due to the protective snowpack over the vegetation and soil.

3.8.6.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.8.6.3.1.

3.8.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.7.

3.8.7.1 Affected Environment

The TFTA Access Roads ROI, located in the southeastern portion of TFTA, occupies 653,748 acres south and west of the Tanana River, between the Wood and Tanana Rivers, and approximately 32 miles south of the city of Fairbanks.

MUNITIONS RELATED RESIDUE

This proposed action does not include live-fire training exercises.

CONTAMINATED SITES

There are no CERCLA Superfund sites listed on the National Priorities List in the TFTA Access Roads ROI. The ADEC CSP database lists one site within the TFTA Access Roads ROI: CSP Site 1136, Fort Wainwright (OU-1) Blair Lakes FTWW-024, which must be accounted for under all of the proposed road alignments. This site, which is listed as Cleanup Complete, is described as a number of drums, some in poor condition, containing POLs, tyrolene, glycol, and solvents (ADEC 2011). No sites are listed on the Army Environmental Restoration database for this ROI (USAEC 2010).

3.8.7.2 Impact Assessment Methodology

The general methodology for evaluating hazardous materials and waste is described in Sections 3.1.7.1 and 3.1.7.2.

3.8.7.3 Environmental Consequences

3.8.7.3.1 Proposed Action

GENERAL HAZARDOUS MATERIALS AND WASTE

The proposed action includes construction of a 35-foot wide aggregate surface road in TFTA, to allow year-round access to the Blair Lakes Impact Area. ADEC site #1136, Fort Wainwright (OU-1) Blair Lakes FTWW-024 is located near all proposed road alignments. The project proponents would utilize the range Institutional Control map to avoid ADEC site #1136 when siting the access road. If the site could not be avoided, established BMPs/SOPs, as identified in Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, would be followed. Impacts associated with potentially contaminated soils and spills of POLs would be similar to those described for the Enhanced Ground Maneuver proposal.

No beneficial or adverse hazardous materials related impacts would occur in association with this proposed action.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

No beneficial or adverse hazardous materials related impacts would occur in association with munitions use, as training and operations would not include live fire. See Section 3.8.3, Safety, regarding potential UXO, including munitions residue, in areas of new construction.

3.8.7.3.2 No Action

Under the No Action Alternative, there would be no access road constructed for improved access to TFTA. Therefore, hazardous material related impacts would not occur.

3.8.7.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.8.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.8.8.1 Affected Environment

The lands for which the TFTA Access study area are proposed are managed by USAG-FWA. The proposed project study area occurs in the southeast corner of TFTA within the Tanana-Kuskokwim Lowlands ecoregion, which is characterized by gentle topography, patches of impermeable permafrost, and poor soil drainage (see Figure B-11 in Appendix B). This region can be broadly classified into two terrestrial ecosystems: forests and forest/scrub/bog communities. Within each of these ecosystems, a number of cover types exist, with vegetation forming a mosaic that reflects fire history, slope, and aspect; presence or absence of permafrost; and the variable climatic, physiographic, and geographic patterns throughout the region (Fort Wainwright 2008; USARAK 2006-2).

VEGETATION

Forest communities cover approximately 41 percent of TFTA. A predominance of forest communities occur as open spruce, spruce and broadleaf, and open and closed spruce forest within the study area for the TFTA Access (Table 3-84). Some species and details on the major land types present in TFTA are included below.

Forests

Forest cover in the TFTA Access study area is diverse and includes stands of spruce, hardwoods or broadleaf trees, and spruce/hardwood mixtures. Descriptions and general distribution of the primary species in each forest cover type present are as follows:

- White spruce (*Picea glauca*) – White spruce occurs on well-drained upland sites that lack permafrost.
- Paper birch (*Betula papyrifera*) – Paper birch is found primarily on upland sites and occurs on most exposures.
- Quaking aspen (*Populus tremuloides*) – Quaking aspen is common on south slopes, well-drained benches, and creek bottoms to an elevation of about 3,000 feet.

- Balsam poplar (*Populus balsamifera*) – Poplar stands are found along alluvial river deposits.
- Black spruce (*Picea mariana*) – Black spruce, the most common forest cover type, is found on cold, wet, poorly aerated and poorly drained sites, but also on dry sites that have gravelly soils and a thin organic layer.
- Spruce/hardwood – Spruce/hardwood forests support a mixture of the above species and predominate in lowland areas.

Scrub Communities

Scrub communities are dominated by shrubs and occur at high elevations, in small stream valley bottoms, and as "pioneer" vegetation on disturbed sites, including areas recovering from fire. Scrub communities are quite extensive on Fort Wainwright training lands and are primarily composed of alder (*Alnus* ssp.), willow (*Salix* ssp.), and dwarf birch (*Betula glandulosa* and *B. nana*).

Bogs and Fens

Vegetation in the flats is dominated by lowland bogs/fens and thermokarst forests. Thermokarst forests consist primarily of open, stunted birch and black spruce stands. Bogs/fens are dominated by low shrubs, herbs, and sedges.

Vegetation classes determined to be present within the TFTA Access study area are presented in Table 3-84.

Table 3-84. Land Types Associated with the Tanana Flats Training Area Roadway Access Project Study Area

Spruce and Broadleaf Forest	Open and Closed Spruce Forest	Closed Mixed Forest	Open Spruce Forest/ Shrub/Bog Mosaic	Tall Shrub	Gravel Bars
Acres (hectares)					
15,749 (6,373)	7,805 (3,159)	2 (1)	6,103 (2,470)	728 (295)	240 (97)

Source: USGS 1991

WILDLIFE

Typical wildlife species that use the lowlands in the vicinity of the TFTA Access study area include moose, black bear, beavers, porcupines, and other small game; songbirds and raptors; and numerous waterfowl. The Tanana River serves as a major migratory waterfowl corridor through interior Alaska, as well as supporting anadromous fish and raptor nests. Bald eagle nests are common on the Tanana River and usually occur within 328 feet (100 meters) of a shoreline. Active nests are generally spaced from 12 to 16 miles apart. Data for known eagle nests are presented in Figure B-12. An estimated 2 million waterfowl migrate through TFTA and the Chena floodplain of YTA each spring, followed by 5 million birds in the fall (USARAK 2004-1). A variety of waterfowl species also use the numerous wetlands in TFTA for nesting. The entire area proposed as the TFTA Access study area was mapped as part of general waterfowl habitat and as the terminus of a major migration route (Figure B-15 in Appendix B, *Definition of the Resources and Regulatory Settings*). Estimates of waterfowl use in TFTA include 5,000 cranes, 10,000 geese, and 200,000 ducks during a breeding season. Several dozen trumpeter swans are also known to nest on the northern and western portions of TFTA (USARAK 2004-1). Individual pairs of swans may nest anywhere on TFTA in a given season. Waterfowl migration peaks in September. TFTA and YTA, as well as the overlying airspace, constitute a major migration corridor for sandhill cranes, with peak use in mid-May and September (USARAK 2004-1).

Medium to small furbearing mammals found on TFTA include wolverine, coyote, lynx, red fox, pine marten, wolves, snowshoe hare, and beaver. The lowlands of this region are also important as large ungulate breeding areas. Moose use the entire proposed TFTA Access study area for rutting in fall, calving in spring, and winter foraging, especially in high-snow-depth years (Figure B-16). Spring and summer moose densities increase two- to four-fold in TFTA including migrations from other watersheds and northern foothills of the Alaska Range (USARAK 2004-1). Caribou use approximately the southern half of the proposed TFTA Access study area for winter foraging (Figure B-13). Most ponds and lakes in TFTA do not support fish populations year-round, as they freeze in winter or when iced over and lack sufficient dissolved oxygen for fish to survive (USARAK 2004-1). However, a stocking program has allowed the public to use the lakes for angling. There are anadromous fish spawning and rearing streams and streams that support highly prized grayling year around.

Known habitats within the TFTA Access study area that are used by wildlife are presented in Table 3-85.

Table 3-85. Wildlife Habitats Associated with the Tanana Flats Training Area Roadway Access Project Area

Caribou Winter Habitat	Moose Winter, Rutting, and Calving Habitat	Waterfowl General Habitat
Acres (hectares)		
13,950 (5,645)	30,628 (12,395)	24,729 (10,007)

Source: RDI 2005-1, 2005-2, 2005-3, 2005-4, 2005-5, 2005-6

3.8.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.8.8.3 Environmental Consequences

3.8.8.3.1 Proposed Action

Direct impacts of ground clearing for road construction can result in vegetation and wildlife habitat losses as well as habitat fragmentation and restricting of access to important habitats for some species.

To reduce adverse effects, recommended siting criteria include minimizing construction in the following known sensitive habitats that occur within TFTA (acreages provided in Table 3-84 and Table 3-85) (different avoidance seasons apply; refer to the biological resources mitigations table in Appendix G, *Biological Resources*, and to Figure B-13, Figure B-15, and Figure B-16 in Appendix B, *Definition of the Resources and Regulatory Settings*):

- Bogs and other wet habitats;
- Moose calving, rutting, migration, and winter habitat;
- Caribou winter habitat;
- Waterfowl general, and migration stopover/resting, and nesting areas;
- Anadromous fish spawning and rearing habitat; and
- Swan breeding habitat.

Additional siting criteria may be developed through the subsequent environmental review and permitting process. Once the road alignment(s) are chosen, expected long-term impacts include the loss of

vegetation and habitat on the area occupied by the 35-foot-wide aggregate surface plus berms or shoulders that are maintained. With the extent of wetland/bog vegetation habitats, there is a high likelihood that wetlands will have to be filled to provide a safe, all-weather roadbase. Fortunately, with the ubiquitous occurrence of wetlands in the area, the loss of a small percentage to roadbase should not adversely affect any specific plant community in the project area or the availability of this habitat type. Any likely effects of road construction on wetlands would be subject to regulatory review and approval as discussed under water resources. In addition to physical effects, road construction has the potential to interfere with the movement of waters by altering flow paths and concentrating runoff through culverts (see Water Resources Section 3.8.6).

To give an idea of potential land disturbance for the project, an example of the TFTA Access Road alignment using a potential road disturbance of 300 feet wide (includes 35-foot road surface, shoulders, and buffers on each side) was analyzed for effects based on preliminary alignments. This example scenario would affect approximately 800 acres of vegetation classes and the associated wildlife habitat in the project study area. Potentially affected vegetation classes are given in Table 3-84. Wildlife habitats potentially affected are presented in Table 3-85.

Siting criteria to avoid bogs/wetlands and known sensitive seasonal wildlife habitats would be applied to minimize direct adverse effects to biological resources such as fish habitats and swan nesting areas.

Temporary effects would occur to vegetation cleared or trampled in areas needed for construction access, work areas, and equipment staging and storage. Areas disturbed but not used for the road corridor would be revegetated per standard BMPs under USAG-FWA policy on habitat restoration after construction projects (Appendix G, *Biological Resources*).

Noxious weed introduction and spread is a common impact of construction projects. USAG-FWA recommends monitoring sites soon after construction has ceased, monitoring source materials and keeping them weed-free, and requiring contractors to wash equipment before coming on to post (Fort Wainwright 2008). Additional vegetation management mitigation measures are presented in the biological resources mitigations table in Appendix G, *Biological Resources*.

Direct effects to wildlife habitat that cannot be avoided may include the fragmentation of larger habitats and migration routes from new road construction, which may impede access to important habitat such as breeding or spawning sites for some species. In general, the access road route that crosses the fewest stream channels (e.g., the currently proposed southernmost alignments) would be expected to affect the least amounts of moose and fish habitats. For wildlife areas of special concern, Army special interest management areas are designated on TFTA, which include the Tanana Flats Migratory Bird Special Interest Area (USARAK 2007-2). Training restrictions established for these areas would be expected to adequately protect sensitive wildlife from disturbance. Construction activities can also cause animal mortality, especially for smaller, young, and less mobile species. It will be important to work with ADFG and USFWS personnel to site road alignments to minimize damage and disturbance to biological resources.

Indirect effects to wildlife, including the addition of noise, dust, trash, weed spread, and potential spills, often accompany construction activities. SOPs and BMPs adopted by the Army provide methods to minimize such effects (Appendix G, *Biological Resources*). Long-term indirect impacts of providing all-season access to the training areas (currently only accessible during the months when the ground and water surfaces are frozen) would likely include the addition of vehicle and human presence to both new roads and existing training areas during the warmer months that had not occurred in the past. For the wildlife species present, the addition of the all-season access road may be disruptive to life cycle activities that occur in the project area. Within TFTA, these include duck and geese breeding, nesting and migration, and moose rutting and calving, and anadromous fish stream habitat.

No threatened or endangered species were identified as occurring in the proposed project area. Wildlife species may become habituated to noise and activities that they learn are not harmful and are generally expected to become tolerant in time to vehicles using an established road, especially given that the study area is an active training area currently supporting ground maneuvers. Because the locations and specifics of construction for the TFTA access road and the biological resources that would be affected by the project are not presently known, uncertainties about biological impacts exist for this programmatic project. However, due to the scale and extent of habitat disturbance required for road development as well as the facilitation of vehicle and human all-season access to areas previously accessible only during winter, impacts to biological resources including fish and wildlife species would be adverse and likely to be significant from the addition of an access road in TFTA.

3.8.8.3.2 No Action

The current amount of localized ground disturbance (from training, vehicles and live fire) would be expected to continue and wildlife using the area would be expected to remain active in occupied habitats.

3.8.8.4 Considerations for Future Planning

In addition to siting criteria and vegetation clearing guidelines listed in Section 3.7.8.3, other measures, BMPs, and SOPs that should be applied to ground-disturbing activities are included in Appendix G, *Biological Resources*.

3.8.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.8.9.1 Affected Environment

TFTA is the ROI for the TFTA Access Road Programmatic Action. The affected environment for TFTA is the same as described in Section 3.2.9.1, Realistic Live Ordnance Delivery.

3.8.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed TFTA Access Roads action is the same as the methodology applied to analysis of the EGMS action (Section 3.7.9.2).

3.8.9.3 Environmental Consequences

3.8.9.3.1 Proposed Action

This Action would construct an access road within TFTA to provide year-round training access to the Blair Lakes Impact Area.

There is the potential for impacts on cultural resources from the construction of the TFTA access road and training associated with this action. Prior to implementation of any element of this proposed action, the Army would comply with NHPA Section 106, including identification of historic properties, and assessment and resolution of adverse effects through consultation with Alaska SHPO and potentially affected Federally recognized tribes.

There is the potential for impacts on traditional cultural resources or Alaska Native activities from the proposed construction of an access road in TFTA. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has initiated

government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed construction of an access road in TFTA (see Section 1.6.5). Consultation will continue as the proposal progresses toward a definitive action.

3.8.9.3.2 No Action

Under the No Action Alternative there would be no establishment of an access road in TFTA. Existing use of the ranges and airspace would continue under this alternative and resources would continue to be managed in compliance with Federal law and Army regulations.

3.8.9.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.8.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.10.

3.8.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

This proposal only involves military land on TFTA. Figure 3-39 provides detailed information on the layout of military infrastructure and uses in TFTA proposal area and adjacent non-military land.

Surrounding land directly north and east of the proposal area is primarily State-owned. The area is largely forested with non-contiguous areas of the Tanana Valley State Forest. The land between TFTA and the river is the within the proposed alignment for a new railroad between Fairbanks and Delta Junction. Completion of that project would bring new opportunities for year-round public and military access across the river. The potential environmental effects of the railroad project are currently under evaluation. The north end of TFTA is contiguous with Fort Wainwright, but physically separated by the Tanana River.

PUBLIC ACCESS

Land Access

Access and use to military lands under consideration for access roads to Blair Lakes Impact Area are described above in Section 3.2.10.1. In addition, public access to TFTA is described in Section 3.2.10.1 (Land Status, Management, and Use and the Public Access subsections). No RS 2477 designated trails are located within the area of influence. Several other non-improved trails in TFTA intersect with the proposed alignments (shown in Figure 3-39).

Aerial Access

Public aerial access to TFTA is described in Section 3.2.10.1 (the Public Access subsection).

Navigable and Public Waters

Portions of the Tanana River and the Wood River bordering TFTA are categorized as navigable rivers. Management of sport fishing falls within the Lower Tanana River Basin area.

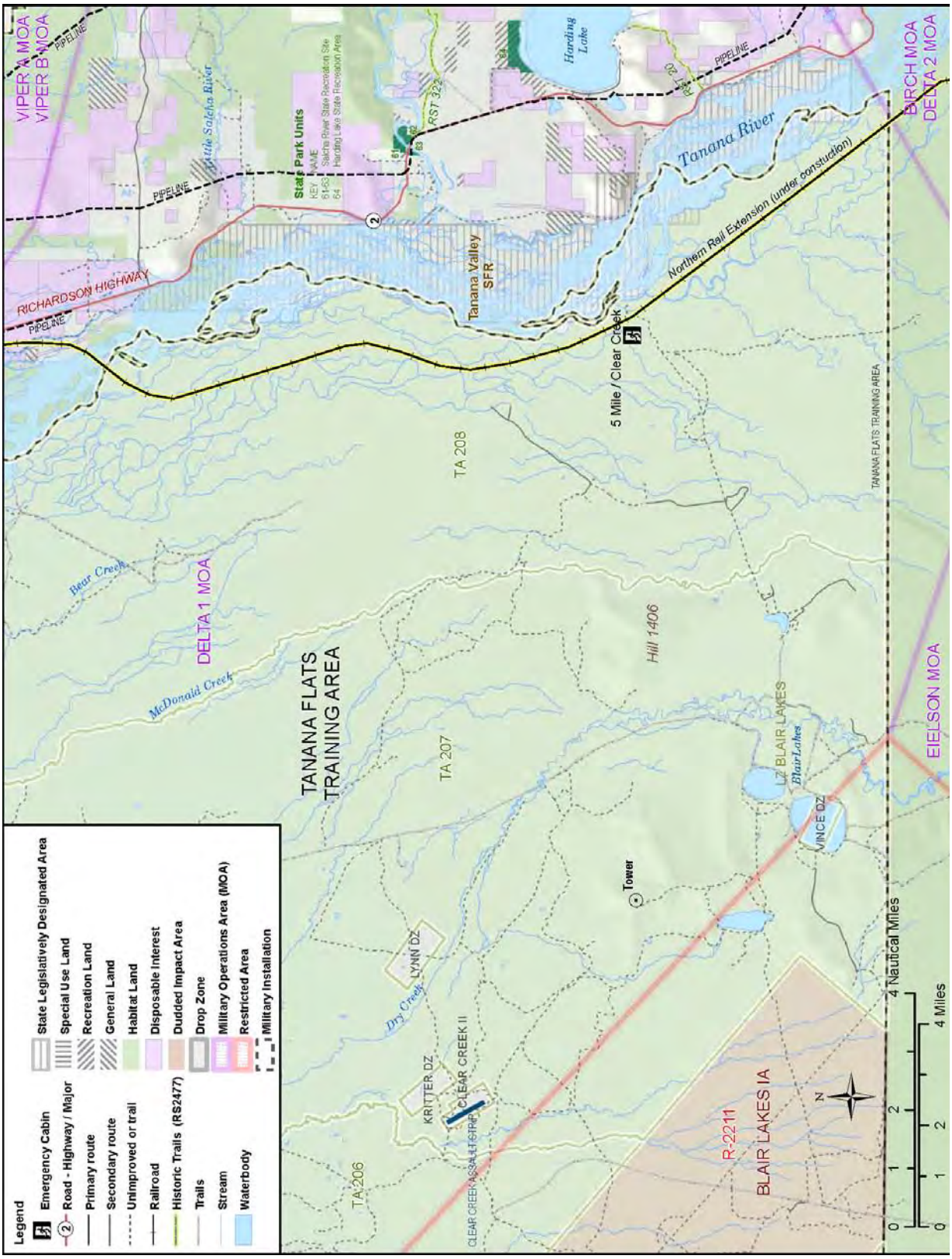


Figure 3-39. Military Uses, Special Use Areas, General Land Classifications and Productive Uses - Tanana Flats Training Area Roadway Access Proposal Area

Source: ADNR 2009-2, ADNR 2009-3, ADNR 2011-3, ADNR 2011-7, ADNR 2011-13

RECREATION

Recreation on Military Land

Recreational use on TFTA is described in Section 3.2.10.1 (Land Status, Management, and Use and Recreation subsections).

Recreation on Non-military Land

There are no Federally designated recreation lands within the ROI of the proposed action. One State-designated area, Tanana Valley State Forest, supports recreation and occurs within the ROI for this proposed action. The area supports the usual general recreational uses permitted by ADNR. Hunting, trapping, and fishing activities follow regulations pertaining to GMU 20A (see Appendix I, *Land Use, Public Access, and Recreation*).

3.8.10.2 Impact Assessment Methodology

General methodology pertaining to evaluating land use, public access and recreation are described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The method for evaluating impacts and selecting future siting criteria is the same as that described in Section 3.7.10.2.

3.8.10.3 Environmental Consequences

3.8.10.3.1 Proposed Action

Impacts from siting new access roads into the Blair Lakes Impact Area are similar to those described in Section 3.7.10.3.1. Particular issues relative to this proposal include vetting optional alignments and potential interface between new access road termini with the new Northern Rail Extension alignment and proposed methods for crossing the Tanana River. Some portion of a TFTA access road would extend beyond military land, requiring detailed coordination with landowners and regulators, particularly ADNR and ADFG, the Alaska Railroad Corporation, Alaska Department of Transportation, USACE, USFWS, FNSB, and potentially affected nearby communities such as Salcha and North Pole.

Within TFTA, a proposed access road could benefit public land use, safety, and recreation. A new road would reduce travel time to remote areas used for both military and non-military purposes (particularly hunting and fishing). A new road into this area would provide access for emergency services and field crews, and could directly link to the Blair Lakes trail survival shelter. Under Alternative A, a new TFTA access road may pass near the 5-mile Clear Creek Emergency shelter, enhancing this site with more robust emergency access. However, these benefits may also come with new issues of safety and controlling of trespass users.

While this proposal has some potential to benefit access and recreation, without careful pre-planning and siting, it has potential to conflict with public recreational uses. The recommended pre-planning process and siting criteria described in Section 3.7.10.3.1 would also apply to this proposal.

3.8.10.3.2 No Action

Under the No Action Alternative, construction and use of a new road to the Blair Lakes area would not occur. No effect to current land use, access or recreational use would result. Potential benefits from improved access and safety would be foregone.

3.8.10.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.8.10.3.1.

3.8.11 Infrastructure and Transportation

Transportation routes, electricity, water, sewage, and natural gas utilities are necessary to support various missions, as well as to maintain the residences of military personnel. Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for additional information regarding transportation and utility resources throughout this region.

3.8.11.1 Affected Environment

INFRASTRUCTURE

Electrical Transmission

A total of 27.86 miles of electric power transmission lines cross the Tanana Flats portion of the maneuver space. In addition, 1.02 miles of telephone transmission lines cross the YTA portion of the maneuver space.

In 2007, a 50-year contract was awarded to Doyon Utilities for assumption of ownership, operation, and maintenance of the electric power generation and distribution systems, central heat and heat distribution systems, natural gas distribution systems, potable water distribution systems, and wastewater collection systems of USAG-AK facilities, including JBER, Fort Wainwright, and Fort Greely. Aurora Energy serves as a subcontractor for the operation of electrical and heat utilities and power generation assets. In addition to the three installations listed above, the contract includes three remote sites: Black Rapids, Bolio Lakes, and YTA.

Currently no commercial power is available in TFTA. GVEA's Northern Intertie is routed along the northwestern and northern sections of TFTA (GVEA 2011).

Water Supply and Wastewater Treatment

Doyon Utilities has assumed ownership, operation, and maintenance of the potable water distribution systems and wastewater collection systems of USAG-AK facilities, including JBER, Fort Wainwright, and Fort Greely. In addition to these three installations, the contract includes three remotes sites: Black Rapids, Bolio Lakes, and YTA. Regulations covering water appropriation are contained in the AAC at 11 AAC 93.010-970. Neither the Alaska Constitution nor the Water Use Act differentiate between surface and groundwater uses.

Natural Gas and Oil Pipelines

No natural gas or oil pipelines are present within this area.

TRANSPORTATION

Roads, Bridges and Trails

No bridges or roads lie within the maneuver access area. Approximately 212 miles of trails are present within TFTA. Most of these trails are unimproved, as shown in Table 3-86.

Table 3-86. Trails in Tanana Flats Training Area

Trail type	Length (miles)
Secondary	13.4
Tertiary	22.9
Unimproved	175.7
Total	212.1

Source: USARAK GIS, 2010

Rail

Railroad infrastructure includes the Alaska Railroad Northern Rail Extension Project which is currently scheduled for completion in August 2014.

3.8.11.2 Impact Assessment Methodology

The general methodology for evaluating infrastructure and transportation is described in Section 3.2.11.2.

3.8.11.3 Environmental Consequences

3.8.11.3.1 Proposed Action

TRANSPORTATION

Within the current study area, there are 56 miles of trail with no existing bridges or roads. Current plans for this programmatic action are to construct a road within TFTA is to provide year-round training access to the Blair Lakes Impact Area. The desired road surface would be a 35-foot-wide aggregate surface to allow two Stryker vehicles to pass. Because of the current absence of permanent roads, the addition of transportation reroutes would result in a net positive impact to current transportation networks. Specific alternatives for direct access to Blair Lakes and TFTA are not developed to the point where specific decisions or plans can be made.

The Richardson Highway runs along this project area and is approximately 368 miles in total length, providing a north-south connection between Fairbanks and Valdez. The Richardson Highway junctions with five other highways. Year 2030 traffic volumes are forecast along most segments of the Richardson Highway between 1,500 and 4,500 AADT. Based on these forecast traffic volumes, a qualitative planning level assessment of the Richardson Highway by ADOT&PF revealed no major roadway capacity constraints over the near- and long-term (ADOT&PF 2010-1).

INFRASTRUCTURE

Within the project area, there are 29 miles of electrical transmission lines. Within the ground training areas, electrical distribution lines run along the northwestern and northern sections of TFTA. No commercial power is available in TFTA. Specific alternatives for electrical requirements for TFTA are not developed to the point where specific decisions or plans can be made. No negative impact is anticipated from the proposed action and alternatives. There is a potential for beneficial impacts by creating new transportation corridors to activity areas where ROW will exist to place new transmission lines.

Fort Wainwright has a coal-fired plant that generates steam and electricity to meet the heating and electricity demands of the base. The plant currently has 20 MWe installed capacity, but only 18 MWe effective capacity. There is currently a plan to double power generation capacity at Fort Wainwright and wheel power to the other two military bases. Current plans also involve a major upgrade to the electrical and boiler control systems at the existing plant (Doyon 2011-2).

Water wells are the source for all potable and non-potable water at Fort Wainwright. Fort Wainwright has 19 raw water supply wells, with two primary source wells for the water plant and two backup supply wells to the water plant. Five wells are classified as fire protection wells and provide water for fire protection use during a fire demand condition. The Fort Wainwright Wastewater Collection System includes lift stations, manholes, force mains, and gravity piping (Doyon 2011-2).

There are no natural gas or oil pipelines present. No impacts on these resources are anticipated from the proposed action.

3.8.11.3.2 No Action

No impacts on infrastructure and transportation would occur under the No Action Alternative.

3.8.11.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.8.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.8.12.1 Affected Environment

The proposed access roads would be located entirely within TFTA. TFTA is within the FNSB and is defined as the ROI. There are no residents or housing within TFTA, and, therefore, population and housing are not discussed in this section. Economic activity in TFTA that could be affected by the proposed action includes construction of the access roads and recreation.

ECONOMIC ACTIVITY

In 2009, total full-time and part-time employment in the FNSB totaled 58,761. Total employment in the construction industry totaled 3,622, representing approximately 6 percent of total employment in the borough (BEA 2011-2).

RECREATION

Training areas, in particular TFTA, are prime habitat for wildlife, including moose, a popular species for hunting, food and wildlife viewing (ASCG Inc. 2006). The road assignments are in sub-units of the Tanana Flats that are open to hunting, fishing, and trapping during seasons established by the ADFG and that are used extensively by hunters, trappers, airboaters, and other recreationists. Areas on the Tanana Flats that are permanently "closed" include the Blair Lakes Impact Area and the Alpha Impact Area. For more-detailed information on recreation in the ROI, see Section 3.8.10.1 and Section 3.2.10.1.

3.8.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.8.12.3 Environmental Consequences

3.8.12.3.1 Proposed Action

The TFTA Roadway Access action involves construction of access roads and changes in ground maneuver activities within the TFTA. In general, construction activities are anticipated to result in temporary and beneficial socioeconomic impacts that would occur only during the construction phase. Based on the economic activity in the region, it is anticipated that the Fairbanks North Star Borough would be able to provide the majority of local labor and supplies. The direct and indirect socioeconomic impacts associated with this action are dependent on the construction expenditures, which are unavailable at this time, but should be taken into consideration during the siting criteria. If any portion of a TFTA access road would extend beyond military land, this would require detailed coordination with landowners and regulators, particularly ADNR and ADFG, the Alaska Railroad Corporation, Alaska Department of Transportation, USACE, USFWS, Fairbanks North Star Borough, and potentially affected nearby communities such as Salcha and North Pole. A concern expressed during the public scoping comment period indicates that there would be potential for significant impacts to civilians who currently live and utilize the affected nearby communities.

Within TFTA, a proposed access road could benefit public land use/access, safety, and recreation (described in Section 3.8.10.3.1), and in turn could have beneficial economic impacts. The specific alternatives for direct access to Blair Lakes and TFTA are not developed to the point where quantitative economic analysis can be performed. However, based on a review of environmental consequences for other resources, potential for high or significant adverse impacts associated with the action would be mitigated based on SOPs, BMPs, and continuation of mitigation measures used previously for the Alaska MOAs.

3.8.12.3.2 No Action

Under the No Action Alternative, the creation and operation of a year-round maneuver space in TFTA would not be implemented. There would be no impacts on socioeconomic resources under the No Action Alternative.

3.8.12.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.8.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.8.13.1 Affected Environment

The proposed road alignments in TFTA would be entirely within the TFTA boundaries. TFTA is within a State nonsubsistence area and a Federal nonrural area, as depicted in Figure 3-23 (ADFG 2011-10; USFWS 2010-1). USAG-FWA does allow access to these ranges for recreational use (described in Section 3.7.10); however, resources are not managed or prioritized for subsistence.

3.8.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.8.13.3 Environmental Consequences

3.8.13.3.1 Proposed Action

As the areas on TFTA accessible to the public are not managed for subsistence resources, and Alaska residents are not given priority for subsistence resources in TFTA, the development of new access infrastructure within TFTA would not be expected to affect subsistence resources. However, this action may affect recreational activities and public accessibility, which is described in Section 3.7.10.

3.8.13.3.2 No Action

Under the No Action Alternative, subsistence activities would continue as they are currently practiced.

3.8.13.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.8.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.14.

3.8.14.1 Affected Environment

The affected environment for the TFTA Access Road proposal includes the FNSB. Table 3-87 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

Table 3-87. Minority Population, Low-Income Population and Children by Area

Area	Total Population	Percent Low-Income	Percent Minority	Percent Alaska Native	Percent Children
Fairbanks North Star Borough	97,581	8.0	25.9	7.0	25.6
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Source: USCB 2010-1, 2010-2.

The percent minority in FNSB is 25.9 percent, which is lower than the 35.9 percent average for the State of Alaska. The percent low-income is 8.0 percent, which is lower than the 9.6 percent average for the State of Alaska. The percent Alaska Native is 7.0 percent, which is less than the 14.8 percent average for the State of Alaska. The percent of children is 25.6 percent, similar to the 26.4 percent average for the State.

3.8.14.2 Impact Assessment Methodology

General Methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2.

3.8.14.3 Environmental Consequences

3.8.14.3.1 Proposed Action

TFTA involves construction of access roads and changes in ground maneuver activities within TFTA. TFTA is located in a State nonsubsistence area and a Federal nonrural area not managed for subsistence. Based on a review of environmental consequences for other resources, potential for significant adverse impacts could be mitigated based on SOPs, BMPs, and possible use of mitigation measures similar to those used previously for the Alaska MOAs.

If any portion of a TFTA access road would extend beyond military land, this would require detailed coordination with landowners and regulators, particularly ADNR and ADFG, the Alaska Railroad Corporation, Alaska Department of Transportation, USACE, USFWS, FNSB, and potentially affected nearby communities such as Salcha and North Pole. Within TFTA, a proposed access road could benefit public land use/access, safety, and recreation.

Because the areas on TFTA accessible to the public are not managed for subsistence resources, and Alaska residents are not given priority for subsistence resources in TFTA, the development of new access infrastructure within TFTA would not be expected to affect subsistence resources.

TFTA would not be expected to create disproportionately high and adverse environmental or health effects on minority or low-income populations or children but the measure listed below would be helpful in minimizing effects to inhabitants of non-military lands.

If further analysis related to siting and construction of TFTA identifies unavoidable significant adverse impacts on inhabited non-military areas, these areas would be evaluated to determine whether they have a higher percentage of minority and low-income populations relative to the comparison area and whether facilities serving children would be adversely affected. If so, the need for environmental justice mitigation measures would be evaluated.

3.8.14.3.2 No Action

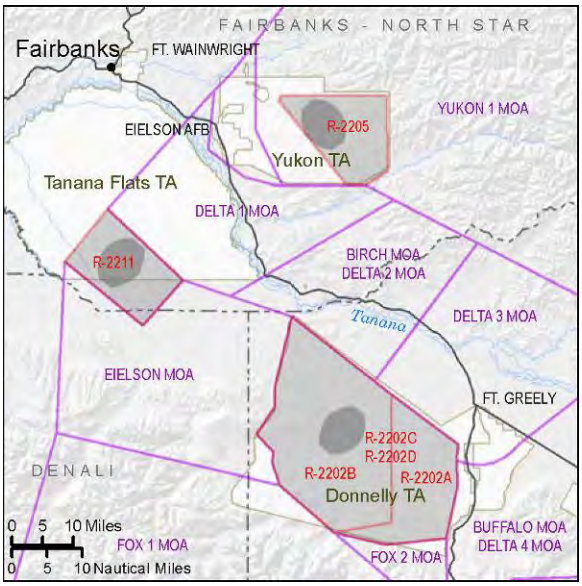
No additional access roads and no changes in ground maneuver activities would occur and thus no disproportionately high and adverse environmental or health effects on minority or low-income populations or children would occur.

3.8.14.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9 JOINT AIR–GROUND INTEGRATION COMPLEX (JAGIC) (PROGRAMMATIC)

The digitally integrated JAGIC is the capstone capability for joint and combined live training. The JAGIC is a proposed JPARC capability for joint and combined live-fire training which would allow Army combined arms capabilities to jointly operate with the Air Force, Navy, and Marine Corps air-to-air and air-to-ground capabilities, along with Special Operations Forces. Ground-disturbing components of the project would include construction of realistic targets, scoring mechanisms, range support buildings, parking area, range tower, convoy live-fire route, urban centers, and an area for Service rocket training, power, communications, and service roads. From a military requirements perspective, it is estimated that the footprint of the overall complex should be at least 26,687 acres (42 square miles (mi^2) or 108 km^2) for the three facilities, which would be located within existing training areas.



The JAGIC proposal considers three potential sites (see the gray-shaded areas in the map above) with a composite study footprint of almost 90,000 acres (139 square miles). The preliminary layout for this capability would be constructed and used on existing military land. The potential for both ground-based military operations and use of associated airspace for hazardous operations, potentially affects a wide spectrum of resources. Potential for significant impacts is estimated as low for infrastructure and transportation, and socioeconomics. In response to future mission change and force structure modernization, it is likely that the Army and other services currently training in Alaska will be required to adapt their training and testing on JPARC lands and ranges. The Army will evaluate any additional modernization and enhancement of JPARC capabilities based on future service requirements in accordance with NEPA.

3.9.1 Airspace Management and Use (No Analysis Needed)

The proposed JAGIC activities do not involve any changes to the management, use, or structure of the surrounding MOA and restricted airspace environment.

3.9.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.9.2.1 Affected Environment

The affected areas are located in the Stuart, Blair Lakes, and Oklahoma Impact Areas. These areas experience noise generated by firing and detonation of weapons. The baseline noise environment in the Oklahoma and Blair Lakes Impact Areas are described in the Section 3.2.2.1 (RLOD); the existing noise environment in the Stuart Impact Area, in Section 3.4.2.1 (DMPTR Restricted Area Expansion).

3.9.2.2 Impact Assessment Methodology

The programmatic assessment of the proposed JAGIC was conducted using munitions noise impact assessment methods described in Sections 3.2.2.2 and 3.3.2.2.

3.9.2.3 Environmental Consequences

3.9.2.3.1 Proposed Action

3.9.2.3.1.1 DTA Study Area

Under the DTA Study Area, the JAGIC would be located in the central area of DTA-West, near the western boundary of the Oklahoma Impact Area. Operations at the JAGIC would include ground vehicle (Stryker) maneuvering, small arms training, indirect munitions fire, Army aviation munitions training, and Air Force aerial ordnance training. High-explosive munitions are currently used in the Oklahoma Impact Area, and noise levels associated with proposed munitions training would be qualitatively similar to that generated by current munitions. Noise levels generated by training at the JAGIC would depend on the intensity of the training operations. The proposed location of the JAGIC, 8 miles from the nearest DTA boundary, would be expected to minimize noise experienced off-range.

3.9.2.3.1.2 YTA Study Area

Under the YTA Study Area, the JAGIC would be located near the center of YTA, and would accommodate the same training activities described for the DTA Study Area. Noise impacts under the YTA Study Area would be similar to those described for the DTA Study Area. YTA is not as large as DTA, and it is more likely that noise levels exceeding 62 dB CDNL or 115 dB PK 15(met) would extend beyond range boundaries. The extent of noise impacts would depend on the intensity of training at the JAGIC.

3.9.2.3.1.3 TFTA Study Area

Under the TFTA Study Area, the JAGIC would be constructed near the southern boundary of TFTA. The Blair Lakes Impact Area, which would receive munitions fired in the JAGIC, is currently limited to non-dud-producing munitions types. If the proposed JAGIC were to be constructed in the Blair Lakes Impact Area, it would be expected that no high-explosive rounds would be permitted. Inert munitions generate relatively low noise levels on impact. Noise impacts under this alternative would be generated primarily by firing of munitions and the maneuvering of air and ground vehicles. Noise associated with the firing of non-high-explosive munitions under this alternative would be qualitatively similar to noise associated with weapons use under baseline conditions. The specific extent of noise impacts under this alternative would depend on the intensity of operations in the JAGIC.

3.9.2.3.2 No Action

Under the No Action Alternative, the JAGIC would not be constructed. Training operations would continue to occur as they do under baseline conditions.

3.9.2.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.3 Safety

FLIGHT SAFETY

This proposal does not include any airspace actions or flight activities beyond those that currently exist within the surrounding airspace environment; therefore, there would not be any additional flight safety concerns associated with the proposed actions.

3.9.3.1 Affected Environment

FLIGHT SAFETY

The activities identified for this proposal do not include any changes to the use or structure of the existing airspace surrounding the JAGIC locations. Refer to Sections 3.1 through 3.6 for discussions of the flight safety risks and prevention programs/practices associated with this airspace environment.

GROUND SAFETY

The ROI for ground safety is TFTA, DTA, and YTA. For this alternative, the environment affected by activities involved in range safety and control, UXO and munitions safety, public access control, and fire and emergency response would not differ from that previously described for RLOD Alternative A in Section 3.2.3.1.

3.9.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The assessment methodology for flight safety impacts addressed in Section 3.1.3.2 was used, as appropriate, for the airspace activities conducted in the areas overlying the JAGIC proposed areas is as discussed in Section 3.1.3.

GROUND SAFETY

Impact assessment methodology is the same as in Section 3.2.3.2.

3.9.3.3 Environmental Consequences

3.9.3.3.1 Proposed Action

GROUND SAFETY

Range Safety and Control – There are no environmental impacts associated with range safety and control for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Unexploded Ordnance and Munitions Safety – There are no environmental impacts associated with UXO and munitions safety for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Public Access Control – There are no environmental impacts associated with public access control for this alternative not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Fire and Emergency Response – There are no environmental impacts associated with fire and emergency response for this alternative not previously discussed under Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences. Consequently, significant impacts are not expected to occur.

3.9.3.3.2 No Action

Under the No Action Alternative, no joint air-to-ground training would occur and thus, no impacts on public health and safety would occur.

3.9.3.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.

3.9.4.1 Affected Environment

The proposed JAGIC would be located in Southeast Fairbanks Census Area, Alaska, which is in attainment of all NAAQS. Table B-12 in Appendix B, Section B.4.3, provides a summary of the estimated 2008 annual emissions for this area.

3.9.4.2 Impact Assessment Methodology

Currently, this action is in its developmental stages and sufficient data is not available to analyze air quality impacts. Once sufficient data is available, the air quality analysis will estimate the construction emissions and the changes (increases and/or decreases) in emissions that would occur from the proposed modification of the selected restricted areas to create the JAGIC for the alternative that would be expected to result in the highest emissions. The estimation of proposed operational emissions will be based on the increase in operational activities at the affected restricted area and the construction associated with the JAGIC.

The analysis will follow the methodology described in Appendix B, Section B.4.5. Since the project region for the proposed action is in attainment of all NAAQS, the PSD new major source threshold of 250 tons per year of each pollutant can be used as an indicator of significance or nonsignificance of projected air quality impacts.

PSD CLASS I AREA IMPACT ANALYSIS

The PSD Class I area of concern is Denali National Park, which is approximately 45 miles from the proposed JAGIC operation area. Therefore, due to the proximity of the proposed action to a pristine PSD Class I area, the potential for proposed activities to affect visibility within this area will need to be analyzed.

3.9.4.3 Environmental Consequences

3.9.4.3.1 Proposed Action

Air quality impacts from construction and operational activities of the proposed JAGIC would occur from (1) combustive emissions due to the use of fossil-fuel-powered equipment and aircraft, (2) combustive emissions due to munitions expenditures, and (3) fugitive dust emissions (PM_{10} and $PM_{2.5}$) due to the operation of equipment on exposed soil. Increases in emissions due to changes in operations associated with the JAGIC action would occur primarily from combustive emissions due to the use of fossil-fuel-powered equipment and aircraft.

Information needed to calculate air emissions resulting from the proposed construction activities associated with the JAGIC action includes the following:

- The type, horsepower, and daily and annual usage rates of fossil-fuel-powered equipment used to construct the roads associated with the proposed action

- The usage of water trucks during construction for dust control
- The surface type, length, and width of the proposed roads
- The area and heights of proposed buildings
- The distance that the trucks would travel to the materials and dumping sites

Operational information needed to calculate the air emissions resulting from increased activities associated with the JAGIC action includes the following:

- The type, horsepower, and daily and annual usage rates of fossil-fuel-powered equipment associated with increased training activities for the proposed action
- Information regarding any increase in munitions expenditures that are associated with the proposed action, including the types of munitions and the baseline and expected utilization of each munitions type
- Sortie information, including the types of aircraft and their engines, durations in the affected area, and altitude distributions

The emissions factors needed to derive construction source emission rates are found in *Compilation of Air Pollution Emission Factors* (EPA 1995) and emissions inventory data produced by the mathematical models: OFFROAD2007 for off-road construction equipment (ARB 2006-1) and EMFAC2007 for on-road vehicles (ARB 2006-2); *Air Emissions Factor Guide to Air Force Mobile Sources* (AFCEE 2009).

Emission reduction strategies that can be incorporated during construction of the JAGIC include the following:

- Use water trucks to keep areas of vehicle movement damp enough to minimize the generation of fugitive dust.
- Minimize the amount of disturbed ground area at a given time.
- Minimize ground-disturbing activities in proximity to the construction area boundary.
- Discontinue proposed ground-disturbing activities within 3 miles upwind of the construction area boundary when winds exceed 25 miles per hour or when visible dust plumes emanate from the site and then stabilize all disturbed areas with water application.
- Designate personnel to monitor the dust control program and to increase dust suppression measures (e.g., watering), as necessary, to minimize the generation of dust.

3.9.4.3.2 No Action

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations at YTA, TFTA, and DTA. Therefore, the No Action Alternative would not result in any new air quality impacts.

3.9.4.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.5 Physical Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.5.

3.9.5.1 Affected Environment

TOPOGRAPHY

The general topographic characteristics of TFTA, YTA, and DTA are described in Section 3.8.5.1. Topography on the Blair Lakes Impact Range in TFTA is fairly level, with elevations gradually increasing from the northwest to southeast. Low elevations are just under 600 feet in the northwest corner and rise to 1,365 feet at an unnamed peak to the west of the Blair Lakes. Elevations at YTA in the vicinity of the Project Area are variable and rugged, with numerous peaks of over 3,000 feet and valleys under 1,000 feet, often with sharp relief. Elevations in the Oklahoma Impact Area and the proposed action area in DTA range from approximately 1,600 to 2,000 feet and gradually increase from the northeast to the southwest. Dinosaur Ridge, a 3,674-foot peak, lies just to the west of the Project Area.

GEOLOGIC HAZARDS

Geologic hazard conditions for TFTA, YTA, and DTA are described in Section 3.8.5.1.

SOILS

General characteristics of soils in TFTA, YTA, and DTA are described in Section 3.8.5.1.

Detailed mapping of soil in the Project Area in TFTA is not currently available, but in general, soils in TFTA are extremely acidic to neutral, have moderate to high potential for frost action, and present limitations to development due to depth to permafrost, depth to the high water table, and high organic matter content (USDA 2006).

Soils in the Project Area of YTA are extremely acidic to neutral, have moderate to high potential for frost action, and present limitations to development due to depth to permafrost, depth to the high water table, high organic matter content, and potential for subsidence (USDA 2006).

Generally, soils in DTA in the Project Area are extremely to moderately acidic, have moderate to high potential for frost action, and present limitations to development due to depth to permafrost, depth to the high water table (especially during the "wet" season), high organic matter content, and a potential for subsidence (USDA 2005).

Representative soils found in the Project Areas are summarized in Table 3-88.

PERMAFROST

General permafrost conditions on TFTA, YTA, and DTA are described in Section 3.8.5.1.

3.9.5.2 Impact Assessment Methodology

The general methodology for evaluating physical resources is described in Section 3.2.5.2.

Table 3-88. Characteristics of Representative Soils Found in the Area of Proposed Joint Air–Ground Integration Complex Locations

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
Tanana Flats Training Area – Blair Lakes Impact Area (see Table 3-83 for general soil types)											
Donnelly Training Area – Oklahoma Impact Area[1]											
622	Histels, impact area	Outwash plains	12 to 28	Water: slight Wind: slight	Low	Poorly drained	None/none	0 to 8	Yes	10.7	-
623	Histels-Orthels-Turbels association	Outwash plains	8 to 28	Water: slight Wind: severe	High	Poorly drained	None/none	0 to 8	Yes	3.0 to 10.7	-
627	Histels-Typic Histoturbels-Typic Historthels complex	Terraces	6 to 24	Water: slight Wind: slight	High	Poorly drained	Rare/ frequent	0 to 8	Yes	2.4 to 5.0	-
652	Terric Fibristels-Ruptic-Histic Aquiturbels-Typic Aquiturbels complex	Terraces and outwash plains	6 to 24	Water: moderate Wind: slight	High to very high	Poorly drained	Rare/ frequent	0 to 8	Yes	2.1 to 5.0	-
680	Typic Cryofluvents-Typic Dystrocryepts-Typic Histoturbels complex	Floodplains	-	Water: slight Wind: severe	Low	Well drained	Occasional/ none	>60	No	2.1 to 11.7	-
681	Typic Dystrocryepts-Ruptic-Histic Aquiturbels complex	Hills, ridges	12 to 24	Water: severe Wind: severe	High	Well drained	None/none	4 to 6	Yes	6.7 to 7.1	-
Yukon Training Area											
20	Mosquito peat	Depressions on alluvial flats	14 to 31	Water: slight Wind: slight	High	Very poorly drained	Rare/ frequent	0	Yes	4.1	Black spruce and tamarack woodland

Table 3-88. Characteristics of Representative Soils Found in the Area of Proposed Joint Air–Ground Integration Complex Locations *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
41C	Minto silt loam, 7 to 12 percent slopes	Hills	-	Water: severe Wind: severe	Medium	Moderately well drained	None/none	4 to >72 in	No	12.6	Paper birch and white spruce forest
41D	Minto silt loam, 12 to 20 percent slopes	Hills	-	Water: severe Wind: severe	Medium	Moderately well drained	None/none	4 to >72	No	12.6	Paper birch and white spruce forest
50X	Ester peat, 20 to 45 percent slopes	Hills	7 to 30	Water: severe Wind: slight	Very high	Very poorly drained	None/none	4	Yes	2.1	Black spruce woodland
81V	Saulich and Chatanika soils, 3 to 15 percent slopes	Hills, valley sides	12 to 39	Water: severe Wind: severe	Very high	Poorly to very poorly drained	None/ frequent	0 to 8	Yes	3.6 to 4.3	Black spruce forest
81X	Saulich and Chatanika soils, 15 to 20 percent slopes	Hills, valley sides	12 to 39	Water: severe Wind: severe	Very high	Poorly to very poorly drained	None/ frequent	0 to 8	Yes	3.6 to 4.3	Black spruce forest
82V	Gilmore and Steese silt loams, 3 to 15 percent	Hills	-	Water: severe Wind: severe	Medium to high	Well drained	None/none	>72	no	2.9 to 6.1	Paper birch white spruce, and quaking aspen forest
82X	Gilmore and Steese silt loams, 15 to 45 percent	Hills	-	water: severe wind: severe	High	Well drained	None/none	>72	No	2.9 to 6.1	Paper birch white spruce, and quaking aspen forest
86V	Brigadier and Manchu silt loams, 3 to 15 percent slopes	Hills	-	Water: severe Wind: severe	High to very high	Moderately well to well drained	None/none	7 to >72	No	3.2 to 6.7	Black spruce forest

Table 3-88. Characteristics of Representative Soils Found in the Area of Proposed Joint Air–Ground Integration Complex Locations
(Continued)

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
86X	Brigadier and Manchu silt loams, 3 to 45 percent slopes	Hills	-	Water: severe Wind: severe	High to very high	Moderately well to well drained	None/none	7 to >72	No	3.2 to 6.7	Black spruce, white spruce, balsam poplar and paper birch forest
90	Fubar-Tanana complex, 0 to 2 percent slopes	Floodplains, terraces	16 to 47	Water: slight Wind: severe	Low to high	Poorly to moderately well drained	Rare/ frequent	0 to 12	Yes	3.4 to 5.2	Black spruce forest
212	Goldstream-Histels complex, 0 to 3 percent slopes	Floodplains, valleys	14 to 24	Water: slight Wind: slight	Negligible	Very poorly drained	None/ frequent	0 to 8	yes	3.6	Black spruce woodland
411C	Minto-Chatanika complex, 7 to 12 percent slopes	Hills	12 to 39	Water: severe Wind: severe	Medium to very high	Poorly to moderately well drained	None/ frequent	0 to 8	yes	4.3 to 12.6	Black spruce, white spruce, and paper birch forest
411D	Minto-Chatanika complex, 12 to 20 percent slopes	Hills	12 to 39	Water: severe Wind: severe	Medium to very high	Poorly to moderately well drained	None/ frequent	0 to 8	Yes	4.3 to 12.6	Black spruce, white spruce, and paper birch forest
451X	Brigadier-Ester complex, 15 to 45 percent slopes	Hills	7 to 30	Water: severe Wind: severe	High to very high	Very poorly drained	None/none	4	No	2.1 to 3.2	Black spruce forest and woodland

[1] Access to Oklahoma Impact Area was restricted during the 2005 Soil Survey; soil data for that area were extrapolated by the NRCS using similar areas and landforms.

Source: USDA 2005, 2006, 2011.

3.9.5.3 Environmental Consequences

This section analyzes the potential impacts on physical resources (including soils, permafrost, and seismicity) associated with the proposed development and use of the JAGIC. Baseline conditions are addressed in Section 3.9.5.1.

3.9.5.3.1 Proposed Action

DTA STUDY AREA

The proposed action would result in the construction of target arrays with service roads, range support buildings, a parking area, a range tower, a convoy live-fire route, urban centers, and an area for service rocket training, designed for at least battalion-sized training events interacting with JIIM components located on DTA-West. Most of the target arrays, the convoy live-fire route, and the urban facilities would be concentrated in areas within existing impact areas (Oklahoma), and the remaining area within the proposed JAGIC would serve as a maneuver area.

Since soil conditions vary greatly within DTA-West, potential impacts associated with the construction of roads or infrastructure would be dependent upon localized soil characteristics at the point of construction. Currently, detailed soil surveys for the proposed locations of the JAGIC area are not available; however, soil types and conditions representative of each training area are discussed in Section 3.9.5.1.

The primary impact associated with service road construction would be an increased potential for erosion during preliminary grading activities and while soil is exposed before application of roadbed and roadway surface material. Primary impacts associated with the construction of parking lots, range support buildings, and other structures would include an increase of impervious surface and surface runoff, soil erosion, reduced soil strength, the removal of vegetation and soil in the building/construction footprint, and soil compaction in the area of and surrounding construction. Impacts from all construction activities would be short-term.

Potential for significant adverse impacts on permafrost during construction of access road(s) would result from removal of upper soil layers or vegetative mat, leading to increased possibility of permafrost degradation and creation of thermokarst features. Structures built on areas with permafrost are subject to differential settling and other damaging effects if there is not sufficient insulation between the structure and the underlying permafrost.

As with soils, extent and location of permafrost beneath the surface at DTA-West is variable and thus the extent of impacts on permafrost would be dependent upon permafrost extent at site of road (or infrastructure component) construction. Permafrost, however, is present at DTA-West to some extent. General permafrost conditions and trends are described in Section 3.9.5.1.

Primary impacts would occur from increased training and ground maneuver activities related to the live-fire, battalion-sized training events and the potential off-road use of Stryker vehicles. Since soil conditions vary greatly within DTA-West, potential impacts associated with the ground maneuver activities and use of Stryker vehicles would be dependent upon localized soil characteristics; however soils would be impacted to varying extent by proposed maneuver activities. Potential impacts resulting from training activities associated with the JAGIC, especially from the use of Stryker vehicles, would be similar to those described in Section 3.8.5.3.1. No beneficial or adverse impacts are anticipated in areas where soil strength is high (on well-drained, gravelly or sandy soils); potentially adverse, but not significant impacts are expected on soils with moderate soil strength (wet or poorly drained sand or silty soils); and significant impacts would be associated with soils having low soil strength (saturated or waterlogged sands, silts, and organic soils). Impacts on soil from proposed activities can include soil

compaction, erosion, reduction of soil strength/support capacity, restricted water movement, creation of ruts, contamination, and transport of sediment.

The potential for significant impacts on permafrost exists from ground maneuver training and off-road Stryker use, as permafrost is particularly vulnerable to the effects of ground disturbance. With the removal of overlying insulating vegetative mat, permafrost can begin to melt, resulting in thermokarst, land subsidence, and the formation of standing water/ponds, leading to areas largely impassible to vehicle traffic and limited usefulness for other training activities. Large portions of DTA-West are considered "No Go" areas to Stryker maneuvering during summer months, due largely to soil conditions (USARAK 2004-1).

DTA-West is located within an area classified by the USGS as moderate to high for earthquake hazard potential. Effects from the 7.9 earthquake in November 2002 were felt on DTA-West and structures and infrastructure (including roads) on nearby TFTA incurred some damage as a result of ground acceleration and other effects associated with the earthquake.

Since ordnance use would occur in existing hazard and target areas (i.e., previously disturbed areas), no beneficial or adverse soil erosion impacts would occur from live-fire activities. Munitions use associated with training activities would range from small arms fire to 2,000-pound GBUs (see Table 2-17) on new and existing target areas, which would potentially leave metal bullets and casings in the environment and propellants near firing positions. Acidic soils (with a pH less than 5.5), such as those present in some areas of DTA-West, have the capacity to dissolve and mobilize metals contained in used munitions. See Section 3.9.6 for additional information regarding dissolution of metals in soil.

YTA STUDY AREA

Impacts associated with locating the JAGIC in the Stuart Creek Impact Area, within YTA, would be similar to those described for the DTA Study Area.

TFTA STUDY AREA

Impacts associated with locating the JAGIC in the Blair Lakes Impact Area, near the southern boundary of TFTA, would be similar to those described for the DTA Study Area.

Site Selection Criteria and Best Management Practices

Since the construction of JAGIC components would result in greater than 1 acre of ground disturbance, USAG-FWA would submit a Notice of Intent (NOI) to ADEC at least 7 days prior to the implementation of the project. Construction activities would be undertaken in compliance with a project-specific NPDES General Construction Permit and the implementation of an SWPPP would also be required. Building designs would be consistent with EPA and State of Alaska Construction General Permit SWPPP Requirements as well as Fort Wainwright's SWPPP in order to minimize runoff contamination. In addition, building, infrastructure, and roadway construction would adhere to all applicable DoD and Army guidelines for protection of soils, prevention of soil erosion, and prevention of permafrost degradation. See Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, for information on how the Army manages natural resources on Army lands in Alaska and ongoing measures that would apply to the proposed action.

Pre-planning for siting of new infrastructure or new activities at ranges or on training areas requires coordination with the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations, as well as information from the ITAM, RTLA, and

LRAM programs would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up.

Any new facility construction would be completed in compliance with guidelines established in Executive Order (EO) 12699, *Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction*. In addition, any new construction, including facilities and infrastructure, would adhere to guidelines established by DoD and Army (or DOT/AAHSTO national standards) for earthquake resistance. USAG-FWA would also ensure new facilities are not constructed on or in proximity to active seismic faults, and if necessary, would consult with the USGS in regard to the location of facilities on JAGIC and distance to active faults.

3.9.5.3.2 No Action

Under the No Action Alternative, the JAGIC complex would not be created on DTA, YTA, or TFTA and conditions would remain as described in Section 3.9.5.1.

3.9.5.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.9.5.3.1.

3.9.6 Water Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.6.

3.9.6.1 Affected Environment

There are three JAGIC study areas for this proposed action: the Oklahoma Impact Area in DTA, the Stuart Creek Impact Area in YTA, and the vicinity of the Blair Lakes Impact Area in TFTA.

One study area involves locating the JAGIC in the central area of DTA-West next to the western boundary of the Oklahoma Impact Area. The Oklahoma Impact Area is in the center of DTA, extending between Delta Creek and One-Hundred-Mile Creek up to the confluence of these two waterways. Delta Creek and One-Hundred-Mile Creek drain into the Tanana River. Delta Creek originates from meltwater from the Trident and Hayes Glacier and has extensive sections of abandoned floodplain terraces above the currently active braided floodplain. One-Hundred-Mile Creek is a clear water stream originating the foothills of the Alaska Range. Along the east side of One-Hundred-Mile Creek are numerous kettle ponds. Large quantities of groundwater are available from the alluvial fan deposits and floodplain deposits in this area. Wetland coverage in this area is approximately 86 percent.

The second study area is in the Stuart Creek Impact Area of YTA. The Stuart Creek Impact Area, including Stuart Creek and Globe Creek, is in the Southern Fork Chena River watershed. The Southern Fork Chena River is a highly sinuous, meandering stream surrounded by rounded hills. Large quantities of groundwater are available in the alluvium of the creek and river valleys. The wetland coverage in the JAGIC study location near the Stuart Creek Impact Area is 23 percent.

The third study area is the Blair Lakes Impact Area. The Blair Lakes Impact Area lies to the west of the Blair Lakes in the south-central portion of TFTA. It runs from the southeast to northwest across the headwaters of Willow Creek and Clear Creek. Willow Creek and Clear Creek flow into the Tanana River. There is substantial surface and groundwater flow in the area, with small streams forming a dense

network of nearly straight channels. Thermokarstic topography is common in this area (USACE 1999). Wetland coverage near the JAGIC study area is 76 percent.

3.9.6.2 Impact Assessment Methodology

The general methodology for evaluating water resources is described in Section 3.2.6.2.

3.9.6.3 Environmental Consequences

3.9.6.3.1 Proposed Action

The increased use of munitions and sedimentation from road and facilities construction and off-road maneuvering could impact surface and groundwater quality. Construction footprints of the roads, urban center, and support facilities could alter the drainage pattern or encroach on the floodplain of creeks and rivers or result in the fill or conversion of wetlands.

Munitions use would be adjacent to existing dudded ranges and involve the construction of new targets and ranges. Munitions would range from small arms fire to 2,000-pound GBUs (see Table 2-17). The small arms fire and larger projectiles leave metal bullets and casings in the environment and propellants near the firing positions. The high-explosive munitions like the GBU-32 and hell fire missiles leave trace amounts of explosive residue. The greatest potential for water quality impacts are from duds or low order detonations of high-explosive munitions (Shaw et al. 2001). As discussed in Section 3.2.6.3.1, preliminary water quality results indicate that explosive residues have not migrated outside of impact areas (USARAK 2006-2). Based on previous studies (USACE 2004) contaminants are generally in the parts per billion in the impact areas but can be locally higher (parts per million) near UXOs. The increase in ordnance use could result in potential adverse impacts to surface and groundwater quality. With management actions, the adverse impacts to surface and groundwater quality could be reduced to not significant.

The proposed action would have potential adverse impacts on surface water quality, primarily resulting sedimentation from off-road maneuvering, land disturbance during road construction and establishment new or increased use of water crossings. By implementing the mitigation measures in the following sections impacts on surface water quality could be reduced to not significant.

The proposed action would result in a potential adverse but not significant impacts to groundwater. Off-road maneuvering compacts the soil which could result in an increase in overland flow and reduced groundwater recharge. The minor adverse impacts on groundwater recharge could be reduced by allowing some training areas to rest for a full freeze-thaw cycle, which would reduce the amount of soil compaction.

The construction of new roads could impact the surface hydrology and alter the drainage patterns. Roads' culverts can focus water flow into selected channels while cutting off overland flow and flow through wetlands. The increase in flow in selected locations at culvert can have downstream impacts through the incision of the channel and streambank erosion. The decrease in overland flow and decreased water flow through wetlands can alter the hydrologic regime by decreasing flood retention of the watershed and decreasing the travel time of stormwater runoff. Hydrologic investigations are needed to ensure that culverts installed along the proposed roads would not produce a discernable change in the hydrologic flow regime of the area. Without additional details on the road alignments and hydrologic investigation of the road alignments, it is not possible to determine the significance of the potential adverse impacts by the proposed action on the surface hydrology.

The proposed action would result in adverse impacts on wetlands, primarily from the conversion and filling of wetlands associated with building new training roads and installing urban centers and support facilities. The proposed action would utilize existing roads where possible and minimize impacts on wetlands and critical habitat. Nonetheless, in some portions of the JAGIC study locations wetlands are the predominant landscape feature (86 percent near the Oklahoma Impact Area). In the wetland-rich areas it would be difficult to avoid filling or converting wetlands. To have year-round access, raised gravel roadbeds would be required. In addition, military-related damage to wetlands can occur from off-road maneuvers during the summer when wetlands have thawed. The off-road impacts are less harmful during the winter when wetlands are frozen and snowpack protects vegetation. As result of wetland disturbance and degradation, the surrounding environment can be affected by increase in peak flow during runoff events, decrease in flow volumes during low flow, loss of erosion control, loss of fish and wildlife habitat, and loss of filtering capacity of sediments and pollutants in the system.

If the proposed action area is within a wetland area as confirmed by the existing wetland inventories and site visit, Environmental Resources Division staff would request a Jurisdictional Determination by the USACE. The USACE may conduct a site visit and complete a wetland delineation or require one be conducted by USAG-FWA. The USACE would recommend the type of wetland permit application to submit. As a condition for receiving these permits, USAG-FWA would comply with all permitting conditions designed to mitigate impacts on wetlands. Without additional detailed wetland surveys of the location of the JAGIC facilities, it is not possible to determine the significance of the potential adverse impacts on wetlands.

Surface water quality

- Monitor water quality for metals and explosive residues in upstream and downstream of the target arrays and in the shallow groundwater downstream of the target arrays. The water quality monitoring would be done under the guidelines established in the INRMP (USARAK 2006-2).
- Track UXO from the training exercises as part of the data collection system which was established as mitigation in the *Alaska Army Lands Withdrawal Renewal Final Legislative EIS* (USARAK 1999-1).
- Design drainage to accommodate general local snowmelt runoff each spring and rainfall events throughout the year. As necessary, conduct hydrological investigations, improving road designs to minimize concentrated surface water flows along these roads during flooding events.
- Where possible, conduct vegetation clearing activities during the winter months when soils are frozen.
- Adhere to the SWPPP during construction of the JAGIC.
- Control sediment transport though utilization of BMPs for erosion and sediment control which could include but is not limited to silt fencing, straw waddles, and stormwater retention/detention basins during construction.
- Keep all construction staging, fueling, and servicing operations at a minimum of 100 feet from surface waters.
- Employ SPPCP measures to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources.
- Stabilize all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.

- Schedule most off-road maneuvering during the winter, when the soil is frozen and the vegetation is covered by a protective snowpack, which limits the ground disturbance and the resulting erosion potential for the soils.
- Rehabilitate maneuver trails and areas on a rotational basis to allow the freeze and thaw process to eliminate compaction and reduce the chance of channelized flow.

Floodplains and waterways

- Avoid the placement of new target arrays in the floodplains of creeks or rivers or near water bodies, where erosion could transport explosive residues into creeks, rivers, lakes, or ponds.
- Construct permanent low-water crossings (i.e., ingress and egress ramps) or other features at designated vehicular stream crossings, to prevent bank erosion, widening of waterways, and increased sediment in streams.
- Harden approaches to fords and ice bridges on anadromous creeks and rivers within training areas. Ensure that crossing would occur only at these approaches. Hardened approaches would reduce the amount of bank-side erosion and sedimentation occurring at crossings.

Wetlands

- Site new training roads, urban centers, and support facilities to avoid construction in wetlands as much as practicable.
- Complete the delineation of wetlands prior to the final design of the JAGIC facilities. After wetland delineations have been completed the designs should be modified based on the delineations to avoid impacting wetlands as much as possible.
- Narrow/confine trail widths in sensitive wetland habitats or, when possible, widen trails to the upland direction to avoid wetland impact.
- Use a hydro-ax within wetlands to reduce impacts on hydric soils and low-lying vegetation.
- Fill areas would be minimized for wetlands through site-specific design and limiting construction staging to upland areas.
- Maintain natural drainage patterns by the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.
- No fill or construction materials would be stockpiled in wetlands or waters of the United States without obtaining necessary permits. All equipment operation would be confined to the project footprint to prevent unnecessary damage to adjacent wetlands and vegetation.
- Conduct all additional avoidance, mitigation and compensation as required by terms and conditions in the USACE Section 404 permit.

3.9.6.3.2 No Action

The No Action Alternative would not provide for the construction and operation of the JAGIC. The impacts water quality or quantity, floodplains, or wetlands within the study area would be the same as the existing condition.

3.9.6.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.9.6.3.1.

3.9.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.7.

3.9.7.1 Affected Environment

The ROI for the JAGIC proposed action encompasses the central area of DTA-West, the Stuart Creek Impact Area within YTA, and the Blair Lakes Impact Area in the southern portion of TFTA. DTA-West is a 571,995-acre training area located in the Tanana River Valley. YTA is a 249,552-acre training area just east of Fairbanks, and TFTA is a 653,746-acre training area south of Fairbanks.

MUNITIONS-RELATED RESIDUE

ALCOM currently conducts a number of training activities in DTA, the Stuart Creek Impact Area within YTA, and the Blair Lakes Impact Area in TFTA, all of which generate munitions-related residue or range residue. In general, munitions-related residue sources include practice bombs, expended artillery, small arms and mortar projectiles, bombs and missiles, rockets and rocket motors, grenades, incendiary devices, experimental items, demolition devices, and any other material fired on or upon a military range. More specific to the JAGIC, munitions-related residue sources would include: small-arms munitions; 105-mm mobile gun system (MGS); tube-launched, optically-tracked, wire-command data link, guided missile (TOW)-2B antitank missiles; 40-mm target practice tracer (TPT) grenades; 60-, 81-, and 120-mm mortars; 105- and 155-mm howitzers; 30-mm chain gun; 2.75-inch practice rockets; Hellfire missiles; and GBU-10, -12, -16, -31, -32, and -38 bombs.

The expenditure of live ammunition or detonations has the potential to release hazardous chemicals or other elements, such as heavy metals, into the environment. Munitions that fail to detonate properly (duds) and munitions that only partially detonate (low-order detonations) can result in the deposition of munitions residues (explosives and metals) at impact sites. Duds and low-order detonations have the potential to create environmental contamination by the leaching of their explosive filler into soil, sediment, surface water, and groundwater.

CONTAMINATED SITES

There are no CERCLA Superfund sites listed on the National Priorities List in DTA, YTA, or TFTA portions of the ROI for JAGIC. There is a single site listed on the ADEC CSP database in the DTA portion of the JAGIC ROI: CSP Site 4309, Oklahoma Range Hillbilly Lake Blivit Failure. There are no sites listed on the ADEC CSP database in the YTA portion of the JAGIC ROI. Five sites are listed on the ADEC CSP database in the TFTA portion of the JAGIC ROI: CSP Sites 354, 355, 356, 357, and 358 (Table 3-89).

The Army Environmental Restoration database lists a single restoration site under the ROI of JAGIC: Site FTWW-008-R-01, Bombing Area Between Fort Wainwright and DTA (USAEC 2010).

3.9.7.2 Impact Assessment Methodology

The general methodology for evaluating hazardous materials and waste is described in Sections 3.1.7.1 and 3.1.7.2.

Table 3-89. Contaminated Sites in Joint Air–Ground Integration Complex Region of Influence

CSP Site Number	Site Name	Description	Site Status	Training Area
4309	Oklahoma Range Hillbilly Lake Blivit Failure	150-gallon diesel fuel release	Open	DTA
354	Eielson AFB (OU-1) (SS50) Blair Lakes	Contaminated soil and groundwater from spill of heating oil from facility storage tank	Open	TFTA
355	Eielson AFB (OU-1) (SS51) Blair Lakes	Diesel fuel–contaminated soil and groundwater from unknown source	Open	TFTA
356	Eielson AFB (OU-1) (SS52) Blair Lakes	Diesel fuel–contaminated soil and groundwater from pipe leak	Open	TFTA
357	Eielson AFB (OU-1) (SS53) Defueling Pump	Contaminated soil from helicopter fuel spill	Cleanup Complete	TFTA
358	Eielson AFB (OU-1) (DP54) Blair Lakes DRM	Buried drums of unknown material	Cleanup Complete	TFTA

Key: AFB=Air Force Base; DTA=Donnelly Training Area; TFTA=Tanana Flats Training Area.

3.9.7.3 Environmental Consequences

3.9.7.3.1 Proposed Action

GENERAL HAZARDOUS MATERIALS AND WASTE

The proposed action is a JPARC joint and combined live-fire training capability. The JAGIC would consist of target arrays with service roads, range support buildings, parking areas, range towers, convoy live-fire routes, urban centers, and an area for Service rocket firing. There are six ADEC CSP sites in the JAGIC ROI. The project proponents would utilize the range Institutional Control map to avoid these CSP locations when siting project components. If sites could not be avoided, established BMPs/SOPs would be followed. Impacts associated with potentially contaminated soils and spills of POLs would be similar to those described for the Enhanced Ground Maneuver proposal. No beneficial or adverse hazardous materials related impacts would occur in association with this proposed action.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

Increased munitions use over baseline conditions would result in potential munitions related hazardous materials impacts. Munitions fragments and residues would be generated as a result of the proposed JAGIC action. The munitions use would be adjacent to existing dudded ranges and involve the construction of new targets and ranges. Munitions would range from small arms fire to 2,000-pound GBUs (see Table 2-17). The small arms fire and larger projectiles would result in discarded metal bullets and casings in the environment and propellants near the firing positions. The high-explosive munitions, such as the GBU-32 and hell fire missiles, would discard trace amounts of explosive residue. The greatest potential for soil and surface water quality impacts would be from duds or low order detonations of high-explosive munitions (Shaw et al. 2001). As discussed in Section 3.2.7.3.1, preliminary water quality results indicate that explosive residues have not migrated outside of impact areas (USARAK 2006-2). Based on previous studies (USACE 2004), contaminants are generally in parts per billion concentrations in the impact areas, but can be locally higher (ppm) near UXOs.

These impact areas would be managed in accordance with current Federal, State of Alaska, Air Force, and Army regulations for the management, safe handling, and disposal of hazardous waste and materials associated with live and inert ordnance and UXO, as the result of training exercises at the proposed

JAGIC. Existing mitigation measures described in Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, would apply to this proposed action. For example, UXO from the training exercises would be tracked as part of the data collection system that was established as mitigation in the *Alaska Army Lands Withdrawal Renewal Final Legislative EIS* (USARAK 1999-1). This data collection system was created to incorporate munitions expenditure reports, number of duds in an area, chemical components of munitions, and biohazards of each chemical. This information would be used by range personnel to manage munitions-related hazardous materials generated in association with the proposed action.

Pre-planning for siting of new infrastructure or new activities at ranges or on training areas requires coordination with the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations, as well as information from the ITAM program would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up. With implementation of these SOPs, no beneficial or adverse hazardous materials impacts would occur in association with munitions use.

3.9.7.3.2 No Action

Under the No Action Alternative, there would be no creation of the JAGIC. Therefore, hazardous materials related impacts would not occur.

3.9.7.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.9.8.1 Affected Environment

The proposed study locations for the JAGIC include DTA, YTA and TFTA. As for the other programmatic projects, study areas for the JAGIC proposed project are large and based upon entire training areas. The biological resources likely to occur within these proposed study areas are described in detail in Sections 3.3.8 (DTA), 3.7.8 (TFTA), and 3.8.8 (DTA, YTA, and TFTA).

Major land types that occur within the JAGIC proposed study locations are presented in Table 3-90.

Important known habitats for wildlife species that occur within the JAGIC proposed study locations are presented in Table 3-91.

Table 3-90. Land Types Associated with the Joint Air–Ground Integration Complex Project

Study Area	Spruce and Broadleaf Forest	Open and Closed Spruce Forest	Spruce Woodland/ Shrub	Open Spruce and Closed Mixed Forest Mosaic	Open Spruce Forest/ Shrub/Bog Mosaic	Closed Mixed Forest	Closed Spruce Forest	Gravel Bars	Alpine Tundra and Barrens	Dwarf Shrub Tundra	Tall and Low Shrub	Tall Shrub	Glaciers and Snow
	Acres (hectares)												
DTA	62,837 (25,429)	220,914 (89,401)	56,645 (22,923)	18,179 (7,357)	163,022 (65,973)	0	0	50,284 (20,349)	4,188 (1,695)	6,172 (2,498)	43,026 (17,412)	5,770 (2,335)	247 (100)
YTA	142,364 (57,613)	27,971 (11,319)	16,680 (6,750)	548 (222)	36,710 (14,856)	0	1,481 (600)	0	0	0	3,889 (1,574)	27,640 (11,186)	0
TFTA	145,802 (59,004)	97,028 (39,265)	3,284 (1,329)	19,335 (7,824)	379,859 (153,723)	4,498 (1,820)	0	11,555 (4,676)	0	53 (22)	66 27	5,679 (2,298)	0

Key: DTA=Donnelly Training Area; TFTA=Tanana Flats Training Area; YTA=Yukon Training Area.
Source: USGS 1991.

Table 3-91. Wildlife Habitats Associated with the Joint Air–Ground Integration Complex Project

Study Area	Moose Winter Habitat	Moose Rutting/Calving Habitat	Caribou Winter Habitat	Caribou Calving Habitat	Waterfowl General Habitat	Dall Sheep Winter Habitat
	Acres (hectares)					
DTA	523,601 (211,894)	361,113 (146,137)	509,351 (206,127)	404,398 (163,654)	284,015 (114,937)	11,155 (4,514)
YTA	82,366 (33,332)	82,366 (33,332)	20,325 (8,225)	0	14,424 (5,837)	0
TFTA	666,393 (269,680)	666,393 (269,680)	132,270 (53,528)	0	573,098 (231,924)	0

Key: DTA=Donnelly Training Area; TFTA=Tanana Flats Training Area; YTA=Yukon Training Area.

3.9.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.9.8.3 Environmental Consequences

3.9.8.3.1 Proposed Action

Actions that may include ground-disturbance and consequently, vegetation clearing within the proposed study locations (DTA, YTA, and TFTA) include: target, road, building and infrastructure construction, which can result in vegetation and wildlife habitat losses and fragmentation. Construction activities can also cause animal mortality, especially for smaller, young, and less mobile species.

To reduce adverse effects, recommended siting criteria include minimizing construction in the following known sensitive habitats (different avoidance seasons apply; see the biological resources mitigations table in Appendix G, *Biological Resources*, and Figures B-11, B-13, and B-14 in Appendix B, *Definition of the Resources and Regulatory Settings*):

- Bogs and other wet habitats
- Moose calving, rut and winter habitats
- Caribou calving, rut, and winter habitats and migration routes
- Dall sheep winter habitat and migration routes
- Waterfowl general, migration stopover/resting, and nesting areas
- Swan habitats
- Brown bear seasonal habitat and fish streams
- Sensitive bison habitat
- Important fish habitat (fisheries)

Direct impacts from new road and utility corridor as well as construction of larger facilities displaces habitat, can fragment larger habitats and migration routes, and may preclude access to important habitat for some species. Indirect impacts that include allowing additional human access into areas or during seasons where it has not occurred in the past can be especially disruptive to wildlife during sensitive life

stages such as breeding, nesting, and calving/lambing. In conjunction with the Army's siting and environmental review process, coordination with ADFG and USFWS personnel would occur to minimize damage and disturbance to biological resources when siting component alignments. The biological resources mitigations table in Appendix G includes established and proposed mitigation measures that, when applied, reduce impacts on wildlife during important seasonal activities. Temporary impacts include the clearing or trampling of construction use areas and the addition of construction noise, dust, trash, weed spread, and other hazards such as potential spills. Standard BMPs and SOPs apply to reducing these types of effects (Appendix G, *Biological Resources*). Other potential long- and short-term effects from construction would be mitigated by institutional programs that include planning, monitoring, rehabilitation, and management of ecological conditions, such as the LRAM component of the ITAM program. Because the locations and specifics of construction at each training area and the biological resources that would be affected by the project are not presently known, uncertainties about biological impacts exist for this programmatic project. However, due to the extensive areas required for JAGIC development in the four training areas, the potential for significant adverse impacts from JAGIC construction and implementation exists.

3.9.8.3.2 No Action

The current amount of localized ground disturbance (from training, vehicles, and live fire) would be expected to continue and wildlife using the area would be expected to remain active in occupied habitats.

3.9.8.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.9.8.3.1.

3.9.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.9.9.1 Affected Environment

DTA, YTA, and TFTA encompass the ROI for the JAGIC proposed action. The DTA and TFTA portions of the JAGIC affected environment are the same as described in Section 3.2.9.1, Realistic Live Ordnance Delivery. The YTA portion of the JAGIC affected environment is the same as described in Section 3.4, Expand Restricted Area R-2205.

3.9.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed JAGIC action is the same as the methodology applied to the analysis of the EGMS action (Section 3.8.9.2).

3.9.9.3 Environmental Consequences

3.9.9.3.1 Proposed Action

This action would create a JAGIC for joint and combined live-fire training (Figure 2-14) to allow Army combined arms capabilities to jointly operate with the Air Force, Navy and Marine air-to-air and

air-to-ground capabilities, along with Special Operations Forces. The JAGIC would be located in DTA, YTA, or TFTA.

There is the potential for impacts on cultural resources from the construction of the JAGIC in DTA, YTA, or TFTA. Depending on where the JAGIC is created, there is the possibility that noise levels exceeding 62 dB CDNL, or 115 dB PK 15(met), would extend beyond range boundaries (see Section 3.9.2.3). Prior to implementation of any element of this proposed action, the Army would comply with NHPA Section 106, including identification of historic properties, and assessment and resolution of adverse effects through consultation with Alaska SHPO and potentially affected Federally recognized tribes.

There is the potential for impacts on traditional cultural resources or Alaska Native activities from the creation of JAGIC in DTA, YTA, or TFTA. Although no traditional cultural properties have been specifically identified in the ROI, this does not mean that none are present. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has initiated government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources, or Indian land under the proposed establishment of JAGIC in DTA, YTA, or TFTA (see Section 1.6.5). Consultation will continue as the proposal progresses toward a definitive action.

3.9.9.3.2 No Action

Under the No Action Alternative there would be no creation of JAGIC in DTA, YTA, and TFTA. Existing use of the ranges and airspace would continue under this alternative and resources would continue to be managed in compliance with Federal law and Army regulations.

3.9.9.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.9.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

Land Status

This programmatic proposal essentially involves a new capability on military land of DTA, YTA, or TFTA as shown in Figure 2-14. A small portion of the proposal area represented extends to the south of TFTA into mostly State-owned non-military land; however, this is not a definitive layout for the proposed complex.

Land Management and Use

These military areas are managed and planned according to current INRMPs, with supporting direction from the RTLP and RDP. Further description of military uses on the proposal areas is provided in Section 3.2.10.1 (DTA and TFTA), Section 3.3.10.1 (DTA-East), and Section 3.4.10.1 (YTA). Also, refer

to Figure 3-22, Figure 3-28, and Figure 3-32 for information on military and public access on these training areas.

All the lands directly adjacent to DTA, YTA, and TFTA are within the ETAP, and under the management of ADNR. This plan is currently under development. The legislatively designated Chena River State Recreation Area borders YTA to the northeast. Tanana Valley State Forest occupies several non-contiguous parcels throughout the proposal area, providing important wildlife habitat, forest products, and hunting opportunities. Figure 3-40 shows the relationship of preliminary JAGIC sites with surrounding military and non-military areas and resources.

PUBLIC ACCESS

Land Access

Access and use to military lands under consideration for enhanced ground maneuvers are described above in Section 3.2.10.1 (for DTA and TFTA), Section 3.3.10.1 (for DTA-East), and Section 3.4.10.1 (for YTA). RS 2477 trails within the area of influence of this proposal include Bonnifield trail (RST #462), Donnelly Dome: Old Valdez Trail Segment (RST# 695), and Donnelly-Washburn (RST #64). These trails are listed in Table 3-92 and shown on Figure 3-40.

Table 3-92. Public Access within the Joint Air–Ground Integration Complex Proposal Area

Public Access	Designation	RST #
Bonnifield Trail	RS 2477	RST #462
Donnelly Dome/Old Valdez trail	RS 2477	RST #695
Donnelly-Washburn	RS 2477	RST #64

Source: ADNR 2009-2, ADNR 2009-3.

Aerial Access

Public aerial access to DTA, TFTA, and YTA is described in Sections 3.2.10.1 and 3.4.10.1.

Navigable and Public Waters

There are no navigable rivers within the proposal footprint.

RECREATION

Recreation on Military Lands

Public access and recreational use in the proposal area is described in Sections 3.2.10.1 (for DTA and TFTA), 3.3.10.1 (for DTA-East), and 3.4.10.1 (for YTA).

Recreation on Non-military Lands

There are no Federally designated recreation lands within the ROI of the proposed action. The State-designated Chena River State Recreation Area occurs within the ROI for this proposal.

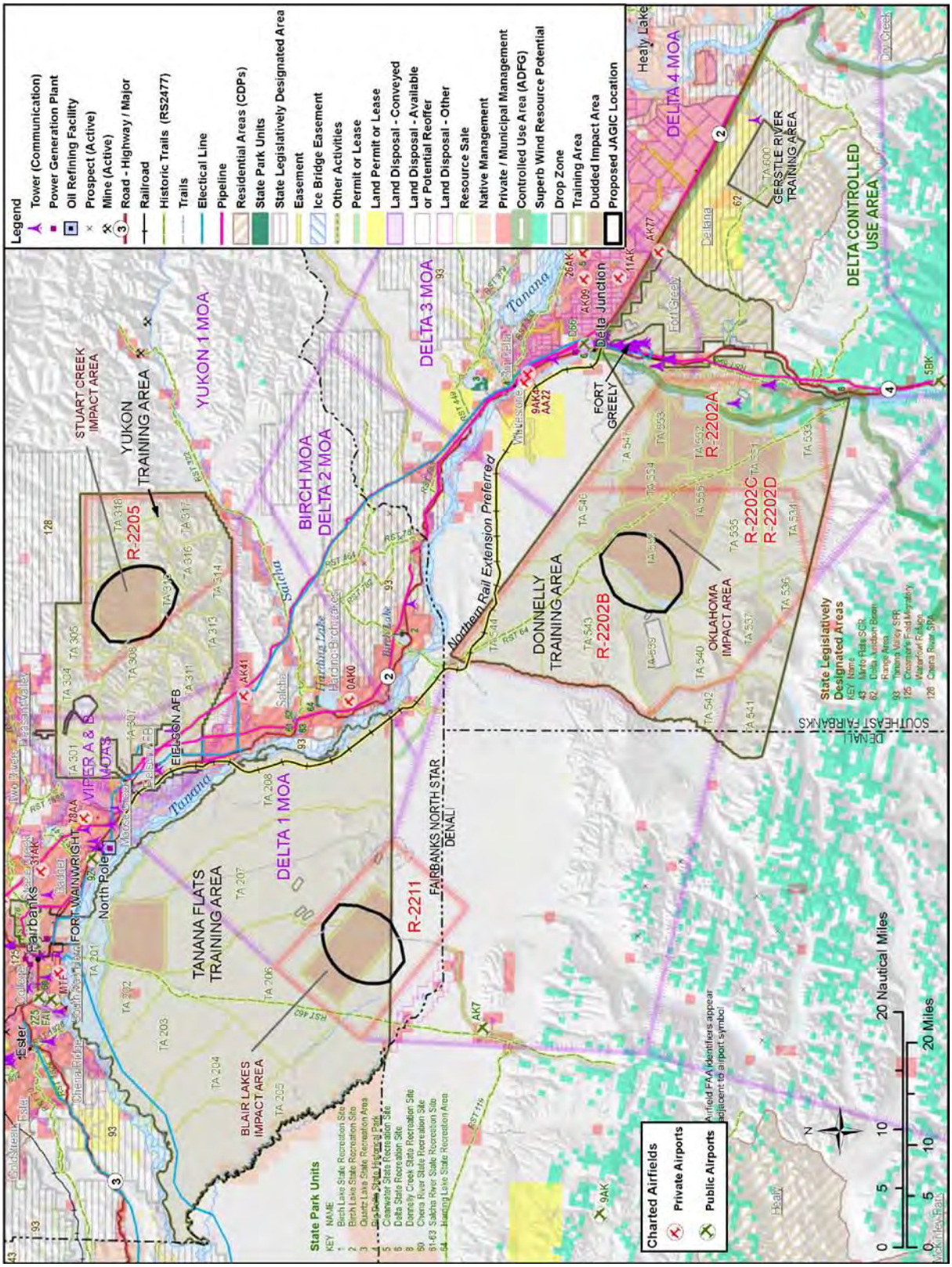


Figure 3-40. Military Uses, Special Use Areas, General Land Status and Productive Uses – Joint Air–Ground Integration Complex Proposal Area

Source: ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2009-4, ADNR 2011-2, ADNR 2011-3, ADNR 2011-4, ADNR 2011-7, AWS TrueWind/NREL 2003, FNSB 2006. NGA no date. SAIC 2011-1. SAIC 2011-3. USCB 2010-1. USGS 2005-1. USGS 2005-2

3.9.10.2 Impact Assessment Methodology

General methodology pertaining to evaluating land use, public access and recreation are described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The primary sources of impacts from this proposal on land use, including public access and recreation, include potential noise effects from military overflights on underlying uses, effects from using countermeasures and expending weapons on land uses and recreation, effects of ground-based military operations (such as vehicle and convoy operations on range roads, ground maneuver training both on range roads and cross country, pedestrian activities and bivouacking), and effects of developing and using new military facilities and infrastructure on military land on existing non-military permitted uses, access and recreation.

The method for assessing impacts is similar to that described in Section 3.2.10.1. This assessment is based on the following assumptions:

- Future SDZs for the new JAGIC would be entirely contained with the boundary of military land utilizing existing impact areas.
- The JAGIC would utilize grand maneuver assets and areas for integrated training (see Section 3.8.10.3).
- JAGIC operations would also use overlying and contiguous SUA.

3.9.10.3 Environmental Consequences

3.9.10.3.1 Proposed Action

The primary source of impact to land use, public access and recreation would result from lack of availability to gain to training areas while they are actively in use for military operations. Seven battalions would use the JAGIC for a minimum of 98 days each year. Additionally, JIIM utilization of the JAGIC can occur on up to 242 days annually. Army training will not be limited by recreational activities. The Army will continue to evaluate access during training cycles, but not to the detriment of Soldier readiness to conduct the assigned mission.

Feasible locations for the JAGIC would utilize existing target and impact areas that have historically supported hazardous weapons firing. The proposed JAGIC facilities and activities are consistent and similar to the spectrum of current military uses occurring at the active impact areas on the three training areas. These areas are off-limits to the public. The JAGIC may potentially expand into some areas that are off limits when JAGIC operations are ongoing, including Chena River State Recreation Area to the north and east, and both private and Native corporation lands to the northwest. Nonetheless, potential impact on land use, public access, and recreation is relatively low because the new complex would function entirely within military land and existing restricted airspace, and public use is generally low except for specific seasons. Recommended criteria for minimizing potential impacts on land use (non-military), access and recreation are described below.

- Avoid extending SDZs beyond military land. Orient new targets and firing locations accordingly to achieve this criteria. If not possible (see Figure 3-40, TFTA schematic layout), future proposals would need to clearly define terms and conditions for exclusive use of affected non-military land with ADNR and any affected private owners/entities.

- Subsequently, USARAK could work with ADFG and ADNR to notify and publish training schedules well in advance so that public users can plan their hunting options accordingly.
- To the extent possible, access should be maintained for public recreational use, hunting and other subsistence uses on the installation in the locations where these activities are most frequent or important. Patterns of use taken from current and past USARTRAK data can provide information for this screening criteria, as well as input from ADFG. Scheduling battalion maneuver events outside of popular hunting areas and seasons would reduce potential impacts. Strategies to achieve this criteria also include rotating or selecting areas for training that have lower value or less overlap with public uses and hunting.
- Planning for future ground maneuver areas should evaluate how integrated, multi-echelon training may expand or shift areas exposed to 62 dB CDNL or above. This may be particularly important for activities and firing points closest to range boundaries and more urbanized areas around Fort Greely and Delta Junction. Confining 62 dB CDNL noise exposure within military land boundaries would reduce potential conflicts with surrounding jurisdictions and landowners.
- Sites for new bridges and roads should avoid existing low-water river crossings used for public access for hunting and recreational uses.
- New road alignments should avoid displacing existing trails that currently provide access for public recreational use. Proposals could include replacement trails if necessary, or allow joint-use of enhancement infrastructure for non-military access when it does not interfere with the military mission.
- Construction of new infrastructure, targets and urban operations areas may extend over multiple years. Where construction overlaps spatially with locations that have natural resource value or recreational and public use value, timing restrictions may be warranted. Construction activities (e.g., noise and traffic generating) should be minimized during times that are sensitive or particular resources.

3.9.10.3.2 No Action

Under the No Action Alternative, construction and use of a JAGIC would not occur. Operations would continue using current range assets and at the same level of use. No impact would result on land use, public access or recreation.

3.9.10.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.9.10.3.1.

3.9.11 Infrastructure and Transportation

Transportation routes, electricity, water, sewage, and natural gas utilities are necessary to support various missions, as well as to maintain the residences of military personnel. Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for additional information regarding transportation and utility resources throughout this region.

3.9.11.1 Affected Environment

INFRASTRUCTURE

Electrical Transmission

Doyon Utilities owns, operates, and maintains the electric power generation and distribution systems, central heat and heat distribution systems, natural gas distribution systems, potable water distribution systems, and wastewater collection systems of Fort Greely. Aurora Energy serves as a subcontractor for the operation of electric and heat utilities and power generation assets. In addition, Doyon owns, operates, and maintains the electric power distribution systems of YTA.

YTA is supplied with power from GVEA and by the Eielson AFB power plant (GVEA 2011). Electric power distribution lines extend northeast into and around the Chena River Research Site and along primary roads within the training area. Where overhead power is not available, constant-run generators are used for power generation.

Electric power distribution within DTA is limited to the area east of the Delta River. Even within that area, however, not all range facilities have electric power. DTA falls within the GVEA service area (GVEA 2011).

Currently no commercial power is available in TFTA. GVEA's Northern Intertie is routed along the northwestern and northern sections of TFTA.

Water Supply and Wastewater Treatment

Doyon Utilities has assumed ownership, operation, and maintenance of the potable water distribution systems and the wastewater collection systems of Fort Greely and YTA. Regulations covering water appropriation are contained in the AAC at 11 AAC 93.010-970. Neither the Alaska Constitution nor the Water Use Act differentiate between surface and groundwater uses.

Natural Gas and Oil Pipelines

A total of 2.25 miles of natural gas pipelines are present within the proposed maneuver space areas within YTA.

TRANSPORTATION

Roads, Bridges and Trails

No bridges lie within the JAGIC proposed action area. Approximately 20 miles of roadway is present within the JAGIC project area boundaries. This unnamed road falls entirely within YTA underneath the JAGIC footprint. Approximately 16 miles of trails are present within the JAGIC proposed action area boundaries. These trails fall within YTA, within TFTA, or outside current DoD facility boundaries. Individual trails and their distances and names (where available) are presented in Table 3-93.

Table 3-93. Trails in Joint Air–Ground Integration Complex Areas

Name	On Facility	Miles
Tractor Trail	Yukon Training Area	8.50
N/A	DTA	0.54
N/A	Tanana Flats	7.37

Key: N/A=not applicable; DTA=Donnelly Training Area.
Source: ADNR 2009-2, ADNR 2009-3.

Rail

No rail lines or associated railroad infrastructure intersects with the proposed action area.

3.9.11.2 Impact Assessment Methodology

The general methodology for evaluating infrastructure and transportation is described in Section 3.2.11.2.

3.9.11.3 Environmental Consequences

3.9.11.3.1 Proposed Action

The JAGIC would require service roads, range support buildings, parking area, range tower, convoy live-fire route, urban centers, and an area for Service rocket training. The range would include realistic targets, scoring, and maintenance access by road or air. In addition, the ground range would need road access. Currently, extensive roads and trails exist in the study areas to support proposed action. Within the three study areas, there are 20 miles of existing road and 16 miles of trail. The Richardson Highway provides statewide access to these project areas and is a north-south connection between Fairbanks and Valdez. The Richardson Highway provides access to a network of five other highways. Year 2030 traffic volumes are forecast along most segments of the Richardson Highway between 1,500 and 4,500 AADT. Based on these forecast traffic volumes, a qualitative planning level assessment of the Richardson Highway by ADOT&PF revealed no major roadway capacity constraints over the near- and long-term (ADOT&PF 2010-1).

The range will need to be close to a railhead or road to minimize the travel distance for ground forces. Currently, extensive rail access is planned to provide additional access for this area with new rail lines are included in the Access to Joint Tanana Military Training Complex and the Denali Park Passenger Train Turnaround Track. The Northern Rail Extension project would construct a new line between North Pole and Big Delta (ADOT&PF 2010-1). Specific alternatives for direct access to DTA, YTA, and TFTA alternatives are not developed to the point where detailed decisions or plans can be made.

No bridges, natural gas pipelines, oil pipelines, water and sewer infrastructures are identified in this study area.

Power for scoring would be provided by generators or power lines, and communications may be transmitted by microwave or fiber optic cable. Most permanent electrical infrastructure is within the facilities at Eielson AFB and Fort Greely. In the past, if Fort Greely electrical loads exceed the 2.5-MVA transformer rating, diesel generators were used to meet peak loads. Doyon Utilities recently constructed a new 138 kV Switching Station, new 138 kV Substation with 20 MVA transformer to increase energy capacity at Fort Greely (Doyon 2011-1). Utilities needed for scoring would require operations and maintenance support.

Within the proposed JAGIC areas, electrical distribution lines extend northeast into and around the Chena River Research Site and the area east of the Delta River as well as along the northwestern and northern sections of TFTA. No commercial power is available in TFTA. Specific alternatives for electrical requirements for DTA, YTA, and TFTA are not developed to the point where specific decisions or plans can be made. In general, the proposed expansion of infrastructure discussed would be a net positive impact for Transportation and Infrastructure as the expansion of access and utility of the area would be beneficial to current users. Additional details regarding specific needs for power lines, fiber optic cable, and road construction requirements would be required to evaluate potential impacts.

Three proposals currently exist for the creation of the JAGIC. The first is to locate the JAGIC in the central area of DTA-West, proximate to the western boundary of the Oklahoma Impact Area. The complex would include the use of the live-fire village at the end of the fire line located under the existing R-2202, from the

Control Tower to the west. The complex would be able to use existing supporting infrastructure and access roads and is proximal to existing infrastructure at Fort Greely. Under this proposal, no net impacts would be expected, as the complex would be able to use existing supporting infrastructure and access roads.

A second proposal would be to locate the JAGIC in the Stuart Creek Impact Area within YTA. The complex would be able to use existing supporting infrastructure and access roads and is proximal to existing infrastructure at Eielson AFB. A net positive gain to transportation and infrastructure could be expected if additional infrastructure is required to facilitate use of the JAGIC.

A third proposal would be to locate the JAGIC in the Blair Lakes Impact Area near the southern boundary of TFTA under the existing R-2211. There is already robust targetry in the Blair Lakes Impact Area. Impacts are identical to those discussed under the proposed action in YTA.

3.9.11.3.2 No Action

No impacts on infrastructure and transportation would occur under the No Action Alternative.

3.9.11.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.9.12.1 Affected Environment

Impact areas on YTA, TFTA, and DTA are all candidates for the siting location of the JAGIC Range Complex. The areas of the three training areas are located in the Denali Borough, FNSB, and the Southeast Fairbanks Census Area which is therefore defined as the ROI for the JAGIC proposed action. The affected environment for the JAGIC proposal is similar to the area described in Section 3.2.12.1, Affected Environment, with the exception of the population under the airspace.

3.9.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.9.12.3 Environmental Consequences

3.9.12.3.1 Proposed Action

Impacts on socioeconomic resources under the proposed action are anticipated to be low since the siting of the JAGIC is in an impact area within an existing training area, in which there are no residential areas or economic centers. In addition, the potential for impact on public use and recreation is anticipated to be low (Section 3.9.10.3.1); thus economic impacts associated with restricted access would also be low.

The ground-disturbing components of the project would include construction of realistic targets, scoring mechanisms, range support buildings, parking area, range tower, convoy live-fire route, urban centers, and an area for Service rocket training, power, communications, and service roads. In general, construction activities are anticipated to result in temporary and beneficial socioeconomic impacts that would occur only during the construction phase. The direct and indirect socioeconomic impacts

associated with this action are dependent on the construction expenditures, which are not available at this time, but should be taken into consideration during the siting criteria. No significant impacts on civilian aviation are anticipated since no aviation activities are associated with the proposed action and therefore, would not cause any impacts on the existing airspace environment that would affect socioeconomic resources (see Section 3.9.1). However, further analysis is required to determine the quantitative impacts on socioeconomic resources once siting alternatives have been more thoroughly developed and expenditure data becomes available.

3.9.12.3.2 No Action

Under the No Action Alternative, socioeconomic resources would remain as described under baseline conditions.

3.9.12.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.9.13.1 Affected Environment

The ROI and affected environment for JAGIC is the same as those described for EGMS (see Section 3.7.13.1).

3.9.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.9.13.3 Environmental Consequences

3.9.13.3.1 Proposed Action

As described in Section 3.7.13.1, areas of TFTA and YTA that are accessible to the public are not managed for subsistence resources, and Alaska residents are not given priority access to subsistence resources. Therefore, siting of the proposed JAGIC within either of these areas is not expected to affect subsistence activities. However, such action may affect recreational access and public access, which are described and considered in Section 3.9.10. The proposal for a JAGIC in DTA may impact subsistence resources. Additional consideration or development of the proposal should address accessibility of the area, including the JAGIC, to the public, avoidance of traditional use areas for nearby communities, and the monitoring of the impacts of activities within or in the vicinity of the JAGIC area on the population and distribution of subsistence wildlife and vegetation.

3.9.13.3.2 No Action

Under the No Action Alternative, subsistence activities would continue as currently practiced.

3.9.13.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.9.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.14.

3.9.14.1 Affected Environment

The affected environment for the JAGIC proposal includes one borough and one census area in which some portion of the proposal footprint is located. Table 3-94 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas comprising the proposal area. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

The average percent minority in the proposal area is 21.3 percent in Southeast Fairbanks Census Area and 25.9 percent in FNSB, both of which are lower than the 35.9 percent average for the State of Alaska. The average percent low-income is 8.0 percent in FNSB and 11.6 percent in Southeast Fairbanks Census Area, compared to 9.6 percent for the State of Alaska. The average percent Alaska Native is 7.0 percent in FNSB and 11.5 percent in Southeast Fairbanks Census Area, both of which are less than the 14.8 percent average for the State. The average percent of children is 25.6 percent in FNSB and 26.3 percent in Southeast Fairbanks Census Area, similar to the 26.4 percent average for the State.

Table 3-94. Minority Population, Low-Income Population and Children by Area

Area	Total Population	Percent Low-Income	Percent Minority	Percent Alaska Native	Percent Children
Fairbanks North Star Borough	97,581	8.0	25.9	7.0	25.6
Southeast Fairbanks Census Area	7,029	11.6	21.3	11.5	26.3
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Source: USC B 2010-1; 2010-2.

3.9.14.2 Impact Assessment Methodology

General Methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2 and additional methodology relevant to the six Programmatic Proposals is described in Section 3.8.14.3.

3.9.14.3 Environmental Consequences

3.9.14.3.1 Proposed Action

Operations at the JAGIC, which would occur in DTA, YTA, or TFTA, depending on future siting decisions, would include ground vehicles (Stryker), small arms training, indirect munitions fire, Army aviation munitions training, and Air Force aerial ordnance training. Based on a review of environmental consequences for other resources, adverse impacts could, in many cases, be reduced based on siting and operational criteria, SOPs, BMPs, and continuation of mitigation measures used previously; however, further study would be needed.

As described for the EGMS proposal, areas accessible to the public in TFTA and YTA are not managed by either the State or Federal government for subsistence, whereas those in DTA are Federally managed for subsistence. DTA is also within GMU 20D, and rural communities participating in subsistence under Federal regulations in the vicinity of DTA include Big Delta, Delta Junction, Healy Lake (High dependence), and Dry Creek (High dependence). Within this unit, rural residents may engage in subsistence hunting, for example, bison, black bear, brown bear, and other game. For fishing, the ROI is located in the Yukon-Northern subsistence area, which allows for the harvesting of a variety of fish species. As a result, siting the JAGIC in DTA could potentially have disproportionately high and adverse environmental or health effects on minority or low-income populations in communities with High dependence on subsistence.

Noise levels associated with proposed munitions training would be qualitatively similar to current munitions noise and would depend on the intensity of the training operations. The JAGIC would be located near the center of YTA. YTA is not as large as DTA and noise levels exceeding 62 dB CDNL or 115 dB PK 15(met) would potentially extend beyond DTA boundaries. The extent of noise impacts would depend on the intensity of training at the JAGIC. Delta Junction is in the vicinity but these noise levels may not extend into the community. Delta Junction has a low potential for disproportionately high and adverse environmental or health effects based on demographic data. Its population of 958 persons has a percent minority and a percent low-income that are substantially less than the surrounding Southeast Fairbanks Census Area.

The information presented below could benefit siting and operations planning by taking into account the location of jurisdictions with greater potential for environmental justice effects:

- Consider whether siting or use of an enhanced maneuver area in DTA that could affect communities with High dependence on subsistence resources, including Healy Lake and Dry Creek can be avoided or minimized and other training area utilized i.e., YTA and TFTA.
- Further analysis may be needed to confirm whether noise levels exceeding 62 dB CDNL or 115 dB PK 15(met) would potentially extend beyond DTA boundaries, and if so, would affect any communities or inhabited areas, causing disproportionately high and adverse environmental or health effects on minority and low-income populations or children.
- If tiered environmental analysis identifies other unmitigated impacts in the ROI, evaluate whether residents or public and private use would be affected, and if so, whether affected populations would have higher percentages of minority and low-income populations than the surrounding jurisdiction. If so, additional mitigation measures may need to be evaluated to reduce effects.
- If adverse impacts on Alaska Native activities are identified, develop case-specific mitigations that can be evaluated during the tiered environmental process to reduce the potential for disproportionately high and adverse environmental and health effects on Alaska Natives.

3.9.14.3.2 No Action

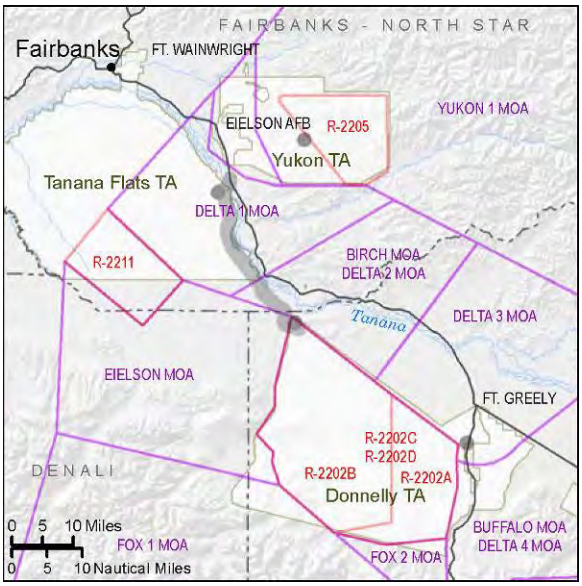
JAGIC would not be established in any of the three training areas (DTA, YTA, or TFTA) and hazardous air operations and related ground activities would not occur. No siting criteria or measures related to environmental justice are needed.

3.9.14.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.9.14.3.1.

3.10 INTERMEDIATE STAGING BASES (PROGRAMMATIC)

ISBs are proposed to support Soldier training and maneuvers within the JPARC and would be used to house, maintain, and stage forces before insertion into the combat training area. The ISB is normally located near but outside the training area. The proposed action would include construction and use of ISBs at four locations, each composed of permanent barracks, large parking areas, dining facilities, ammunition storage points, petroleum-oil-lubricant area, and maintenance facilities on approximately 110 acres.



This proposal considers four possible sites for developing ISBs. The composite footprint of the preliminary siting areas (gray-shaded area in the map to the right) is about 46,000 acres (72 square miles), although the footprint for developing these facilities would be a small fraction of this area (about 1 percent). The preliminary ISB siting areas would all involve withdrawn military land. Operations and use of ISBs would be non-hazardous to surrounding areas, but would be exclusively used for military purposes. Because this proposal does not involve the use of airspace, the potential for effects on airspace management and flight safety is low. In response to future mission change and force structure modernization, it is likely that the Army and other services currently training in Alaska will be required to adapt their training and testing on JPARC lands and ranges. The Army will evaluate any additional modernization and enhancement of JPARC capabilities based on future service requirements in accordance with NEPA.

3.10.1 Airspace Management and Use (No Analysis Needed)

This proposal would not involve any aviation activities beyond those helicopter operations that would provide aviation support for the ISBs. Such support would not require any changes to the existing SUA or result in any impacts on the existing airspace environment and other airspace uses. Therefore, this resource is not further analyzed for this proposal.

3.10.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.2.

3.10.2.1 Affected Environment

The affected areas would be within the borders of JPARC ground training areas. These areas are exposed to varying levels of military training noise. Potential locations near the proposed rail line would, at some point in the future, experience noise generated by rail traffic. Locations near impact areas experience munitions firing and detonation noise. All potential sites are overlain by military training airspace, and experience aircraft operations noise.

3.10.2.2 Impact Assessment Methodology

Construction activity noise impacts were assessed using the same methods described for the TFTA Access Road (see Section 3.8.2.2). Generalized noise levels were also estimated for transportation of

units to and from the ISBs once construction is complete. Because the ISB initiative is assessed programmatically, noise impacts are not assessed against a specific set of locations. Potential impacts of estimated noise levels on various types of locations are considered.

3.10.2.3 Environmental Consequences

3.10.2.3.1 Proposed Action

Construction activities would involve many of the same pieces of equipment used in road construction. Noise levels associated with several common pieces of construction equipment are listed in Table 3-80. Construction noise would not be expected to be audible beyond the boundaries of DoD-owned land. Noise levels generated by an operational ISB would depend on the specific nature of the operations.

3.10.2.3.2 No Action

Under the No Action Alternative, the ISB would not be constructed. There would be no noise impacts under the No Action Alternative.

3.10.2.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.10.3 Safety

3.10.3.1 Affected Environment

FLIGHT SAFETY

The airfield activities that would be part of an ISB initiative would be within the existing regional airspace environment, where it is not anticipated that the associated flight operations would have any measurable effect on flight safety beyond what has been addressed for the JPARC airspace proposals.

GROUND SAFETY

The ROI for ground safety is land within and just outside YTA, TFTA, DTA, and the Fort Greely area. For this proposal, the environment affected by activities involved in range safety and control, UXO and munitions safety, public access control, and fire and emergency response would not differ from that previously described for RLOD Alternative A in Section 3.2.3.1.

3.10.3.2 Impact Assessment Methodology

FLIGHT SAFETY

Flight safety impacts would be determined once this becomes a definitive proposal. However, flight activities associated with a basing airfield should have minimal potential impacts associated with flight risks involving mishaps, near misses/midair collisions, and bird-aircraft strikes. Such potential for any impacts would be controlled through standing procedures and management practices that are established to prevent such risks/practices.

GROUND SAFETY

Impact assessment methodology is the same as in Section 3.2.3.2.

3.10.3.3 Environmental Consequences

3.10.3.3.1 Proposed Action

FLIGHT SAFETY

Flight safety impacts associated with this requirement cannot be addressed until the airfield activities are defined.

GROUND SAFETY

Range Safety and Control – There are no environmental impacts associated with range safety and control for this proposal not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Unexploded Ordnance and Munitions Safety – There are no environmental impacts associated with UXO and munitions safety for this proposal not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Public Access Control – There are no environmental impacts associated with public access control for this proposal not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

Fire and Emergency Response – There are no environmental impacts associated with fire and emergency response for this proposal not previously discussed under *Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences*. Consequently, significant impacts are not expected to occur.

3.10.3.3.2 No Action

Temporary ISB facilities would continue to be used within the training areas. As a result, no impacts on public health and safety would occur.

3.10.3.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.10.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.4.

3.10.4.1 Affected Environment

The proposed ISBs would potentially be located in FNSB and Southeast Fairbanks Census Area. None of the ISBs would be within the nonattainment or maintenance areas of FNSB. Table B-12 in Appendix B, Section B.4.3 provides a summary of the estimated 2008 annual emissions for the FNSB and Southeast Fairbanks Census Area.

3.10.4.2 Impact Assessment Methodology

Currently, this action is in its developmental stages and sufficient data is not available to analyze air quality impacts. Once sufficient data is available, the air quality analysis will estimate the construction emissions and the changes (increases and/or decreases) in emissions that would occur from the proposed ISBs. The air quality effects from this action will be evaluated qualitatively as the predicted emissions would be minor and intermittent in nature.

Since the affected project region for the proposed action is in attainment of all NAAQS, the analysis will use the PSD new major source threshold of 250 tons per year of each pollutant as an indicator of significance or nonsignificance of projected air quality impacts.

PSD CLASS I AREA IMPACT ANALYSIS

The closest PSD Class I area to the proposed action is Denali National Park, which is approximately 65 miles from the closest proposed ISB. Therefore, due to the proximity of the proposed action to a pristine PSD Class I area, the potential for proposed activities to affect visibility within this area will need to be analyzed.

3.10.4.3 Environmental Consequences

3.10.4.3.1 Proposed Action

Air quality impacts from construction and operational activities for the proposed ISBs would occur from (1) combustive emissions due to the use of fossil-fuel-powered equipment and aircraft, and (2) fugitive dust emissions (PM_{10} and $PM_{2.5}$) due to the operation of equipment on exposed soil. Increases in emissions due to changes in operations related to the ISB action would occur primarily from combustive emissions due to the use of fossil-fuel-powered equipment and aircraft.

Information needed to calculate air emissions resulting from the proposed ISB construction activities includes the following:

- The type, horsepower, and daily and annual usage rates of fossil-fuel-powered equipment used to construct the roads associated with the proposed action
- The usage of water trucks during construction for dust control
- The surface type, length, and width of the proposed roads
- The area and heights of proposed buildings
- The distance that the trucks would travel to the materials and dumping sites

Operational information needed to calculate the air emissions resulting from increased activities associated with the ISBs action includes the following:

- The type, horsepower, and daily and annual usage rates of fossil-fuel-powered equipment associated with increased training activities for the proposed action
- Information on personnel transportation to and from the ISBs, including a breakdown of vehicle types, average distances traveled per day, and personnel numbers

The emissions factors needed to derive construction source emission rates are found in *Compilation of Air Pollution Emission Factors* (EPA 1995), and emissions inventory data produced by the mathematical

models: OFFROAD2007 for off-road construction equipment (ARB 2006-1) and EMFAC2007 for on-road vehicles (ARB 2006-2).

Emission reduction strategies that can be incorporated during construction of the ISBs include the following:

- Use water trucks to keep areas of vehicle movement damp enough to minimize the generation of fugitive dust.
- Minimize the amount of disturbed ground area at a given time.
- Minimize ground-disturbing activities in proximity to the construction area boundary.
- Discontinue proposed ground-disturbing activities within 3 miles upwind of the construction area boundary when winds exceed 25 miles per hour or when visible dust plumes emanate from the site and then stabilize all disturbed areas with water application.
- Designate personnel to monitor the dust control program and to increase dust suppression measures (e.g., watering), as necessary, to minimize the generation of dust.

3.10.4.3.2 No Action

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations in YTA, DTA, TFTA, and at Fort Greely. Therefore, the No Action Alternative would not result in any new air quality impacts.

3.10.4.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.10.4.3.1.

3.10.5 Physical Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.5.

3.10.5.1 Affected Environment

TOPOGRAPHY

General topographic conditions for TFTA, YTA, and DTA are described in Section 3.8.5.1.

The proposed ISB area on TFTA is located in a level area on the banks of the Tanana River at an elevation of approximately 600 feet, sloping gently downward from southeast to northwest. Elevations of YTA in the vicinity of the Project Area are variable and rugged, with numerous peaks of over 3,000 feet and valleys of under 1,000 feet, often with sharp relief. Elevations at the proposed ISB just east of the Delta River are just over 1,400 feet, sloping upward from northeast to southwest. Donnelly Dome, a prominent glacially-formed landmark of 3,910 feet, dominates the local landscape to the south, and Granite Mountain, a 5,815 foot peak, lies to the southeast. Elevations for the ISB proposed in the northwest corner of DTA range from just under 1,000 to just over 1,200 feet, sloping from southeast to northwest. Several small ridges are located at the extreme northwest corner of DTA.

GEOLOGIC HAZARDS

Geologic hazard conditions for TFTA, YTA, and DTA are described in Section 3.8.5.1.

SOILS

General characteristics of soils on TFTA, YTA, and DTA are described in Section 3.8.5.1.

Detailed maps of soil in the Project Area are not currently available, but in general soils on TFTA are extremely acidic to neutral, have moderate to high potential for frost action, and present limitations to development due to depth to permafrost, depth to the high water table, and high organic matter content (USDA 2006). The Proposed ISB is located in the Bear Creek Lowlands, an ecological area dominated by abandoned-floodplain riverbed deposits with thin cover deposits of fine-grained sediments (USACE 1999).

YTA soils in the Project Area are extremely acidic to neutral, have moderate to high potential for frost action, and present limitations to development due to depth to permafrost, depth to the high water table, high organic matter content, and a potential for subsidence (USDA 2006). The Proposed ISB is in YTA in the Chena-Salcha Highlands, an ecological area described as having weathered bedrock in alpine areas, residual soils on upper slopes, and transported deposits in upland and lower slope areas (USACE 1999).

Generally, DTA soils in the Project Area are extremely to moderately acidic, have moderate to high potential for frost action, and present limitations to development due to depth to permafrost, depth to the high water table (especially during "wet" season), high organic matter content, and a potential for subsidence (USDA 2005).

Representative soils found in each of the Project Areas are summarized in Table 3-95.

PERMAFROST

General permafrost conditions in TFTA, YTA, and DTA are described in Section 3.8.5.1.

Permafrost conditions in the area of the proposed ISB in TFTA are categorized as either discontinuous or unfrozen. Conditions are generally difficult to detect due to local groundwater movements, but are likely sporadic (USACE 1999). Permafrost conditions in the area of the proposed ISB in YTA are categorized as largely unfrozen, with permafrost sometimes present on northern and lower slopes and absent on southern slopes (USACE 1999). Permafrost conditions in DTA in the vicinity of the proposed ISB are variable, but portions of the ISB might be located in ecological regions where permafrost is likely to exist (USACE 2001).

3.10.5.2 Impact Assessment Methodology

The general methodology for evaluating physical resources is described in Section 3.8.5.2.

3.10.5.3 Environmental Consequences

This section analyzes the potential impacts on physical resources (including soils, permafrost, and seismicity) associated with the proposed action. Baseline conditions were addressed in Section 3.10.5.1.

3.10.5.3.1 Proposed Action

The proposed action includes the construction and use of up to four ISBs, with a combined capacity for up to 2,500 Soldiers, within existing JPARC training sites, including DTA, TFTA, and YTA. Components of the proposed action include permanent barracks, large parking areas for storage of truck and vehicular equipment, dining facilities, ammunition storage points, petroleum-oil lubricant area, and maintenance facilities. Each ISB would be approximately 110 acres and would be located near existing transportation access (roads) in order to minimize new roadway construction.

Table 3-95. Characteristics of Representative Soils Found in the Area of Proposed Intermediate Staging Bases Locations

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
Tanana Flats Training Area (see Table 3-83 for general soil types in TFTA)											
Donnelly Training Area (Fort Greely Ice Bridge)											
610	Butchlake-Southpaw complex, 0 to 35 percent slopes	Hills on moraines	-	Water: slight Wind: moderate to severe	Low to medium	Well drained	None/none	> 60	No	3.9 to 7.2	Paper birch, spruce, and aspen forest
613	Chena very fine sandy loam	stream terraces	-	Water: slight Wind: moderate	Very low	Excessively drained	Rare/none	> 60	No	3.5	White spruce and balsam poplar forest
616	Donnelly silt loam, 0 to 3 percent slopes	Stream terraces	-	Water: slight Wind: moderate	Low	Somewhat excessively drained	None/none	> 60	No	3.4	Open black spruce forest or birch scrub
617	Donnelly silt loam, 45 to 70 percent slopes	Escarpments of stream terraces	-	Water: severe Wind: moderate	High	Somewhat excessively drained	None/none	> 60	No	3.4	Open black spruce forest or birch scrub
618	Donnelly-Nenana complex, 0 to 3 percent slopes	Stream terraces	-	Water: slight Wind: moderate	Low	Somewhat excessively drained	None/none	> 60	No	3.4	Open black spruce forest or birch scrub
629	Jarvis very fine sandy loam	Floodplains	-	Water: slight Wind: severe	Low	Well drained	Rare/ occasional	0 to > 60	No	6.5	White spruce, balsam poplar, and paper birch forest

Table 3-95. Characteristics of Representative Soils Found in the Area of Proposed Intermediate Staging Bases Locations *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
630	Jarvis very fine sandy loam, flooded	Floodplains	-	Water: slight Wind: severe	Low	Well drained	Rare/ occasional	0 to > 60	No	6.5	Balsam poplar, willow, silverberry and white spruce scrub
631	Jarvis-Chena complex	Floodplains and stream terraces	-	Water: slight Wind: moderate to severe	Very low to low	Well to excessively drained	Rare/ occasional	0 to > 60	No	3.5 to 6.5	White spruce and balsam poplar, and paper birch forest
632	Jarvis-Chena complex, flooded	Floodplains and stream terraces	-	Water: slight Wind: moderate to severe	Very low to low	Well to excessively drained	Rare/ occasional	0 to > 60	No	3.5 to 6.5	Balsam poplar, willow, silverberry and white spruce scrub
639	Nenana silt loam, 0 to 3 percent slopes	Stream terraces	-	Water: slight Wind: moderate	Low	Well drained	None/ occasional	0 to > 60	No	5.9	White spruce, quaking aspen, and paper birch forest
648	Salchaket very fine sandy loam	Floodplains	-	Water: slight Wind: moderate	low	Well drained	Rare/ frequent	0 to > 60	No	9.7	White spruce, balsam, and paper birch forest

Table 3-95. Characteristics of Representative Soils Found in the Area of Proposed Intermediate Staging Bases Locations *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
Donnelly Training Area (NW Corner)											
674	Typic Aquiturbels-Typic Histoturbels association	Outwash plains	6 to 18	Water: slight Wind: slight	High	Poorly drained	Rare/ frequent	0 to 10	Yes	2.4 to 5.0	-
678	Typic Cryofluvents-Histels-Typic Haploturbels association	Floodplains, terraces, and hills	10 to 24	Water: severe Wind: severe	High	Poorly drained to well drained	Occasional / none	0 to > 60	No	2.1 to 5.1	-
680	Typic Cryofluvents-Typic Dystrocryepts-Typic Histoturbels complex	Floodplains	-	Water: slight Wind: moderate to severe	Low	Well drained	Occasional / none	> 60	No	2.1 to 11.7	-
702	Typic Histoturbels	Outwash plains	10 to 18	Water: slight Wind: slight	High	Poorly drained	None/none	0 to 10	Yes	5.0	-
707	Typic Histoturbels-Typic Dystrocryepts complex, hills	Hills	14 to 24	Water: severe Wind: moderate	High	Poorly to well drained	None/none	0 to > 60	No	6.1 to 8.4	-
Yukon Training Area											
45F	Gilmore silt loam, 30 to 45 percent slopes	Hills	-	Water: severe Wind: severe	High	Well drained	None/none	> 72	No	2.9	Black spruce, paper birch, white spruce, and quaking aspen forest

Table 3-95. Characteristics of Representative Soils Found in the Area of Proposed Intermediate Staging Bases Locations *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
49D	Angel silt loam, 12 to 20 percent slopes	Hills	-	Water: severe Wind: severe	Low	Well drained	None/none	> 72	No	3.0	Black spruce, paper birch, white spruce, and quaking aspen forest
49E	Angel silt loam, 20 to 30 percent slopes	Hills	-	Water: severe Wind: severe	Medium	Well drained	None/none	> 72	No	3.0	Black spruce, paper birch, white spruce, and quaking aspen forest
50X	Ester peat, 20 to 45 percent slopes	Hills	7 to 30	Water: severe Wind: slight	Very high	Very poorly drained	None/none	4	Yes	2.1	Black spruce woodland
51C	Saulich peat, 7 to 10 percent slopes	Valley sides	14 to 24	Water: slight Wind: slight	Very high	Very poorly drained	None/ frequent	0 to 8	Yes	3.6	Black spruce forest with low shrubs and moss
81V	Saulich and Chatanika soils, 3 to 15 percent slopes	Hills, valley sides	12 to 39	Water: severe Wind: severe	Very high	Poorly to very poorly drained	None/ frequent	0 to 8	Yes	3.6 to 4.3	Black spruce forest with low shrubs and moss
81X	Saulich and Chatanika soils, 15 to 20 percent slopes	Hills, valley sides	12 to 39	Water: severe Wind: severe	Very high	Poorly to very poorly drained	None/ frequent	0 to 8	Yes	3.6 to 4.3	Black spruce forest with low shrubs and moss

Table 3-95. Characteristics of Representative Soils Found in the Area of Proposed Intermediate Staging Bases Locations *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
82V	Gilmore and Steese silt loams, 3 to 15 percent slopes	Hills	-	Water: severe Wind: severe	Medium to high	Well drained	None/none	> 72	No	2.9 to 6.1	Paper birch white spruce, and quaking aspen forest
82X	Gilmore and Steese silt loams, 15 to 45 percent slopes	Hills	-	Water: severe Wind: severe	High	Well drained	None/none	> 72	No	2.9 to 6.1	Paper birch white spruce, and quaking aspen forest
86X	Brigadier and Manchu silt loams, 3 to 45 percent slopes	Hills	-	Water: severe Wind: severe	High to very high	Moderately well to well drained	None/none	7 to > 72	No	3.2 to 6.7	Black spruce, white spruce, balsam poplar and paper birch forest
87V	Gilmore, subalpine and Manchu soils, 0 to 15 percent slopes	Hills	-	Water: moderate to severe Wind: severe	Medium to very high	Well drained	None/none	7 to > 72	No	2.9 to 6.7	Black spruce, paper birch white spruce, and quaking aspen forest
91	Aquic Cryofluvents-Typic Cryaquents-Fluvaquentic Aquorthels complex, 2 to 10 percent slopes	Floodplains	14 to 28	Water: slight to moderate Wind: slight to moderate	Low to very high	Very poorly to moderately well drained	Occasional to frequent/ frequent	0 to 51	Yes	5.9 to 13.9	Willow and birch scrub

Table 3-95. Characteristics of Representative Soils Found in the Area of Proposed Intermediate Staging Bases Locations *(Continued)*

Unit #	Soil name	Location/ Landform	Depth to Permafrost (inches)	Erosion Hazard (organic mat removed)	Runoff	Drainage Class	Flooding/ Ponding	Depth to High Water Table (inches)	Hydric?	Available Water Capacity (inches)	Associated Vegetation
211	Chatanika-Goldstream complex, 0 to 5 percent slopes	Hills, floodplains, valleys	12 to 39	Water: slight Wind: severe	Negligible to very high	Poorly to very poorly drained	None/ frequent	0 to 8	Yes	3.6 to 4.3	Black spruce woodland and forest
212	Goldstream-Histels complex, 0 to 3 percent slopes	Floodplains, valleys	14 to 24	Water: slight Wind: slight	Negligible	Very poorly drained	None/ frequent	0 to 8	Yes	3.6	Black spruce woodland
411C	Minto-Chatanika complex, 7 to 12 percent slopes	Hills	12 to 39	Water: severe Wind: severe	Medium to very high	Poorly to moderately well drained	None/ frequent	0 to 8	Yes	4.3 to 12.6	Black spruce, white spruce, and paper birch forest
411D	Minto-Chatanika complex, 12 to 20 percent slopes	Hills	12 to 39	Water: severe Wind: severe	Medium to very high	Poorly to moderately well drained	None/ frequent	0 to 8	Yes	4.3 to 12.6	Black spruce, white spruce, and paper birch forest
451X	Brigadier-Ester complex, 15 to 45 percent slopes	Hills	7 to 30	Water: severe Wind: severe	High to very high	Very poorly drained	None/none	4	No	2.1 to 3.2	Black spruce forest and woodland

Source: USDA 2005, 2006, 2011

Primary impacts associated with the construction of ISB components would be short-term. Potential soil impacts would include the increase of impervious surface and surface runoff, soil erosion, reduced soil strength, the removal of vegetation and soil in the building/construction footprint, and soil compaction in the area of and surrounding construction. Compaction of soil can lead to inhibited vegetation growth and increased surface water runoff. Soil erosion can contribute to increased sedimentation of nearby waterways, resulting in the potential for significant adverse impacts.

Potential impacts on permafrost during and after construction of new facilities would result from removal of upper soil layers or vegetative mat, leading to increased possibility of permafrost degradation and creation of thermokarst features. Structures built on areas with underlying permafrost are subject to differential settling and other damaging effects, if there is not sufficient insulation between the structure and the underlying permafrost. Permafrost is vulnerable to surface disturbance and significant adverse impacts are likely to be long-term and irreversible.

As with soils, extent and location of permafrost beneath the surface at DTA, YTA, and TFTA, respectively, is variable and thus the extent of impacts on permafrost would be dependent upon permafrost conditions under the construction footprints of each ISB. All but one of the possible ISB sites are in areas that range from a worst-case scenario of discontinuous permafrost to a best-case of permafrost free (e.g., areas in proximity to existing roadways or in the Tanana River lowlands). The one exception is the proposed ISB location on YTA; that proposed site may range from continuous to discontinuous permafrost (USACE 1999).

Land on TFTA, YTA, and DTA is located within an area classified by the USGS as moderate to high for earthquake hazard potential. Effects from the 7.9 earthquake in November 2002 were felt on TFTA, YTA, and DTA and structures and infrastructure on TFTA did incur some damage as a result. Potential geologic hazards such as slope instability and seismically-induced ground failure would be addressed through a standard, site-specific, geotechnical investigation before construction begins, in particular for the proposed ISB on YTA, as this location is in an area of varied and often steep topography.

3.10.5.3.1.1 Site Selection Criteria and Best Management Practices

Since the construction of any of the ISBs would result in greater than 1 acre of ground disturbance, USAG-FWA would be required to coordinate with ADEC and may be required to submit a NOI to ADEC at least 7 days prior to the implementation of the project. Construction activities would be undertaken in compliance with a project-specific NPDES General Construction Permit and the implementation of an SWPPP may also be required. Building designs would be consistent with Section 438 of the Energy Independence and Security Act (EISA) as well as Fort Wainwright's SWPPP in order to minimize runoff contamination. In addition, building and infrastructure construction would adhere to all applicable DoD and Army guidelines for protection of soils, prevention of soil erosion, and prevention of permafrost degradation. See Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, for information on how the Army manages natural resources on Army lands in Alaska and ongoing measures that would apply to the proposed action.

Pre-planning for siting of new infrastructure or new activities at ranges or on training areas requires coordination with the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations, as well as information from the ITAM program would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up.

Any new facility construction would be undertaken in compliance with guidelines established in EO12699, *Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction.* In addition, any new construction, including facilities and infrastructure, would adhere to guidelines established by DoD and Army (or DOT/AAHSTO national standards) for earthquake resistance. USAG-FWA would also ensure new facilities are not constructed on or in proximity to active seismic faults and, if necessary, would consult with the USGS in regard to ISB location and distance to active faults.

3.10.5.3.2 No Action

Under the No Action Alternative, existing "relocatable" ISB facilities would continue to be used. With respect to construction related impacts, soil, permafrost, and seismic related impacts would be similar to the proposed action, but only after seven years of operations. Impacts would be substantially less during the first 7 years of operations, due to the lack of new construction. As a result, conditions would remain as described in Section 3.10.5.1.

3.10.5.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.10.5.3.1.

3.10.6 Water Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.6.

3.10.6.1 Affected Environment

Four ISBs would be located within the existing JPARC training grounds at key points on the planned rail corridor and planned bridge crossings. One ISB would likely be near the Northern Rail extension bridge crossing of the Tanana River, on the west side of the river. This area is an abandoned floodplain of the Tanana River dissected by ribbons of palustrine shrub-scrub wetlands. The area is 10 to 20 feet (3.1 to 6.1 meters) in elevation above the active Tanana River channel. Based on nearby surface water and groundwater quality measurements, surface and groundwater likely meet primary State water quality standards. Wetland coverage in the potential location for the ISB ranges from 25 to 100 percent.

One ISB would be potentially located near the southwest edge of the Stuart Creek Impact Area in the Tanana-Yukon Uplands. This location is near the headwaters of Stuart Creek and French Creek. Groundwater availability is limited in the hills and the uplands where the ISB may be located. Though there are no groundwater monitoring wells in the area, groundwater in nearby wells at Fort Wainwright have high concentrations of metals. Iron concentrations exceed secondary water quality standards, and some wells in the uplands also have higher concentrations of arsenic from naturally occurring sources. High concentrations of iron are common in areas that drain wetland-rich areas. In this area the wetlands are located primarily in the valleys of Stuart and French Creeks. Wetland coverage in this location is approximately 16 percent.

One ISB would potentially be located on the northwest of edge of DTA near the confluence of the Little Delta River and the Tanana River. Surface water quality values on DTA meet the State's primary drinking water standards. However, naturally occurring aluminum, iron, and manganese concentrations are higher than the State's secondary standards. High concentrations of iron are common in areas that drain wetland-rich areas. Groundwater is available in the floodplain alluvium of either the Tanana or Little Delta River. Based on available groundwater data, groundwater quality in DTA is within State standards. Information on the extent of the 100-year floodplain is unavailable. However, hills in the area

are over 700 feet (213 meters) above the active channels, and the ISB can be outside the floodplain. Wetlands are primarily located in the low-lying areas of the Tanana and Little Delta Rivers. Wetland coverage for potential sites in this location ranges from 3 to 24 percent.

One ISB would potentially be near Highway 4 in DTA between the Delta River and Jarvis Creek. Delta River and Jarvis Creek are glacier-fed streams. Surface water quality values on DTA meet the State's primary drinking water standards. However, naturally occurring aluminum, iron, and manganese concentrations are higher than the State's secondary standards (USARAK 2004-1). High concentrations of iron are common in areas that drain wetland-rich areas. Large quantities of groundwater are available in the floodplain deposits of the Delta River and Jarvis Creek. Nearby at Fort Greely, the water supply comes from a single well in Mainside near the Delta River. The 100-year floodplain of Jarvis Creek was mapped in 2006 (USARAK 2008-2). There are numerous small ponds and scattered wetlands throughout the area. Wetland coverage for potential sites in this location ranges from 3 to 24 percent.

3.10.6.2 Impact Assessment Methodology

The general methodology for evaluating water resources is described in Section 3.2.6.2.

3.10.6.3 Environmental Consequences

3.10.6.3.1 Proposed Action

The proposed action would include construction and use of four ISBs. Each ISB would include permanent barracks, large parking areas for storage of truck and vehicular equipment, dining facilities, ammunition storage points, petroleum-oil, lubricant area, and maintenance facilities. Each ISB would cover approximately 110 acres (45 hectares).

The proposed action could impact surface water quality and quantity due to sedimentation resulting from altered runoff and overland flow patterns during construction. USAG-FWA currently has an approved SWPPP (USARAK 2006-2). The SWPPP sets the framework for which all construction projects must follow in terms of storm water management. Construction of the ISB would adhere to the USAG-FWA SWPPP limiting impacts of sedimentation to surface water quality. On-going use of the ISBs could potentially degrade surface and groundwater quality through the inadvertent release of petro-chemicals. The USAG-FWA implements hazardous materials management programs to ensure compliance and provide guidance on handling and disposing of such materials. These include stringent discharge, storage, and pollution prevention measures and require facility managers to reduce, to the extent possible, quantities of toxic substances released into the environment. All facilities would have comprehensive programs in place that implement responsible stewardship, hazardous materials management and minimization, pollution prevention, recycling, and spill prevention and response. Due to the adherence to the SWPPP during construction and adherence to hazardous material management programs after construction, the potential adverse impacts on surface water quality would be reduced to not significant.

The additional impervious surface of the buildings and parking lots of the ISB would increase surface water runoff and decrease groundwater recharge. Due to the abundance of groundwater and the overall size of the alluvial deposits and recharge areas compared to the ISB footprint, the impacts of the construction of ISBs on groundwater quantity would be potentially adverse but not significant.

The ISB study locations near the Tanana River and near Jarvis Creek and Delta River may encroach upon the 100-year floodplain. Building an ISB within the 100-year floodplain could put lives and military property at risk. Prior to selecting the sites for the ISBs, the 100-year floodplain of any creeks or rivers near the proposed locations of ISBs should delineated. The ISB should be placed outside of the 100-year

floodplain to reduce risks of flooding. If a proposed ISB is potentially within a 100-year floodplain, measures outlined in EO 11988, *Floodplain Management* should be followed.

The wetland coverage of the proposed study locations for the ISBs ranges from 3 to 100 percent. Where feasible, the construction footprint of the ISB should be located to minimize impacts on wetlands and critical habitat. Prior to selecting the site of the ISB, the wetlands within the proposed study location should be delineated.

If the proposed action area is within a wetland area as confirmed by the existing wetland inventories and site visit, Environmental Resources Division staff would request a Jurisdictional Determination by the USACE. The USACE may conduct a site visit and complete a wetland delineation or require one be conducted by USAG-FWA. The USACE would recommend the type of wetland permit application to submit. As a condition for receiving these permits, USAG-FWA would comply with all permitting conditions designed to mitigate impacts on wetlands. Without detailed wetland surveys of the proposed ISBs, it is not possible to determine the significance of the potential adverse impacts by the proposed action on wetlands.

Recommended Measures to Reduce Impacts:

Water Quality

- Adhere to the SWPPP during construction (USARAK 2006-2).
- Ensure the ISB facilities have hazard material management programs that implements responsible stewardship, hazardous materials management and minimization, pollution prevention, recycling, and spill prevention and response.
- Control sediment transport though utilization of BMPs for erosion and sediment control which could include but is not limited silt fencing, straw waddles, and stormwater retention/detention basins during construction.
- Keep all construction staging, fueling, and servicing operations at a minimum of 100 feet from surface waters.
- Employ SPPCP measures to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources.
- Stabilize all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.

Floodplains

- If a proposed ISB is potentially within a 100-year floodplain, measures outlined in EO 11988, *Floodplain Management* should be followed.

Wetlands

- Site the ISBs to avoid construction in wetlands as much as practicable.
- Complete detailed wetland delineations prior to the final designs of the ISBs. After wetland delineations have been completed the designs should be modified based on the delineations to avoid impacting wetlands as much as possible.
- Where possible, conduct vegetation-clearing activities during the winter months when soils are frozen.
- Use of a hydro-ax within wetlands to reduce impacts on hydric soils and low-lying vegetation.

- Fill areas would be minimized for wetlands through site-specific design and limiting construction staging to upland areas.
- Maintain natural drainage patterns by the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.
- No stockpiling of fill or construction materials in wetlands or waters of the United States without obtaining necessary permits. All equipment operation would be confined to the project footprint to prevent unnecessary damage to adjacent wetlands and vegetation.
- Conduct all additional avoidance, mitigation and compensation as required by terms and conditions in the USACE Section 404 permit.

3.10.6.3.2 No Action

Under the No Action Alternative, existing "relocatable" ISB facilities would continue to be used. Therefore impacts on water quality, floodplains, and wetlands would be the same as existing condition.

3.10.6.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.10.6.3.1.

3.10.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.7.

3.10.7.1 Affected Environment

The ROI for the ISBs proposed action is land within and just outside YTA, TFTA, DTA, and the Fort Greely area. Generally, the ISBs are near but outside the related training areas. In addition to the training areas, the ROI includes lands along a 2-mile-wide corridor between TFTA and DTA (under the Delta 2 MOA/Birch MOA). DTA is a 623,585-acre training area in the Tanana River valley. YTA is a 249,552-acre training area just east of Fairbanks. TFTA is a 653,746-acre training area south of Fairbanks. Fort Greely is a 6,805-acre installation east of DTA in the east-central portion of Alaska.

MUNITIONS-RELATED RESIDUE

This proposed action does not include the use of live-fire training exercises.

CONTAMINATED SITES

There are no CERCLA Superfund sites listed on the National Priorities List in DTA, YTA, TFTA, or Fort Greely in the ROI for the ISBs. There are no sites listed on the ADEC CSP database in the ISB ROI within YTA. The ADEC CSP database lists a single site, CSP 1642, just outside TFTA in the ISB ROI (Table 3-96). The CSP database lists seven sites within Fort Greely in the ISB ROI: CSP Sites 1730, 1738, 2528, 2681, 3113, 4293, and 25634 (Table 3-96).

The Army Environmental Restoration database lists a single restoration site under the ISB ROI. This site is identified as FTWW-008-R-01, Bombing Area Between Fort Wainwright and DTA (USAEC 2010).

3.10.7.2 Impact Assessment Methodology

The general methodology for evaluating hazardous materials and waste is described in Section 3.1.7.2.

Table 3-96. Contaminated Sites in Intermediate Staging Bases Region of Influence

CSP Site #	Site Name	Description	Site Status	Training Area
1642	AHFC Properties, Salcha	Soil and groundwater contamination from heating oil pipeline diesel	Cleanup Complete	Near TFTA
1730	Alyeska PS 09 Turbine Fuel Spill	Contaminated soil from 180-gallon turbine fuel spill	Open	Fort Greely
1738	Alyeska PS 09 Fuel Handling Area	Petroleum- contaminated soil in pipeline fuel-handling area	Open	Fort Greely
2528	Alyeska PS 09 Fuel Island	Pump station diesel soil contamination	Cleanup Complete	Fort Greely
2681	Alyeska PS 09 Former Mainline Turbine Sump	Pipeline sump petroleum–contaminated soil and groundwater	Open	Fort Greely
3113	Alyeska PS 09 Therminol Release	Therminol-contaminated soil from pipeline boot liner repair	Open	Fort Greely
4293	Alyeska PS 09 Mainline Historical Contamination	Petroleum contamination of soil discovered during construction	Cleanup Complete-Institutional Controls	Fort Greely
25634	Alyeska PS 09 Tank 190	Pipeline crude oil contamination	Open	Fort Greely

Key: ISB=Intermediate Staging Base; ROI=region of influence; TFTA=Tanana Flats Training Area.

3.10.7.3 Environmental Consequences

3.10.7.3.1 Proposed Action

GENERAL HAZARDOUS MATERIALS AND WASTE

The proposed action consists of the establishment of ISBs to house, maintain, and stage forces before insertion into the combat training area. There are eight ADEC CSP sites in the ISB ROI. The project proponents would utilize the range Institutional Control map to avoid these CSP locations when siting project components. If sites could not be avoided, established BMPs/SOPs would be followed. Impacts associated with potentially contaminated soils and spills of POLs would be similar to those described for the Enhanced Ground Maneuver proposal. Existing mitigations described in Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, would be applied to the proposed action. No beneficial or adverse hazardous materials related impacts would occur in association with this proposed action.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

No hazardous materials impacts would occur in association with munitions use, as training and operations would not include live fire.

3.10.7.3.2 No Action

Under the No Action Alternative, the existing "relocatable" ISB facilities would continue to be used and hazardous materials would continue to be managed in accordance with Army, State, and Federal regulations. Therefore, no beneficial or adverse hazardous material related impacts would occur.

3.10.7.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.10.7.3.1.

3.10.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.10.8.1 Affected Environment

As for the other programmatic projects, study areas for the proposed ISB project are large and based upon entire training areas. The biological resources that likely occur in the proposed project study locations are described in detail in Section 3.3.8 (DTA), Section 3.8.8 (TFTA), and Section 3.7.8 (DTA, YTA, and TFTA).

Major vegetation types that occur within the ISB study locations are presented in Table 3-98 (next page).

Important known habitats for wildlife species that occur within the ISB study locations are presented in Table 3-97.

Table 3-97. Wildlife Habitats Associated with the Intermediate Staging Bases Project

Study Area	Moose Winter Habitat	Moose Rutting/Calving Habitat	Caribou Winter Habitat	Caribou Calving Habitat	Waterfowl General Habitat	Dall Sheep Winter Habitat
	Acres (hectares)					
DTA	523,601 (211,894)	361,113 (146,137)	509,351 (206,127)	404,398 (163,654)	284,015 (114,937)	11,155 (4,514)
YTA	82,366 (33,332)	82,366 (33,332)	20,325 (8,225)	0	14,424 (5,837)	0
TFTA	666,393 (269,680)	666,393 (269,680)	132,270 (53,528)	0	578,275 (234,019)	0

Key: DTA=Donnelly Training Area; ISB=Intermediate Staging Base; TFTA=Tanana Flats Training Area; YTA=Yukon Training Area.

Source: RDI 2005-1, 2005-2, 2005-3, 2005-4, 2005-5, 2005-6.

Table 3-98. Land Types Associated with the Intermediate Staging Bases Project

Study Area	Spruce and Broadleaf Forest	Open and Closed Spruce Forest	Spruce Woodland/ Shrub	Open Spruce and Closed Mixed Forest Mosaic	Open Spruce Forest/ Shrub/Bog Mosaic	Closed Mixed Forest	Closed Spruce Forest	Gravel Bars	Alpine Tundra and Barrens	Dwarf Shrub Tundra	Tall and Low Shrub	Tall Shrub	Glaciers and Snow
	Acres (hectares)												
DTA	62,837 (25,429)	220,914 (89,401)	56,645 (22,923)	18,179 (7,357)	163,022 (65,973)	0	0	50,284 (20,349)	4,188 (1,695)	6,172 (2,498)	43,026 (17,412)	5,770 (2,335)	247 (100)
YTA	142,364 (57,613)	27,971 (11,319)	16,680 (6,750)	548 (222)	36,710 (14,856)	0	1,481 (600)	0	0	0	3,889 (1,574)	27,640 (11,186)	0
TFTA	145,802 (59,004)	97,028 (39,265)	3,284 (1,329)	19,335 (7,824)	379,859 (153,723)	4,498 (1,820)	0	11,555 (4,676)	0	53 (22)	66 27	5,679 (2,298)	0

Key: DTA=Donnelly Training Area; ISB=Intermediate Staging Base; TFTA=Tanana Flats Training Area; YTA=Yukon Training Area.
Source: USGS 1991.

3.10.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.10.8.3 Environmental Consequences

3.10.8.3.1 Proposed Action

The programmatic analysis for the ISB project would be very similar to those analyses provided above for the other ground-disturbing projects including EGMS, TFTA Road Access, and JAGIC. The proposed action would include construction of barracks and support facilities for four ISBs, each approximately 110 acres in size. Each ISB may include an airfield for staging forces and would support 500 to 1,000 Soldiers and associated vehicular equipment, fueling and maintenance facilities.

Actions that may include ground-disturbance and consequently, vegetation clearing within the proposed study locations (DTA, YTA, and TFTA) can result in vegetation and wildlife habitat losses and fragmentation. Construction activities can also cause animal mortality, especially for smaller, young, and less mobile species.

To reduce adverse effects, recommended siting criteria include minimizing construction in the following known sensitive habitats (different avoidance seasons apply; see the biological resources mitigations table in Appendix G, *Biological Resources*, and Figures B-11, B-13 and B-14 in Appendix B):

- Bogs and other wet habitats
- Moose calving, rut and winter habitats
- Caribou calving, rut, and winter habitats and migration routes
- Dall sheep winter habitat and migration routes
- Waterfowl general, migration stopover/resting, and nesting areas
- Swan habitats
- Brown bear seasonal habitat and fish streams
- Sensitive bison habitat
- Fish spawning and rearing habitat
- Raptor, especially eagle, nesting areas

Direct impacts from new road and utility corridor as well as construction of larger facilities displaces habitat, can fragment larger habitats and migration routes, and may hinder or preclude access to important habitat for some species. Indirect impacts that include allowing additional human access into areas or during seasons where it has not occurred in the past can be especially disruptive to wildlife during sensitive life stages such as breeding, nesting, and calving/lambing. In conjunction with the Army's siting and environmental review process, coordination with ADFG and USFWS personnel would occur to site component alignments to minimize damage and disturbance to biological resources. The biological resources mitigations table in Appendix G, *Biological Resources*, includes established and proposed mitigation measures that, when applied, reduce impacts on wildlife during important seasonal activities. Temporary impacts include the clearing or trampling of construction use areas and the addition of construction noise, dust, trash, weed spread, and other hazards such as potential spills. Standard BMPs and SOPs also apply to reducing these types of effects (Appendix G). Other potential long- and short-term effects from construction would be mitigated by institutional programs that include planning,

monitoring, rehabilitation, and management of ecological conditions. Because the locations and specifics of construction at each training area and the biological resources that would be affected by the project are not presently known, uncertainties about biological impacts exist for this programmatic project. However, due to the large amounts of land disturbance required for site development and the introduction of human and vehicle all-season access into the area, the potential for significant adverse impacts from ISB construction and implementation exists.

3.10.8.3.2 No Action

The current amount of localized ground disturbance (from training, vehicles and live fire) would be expected to continue and wildlife using the area would be expected to remain active in occupied habitats.

3.10.8.4 Considerations for Future Planning

In addition to siting criteria and vegetation clearing guidelines listed in Section 3.7.8.3, other measures, BMPs, and SOPs that should be applied to ground-disturbing activities are included in Appendix G, *Biological Resources.*

3.10.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.10.9.1 Affected Environment

The ROI for the ISB proposed action is land within and just outside YTA, TFTA, DTA, and the Fort Greely area. The DTA and TFTA portions of the ISB affected environment are the same as described in Section 3.2.9.1, Realistic Live Ordnance Delivery. The YTA portion of the ISB affected environment is the same as described in Section 3.4.9.1, Expand Restricted Area R-2205. The Birch MOA portion of the ISB affected environment is the same as described in Section 3.6.9.1, UAV Access.

3.10.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed ISB action is the same as the methodology applied to the analysis of the EGMS action (Section 3.8.9.2).

3.10.9.3 Environmental Consequences

3.10.9.3.1 Proposed Action

This Action would create four ISBs (one ISB supporting 1,000 Soldiers and three supporting 500 Soldiers) within existing JPARC ground training areas.

There is the potential for impacts on cultural resources from the construction of the ISBs in DTA, YTA, and TFTA. Prior to implementation of any element of this proposed action, the Army would comply with NHPA, Section 106 including identification of historic properties, and assessment and resolution of adverse effects through consultation with Alaska SHPO.

There is the potential for impacts on traditional cultural resources or Alaska Native activities from the construction of the ISBs in DTA, YTA, and TFTA. Although no traditional cultural properties have been specifically identified in the ROI, this does not mean that none are present. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has initiated government-to-government consultation with potentially affected Federally

recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed construction of the ISBs in DTA, YTA, and TFTA (see Section 1.6.5). Consultation will continue as the proposal progresses toward a definitive action.

3.10.9.3.2 No Action

Under the No Action Alternative there would be no construction of the ISBs in DTA, YTA, and TFTA. Existing use of the ranges and airspace would continue under this alternative and resources would continue to be managed in compliance with Federal law and Army regulations.

3.10.9.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.10.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.10.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

Land Status

ISBs would be located on existing Army-managed land. Locations for four ISBs shown in Figure 2-14 are preliminary and represent operationally suitable sites, but could be adjusted to limit environmental effects, reduce real estate conflicts and improve operational efficiency. Figure 3-41 shows the land status and uses of surrounding military and non-military land in relations to these conceptual sites. For the purpose of analysis, the proposal area includes land surrounding the illustrated sites.

Land Management and Use

The proposal includes four potential sites. Preliminary sites are located on or adjacent to military land on TFTA, DTA-West, DTA-East/Fort Greely and/or YTA. These areas are managed and planned according to current INRMPs, with supporting direction from the RTLP and RDP. Further description of military uses on these areas is provided in Section 3.2.10.1 (DTA-West and TFTA), Section 3.3.10.1 (for DTA-East), and Section 3.4.10.1 (for YTA).

Potential sites (on TFTA and DTA-West) are located on Army land between Fort Wainwright and Fort Greely. The surrounding land is predominantly State-owned, with interspersed small communities and land that is classified for habitat and recreational use. ADNR is the primary land resource manager of State lands in the potentially affected area. ADNR is currently developing the ETAP that will guide management of State land in this area. This area is the primary travel corridor in the region. Land in this corridor could have potential for future settlement and development. The proposal area also includes lands within the FNSB, with the Regional Comprehensive Plan and the FNSB JLUS providing a framework for future development and compatible uses.

The legislatively designated Tanana Valley State Forest has several parcels interspersed along the Tanana River corridor between Fairbanks and Delta Junction, as shown in Figure 3-41.

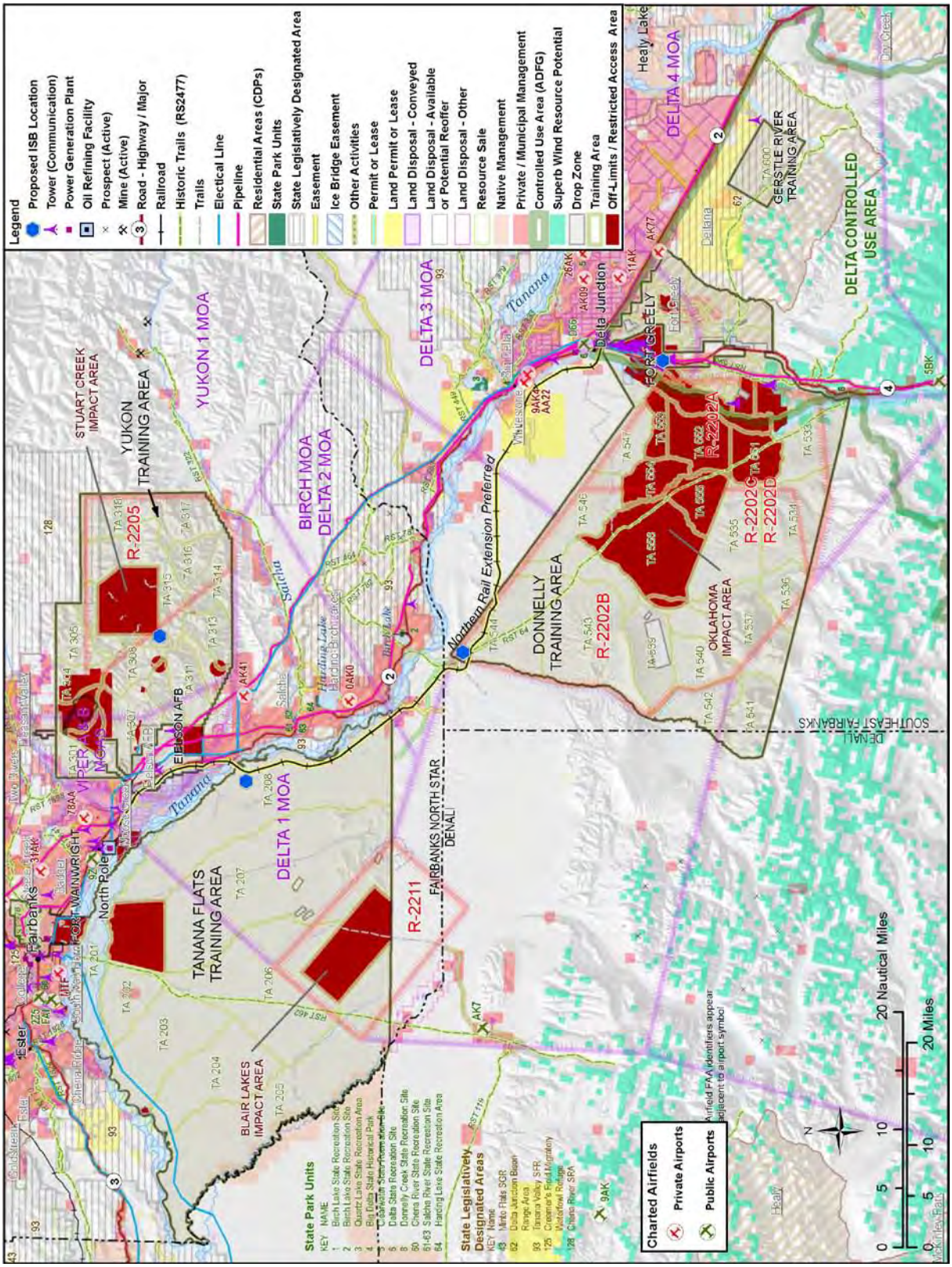


Figure 3-41. Military Uses, Special Use Areas, General Land Status and Productive Uses – Intermediate Staging Bases Proposal Area

Source: ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2009-4, ADNR 2011-2, ADNR 2011-3, ADNR 2011-4, ADNR 2011-7, AWS TrueWind/NREL 2003, FNSB 2006, NGA no date, SAIC 2011-1, SAIC 2011-3, USCB 2010-1, USGS 2005-1, USGS 2005-2

Resource and Productive Use

Based on the preliminary study area for the ISB proposal, the affected real estate includes primarily forested land, 690 acres of land classified for recreational values, about 3,300 acres classified for habitat value. Surrounding State land may have valid existing rights-of-way and active mineral estate claims and orders. One of the proposed sites intersects with a small segment of utility easement. One site is located close to a designated trail (Donnelly-Washburn). Two sites (on YTA and Fort Greely/DTA-East) are located within or close to areas with continuous access restrictions because of hazardous military activities.

PRIVATE AND NATIVE LANDS

There is no private land directly within the preliminary proposal study area.

LOCATIONS OF INTEREST

The proposed site for an ISB on TFTA is close to the newly approved alignment for the Alaska Northern Rail Extension and bridge crossing near Salcha.

PUBLIC ACCESS

Land Access

Access and use to military lands under consideration for the ISB proposal are described above in Sections 3.2.10.1, 3.3.10.1, and 3.4.10.1. There are several trails, including RS 2477 designated routes, within the study area for this proposal include the Donnelly-Washburn trail (RS 2477-RST 64).

Aerial Access

Public aerial access to DTA, TFTA, DTA-East/Fort Greely, and YTA is described in Sections 3.2.10.1, 3.3.10.1, and 3.4.10.1.

Navigable and Public Waters

The portion of the Tanana River in the proposal area is considered navigable.

RECREATION

State land surrounding the proposed ISB sites at TFTA and DTA and Fort Greely support recreational uses, particularly hunting, fishing, trapping and a variety of sporting activities. Several State recreational areas and parks are located in the corridor between Fairbanks and Delta Junction. Appendix I, *Land Use, Public Access, and Recreation* provides descriptions of those in the ISB proposal area. Information on recreation in the ISB proposal area is described in Sections 3.2.10.1, 3.3.10.1, and 3.4.10.1, and 3.6.10.1.

3.10.10.2 Impact Assessment Methodology

General methodology pertaining to evaluating land use, public access and recreation are described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The method for assessing impacts for this programmatic proposal is similar to that described in Section 3.8.10.2. This assessment is based on the following assumptions:

- Some level of industrial type activity would occur on-site for vehicle maintenance and operating a remote site for a large concentrated number of people.

- Each site would not support hazardous training activities such as weapons training or munitions storage.
- Fuels and other lubricants would be used and stored on site to service the vehicles that stage from the ISB.
- Each site would occupy up 110 acres (preliminary estimate), with facilities concentrated on about 10 to 15 percent of the land.
- Each ISB would require an access road of varying lengths. Access roads could pass over non-military roads and require acquiring a real estate interest such as a right-of-way or easement from the surface landowners.

3.10.10.3 Environmental Consequences

3.10.10.3.1 Proposed Action

The primary sources of impact on land use, including public access and recreation, from this proposal would result from construction activities, use of new facilities (either permanent or temporary) for housing up to 1,000 Soldiers, and use of facilities to maintain and support vehicles and equipment for field training. Impacts could result from land acquisition or lease of property from another entity and resulting displacement of current uses and ownership interests. Noise, traffic, scale and visibility of facilities, and activity associated with construction and subsequent use of a remote built-up area may be incompatible with surrounding areas based on their use and inherent resource values. The following siting pre-planning process and siting criteria are recommended to reduce potential impacts.

- Develop and apply a comprehensive set of siting and operational criteria to refine the optional sites. Initially identify operationally suitable areas. Within these areas, identify all potentially sensitive assets or resources, protected or unavailable land (for example, areas with UXO, non-military ownership, noise sensitive, developed site) using GIS overlays. Prioritize preferred sites for preliminary review with local jurisdictions and regulatory agencies. Preliminary agencies to include are ADNR, USACE, USFWS, ADFG, local borough, Native village, or community planners. Internally, review selected sites with USAG-FWA planners and resource asset managers.
- During the siting process, look for opportunities to maximize the use of existing infrastructure or to augment locations that would benefit from improvements (such as shared use of access road or energy upgrades) for both military and non-military purposes.
- Coordinate with local jurisdictions and regulatory agencies early in the siting process to review siting criteria and to share updated information on related to siting criteria. If a site requires access over or development on non-military land, use the coordination process to obtain detailed and up-to-date information on land status and subsurface ownership, encumbrance and interests in the lands held by other parties (including minerals and energy resources), existing rights-of-way, easements, leases, permits. To the extent possible, avoid land with any conflicting interests. Discuss options and mechanisms for acquiring access easements with landowners/managers.
- To minimize the amount of construction required, prioritize sites based on distance from paved and maintained road network, utilities and power grid. Alternatively, consider concepts of site self-sustainability that incorporate energy and water saving strategies.
- Avoid sites requiring land in or near special use areas (such as Tanana Valley State Forest), communities or homesteads, important wildlife habitat, areas used for wildlife calving, rutting, or migration, popular recreational and hunting areas (including cabins and shelters), wetlands and waterways, and soils characterized as unconstructable.

- To the extent possible, incorporate buffers or distance from sensitive locations, particularly or sites that are on or near non-military land. Evaluate whether design features can solve any concerns regarding visibility (for example, through facility placement or screening, or directional night lighting), erosion control, noise migration, traffic. Identify proposed solutions in the project description.
- Avoid sites that would intersect and disrupt access to rivers (and low-water river crossings) or existing roads and trails that provide access for property owners or permitted public uses on public land.
- During the operational phase, consider and provide measures to maintain public access. If ISBs would operate discontinuously, consider how training schedules could accommodate public access during the most important hunting, fishing and recreational use periods.
- Consider how new ISBs could provide joint benefits as satellite sites for emergency services or land management staging, and for other remote land users.
- New road alignments and facilities should avoid displacing existing trails that currently provide access for public recreational use. Proposals could include replacement trails if necessary, or allow joint-use of enhancement infrastructure for non-military access when it does not interfere with the military mission.
- Construction of new facilities and infrastructure may extend over multiple seasons. Where construction overlaps spatially with locations that have natural resource value or recreational and public use value, timing restrictions may be warranted. Construction activities (e.g., those producing noise and traffic) should avoid times that are sensitive for particular resources to the extent feasible.

3.10.10.3.2 No Action

Under the No Action Alternative, construction and use of ISBs would not occur. Operations would continue using current facilities and at the same level of use. No impact would result on land use, public access or recreation.

3.10.10.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.10.10.3.1.

3.10.11 Infrastructure and Transportation

Reference Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for additional regional infrastructure and transportation data.

3.10.11.1 Affected Environment

INFRASTRUCTURE

Electrical Transmission

Electricity in the area is provided by GVEA and Doyon Utilities (ADCCED 2011; Doyon 2011-1). Aurora Energy serves as a subcontractor for the operation of electric power and heat utilities and power generation assets. The contract includes three remotes sites: Black Rapids, Bolio Lakes, and YTA

(Doyon 2011-1). Approximately 1.59 miles of electric power transmission lines cross the ISB rail areas. In addition, 1.71 miles of telephone transmission lines cross the ISB rail areas.

YTA is supplied with power from GVEA and by the Eielson AFB power plant (GVEA 2011). Electric power distribution lines extend northeast into and around the Chena River Research Site and along primary roads within the training area. Overhead power is not available; constant-run generators are used for power generation.

Electric power distribution within DTA is limited to the area east of the Delta River. Even within that area, however, not all range facilities have electric power. DTA falls within the GVEA service area (GVEA 2011).

Currently no commercial power is available in TFTA. GVEA's Northern Intertie is routed along the northwestern and northern sections of TFTA.

Water Supply and Wastewater Treatment

This section presents the proposed actions specific to water supply and wastewater infrastructure and analyzes the potential impacts associated with the ISB proposed action. Water in the region is derived from a well and is treated. Regulations covering water appropriation are contained in the AAC at 11 AAC 93.010-970. Neither the Alaska Constitution nor the Water Use Act differentiate between surface and groundwater uses.

Natural Gas and Oil Pipelines

Within the proposed ISB action areas, 1.63 miles of natural gas pipelines lie within the ISB Fort Greely areas; and 1.47 miles of natural gas pipelines are located within the Tanana Flats rail area.

TRANSPORTATION

Roads, Bridges and Trails

No bridges lie within the ISB proposed action area. Approximately 13 miles of roadway is present within the ISB project area boundaries. These roads fall primarily off DoD facilities; however, slightly over 1 mile of road is within DTA. Individual roads and their distances and names (where available) are presented in Table 3-99.

Under the Alaska Statewide Transportation Plan (ADOT&PF 2008), strategic goals for the transportation network have been set. Among these are to complete modernization of the National Highway System to current standards to address safety and connectivity. These selected routes carry most of the state's truck-based freight and much of its tourist traffic.

Some key sections originally built in the 1940s and 1950s have not been significantly improved since, and these are to be updated. Among these key remaining sections are segments of the Richardson Highway between Delta Junction and Gakona Junction (ADOT&PF 2008).

Approximately 8 miles of trails are present within the ISB proposed action area boundaries. These trails fall within YTA, within DTA, or outside current DoD facility boundaries. Individual trails and their distances and names (where available) are presented in Table 3-100.

Rail

No rail lines or associated railroad infrastructure intersects with the proposed action area.

Table 3-99. Roads in Intermediate Staging Bases Areas

Project Area	Miles	On Facility	Name
ISB Greely	0.79	N/A	Richardson Hwy (SR4)
ISB Greely	0.22	N/A	T A P S Pump Station 9 Access Rd
ISB Greely	1.11	Donnelly Training Area	Richardson Hwy (SR4)
ISB Tanana	0.58	N/A	Richardson Hwy (SR2)
ISB Tanana	0.73	N/A	N/A
ISB Tanana	0.16	N/A	Armitage Ave
ISB Tanana	0.20	N/A	Bradbury Dr
ISB Tanana	0.15	N/A	Crazy H Ln
ISB Tanana	0.19	N/A	Eric St
ISB Tanana	0.14	N/A	Grieme Rd
ISB Tanana	0.32	N/A	Howell Rd
ISB Tanana	1.82	N/A	Old Richardson Hwy
ISB Tanana	0.04	N/A	Powell Dr
ISB Tanana	0.26	N/A	Youngberg Rd
ISB Tanana	0.42	N/A	N/A
ISB Tanana	1.44	N/A	Richardson Hwy (SR2)
ISB Tanana	1.29	N/A	N/A
ISB Tanana	0.30	N/A	Bradbury Dr
ISB Tanana	0.16	N/A	Cleveland Rd
ISB Tanana	0.23	N/A	Maggie Ct
ISB Tanana	0.35	N/A	Markgraf St
ISB Tanana	0.10	N/A	Mema St
ISB Tanana	0.98	N/A	Old Richardson Hwy
ISB Tanana	0.14	N/A	Paula Ct
ISB Tanana	0.16	N/A	Pit Run Rd
ISB Tanana	0.10	N/A	Ruger Trl
ISB Tanana	0.13	N/A	Tenderfoot Ct
ISB Tanana	0.32	N/A	N/A

Key: Ave=Avenue; Ct=Court; Dr=Drive; Ln=Lane; HWY=Highway; ISB=Intermediate Staging Base; N/A=not applicable; Rd=Road.

Table 3-100. Trails in Intermediate Staging Bases Areas

Project Area	Miles	On Facility	Name
ISB D	1.50	Donnelly Training Area	Winter Trail
ISB RAIL D	0.55	N/A	N/A
ISB RAIL D	4.33	N/A	Winter Trail
ISB RAIL D	1.11	Donnelly Training Area	Winter Trail
ISB Y	0.23	Yukon Training Area	N/A

Key: ISB=Intermediate Staging Base; N/A=not applicable.

3.10.11.2 Impact Assessment Methodology

The general methodology for evaluating infrastructure and transportation is described in Section 3.2.11.2.

3.10.11.3 Environmental Consequences

3.10.11.3.1 Proposed Action

The proposed action would include construction and use of the ISBs. Components to be built would include permanent barracks, large parking areas for storage of truck and vehicular equipment, dining facilities, ammunition storage points, POL area, and maintenance facilities. Criteria for siting include location of the ISB near existing transportation systems, location near key range roads and access points into training areas, collocation of the ISB near the planned bridge crossings, and rail access.

Extensive roads and trails currently exist in this area to support proposed action, including approximately 1 mile of roadway within DTA and 8 miles of trails throughout TFTA, DTA, YTA, and Fort Greely ISB areas. Extensive rail access is planned for these areas with new rail lines included in the Access to Joint Tanana Military Training Complex and the Denali Park Passenger Train Turnaround Track. The Northern Rail Extension project would construct a new line between North Pole and Big Delta (ADOT&PF 2010-1). This infrastructure would provide rail accessibility to each ISB area.

The Richardson Highway runs through this project area and provides a north-south connection between Fairbanks and Valdez. The Richardson Highway intersects with five other highways and provides regional road access. Year 2030 traffic volumes are forecast along most segments of the Richardson Highway between 1,500 and 4,500 AADT. Based on these forecast traffic volumes, a qualitative planning level assessment of the Richardson Highway by ADOT&PF revealed no major roadway capacity constraints over the near- and long-term (ADOT&PF 2010-1).

There are currently 1.63 miles of natural gas pipelines within Fort Greely and 1.47 miles of natural gas pipelines in the Tanana Rail Area, with no oil pipelines present. Existing pipeline in ROW should not be impacted by the proposed action. When locations for additional roads, access points, maneuver space and ISBs are determined, avoidance buffers and crossing points to prevent damage to pipeline are required.

In the past, if Fort Greely electrical loads exceed the 2.5-MVA transformer rating, diesel generators were used to meet peak loads. Doyon Utilities recently constructed a new 138 kV Switching Station and new 138 kV Substation with 20 MVA transformer to increase energy capacity at Fort Greely (Doyon 2011-1).

Within the ground training areas, electrical distribution lines extend northeast into and around the Chena River Research Site and the area east of the Delta River as well as along the northwestern and northern sections of TFTA. No commercial power is available in TFTA. Specific alternatives for electrical requirements for the ISB locations are not developed to the point where specific decisions or plans can be made.

Proposed Study Locations

The four ISB potential locations are proposed at key points along the planned rail corridor close to the planned bridge crossings. The optimum solution would be to have ISBs and staging facilities at key locations within major maneuver areas. In any of the proposed areas, the potential requirement for additional infrastructure needs is likely. Currently 1.59 miles of electrical lines and 1.71 miles of telephone lines are located in the four study areas. Additional power lines, fiber optic cable, and road construction requirements may be necessary for permanent ISB facilities. When the location of the selected ISB are determined, extensions to electrical and communication lines can be planned. The use of existing infrastructure discussed and the creation of additional infrastructure and roads would be a beneficial impact for other users of these training areas as the additional infrastructure would improve connectivity to utility and transportation resources in the area.

3.10.11.3.2 No Action

No impacts on infrastructure and transportation would occur under the No Action Alternative.

3.10.11.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.10.11.3.1.

3.10.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.10.12.1 Affected Environment

The areas of the proposed ISBs are located in the FNSB and the Southeast Fairbanks Census Area, which are therefore defined as the ROI for the ISB proposed action. The affected environment for the ISB proposal is similar to the area described in the Sections 3.3.12.1, Affected Environment, and 3.4.12.1, Affected Environment, with the exception of the population under the airspace (see Table 3-46 and Table 3-54).

3.10.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.10.12.3 Environmental Consequences

3.10.12.3.1 Proposed Action

The proposed action would include construction and use of ISBs at four locations, each composed of permanent barracks, large parking areas, dining facilities, ammunition storage points, a petroleum-oil-lubricant area, and maintenance facilities on approximately 110 acres. In general, construction activities are anticipated to result in temporary and beneficial socioeconomic impacts that would occur only during the construction phase. In addition, the construction of new facilities (either permanent or temporary) for housing up to 1,000 Soldiers would likely result in a beneficial impact on the local economy from additional spending and revenue generated by the incoming personnel. The direct and indirect socioeconomic impacts associated with this action are dependent on the construction expenditures, which are not available at this time, and should be taken into consideration during the siting criteria.

Any impacts to land use, including public access and recreation (as discussed in Section 3.10.10.3.1) or subsistence (in DTA) (Section 3.10.13.3.1) could also have economic impacts. The specific alternatives for the ISB sites are not developed to the point where quantitative economic analysis can be performed. Siting criteria as recommended in Section 3.10.10.3.1 would minimize potential adverse impacts to land use concerns and associated socioeconomic resources. Additional analysis would be required to determine socioeconomic impacts associated with the proposed action once the action has been more fully developed and expenditure data is available.

3.10.12.3.2 No Action

Under the No Action Alternative, socioeconomic resources would remain as described under baseline conditions.

3.10.12.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.10.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.13.

3.10.13.1 Affected Environment

The ROI and affected environment for ISBs is the same as those described for the EGMS (see Section 3.7.13.1).

3.10.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.10.13.3 Environmental Consequences

3.10.13.3.1 Proposed Action

As described in Section 3.10.13.1, areas of TFTA and YTA that are accessible to the public are not managed for subsistence resources, and Alaska residents are not given priority access to subsistence resources. Therefore, siting of the proposed ISBs within either of these areas is not expected to affect subsistence activities. However, such action may affect recreational access and public access, which are described and considered in Section 3.10.10. The proposal for ISBs in DTA may impact subsistence resources. Additional consideration or development of the proposal should address the accessibility of the area to the public, avoidance of traditional use areas for nearby communities, and the monitoring of the impacts of activities within or in the vicinity of the ISB area on the population and distribution of subsistence wildlife and vegetation.

3.10.13.3.2 No Action

Under the No Action Alternative, subsistence activities would continue as currently practiced.

3.10.13.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.10.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.14.

3.10.14.1 Affected Environment

The affected environment for the ISBs proposal is the same as described for the JAGIC proposal in Section 3.9.14.1, Affected Environment, above. Table 3-94 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas comprising the proposal area.

3.10.14.2 Impact Assessment Methodology

General Methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2 and additional methodology relevant to the six Programmatic Proposals is described in Section 3.7.14.2.

3.10.14.3 Environmental Consequences

3.10.14.3.1 Proposed Action

Based on a review of environmental consequences for other resources, adverse impacts could, in many cases, be reduced based on application of siting and operational criteria, SOPs, BMPs, and continuation of mitigation measures used previously; however, further study would be needed. As described under the Enhanced Ground Maneuver proposal, areas accessible to the public in TFTA and YTA are not managed for subsistence resources, whereas those in DTA are managed by the Federal government for subsistence. Subsistence siting and operational criteria and related measures listed in Section 3.10.13.3.1 would be applicable for environmental justice.

The information presented below could benefit siting and operations planning by taking into account the location of jurisdictions with greater potential for environmental justice effects:

- Implement siting and operational criteria to reduce potential adverse impacts on land use (3.10.10).
- Consider whether siting or use of an ISB proposed in DTA that could affect communities with High dependence on subsistence resources, including Healy Lake and Dry Creek, could be minimized and other training areas utilized, i.e., YTA and TFTA.
- The extent of noise impacts from operations would depend on the intensity of training at the ISB and specific nature of operations. Further study would be needed to determine if inhabited non-military areas are adversely affected by high noise levels and if so, additional study of environmental justice effects should be conducted (Section 3.10.2).
- If tiered environmental analysis identifies unmitigated impacts in the ROI, evaluate whether areas used by the public or any inhabited non-military areas would be affected and if so, whether affected populations have higher percentages of minority and low-income populations than the surrounding borough or State, as applicable. If so, additional mitigation measures may need to be evaluated.
- If adverse impacts on traditional cultural resources or Alaska Native activities are identified, develop case-specific mitigations in compliance with NHPA Section 106 and DoD American Indian and Alaska Native Policy (DoD 1998), that can be evaluated during the tiered environmental process to reduce the potential for disproportionately high and adverse environmental or health effects on Alaska Natives (Section 3.10.9).

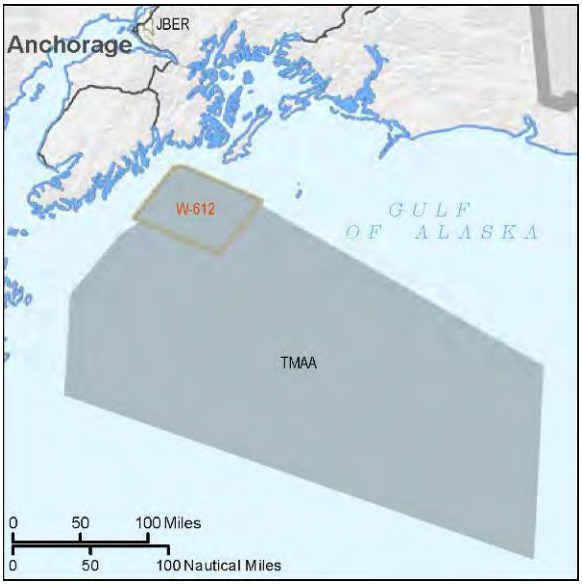
3.10.14.3.2 No Action

ISBs would not be established in any of the three training areas (DTA, YTA or TFTA). No siting criteria or measures related to environmental justice would be needed.

3.10.14.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.10.14.3.1.

3.11 MISSILE LIVE-FIRE FOR AIM-9 AND AIM-120 IN THE GULF OF ALASKA (PROGRAMMATIC)



The AIM-9 and AIM-120 are the main air-to-air armaments for the F-22 Raptor and other Air Force fighter aircraft. These live-fire activities would be executed as part of both individual pilot training and joint training with other air and ground units. The Air Force currently trains in the Gulf of Alaska (GOA) airspace; however, the proposed action would include Air Force fighter aircraft use of AIM-9 and AIM-120 missiles in the GOA warning area, as is currently done by other Services. The proposal includes an additional 100 missile exercises to be undertaken in the TMAA each year. Tweny-four would include AIM-9 Sidewinder missiles and 18 would include AIM-120 AMRAAM missiles. The Navy GOA EIS covers non-Navy participants in joint training exercises, such as the Air Force, but only when joint training activities are occurring the Navy is participating in, since the Navy is the lead agency, prepared the EIS, and prepared and maintains the permits (Navy 2011). This programmatic proposal, as currently conceived, would involve live firing of AIM-9 and AIM-120 missiles into the GOA against drone targets. The proposal area (gray-shaded area in the map to the right) is composed of existing Temporary Maritime Activities Area (TMAA) and Warning Area (W)-612, encompassing 36.5 million acres (57,200 square miles).

3.11.1 Airspace Management and Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.

The GOA airspace in which the Air Force live fire missile operations are proposed is shown in Figure 2-16 (and Appendix D, *Airspace Management*, Figure D-2) relative to the existing airspace environment and the Federal airways, jet routes, and RNAV routes transiting this oceanic region. This proposal would not require any changes to the TMAA and W-612 airspace structure or the routes currently flown by the Air Force to transit to/from this training airspace. Use of these two areas for AIM-9 and AIM-120 operations would be in accordance with those procedures currently established for planning and scheduling this airspace for flight activities and ordnance use. As described in the *The Gulf of Alaska Navy Training Activities Final Environmental Impact Statement/Overseas Environmental Impact Statement* (the *GOA EIS/OEIS*) referenced in Chapter 2.0, AIM-9 and AIM-120 missions are currently conducted within this training airspace environment as part of other maritime training activities.

3.11.1.1 Affected Environment

MILITARY AIRSPACE USE

Chapter 2.0 describes the existing airspace environment associated with this proposed action that includes W-612 and the TMAA. This airspace is used primarily by the Navy for air and maritime training activities fully described in the *GOA EIS/OEIS* referenced in Chapter 2.0. The Air Force conducts occasional training and exercise operations within this GOA airspace, to include participation in the NORTHERN EDGE exercises that utilize both the GOA areas and Alaska MOAs and restricted areas.

CIVIL AVIATION AIRSPACE USE

Most civil aviation airspace uses in this southern Alaska region are sufficiently distant from the off-shore location of W-612 and the TMAA so as to be unaffected by military operations in this airspace. The closest public airport to the W-612 area is Seward, which is inland approximately 25 NM from the W-612 northern boundary. Airport data from 2009 indicate this airport has general aviation and air taxi services that average 29 daily operations (AirNav 2011). The RNAV instrument arrival and departure procedures published for this airport are not affected by W-612.

As shown in Appendix D, *Airspace Management*, Figure D-2, Federal airways and jet routes transit the W-612 and TMAA region to include three RNAV routes (B453, B757, and T264) that provide direct GPS navigation routing across this oceanic environment. IFR air traffic operating within this area are under the positive control of the Anchorage ARTCC, which is the designated center for managing international flights using these oceanic RNAV routes. Therefore, the ARTCC provides required separation between this IFR traffic and military operations when this training airspace is in use. Routes used by the Air Force to transit between JBER and this GOA airspace are separated from IFR air traffic and at altitudes above those normally flown by VFR aircraft.

3.11.1.2 Impact Assessment Methodology

The methodology described in Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.1.1, was considered in the review of any potential impacts this proposal may have on other airspace uses in the affected region.

3.11.1.3 Environmental Consequences

3.11.1.3.1 Proposed Action

The proposed action would involve a limited number of sorties (estimated 100 annually) from JBER that would have a minimal effect on the overall annual operations conducted in this airspace by other military flight activities. There would be no changes to any airspace or routes used by JBER aircraft while transiting to/from W-612 and the TMAA. Therefore, there would be minimal impacts on any other airspace uses in this environment.

3.11.1.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during air-to-air missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the GOA EIS/OEIS Record of Decision (Navy 2011).

3.11.1.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.11.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.2.

3.11.2.1 Affected Environment

The affected areas are the area beneath W-612 and the GOA TMAA. These areas are both located entirely over the GOA and are no closer than 12 NM from the shoreline. Human activity in these areas is rare, consisting primarily of military training exercises and commercial endeavors such as fishing and shipping. The Navy conducts training exercises in this same area, including air-to-air missile training with AIM-7, AIM-9, and AIM-120 missiles (Navy 2011).

3.11.2.2 Impact Assessment Methodology

Noise impacts associated with the proposed firing and detonation of AIM-9 and AIM-120 missiles were assessed using the same methods used to assess the noise of large arms associated with the RLOD. These methods are described in Section 3.2.2.2.

3.11.2.3 Environmental Consequences

3.11.2.3.1 Proposed Action

Under the proposed action, approximately 100 live AIM-9 and AIM-120 missiles would be fired annually in W-612 and the GOA TMAA. This type of missile training is typically conducted at altitudes at or above 15,000 feet MSL (Navy 2011). Detonations of AIM-9 and AIM-120 missiles generate peak noise levels of 117 dB and 120 dB, respectively, at a distance of 15,000 feet under unfavorable weather conditions (85 percent of events would generate lower noise levels). Detonation noise events could be annoying to persons in the vicinity of the detonation. However, in accordance with existing safety exclusion zone SOPs, all nonparticipants must be cleared from the area prior to missile training events. Because the proposed training would occur in remote and off limits areas, noise effects on humans would be limited.

3.11.2.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during air-to-air missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the GOA EIS/OEIS Record of Decision (Navy 2011).

3.11.2.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.11.3 Safety (No Analysis Needed)

FLIGHT SAFETY

This proposal does not include any airspace actions or flight activities beyond those that currently exist within the surrounding airspace environment; therefore, there would not be any additional flight safety concerns associated with the proposed actions. The Air Force proposal for use of the AIM-9 and AIM-120 missile systems in the GOA would not require any changes to W-612 or the TMAA and would not significantly increase the current use of this airspace by those aircraft conducting these training activities. The flight safety factors discussed in Section 3.1.3 would be considerations relevant to transit on established routes between JBER and the GOA and to operations within this airspace.

GROUND SAFETY

This alternative does not include activities that pose ground safety hazards, such as air-to-ground or live-fire ordnance training. Consequently, impacts on ground safety are not expected.

3.11.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.

3.11.4.1 Affected Environment

The proposed missile live-firing exercises would take place over the GOA in an area more than 12 NM from the Alaskan coast. The ADEC does not regulate sources of emissions beyond 3 NM from the Alaskan coast. There are no substantial sources of emissions in this area except for Navy training and ship activities. Therefore, the air quality in this region is generally good.

3.11.4.2 Impact Assessment Methodology

EO 12114, *Environmental Affects Abroad of Major Federal Actions*, requires Federal agencies to analyze major Federal actions outside U.S. territorial waters, including the Exclusive Economic Zone (EEZ) of the United States, which encompasses the areas from 12 NM (22.2 km) out to 200 NM (370.4 km) from shore.

Currently, this action is in its developmental stages and sufficient data is not available to analyze air quality impacts. This proposed action will result in an increase in emissions in the region from the use of the AIM-9 and AIM-120 missile systems. Once sufficient data is available, the environmental impacts of this proposed action will be analyzed by the Air Force as a separate NEPA action.

3.11.4.3 Environmental Consequences

3.11.4.3.1 Proposed Action

There are no proposed construction activities associated with the missile live-fire action. Air quality impacts from operational activities associated with the missile live-fire action would occur from (1) combustive emissions due to the use of aircraft, and (2) combustive emissions due to ordnance expenditures.

Operational information needed to calculate the air emissions resulting from increased activities associated with the missile live-fire action includes the following:

- Information regarding any increase in munitions expenditures associated with the proposed action, including the types of munitions and the baseline and expected utilization of each munitions type
- Sortie information, including the types of aircraft and their engines, durations in the affected area, and altitude distributions

The emissions factors needed to derive construction source emission rates are found in *Compilation of Air Pollution Emission Factors* (EPA 1995) and *Air Emissions Factor Guide to Air Force Mobile Sources* (AFCEE 2009).

3.11.4.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during Air-to-Air Missile exercises in the GOA TMAA during up to two

joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the GOA EIS/OEIS Record of Decision (Navy 2011).

3.11.4.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.11.5 Physical Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.5. Given that this programmatic action involves no disturbance of any land surface, no beneficial or adverse impacts of this action on physical resources within the study area are expected to occur. This resources is, therefore, not further analyzed for this proposal.

3.11.6 Water Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.6.

3.11.6.1 Affected Environment

Alaska's water resources, including the GOA, are generally in pristine condition because of the low intensity of use in this remote area (EPA 2004). Marine water resources in the study area are affected by ocean currents, climate and weather patterns, and bathymetry. Ocean currents influence conditions by altering surface water temperatures, transporting and depositing sediments, and concentrating or diluting the resources on which marine life depends. Similarly, prevailing winds change with the season and alter the movement of surface waters. During spring and summer, southerly winds push surface waters away from the coast and bring cold, nutrient-rich waters from deeper areas, a process known as upwelling. These processes sustain active fisheries for a variety of fish and marine invertebrates, influence weather patterns and the hydrologic cycle of much of the western United States, and play a vital role in the economy of many coastal communities.

The proposed action would occur in the TMAA. The TMAA covers approximately 42,146 square nautical miles (NM^2) (145,482 km^2) of ocean in the GOA. The TMAA spans both coastal and deepwater habitats, ranging from approximately 426 feet (130 meters) to over 12,000 feet (3,660 meters) in depth. The GOA forms a large, semicircular bight opening southward into the North Pacific Ocean. The GOA is characterized by a broad and deep continental shelf containing numerous troughs, seamounts, and ridges. The region receives high amounts of freshwater input, experiences numerous storms, and exhibits highly variable environmental conditions (Navy 2011).

3.11.6.2 Impact Assessment Methodology

The general methodology for evaluating water resources is described in Section 3.2.6.2.

3.11.6.3 Environmental Consequences

3.11.6.3.1 Proposed Action

The impacts of AIM-9 and AIM-120 on water resources in the GOA are discussed in detail in the *GOA EIS/OEIS* (Navy 2011). In summary, missiles used in training (AIM-9 and AIM-120) would not be

recovered during the training exercises. The hazardous substances deposited by the AIM-9 and AIM-120 include unexpended propellants (ammonium perchlorate), battery constituents (lead, silver, copper, and lithium), undetonated explosive warheads (ammonium perchlorate), and heavy metals (chromium, lead, tungsten, nickel and cadmium) (Navy 2011). The hazardous substances consist of approximately 0.83 percent of the missiles by weight. Missile casings are relatively inert, and would corrode in the marine environment. Corrosion and benthic organisms would encrust the missile body, slowing degradation. The TMAA is over 42,000 NM^2 and missiles would be dispersed throughout this area. With the low frequency and high dispersion of the missiles, there would be no substantial adverse impacts on biological resources (see discussion in 3.11.8.3.1). Thus, expended training materials would have potential adverse but not significant impacts on ocean water resources.

3.11.6.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during Air-to-Air Missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the GOA EIS/OEIS Record of Decision (Navy 2011).

3.11.6.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.11.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.7.

3.11.7.1 Affected Environment

MUNITIONS-RELATED RESIDUE

ALCOM currently conducts training activities in the GOA that generate munitions-related residue. Specific to the GOA, munitions-related residue sources include the propellants, explosives, and batteries of AIM-9 and AIM-120 missiles. The AIM-9 and AIM-120 missiles use a solid propellant that is primarily composed of rubber (polybutadiene) mixed with ammonium perchlorate (Navy 2011). Munitions that fail to detonate properly (duds) and munitions that only partially detonate (low-order detonations) can result in the deposition of munitions residues (explosives and metals) at impact sites. Duds and low-order detonations have the potential to create environmental contamination by the leaching of explosive filler into the sea.

Aerial drone targets are currently used for training in the GOA (Navy 2011). These aerial targets contain hazardous components such as pyrotechnics, batteries, and POLs, which can potentially leach into marine waters of the training area.

CONTAMINATED SITES

There are no CERCLA Superfund sites listed on the National Priorities List in missile live-fire areas of the AIM-9 and AIM-120 ROI. In addition there are no contaminated sites listed on the ADEC or Army Environmental Restoration databases.

3.11.7.2 Impact Assessment Methodology

The general methodology for evaluating hazardous materials and waste is described in Sections 3.1.7.1 and 3.1.7.2.

3.11.7.3 Environmental Consequences

3.11.7.3.1 Proposed Action

The proposed action involves live firing over the GOA with AIM-9 and AIM-120 missiles.

GENERAL HAZARDOUS MATERIALS AND WASTE

There would be no refueling or maintenance of aircraft conducted in the Missile Live-Fire for AIM-9 and AIM-120 proposed action ROI. Therefore, operational impacts would not occur with respect to general hazardous materials and waste.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

There is the potential for residual releases of hazardous materials associated with the use of the AIM-9 and AIM-120 missiles and target drones in the GOA. Hazardous materials related impacts of AIM-9 and AIM-120 in the GOA are discussed in detail in the *GOA EIS/OEIS* (Navy 2011). In summary, missiles used in training (AIM-9 and AIM-120) would not be recovered during the training exercises. The missiles contain propellants and high-explosive components, which can be hazardous. Residual explosives and solid propellants will slowly leach hazardous substances, but would not result in concentrations considered harmful. Missile casings are relatively inert, and will corrode in the marine environment. Corrosion and benthic organisms will encrust the missile body, further slowing degradation. Thus, expended training materials will have no beneficial or adverse hazardous materials impacts on marine water quality.

In addition, training exercises would likely result in destruction of ordnance and/or targets, which could result in residual concentrations of hazardous materials and petroleum products being released directly into the marine environment. This issue was similarly discussed in the *GOA EIS/OEIS* (Navy 2011). The infrequency and limited volume of such residual concentrations of hazardous substances would similarly not result in concentrations considered harmful. Thus, expended training materials will have no beneficial or adverse hazardous materials impacts on marine water quality.

3.11.7.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during Air-to-Air Missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the GOA EIS/OEIS Record of Decision (Navy 2011).

3.11.7.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.11.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.8.

3.11.8.1 Affected Environment

The activities associated with the proposed Missile Live-Fire for AIM-9 and AIM-120 in the GOA would take place within the TMAA, which has been designated over a portion of the GOA. The TMAA, an area 42,146 NM^2 (145,482 km^2) in extent, is described in *GOA EIS/OEIS* (Navy 2011), which is incorporated by reference. The following description is based on that document.

The TMAA lies seaward of the Kenai Peninsula and Kodiak Island and extends approximately 300 NM (556 km) to the southeast (refer to Figure 2-15). The nearest shoreline is approximately 24 NM (44 km) north of the TMAA's northern boundary. The TMAA spans both coastal and deepwater habitats. Water depths range from about 426 feet (130 meters) to over 12,000 feet (3,660 meters) in the Aleutian Trench. Biological resources of TMAA include productive fisheries and EFH, a designation under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). Several Federally listed endangered or threatened species are present in the TMAA, including five salmonid fish species, the short-tailed albatross, seven species of marine mammals, and the leatherback turtle. Four seamounts and two areas of continental slope designated as Habitat Conservation Areas are included within the TMAA.

The TMAA and vicinity, a highly productive region for various marine fish and shellfish populations, supports some of the most productive fisheries in the United States (Lanksbury et al. 2005). Six dominant species of salmonids may occur in the TMAA: Chinook (*Onchorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*), sockeye (*O. nerka*), and steelhead (*O. mykiss*). Salmonids found in the GOA are anadromous fish species that spend at least part of their adult life in the ocean but return to freshwater environments to spawn.

A total of 68 fish and invertebrate species designated EFH occur in the TMAA. They are grouped into the high-seas salmon (five species), scallop (four species), and groundfish complex (59 species).

Various Evolutionary Significant Units (ESUs) or Distinct Population Segments (DPSs) of salmonids (Chinook salmon, coho salmon, chum salmon, sockeye salmon, and steelhead), which are listed as endangered or threatened under the ESA, migrate north to mature in the GOA and may occur in the TMAA. While these listed salmonids, which spawn in Washington, Oregon, or California, have designated critical habitat, none of the critical habitat occurs within the TMAA. Salmon (Chinook and coho, in particular) support important traditional, commercial, and recreational fisheries in the GOA and have long been an integral part of the Native American culture (NPFMC 1990).

Marine mammals expected in the TMAA include cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions). Additional species, such as the sea otter, may occur there but are outside their normal habitat preferences and range and are thus considered extralimital. Additionally, several species protected as threatened or endangered under the ESA, including seven cetaceans and two pinnipeds, are documented from the TMAA. Of these, three species are considered common in the TMAA (fin whale, humpback whale, Steller sea lion [both eastern and western U.S. stocks]). The sea otter and Cook Inlet beluga whale are considered extralimital in the TMAA, and the sperm whale, blue whale, North Pacific right whale, and Sei whale are considered rare to very rare in the TMAA. No marine mammal species have designated critical habitat within the TMAA. All marine mammals are protected under the Marine Mammal Protection Act (MMPA).

The TMAA supports a variety of resident and migratory seabirds and sea ducks. Since the TMAA occurs mostly over the outer shelf slope and deeper ocean waters, this area is dominated by species that use the

region seasonally and are not land-based outside the nesting season. Habitats nearer the shoreline than the TMAA support a greater diversity and greater numbers of sea birds.

One bird species normally found in the TMAA, the short-tailed albatross (*Phoebastria albatrus*), is protected as endangered under the ESA. Steller's eider (*Polysticta stelleri*), Federally listed as threatened, is found in nearshore waters of the GOA during winter but is unlikely to occur in the TMAA. Its breeding range is hundreds of miles to the north and west of the TMAA.

3.11.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.11.8.3 Environmental Consequences

3.11.8.3.1 Proposed Action

Approximately 100 live-fire sorties with the AIM-9 Sidewinder and AIM-120 AMRAAM air-to-air missile systems would be conducted annually in the TMAA and W-612 offshore in the GOA. The missiles would be fired from fighter aircraft. The Navy is already training with these weapons in this area so this would be an increase in operations and possibly an expansion of season of use but not a completely new effect for this area. Air-to-air missiles are fired from aircraft against aerial targets to provide aircrews with experience using aircraft missile firing systems and training on air-to-air combat tactics. The missiles may have live explosive warheads or inert telemetry packages. The main aerial targets are flares suspended from parachutes for heat-seeking missiles (AIM-9) and tactical air-launched decoys for radar-guided missiles (AIM-120). The targets typically are launched by other aircraft participating in the exercise. The expended missiles, paraflares, and decoys would not be recovered after use. Expended training materials that come to rest on the ocean floor may:

1. Lodge in oxygen-poor sediments;
2. Remain on the ocean floor and corrode; or
3. Remain on the ocean floor and become encrusted by marine organisms.

These items have the potential to release toxic constituents including unexpended propellants, battery constituents, undetonated explosive warheads, and heavy metals, locally affecting water quality and marine life in the immediate vicinity of the item. The amounts of materials released would depend on the specifics of the engagement (length of travel, whether or not the missile hit its target and the warhead detonated, etc.) and individual items would be dispersed and would not concentrate in a single area, given the nature of air-to-air combat. Analysis of the fate and effects of these constituents is contained in the *GOA EIS/OEIS* (Navy 2011).

Primary resource concerns and avoidance areas include the following:

- Sixty-eight fish and invertebrate species with designated EFH
- Four seamounts and two areas of continental slope designated as Habitat Conservation Areas
- ESUs or DPSs of salmonids (Chinook salmon, coho salmon, chum salmon, sockeye salmon, and steelhead), listed as endangered or threatened
- Seven species of endangered or threatened cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions)
- Endangered leatherback sea turtle

- Resident and migratory seabirds and sea ducks
- Endangered short tailed albatross

There is potential for adverse but not significant effects on biological resources from proposed AIM-9 and AIM-120 activities, given the low frequency and high dispersion of the air-to-air missile firings and the considerations related to the fate and effects of munitions constituents outlined above. Because of the presence of endangered and threatened species in the project area, compliance with ESA Section 7 requirements would be necessary including formal or informal consultation with NOAA Fisheries and USFWS. DoD will initiate consultation with USFWS and NOAA Fisheries under ESA Section 7 and meet requirements of the MMPA if the Missile Live-Fire proposal is developed into a definitive action.

3.11.8.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during air-to-air missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the GOA EIS/OEIS Record of Decision (Navy 2011).

3.11.8.4 Considerations for Future Planning

In addition to siting criteria and vegetation clearing guidelines listed in Section 3.7.8.3, other measures, BMPs, and SOPs that should be applied to ground-disturbing activities are included in Appendix G, *Biological Resources.*

3.11.9 Cultural Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9. No potential for impacts on cultural resources are expected with the increased missile usage in the GOA, given the assumption that there is no construction required related to this action, and that there are no cultural resources in the GOA beneath the TMAA and W-612. This resources is therefore not further analyzed for this programmatic proposal.

3.11.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.11.10.1 Affected Environment

RESOURCE STATUS, MANAGEMENT AND USE

There is no land within the Missile live fire for AIM-9 and AIM-120 proposal area in the GOA proposal area. However, the water resources of the GOA within this proposal area are used for both public and military activities. The following description of activities and uses in the proposal area are extracted from the 2011 *GOA EIS/OEIS* prepared by the Navy.

Military Use Areas

Warning Area 612 (W-612)

Warning Areas are located over domestic or international waters, or both. W-612 consists of about 2,256 NM^2 (8,766 km^2) of airspace, most of which overlaps the GOA TMAA. When not included as part of the TMAA, W-612, which provides 2,256 NM^2 (8,766 km^2) of SUA, is used by the Air Force to

conduct training in anti-air warfare (AAW) and by the U.S. Coast Guard to fulfill some of its training requirements. Air Force and Coast Guard activities conducted as part of joint training within the TMAA are included in the *GOA EIS/OEIS* analysis.

Gulf of Alaska Temporary Maritime Activities Area (TMAA)

The GOA TMAA, a water resource established in conjunction with the FAA, defines the boundaries of this proposal area. As stated in the *GOA EIS/OEIS*, the TMAA is located in the Northeast Pacific Ocean off the mountainous coast of southern Alaska. The TMAA is a polygon that roughly resembles a rectangle oriented from northwest to southeast, approximately 300 NM (555.6 km) in length by 150 NM (277.8 km) in width, located south of Prince William Sound and east of Kodiak Island. The nearest mainland shoreline (Kenai Peninsula) is located approximately 24 NM (44 km) north of the TMAA's northern boundary (Navy 2011).

The TMAA is a surface, undersea space and airspace maneuver area within the GOA for ships, submarines, and aircraft to conduct required training activities. Commander Submarine Force, U.S. Pacific Fleet 2 (COMSUBPAC) manages this underwater space as transit lanes and operational areas for U.S. submarines. The undersea area extends to the seafloor (Navy 2011). The dimensions of the air, sea surface and underwater resources of the TMAA and W-612 are provided in Table 3-101.

Table 3-101. Dimensions of Air, Sea and Undersea Associated with the Missile Live-Fire Proposal Area

Area Name	Airspace (NM^2)	Sea Space (NM^2)	Undersea Space (NM^2)
TMAA	42,146	42,146	42,146
W-612	2,256	2,256	2,256

Key: NM^2=square nautical miles.

Coastal Zone Management

The Alaskan Legislature enacted the Alaska Coastal Management Act in 1977 (Chapter 84 State Legislature of Alaska 1977), which established the Alaska Coastal Management Program (ACMP). This program was subsequently ended in July 2011. The Coastal Zone defined by the ACMP extends from 3 nautical miles (5.6 km) offshore to inland areas necessary to control the shoreline, and where land uses would have a substantial effect on coastal resources. The ACMP addressed a variety of issues, including the sustainability of fisheries, impacts of mining, transportation needs and impacts, and other areas of concern within the clear zone. ADNR remains as the primary authority for managing marine and coastal resources in accordance with applicable Alaska state laws and regulations.

Inland Areas

Areas inland from the coastline, including Air Force air ranges and Army training lands, are addressed in the *Final Alaska MOA EIS* (Air Force 1997-1), *Improvements to Military Training Routes in Alaska Environmental Assessment* (Air Force 2007-3), *Alaska Army Lands Withdrawal Renewal Final Legislative EIS* (USARAK 1999-1) and the *Transformation of U.S. Army Alaska FEIS* (USARAK 2004-1).

PUBLIC USE OF THE GULF OF ALASKA

Commercial Shipping

The GOA is traveled by large and small marine vessels, with several commercial ports occurring near the TMAA. Two major ports near the TMAA, Anchorage and Valdez, were ranked in the top 150 U.S. ports by tonnage in 2000. Commercially used waterways traverse the TMAA, but are controlled by the use of directional shipping lanes for large vessels (cargo, container ships, and tankers). Ships traveling from

major ports to the Lower 48 states and Hawaii as well as marine traffic between coastal ports enter the TMAA briefly, but Navy activities are communicated to all vessels and operators by use of Notice to Mariners (NOTMAR) available on public websites (Navy 2011).

Commercial Fishing

Commercial fishing takes place throughout the GOA waters and in coastal inlets and bays. The North Pacific Fishery Management Council (NPFMC) is one of eight regional fishery management councils (Councils) established by the MSFCMA for the purpose of managing fisheries 3 to 200 miles (1.8 to 370 km) offshore of the U.S. coastline (Carroll 2006). The primary responsibility of the NPFMC is the groundfish fisheries in the Federal waters of the Bering Sea and the GOA. The groundfish include cod, flatfish, mackerel, Pollock, sablefish, and rockfish species outside of 3 miles offshore. Other large Alaska fisheries such as salmon, crab and herring are managed by the ADFG. The commercial fish resources of Alaska are of great importance to the economies of the state and the nation (Navy 2011). All commercial shellfish fisheries in State and Federal waters are managed by the ADFG. Ocean areas with fisheries near the TMAA are located around Kodiak Island (Navy 2011).

PUBLIC ACCESS TO THE GULF OF ALASKA

Aerial Access

Public use of airspace is primarily for transit to other destinations. This topic is discussed in Section 3.11.1, Airspace Management and Use.

Navigable and Public Waters

The waters of the TMAA are available to civilian vessels, except during hazardous training activities. During such activities, the public is excluded because of safety concerns. NOTMARs and NOTAMs are issued to notify the public about the hazards of operating vessels or aircraft in the vicinity. Typical, civilian access throughout the GOA are commercial shipping, commercial shipping, tourist-related activities, and the ferry service for passengers and vehicles between coastal communities provided by the Alaska Marine Highway System (AMHS) (AMHS 2011) (Navy 2011).

RECREATION USE IN THE GULF OF ALASKA

Recreation and Tourism

Recreation and tourist areas around the TMAA include the Kenai Peninsula, Kodiak Island, Prince William Sound, and Resurrection Bay (ADNR 2008). There are 9 state parks on the Kenai Peninsula as well as Kenai Fjords National Park, 6 on the island of Kodiak, 14 marine parks in Prince William Sound, and 5 in Resurrection Bay. The parks offer a variety of activities close to shore such as sea kayaking, saltwater and freshwater fishing, and recreational boating. Most recreational boating occurs close to shore in protected coves because of dangerous Gulf waters (NPS 2012; Navy 2011).

Many people choose to navigate the GOA on ferries giving the spectacular views of glaciers, fjords, lush forests, and concentrations of seabirds and marine wildlife. Cruise travel along the GOA is a popular recreational activity and is the fastest growing tourist trade. With excellent fishing and stunning coastal scenery, many visitors to the GOA choose to tour the area by boat and can choose from single-day to multi-day cruises (Alaska Travel Industry Association 2012) (Navy 2011).

Whale watching in South-central Alaska and the GOA occurs between June and early September, with August being the prime viewing month. A number of charter boat companies run whale watching cruises throughout the area (Navy 2011).

3.11.10.2 Impact Assessment Methodology

General methodology pertaining to evaluating land use, public access and recreation are described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The method for assessing impacts for this programmatic proposal is similar to that described in Section 3.7.10.2. This assessment is based on the following assumptions:

- The proposal does not involve any change in dimensions or capabilities of any SUA or military-use maritime activity areas.
- No new types of munitions or weapons are proposed.
- To reduce potential impacts to sport and subsistence fishing activities in the GOA, coordinate military schedules to minimize operations during seasons that are important for marine harvesting.

3.11.10.3 Environmental Consequences

3.11.10.3.1 Proposed Action

Proposed operations for this proposal are similar to those recently analyzed by the Navy in the *GOA EIS/OEIS* (Navy 2011). The proposal includes an additional 100 missile exercises to be undertaken in the TMAA each year. The Navy GOA EIS covers non-Navy participants in joint training exercises, such as the Air Force, but only when joint training activities are occurring that the Navy is participating in, since the Navy is the lead agency, prepared the EIS, and prepared and maintains the permits (Navy 2011). Consequently, this EIS has the same findings and recommends the same mitigations measures to minimize impacts on public, private and commercial maritime uses as those identified in the Navy's EIS.

3.11.10.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during air-to-air missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the *GOA EIS/OEIS* ROD (Navy 2011).

3.11.10.4 Considerations for Future Planning

Measures described in the Navy's *GOA EIS/OEIS* to minimize effects on non-military maritime activities should be included in future proposals for live missile fire for Air Force activities in the GOA.

3.11.11 Infrastructure and Transportation

Under consideration in this section are waterborne transportation resources. For additional information on transportation and utility resources in the region, reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11.

3.11.11.1 Affected Environment

As provided from the *Navy GOA EIS*, this is an element of JPARC joint training capabilities utilized during major joint force exercises.

MARINE TRAFFIC

A significant amount of ocean traffic consisting of military, Coast Guard, and commercial and recreational vessels transit through the GOA. For commercial vessels, the major transoceanic routes enter the TMAA briefly in transit. The approach and departure routes into the inland waters can be adjusted depending on notification of Navy activities through NOTMARs, which are found at http://www.navcen.uscg.gov/lnm/d17/.

MILITARY

Military traffic consists of the transit of large military vessels at sea, including submarines. Total surface area of the TMAA is 42,146 NM^2 (145,482 km^2). The TMAA undersea training area lies beneath the surface and extends to the seafloor.

Commander, Submarine Force, U.S. Pacific Fleet,[2] manages this underwater space as transit lanes and operational areas for U.S. submarines.

CIVILIAN

Marine vessels, large and small, transit the GOA to several commercial ports lying near the TMAA. Vessel traffic approaching these ports is managed by the Vessel Traffic Service, which is operated jointly by the Coast Guard and the Marine Exchange of Alaska (a nonprofit organization established to serve the Alaska Maritime Community by providing information, communications, and services to ensure safe, secure, efficient, and environmentally responsible maritime operations). The Vessel Traffic Center is located in Valdez at the north end of Prince William Sound (USCG Navigation Center 2012). The ocean traffic flow in congested waters, especially near coastlines, is controlled by the use of directional shipping lanes for large vessels, including cargo ships, container ships, and tankers. Traffic flow controls are also implemented to ensure that harbors and ports-of-entry remain as uncongested as possible.

Two major ports close to the TMAA, Anchorage and Valdez, were ranked in the top 50 U.S. ports by tonnage in 2010 (DOT 2011). Commercially navigable waterways traverse the TMAA, but are controlled by the use of directional shipping lanes for large vessels (cargo ships, container ships, and tankers). Ships traveling from major ports to the Lower 48 and Hawaii, as well as marine traffic between coastal ports, enter the TMAA briefly, but Navy activities are communicated to all vessels and operators through NOTMARs, which are found at http://www.navcen.uscg.gov/lnm/d17/.

In addition to large commercial vessels traversing the GOA, the AMHS provides ferry service for passengers and vehicles between coastal communities (AMHS 2011). The Southwest Alaska route services Prince William Sound, Kodiak Island, the Alaska Peninsula, and the Aleutian Islands. The ferry route closest to the TMAA provides service to Chenega Bay in Prince William Sound and the town of Kodiak on Kodiak Island. The route is one of the least-busy routes; there were only 13 sailings in 2010 (AMHS 2011).

3.11.11.2 Impact Assessment Methodology

The methodology used to assess impacts of this proposed action—i.e., use of the GOA for Air Force live-fire AIM-9 and AIM-120 missile exercises—on marine infrastructure and transportation would

[2] The Commander Submarine Force, U.S. Pacific Fleet is the principal advisor to the Commander in Chief, U.S. Pacific Fleet, for submarine matters. The Force provides antisubmarine warfare, anti–surface ship warfare, precision land strike, mine warfare, intelligence, surveillance, early warning, and special warfare capabilities to the U.S. Pacific Fleet and strategic deterrence capabilities to the U.S. Strategic Command.

involve defining all of the requirements for proposal support, including thorough coordination and consultation with the Navy. As yet, sufficient information has not been developed with regard to the impacts of the Air Force proposal or to all requirements and authorizations necessary for a definitive decision.

3.11.11.3 Environmental Consequences

Recreation and commercial mariners could be impacted by such access restrictions. Possible delays could also occur to the AMHS on its Cross Gulf Route. The ferry runs from May through September on bi-monthly trips from Prince Rupert, Ketchikan and Juneau in the southeast to Whittier in southwest, with stops in Yakutat. This route is used as a service link between the Inside Passage in the Southeast and the Southwestern routes as well as for tourists (AMHS 2011).

As with the Navy *GOA EIS/OEIS*, training areas would remain accessible to the public for commercial and recreational purposes when not being used for military training activities. During planned missions, the Air Force would provide advance notice of training schedules to Federal regulatory agencies. In addition, the FAA would publish information regarding temporary access restrictions to airspace via NOTAMs on its Web site. Mariners would access the Coast Guard's Local NOTMARs Web site to adjust their routes to avoid temporarily restricted areas (Navy 2011).

Mission activities would be conducted in areas away from shipping lanes to allow marine traffic to flow freely. NOTMARs and NOTAMs would substantially reduce possible congestion when training activities occur within shipping or high traffic areas. The GOA EIS stated that the proposed mission activities would not have a significant effect on air or marine traffic. Additional analysis in the EIS indicated that there would be no risk to public safety from the proposed action, because of the Navy's implementation of range clearance procedures and SOPs on land and at sea prior to training and testing activities.

3.11.11.3.1 Proposed Action

The Air Force needs a fully instrumented range, which would require considerable investment. The locations in the GOA will need to be reviewed to determine impacts on transportation and shipping routes in the GOA. This proposed action will require additional study to determine all requirements needed to support this proposal. Sufficient information is currently not available to fully identify and evaluate these requirements.

3.11.11.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during Air-to-Air Missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the *GOA EIS/OEIS* ROD (Navy 2011).

3.11.11.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.11.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.11.12.1 Affected Environment

The location of the proposed action includes the existing TMAA and W-612 in the GOA south of Prince William Sound and East of Kodiak Island. These areas, along with the surrounding Valdez-Cordova Census Area, Kenai Peninsula Borough, Kodiak Island Borough, and the Matanuska-Susitna Borough, are defined as the ROI for this analysis.

ECONOMIC ACTIVITY

Cordova, accessed only by plane or boat, is directly linked to the North Pacific Ocean shipping lanes through the GOA. This home rule city supports a large fishing fleet for Prince William Sound and several fish-processing plants. The largest employer is Trident Seafoods, Inc. Harvested fish in the area include, among others, red salmon, pink salmon, herring, halibut, and bottom fish. A reduction in salmon prices has adversely affected the economy of Cordova (ADCCED 2011). Nearly half of all households in Cordova have someone employed by the commercial harvesting or processing industry (ADCCED 2011).

The home rule city of Valdez is located on the north shore of Port Valdez, a deep-water fjord in Prince William Sound. The community is the southern terminus for the Trans-Alaska Pipeline and off-loading point for oil extracted from Prudhoe Bay on the North Slope. Federal, State, and city agencies are among the major employers in the home rule city. Also located in Valdez is a $48 million cargo and container facility, two fish-processing plants and a year-round Fisheries Development Association (ADCCED 2011).

The Kenai Peninsula Borough has a diverse economy, with off-shore oil and gas production in Cook Inlet and downstream production north of Kenai. Visitors to the Kenai Peninsula seek sport fishing and other recreational activities. Important economic contributors to the area include commercial fishing and fish processing, particularly for such species as salmon, cod, and halibut (ADCCED 2011).

Fishing and fish processing are among the top industries on Kodiak Island, located on the western side of the GOA. Major employers include Federal, Coast Guard, State, borough, and city agencies. Subsistence and sport fishing are also prevalent activities in the borough (ADCCED 2011).

The economy of the Matanuska-Susitna Borough is fairly diverse; residents are employed in a variety of retail, professional, and government occupations. Due to the borough's proximity to Anchorage, nearly one-third of its labor force commutes (ADCCED 2011).

COMMERCIAL SHIPPING

See Section 3.11.10.1, Public Use of the GOA for discussion on commercial shipping.

COMMERCIAL FISHING

Commercial fishing and fish processing are key economic industries and employers in Alaska, particularly in areas in the ROI bordering the GOA, including the Kenai Peninsula Borough, Kodiak Island Borough, and Valdez-Cordova Census Area. See Table 3-102 for 2010 commercial fishing permits reported by region.

Table 3-102. Commercial Fishing Permits by Region, 2010

Region	Number of Residents with Commercial Fishing Permits	Percent of Total Regional Population Holding Commercial Fishing Permit
Cordova	337	15
Kenai Peninsula Borough	1,427	2.6
Kodiak Island Borough	588	4.3
Matanuska-Susitna Borough	300	<1
Valdez	52	1.3

Source: ADCCED 2011.

RECREATION AND TOURISM

Recreation and tourism are important contributors to Alaska's economy. The GOA offers many recreation and tourist opportunities to in-state and out-of-state visitors. The majority of activities in the GOA include commercial fishing, recreational fishing, whale watching, and sightseeing. Most recreational activities in the GOA occur closer to shores near protected waters. Popular recreational and tourist spots around the TMAA include state parks on the surrounding lands. For additional information on recreation in the area of the proposed action, see Section 3.11.10.1 (Recreation subsection).

3.11.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.11.12.3 Environmental Consequences

3.11.12.3.1 Proposed Action

A concern expressed during the public scoping period were the economic impacts, particularly potential for closure of fishing fleets.

In a recent study, the *Navy GOA EIS/OEIS* (Navy 2011), the Navy analyzed the potential impacts from military training operations performed in the TMAA, which included AIM-9 and AIM-120 training activities. Based on the *Navy GOA EIS/OEIS's* Preferred Alternative, there are up to six events of the air-to-air missile exercises annually in which eight AIM-9 and six AIM-120 missiles are expended every two events. The air-to-air exercises last about 1 hour and are conducted in the TMAA outside of 12 NM (22 km) and above 3,000 feet (914 meters). The total maximum time period the Navy conducts their training and exercises is 21 consecutive days for each event during the summer months (April through October) (Navy 2011). The Navy EIS determined that there would be no significant impacts on socioeconomic resources due to advanced public notification of military activities using the NOTAM and NOTMAR systems, and due to the primarily short-term duration of military activities.

If the use of the TMAA for live delivery of the AIM-9 and AIM-120 missiles by Air Force fighter aircraft as proposed under this action occurs during times when the Navy performs their training, then there would be no need for additional restrictions. However, if the Air Force operations are performed at times other than those currently utilized by the Navy, then additional restrictions would be required and could result in impacts. The significance of these impacts would depend on the length and frequency of these restrictions and this information is not available at this time. Similar to recommendations made in the *Navy GOA EIS/OEIS*, advanced public notification of Air Force activities could minimize delays to commercial fishing and shipping fleets by allowing users to schedule their activities accordingly to avoid Air Force training activities.

3.11.12.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during air-to-air missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the *GOA EIS/OEIS* ROD (Navy 2011).

3.11.12.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.11.13 Subsistence (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13. The proposed missile live fire would take place within the existing TMAA used by the Navy for large surface exercises, including live fire. This area is off shore within the GOA and does not come under either Federal or State subsistence regulations. While Alaska Natives are exempt from the MMPA and are permitted to engage in subsistence harvesting of protected species such as whales, sea otters, and halibut, according to the recently completed *GOA EIS/OEIS* (Navy 2011), subsistence activities do not take place within the TMAA. Therefore, subsistence resources are not further analyzed for this programmatic proposal.

3.11.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.14.

3.11.14.1 Affected Environment

The affected environment for the Missile Live-Fire for AIM-9 and AIM-120 in the Gulf of Alaska proposal includes the existing TMAA and W-612 in the GOA, situated south of Prince William Sound and East of Kodiak Island. As such, a characterization of populations groups living in the TMAA is not applicable. However, impacts on human populations, for example, effects on commercial or recreational fishing and subsistence use, would be part of the environmental consequences analysis, to determine effects on users.

3.11.14.2 Impact Assessment Methodology

General Methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2 and additional methodology relevant to the six Programmatic Proposals is described in Section 3.7.14.2.

3.11.14.3 Environmental Consequences

3.11.14.3.1 Proposed Action

The affected area is located beneath W-612 and the TMAA. These areas are both located entirely over the GOA and are no closer than 12 NM from the shoreline. Human activity in these areas is rare, consisting primarily of military training exercises and commercial endeavors such as fishing and shipping.

Based on a review of environmental consequences for other resources, adverse impacts could, in many cases, be reduced based on siting and operational criteria, SOPs, BMPs, and continuation of mitigation measures used previously; however, further study would be needed.

As described in Section 3.11.14, subsistence activities are not conducted within the TMAA; however, criteria and measures listed for subsistence activities would also apply for environmental justice. Military activities should be evaluated to determine if they affect marine wildlife typically harvested in other areas by Alaska Natives. If the proposed live-fire activities have the potential to affect the population or distribution of marine wildlife, additional analysis and consideration should be conducted for Alaska Natives who are dependent on harvesting marine species for subsistence. Additional siting criteria or measures are recommended for environmental justice.

The information presented below could benefit siting and operations planning by taking into account the location of jurisdictions with greater potential for environmental justice effects:

- If tiered environmental analysis identifies unmitigated impacts in the ROI, evaluate whether human populations would be affected, and if so, whether they have higher percentages of minority and low-income populations than the surrounding area. If so, additional mitigation measures may need to be evaluated to reduce potential disproportionately high and adverse environmental or health effects.
- If adverse impacts on traditional cultural resources or Alaska Native activities are identified, develop case-specific mitigations to reduce potential disproportionately high and adverse environmental or health effects on Alaska Natives.

3.11.14.3.2 No Action

Under the No Action Alternative, 24 AIM-9 Sidewinder missiles and 18 AIM-120 AMRAAM missiles would be expended annually during air-to-air missile exercises in the GOA TMAA during up to two joint training exercises that could occur for up to 21 days each and take place between April and October. This reflects the Preferred Alternative implemented by the Navy in the *GOA EIS/OEIS* ROD (Navy 2011).

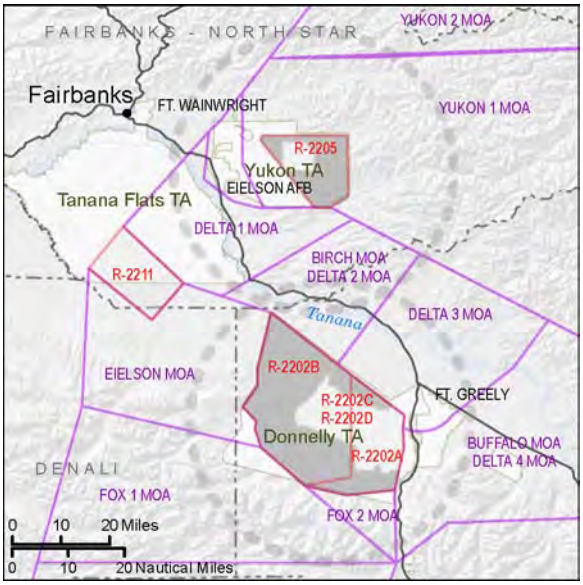
3.11.14.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.11.14.3.1.

3.12 JOINT PRECISION AIRDROP SYSTEM DROP ZONES (PROGRAMMATIC)

The JPADS is a system of GPS receivers and steerable parachutes that are revolutionizing the way the military executes aerial resupply. JPADS are dropped from large cargo aircraft such as the C-17 Globemaster and fall into dangerous or remote landing zones to resupply ground troops.

The JPADS proposal considers two potential locations for this expanded capability within the existing restricted areas of DTA or YTA. The composite footprint depicted on the map is about 3.3 million acres (almost 5,100 square miles), with each location centered within existing military restricted area. (Refer to the gray-shaded area in the map to the right.) However, because of the large zone exposed to potential surface hazards for this capability, the potential footprint is much larger than existing training areas, and could extend into non-military land. The initial impact screening assessment rated the potential for significant impacts as low for air quality and infrastructure and transportation.



3.12.1 Airspace Management and Use (No Analysis Needed)

The airspace in which JPADS activities would occur are within existing restricted areas to be activated for these operations. Therefore, any effects on airspace management and other uses would be the same as those that currently exist in those areas and the surrounding region. No further discussion or analysis is required.

3.12.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.12.2.1 Affected Environment

The affected area could be anywhere in the JPARC complex. Noise sources include military training, civilian transportation and other noises, and natural sounds. Noise levels are typically low except during military training events.

3.12.2.2 Impact Assessment Methodology

Noise levels of the JPADS are considered relative to baseline conditions. Noise impacts are discussed qualitatively.

3.12.2.3 Environmental Consequences

3.12.2.3.1 Proposed Action

The JPADS would not be expected to be audible except on touchdown. Noise resulting from touchdown would be minimal and limited to the immediate vicinity of the touchdown site. Noise impacts resulting from implementation of the action alternative would be minimal.

3.12.2.3.2 No Action

Under the No Action Alternative, JPADS training would not occur. There would be no noise impacts under the No Action Alternative.

3.12.2.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.12.3 Safety

3.12.3.1 Affected Environment

FLIGHT SAFETY

This proposal does not require any new or modified airspace actions to accommodate the JPADS flight training activities, as this training would occur within the existing or proposed SUA. This proposed new activity would also not present any additional flight safety risks or considerations beyond those previously discussed for the other current airspace uses. Therefore, flight safety is not addressed any further for this proposal.

GROUND SAFETY

Because this alternative only involves air dropping of steerable parachute, only potential issues associated with range safety and public access control would apply. Current procedures associated with these issues are already described in Section 3.2.3.1.

3.12.3.2 Impact Assessment Methodology

The impact assessment methodology is the same as that described in Section 3.2.3.2.

3.12.3.3 Environmental Consequences

3.12.3.3.1 Proposed Action

GROUND SAFETY

Under this Alternative, no impacts on public health and safety would occur.

3.12.3.3.2 No Action

FLIGHT SAFETY

Not applicable.

GROUND SAFETY

Under the No Action Alternative, JPADS operations would not occur and thus, no impacts on public health and safety would occur.

3.12.3.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.12.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.

3.12.4.1 Affected Environment

The proposed JPADS drop locations are located in FNSB and Southeast Fairbanks Census Area. The drop location close to Fort Wainwright that is proposed under Alternative A is within the $PM_{2.5}$ nonattainment and carbon monoxide maintenance areas of FNSB. All other proposed drop locations are in attainment areas. Table B-12 in Appendix B, Section B.4.3 provides a summary of the estimated 2008 annual emissions for the affected borough and census area.

3.12.4.2 Impact Assessment Methodology

Currently, this action is in its developmental stages and sufficient data is not available to analyze air quality impacts. Once sufficient data is available, the air quality analysis will estimate the emissions that would occur from JPADS delivery and recovery operations. There are no construction activities associated with this proposed action. The analysis will generally follow the methodology described in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.5.

PSD CLASS I AREA IMPACT ANALYSIS

The closest PSD Class I area to the JPADS operations area is Denali National Park, which is approximately 45 miles from the closest proposed drop location. Therefore, due to the proximity of the proposed action to a pristine PSD Class I area, the potential for proposed activities to affect visibility within this area will need to be analyzed.

3.12.4.3 Environmental Consequences

3.12.4.3.1 Proposed Action

There are no construction activities associated with the JPADS action. Air quality impacts from operational activities of the proposed JPADS action would occur from (1) combustive emissions due to the use of fossil-fuel-powered equipment and aircraft, and (2) fugitive dust emissions (PM_{10} and $PM_{2.5}$) due to the operation of equipment on exposed soil.

Operational information needed to calculate the air emissions resulting from increased activities associated with the JPADS action includes the following:

- The type, horsepower, and daily and annual usage rates of fossil-fuel-powered equipment associated with increased training activities for the proposed action
- Sortie information, including the types of aircraft and their engines, durations in the affected area, and altitude distributions

The emissions factors needed to derive construction source emission rates are found in *Compilation of Air Pollution Emission Factors* (EPA 1995); emissions inventory data produced by the mathematical models OFFROAD2007 for off-road construction equipment (ARB 2006-1) and EMFAC2007 for on-road vehicles (ARB 2006-2); and *Air Emissions Factor Guide to Air Force Mobile Sources* (AFCEE 2009).

3.12.4.3.2 No Action

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations in YTA and DTA. Therefore, the No Action Alternative would not result in any new air quality impacts.

3.12.4.4 Considerations for Future Planning

There are no recommended measures identified for this resource based on preliminary project parameters.

3.12.5 Physical Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.5. Given that the proposed action involves minimal to no disturbance of any land surface, no beneficial or adverse impacts of this action on physical resources within the study area are expected to occur; therefore, it is not further analyzed for this programmatic proposal.

3.12.6 Water Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.6. The proposed action involves minimal to no disturbance of any surface water. Errant drops of equipment would require recovery. This may involve ground vehicles. Recovery operations would follow existing guidelines (Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*) to minimize impacts of training on wetlands and surface water resources. Therefore this action is expected to have negligible or no impacts on water resources within the study area and is not further analyzed.

3.12.7 Hazardous Materials and Waste (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.7. No hazardous materials and waste impact analysis was conducted for this proposed action, as this action involves the JPADS, which is a system of GPS receivers and steerable parachutes to support aerial resupply training under varied, realistic conditions. There would be no impacts regarding the creation, dispersion, management, handling, or disposal of hazardous materials or waste in the proposed JPADS training exercises. This resources is not further analyzed for this programmatic proposal.

3.12.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.8.

3.12.8.1 Affected Environment

As for the other programmatic projects, study areas for the JPADS proposed project are large and based upon entire training areas (DTA and YTA). The biological resources that likely occur in the proposed project study locations are described in detail in Section 3.3.8 (DTA), Section 3.8.8 (TFTA), and in Sections 3.7.8 (DTA, YTA, and TFTA).

Major land types that occur within the JPADS study areas are presented in Table 3-103.

Known important wildlife species habitat areas that occur within the JPADS study areas are presented in Table 3-104.

3.12.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.12.8.3 Environmental Consequences

3.12.8.3.1 Proposed Action

A similar programmatic analysis of overall presence of sensitive biological resources on YTA and DTA was conducted for EGMS (Section 3.7.8) and for JAGIC (Section 3.9.8). JPADS training would involve minimal ground disturbance, however, DZs should be selected with consideration of seasonal biological resources and sensitive habitats constraints.

To reduce adverse effects, recommended siting criteria include minimizing construction in the following known sensitive habitats that occur within the JPADS study areas (different avoidance seasons apply; see the biological resources mitigations table in Appendix G, *Biological Resources*, and Figures B-11, B-13, and B-14 in Appendix B, *Definition of the Resources and Regulatory Settings*):

- Bogs and other wet habitats
- Moose calving, rut, and winter habitats
- Caribou calving, rut, and winter habitats and migration routes
- Dall sheep winter habitat and migration routes
- Waterfowl general, migration stopover/resting, and nesting areas
- Brown bear seasonal habitat and fish streams
- Sensitive bison habitat

Table 3-103. Land Types Associated with the Joint Precision Airdrop System Project

Study Area	Spruce and Broadleaf Forest	Open and Closed Spruce Forest	Spruce Woodland/ Shrub	Open Spruce and Closed Mixed Forest Mosaic	Open Spruce Forest/ Shrub/Bog Mosaic	Closed Spruce Forest	Gravel Bars	Alpine Tundra and Barrens	Dwarf Shrub Tundra	Tall and Low Shrub	Tall Shrub	Glaciers and Snow
	Acres (hectares)											
DTA	62,837 (25,429)	220,914 (89,401)	56,645 (22,923)	18,179 (7,357)	163,022 (65,973)	0	50,284 (20,349)	4,188 (1,695)	6,172 (2,498)	43,026 (17,412)	5,770 (2,335)	247 (100)
YTA	142,364 (57,613)	27,971 (11,319)	16,680 (6,750)	548 (222)	36,710 (14,856)	1,481 (600)	0	0	0	3,889 (1,574)	27,640 (11,186)	0

Key: DTA=Donnelly Training Area; YTA=Yukon Training Area.
Source: USGS 1991.

Table 3-104. Wildlife Habitats Associated with the Joint Precision Airdrop System Project

Study Area	Moose Winter Habitat	Moose Rutting/Calving Habitat	Caribou Winter Habitat	Caribou Calving Habitat	Waterfowl General Habitat	Dall Sheep Winter Habitat
	Acres (hectares)					
DTA	523,601 (211,894)	361,113 (146,137)	509,351 (206,127)	404,398 (163,654)	284,015 (114,937)	11,155 (4,514)
YTA	82,366 (33,332)	82,366 (33,332)	20,325 (8,225)	0	14,424 (5,837)	0

Key: DTA=Donnelly Training Area; YTA=Yukon Training Area.
Source: RDI 2005-1, 2005-2, 2005-3, 2005-4, 2005-5, 2005-6.

It will be important to work with ADFG and USFWS personnel early in the design phases to site new JPADS DZs in order to minimize damage and disturbance to biological resources. Indirect impacts that include allowing additional human access into areas or during seasons where it hasn't occurred in the past can be especially disruptive to wildlife during sensitive life stages such as winter, breeding, nesting, and calving/lambing. The biological resources mitigations table in Appendix G, *Biological Resources*, includes established and proposed mitigation measures that, when applied, reduce impacts on wildlife during important seasonal activities. Temporary impacts from vegetation-clearing or trampling, the addition of noise, dust, trash, weed spread, and other hazards such as potential spills may occur. Standard BMPs and SOPs also account for reducing these types of effects (Appendix G).

Given the application of environmental considerations in siting DZs, the anticipated nature of project impacts, impacts on biological resources would be adverse but not significant.

3.12.8.3.2 No Action

The current amount of localized ground disturbance (from training, vehicles and live fire) would be expected to continue and wildlife using the area would be expected to remain active in occupied habitats.

3.12.8.4 Considerations for Future Planning

In addition to siting criteria and vegetation clearing guidelines listed in Section 3.7.8.3, other measures, BMPs, and SOPs that should be applied to ground-disturbing activities are included in Appendix G, *Biological Resources*.

3.12.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.12.9.1 Affected Environment

The ROI for JPADS Alternative A consists of that portion of YTA as well as the airspace of R-2205 above YTA where the JPADS operations would be conducted. The ROI for JPADS Alternative B consists of that portion of DTA as well as the airspace of R-2202 above DTA where the JPADS operations would be conducted. The DTA portion of the JPADS affected environment is the same as described in Section 3.2.9.1, Realistic Live Ordnance Delivery. The YTA portion of the JPADS affected environment is the same as described in Section 3.4.9.1, Expand Restricted Area R-2205.

3.12.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed JPADS DZs action is the same as the methodology used for the analysis of the RLOD action (Section 3.2.9.2).

3.12.9.3 Environmental Consequences

3.12.9.3.1 Proposed Action

This proposed action is the establishment of JPADS DZs in R-2205 and R-2202.

There is the potential for impacts on cultural resources from the establishment of JPADS in R-2205 and R-2202. Prior to implementation of any element of this proposed action, the Army would comply with NHPA, Section 106 including identification of historic properties, and assessment and resolution of

adverse effects through consultation with Alaska SHPO and potentially affected Federally recognized tribes.

There is the potential for impacts on traditional cultural resources or Alaska Native activities from the establishment of JPADS in R-2205 and R-2202. Although no traditional cultural properties have been specifically identified in the ROI, this does not mean that none are present. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has initiated government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources, or Indian land under the proposed establishment of JPADS in R-2205 and R-2202 (see Section 1.6.5). Consultation will continue as the proposal progresses toward a definitive action.

3.12.9.3.2 No Action

Under the No Action Alternative there would be no establishment of JPADS in R-2205 and R-2202. Existing use of the ranges and airspace would continue under this alternative and resources would continue to be managed in compliance with Federal law and Army regulations.

3.12.9.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.12.9.3.1.

3.12.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.12.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

Full JPADS capability would require a surface area of almost 1.7 million acres (based on a hypothetical maximum 25-mile-radius area of operations). Whether sited on DTA or YTA, this configuration would include military land, other Federal lands, State and private land, with the majority being outside of installation boundaries. Based on the general characteristics of land surrounding these training areas, only about 1 percent is likely to be private (including Native-owned) land. Figure 3-42 shows the general land status in the region of potential interest for this proposal.

Land Management and Use

The military areas (YTA and DTA) are managed and planned according to current INRMPs, with supporting direction from the RTLP and RDP. Further description of military uses on the proposal areas is provided in Sections 3.2.10.1 (for DTA) and 3.4.10.1 (for YTA).

ADNR is the primary land resource manager of State lands in the proposal area. ADNR's ETAP is under development. The proposal area also includes lands within the FNSB, with the Regional Comprehensive Plan and the FNSB JLUS providing a framework for future development and compatible uses. Lands in surrounding areas fall under the management of several jurisdictions and agencies with applicable land management plans.

Potential special use areas in preliminary JPADS proposal areas are listed in Table 3-105, and the locations are shown in Figure 3-42. Descriptions of these areas are provided in Appendix I, *Land Use, Access, and Recreation*. Hunting and fishing are predominant public activities in the non-military areas for personal, commercial, and subsistence purposes. The ADFG manages the Delta CUA where motorized access for hunting is seasonally restricted.

RESOURCE AND PRODUCTIVE USE

Portions of the JPADS proposal area overlie non-military land with a range of passive and productive uses. Federal and State land managers prioritize the use of lands based on resources, attributes, and local values. In the proposal area, most State-managed land is classified for its habitat value, with recreation being a closely associated use. Figure 3-42 illustrates the primary land status and important uses and features of the proposal area including areas with potential for energy development.

Table 3-105. Special Use Areas – Joint Precision Airdrop System Programmatic Proposal Area and Surrounding Vicinity

Special Use Area	Designation
Tanana Valley State Forest	State Forest
Delta Junction State Range	State Range Area (Bison Range Area)
Chena River State Recreation Area	State Recreation Area
Birch Lake State Recreation Site	State Recreation Site
Harding Lake State Recreation Area	State Recreation Site
Quartz Lake State Recreation Site	State Recreation Site
Salcha River State Recreation Site	State Recreation Site
Big Delta State Historical Park	State Historical Site
Clearwater State Recreation Site	State Recreation Site
Big Lake State Recreation Site	State Recreation Site
Delta State Recreation Site	State Recreation Site
Donnelly Creek State Recreation Site	State Recreation Site

Source: ADNR 2011-3.

PRIVATE AND NATIVE LANDS

Private parcels and residential lands within the Proposal area account for about 1 percent of the preliminary Proposal area. Private landowners may also have ownership interest in subsurface resources. Further discussion of Native-owned lands and resources is provided in Section 3.12.13.2, Subsistence.

LOCATIONS OF INTEREST

Special use areas within the proposal area include Chena River State Recreation Area, on the northeast side of YTA, and the Delta River Bison Range, located to the east of DTA. Several CDPs (with concentrated populations) are located within the proposal area including Delta Junction, Harding Lake, Salcha, Big Delta, and Fort Greely.

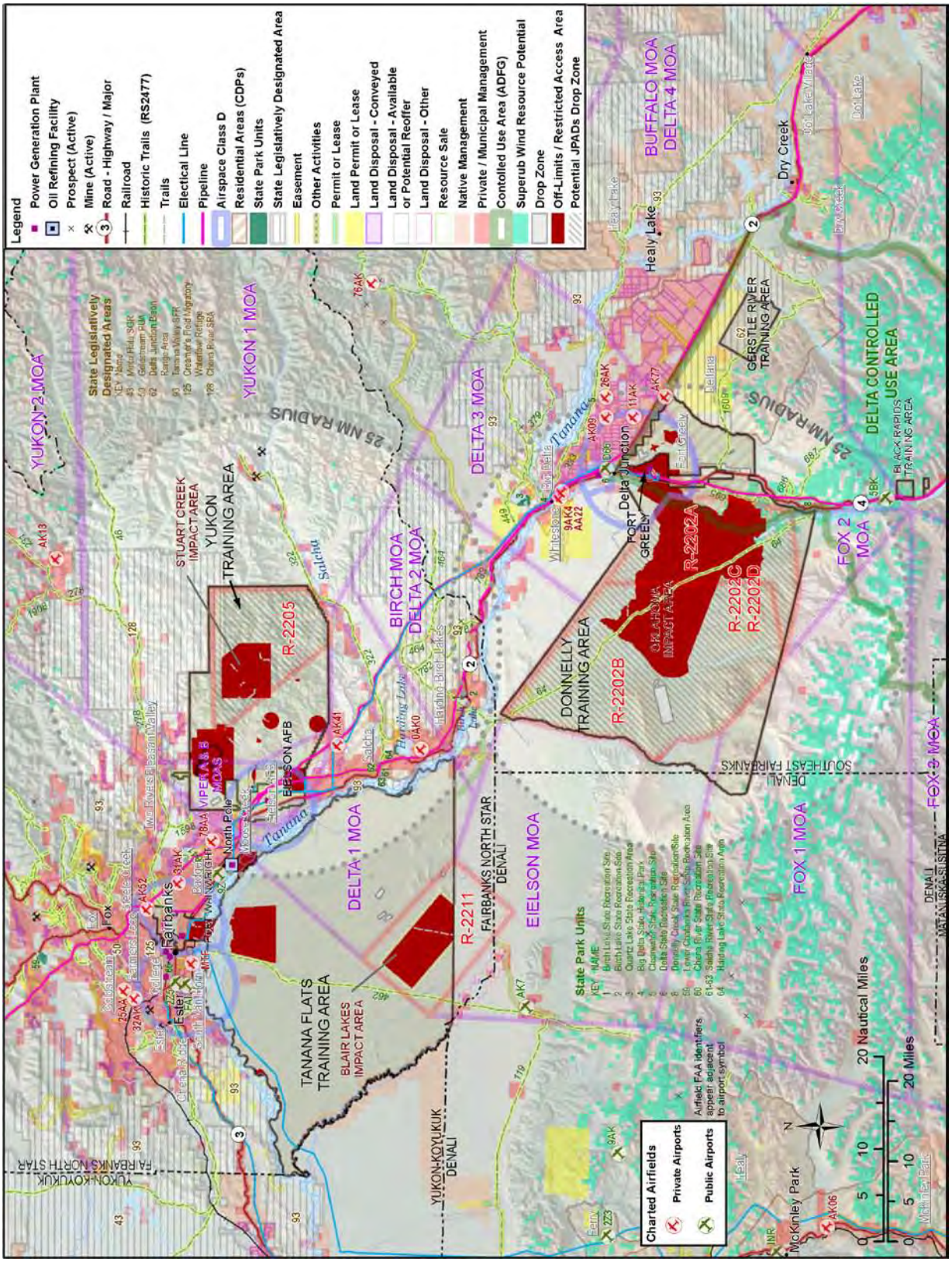


Figure 3-42. General Land Status, Special Use Areas and Productive Uses in the Joint Precision Airdrop System Proposal Area and Surrounding Vicinity

Source: ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2009-4, ADNR 2011-2, ADNR 2011-3, ADNR 2011-4, ADNR 2011-7, AWS TrueWind/NREL 2003, FNSB 2006, NGA no date, SAIC 2011-1, SAIC 2011-3, USCB 2010-1, USGS 2005-1, USGS 2005-2

PUBLIC ACCESS

Land Access

Access and use to military lands under consideration for the JPADS proposal are described above in Sections 3.2.10.1, 3.3.10.1, and 3.4.10.1.

The trails, including RS 2477 designated routes, within the ROI for this proposed action and alternatives are listed in Table 3-106.

Aerial Access

Public aerial access to DTA and YTA is described in Sections 3.2.10.1, 3.3.10.1, and 3.4.10.1. Figure 3-42 shows the locations of public and private airports in the ROI.

Navigable and Public Waters

Portions of the Tanana and Wood River in the ROI are categorized as navigable.

RECREATION

Recreation on Military Land

Public access and recreational use in the proposal area is described in Sections 3.2.10.1 (for DTA) and 3.4.10.1 (for YTA).

Recreation on Non-military Land

There are no Federally designated recreation lands within the ROI of the proposed action. Three State designated recreation lands, Tanana Valley State Forest, Chena River State Recreation Area, and Delta Junction State Range are located partially within the ROI for this proposed action (Table 3-106). Several state recreational areas are located in the corridor between Fairbanks and Delta Junction. Appendix I, *Land Use, Access, and Recreation* provides descriptions of those in the JPADS proposal area.

3.12.10.2 Impact Assessment Methodology

General methodology pertaining to evaluating land use, public access and recreation are described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The primary sources of impact on land use, including public access and recreation, from this proposal include:

- Effects of military overflights on underlying uses and activities (primarily from aircraft noise) as described in Section 3.1.10.2.
- Indirect effects of limited civilian air access on land use and recreation as described in Section 3.1.10.2.
- Effects of expending weapons, munitions and dispensing hazardous payloads on land uses, private and public access, and recreation as described in Section 3.3.10.2.

For this programmatic proposal, proposed siting criteria are the basis for assessment. Where these are not specified or are not developed, the investigation identifies measures and siting criteria that would reduce conflicts with land use, access, and recreation, particularly with regard to non-military lands.

Table 3-106. Public Access Trails in the Joint Precision Airdrop System Proposal Area of Influence

Public Access	Designation	Length (miles)
Chena Hot Springs-East Fork (Van Curlers)	RST 2477/ RST 46	16.3
Chena Hot Springs - Olympia Creek Trail	RST 2477/ RST 1908	0.3
Chena Lakes Trail	RST 2477/ RST 1598	4.7
Chena Lowlands Winter Trail Connections	RST 2477/ RST 641	2.6
Donnelly Dome: Old Valdez Trail Segment	RST 2477/ RST 695	13.1
Donnelly-Washburn	RST 2477/ RST 64	55.0
Fairbanks - Chena Hot Springs	RST 2477/ RST 278	44.1
Goodpaster River Trail	RST 2477/ RST 449	13.3
Jarvis Creek Trail	RST 2477/ RST 687	9.9
North Fork of Fortymile-Big Delta	RST 2477/ RST 379	9.3
Ober Creek Trail	RST 2477/ RST 686	6.4
Redmond Creek - Banner Creek Trail	RST 2477/ RST 782	10.6
Richardson Highway (Birch Lake) - Caribou Creek Trail	RST 2477/ RST 464	31.4
Richardson Highway-Gerstle River	RST 2477/ RST 1609	12.0
Richardson Telegraph Station - Ridge (Banner Creek)	RST 2477/ RST 781	7.2
Salcha-Caribou Sled Road	RST 2477/ RST 322	50.2
Shaw Creek Lodge - Tenderfoot Creek Trail	RST 2477/ RST 783	4.0
Tanana Crossing-Grundler Trail	RST 2477/ RST 333	14.0
Wrong Way Lane (Harding Lake Trail)	RST 2477/ RST 20	2.2

Source: ADNR 2009-2

3.12.10.3 Environmental Consequences

3.12.10.3.1 Proposed Action

The JPADS proposal would establish DZs for JPADS payloads on military land underlying restricted airspace. It would not involve construction of permanent facilities outside of military land. JPADS events would activate an extensive SDZ. JPADS missions would occur intermittently, generally as part of MFEs, during six periods each year (usually for periods of 14 days each). JPADS events would exclude public access and use to all land within activated SDZs. This could include the entire training area (YTA or DTA). Public access would also be restricted in any areas outside of military land that fall within the SDZ. Excluding access to military land would be inconvenient, particularly affecting recreational activity (hunting) and subsistence uses. Excluding access to non-military land would have a similar effect, but would also preclude access to private land, and to State-owned land for a spectrum of public uses (including commercial activities and resource harvesting and production). For the duration of the drop event, use of roads and trails within the SDZ would also be suspended. The duration of these exclusions could have minor to substantial effects on land use, access, and recreation, and could in some cases make it infeasible to pursue certain uses and resource opportunities. This could result in significant impacts on land use and ownership interests, access and recreation within any future proposal areas. In formulating future proposals, incorporating the process, siting criteria, and recommended parameters below, could reduce potential impacts on land use, access, and recreation.

- Develop and apply a comprehensive set of siting and operational criteria to compare potential sites. For operationally suitable sites, identify all potentially sensitive assets or resources,

protected or unavailable land (for example, areas with UXO, non-military ownership, noise sensitive, developed site) using GIS overlays.

- Prioritize preferred sites for preliminary review with local jurisdictions and regulatory agencies. Preliminary agencies to include are ADNR, USACE, USFWS, ADFG, local borough, Native village, or community planners.
- Coordinate with local jurisdictions and regulatory agencies early in the siting process to review siting criteria and to share updated information on related to siting criteria. Particularly for non-military land within SDZs, use the coordination process to obtain detailed and up-to-date information on land status and subsurface ownership, encumbrance and interests in the lands held by other parties (including minerals and energy resources), existing rights-of-way, easements, leases, and permits. To the extent possible, avoid land with any conflicting interests. Discuss options and mechanisms for acquiring access easements with landowners/managers. Discuss options for temporary evacuation areas and methods for implementing them.
- To the extent possible, access should be maintained for public recreational use, hunting and other subsistence uses on the installation in the locations where these activities are most frequent or important. Patterns of use taken from current and past USARTRAK data can provide information for this screening criteria, as well as input from ADFG. Scheduling JPADS events outside of popular hunting areas and seasons would reduce potential impacts. Strategies to achieve this criteria also include rotating or selecting areas for training that have lower value or less overlap with public uses and hunting.
- If land acquisition is proposed, prepare a detailed real estate study to fully identify and evaluate surface and subsurface interests in the affected parcels.
- For options involving easements and intermittent/temporary use, fully explore the frequency of JPADS missions and potential for consolidating missions into fewer periods each year. Evaluate concepts of closure zones (restricted access) which correspond to size and frequency. For example, the largest SDZ may only be activated once per year, with smaller zones identified for more frequent use. Configure DZs and SDZs so that high use SDZs are contained within existing military land and restricted airspace.
- If possible, schedule missions at times other than those that are popular for outdoor activities (for hunting, guided wilderness trips, recreation, subsistence harvesting).
- For non-military land within SDZs, avoid land in or near special use areas (such as Tanana Valley State Forest, Chena State Recreation Area), communities or homesteads, important wildlife habitat, areas used for wildlife calving, rutting, or migration, popular recreational and hunting areas (including cabins and shelters), active mines and energy resource sites, commercial areas, hospitals, and schools.
- Design SDZs to avoid major highways, railroad corridors, population centers, and important public roads and trails.
- Identify plans and procedures for retrieving payloads, particularly when they fall outside of military land.
- Create a public involvement program early in the process. Involve potentially affected parties in negotiations about compensation for loss of access and use of private interests.
- Include a Safety and Emergency Access plan in the project proposal if public transportation networks and airfields would experience temporary loss of service, potentially affecting local communities.

- Negotiate agreements with potentially affected landowners (ADNR or private owners) for intermittent use and evacuation (if required) of affected lands commensurate with the frequency and duration of evacuation.
- Define safety procedures and measures for these JPADS activities, including maximum events per year, advance notification, and preplanning activities.
- Minimize the duration of evacuation periods of non-military areas and avoid block scheduling more time than is needed for the hazardous event.

The following existing BMP would continue for future proposals to reduce the potential for significant impacts on land use, access, and recreation.

- Continued implementation of the USARTRAK automated check-in phone system. This would provide information regarding daily closures and should greatly simplify the public access process.

3.12.10.3.2 No Action

There would be no change, and therefore no impact on surface uses and activities under the No Action Alternative.

3.12.10.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.12.10.3.1.

3.12.11 Infrastructure and Transportation (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11. This proposed action involves minimal to no disturbance of any infrastructure or transportation assets; therefore, it is not further analyzed for this programmatic proposal.

3.12.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.12.12.1 Affected Environment

The ROI for the JPADS proposed action is the Denali Borough, FNSB, and the Southeast Fairbanks Census Area. General socioeconomic information for these areas is similar to that for the area described for the RLOD proposal in Section 3.2.12.1, Affected Environment, with the exception of the population under the airspace.

3.12.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.12.12.3 Environmental Consequences

3.12.12.3.1 Proposed Action

Depending on the location of the JPADS, there is potential for significant impacts on socioeconomic resources due to the large zone exposed to potential surface hazards that could extend into non-military land. In order to minimize potential impacts to socioeconomic resources, the selection of a JPADS site should avoid creating a surface hazard zone that overlaps population centers, residential areas, schools, and major economic centers. Safety measures and requirements for this action should be defined and incorporated into the siting criteria and planning process. Additional siting criteria and recommended parameters as defined in Section 3.12.10.3.1 could also reduce potential impacts to socioeconomic resources. Additional analysis is required to determine socioeconomic resource impacts, once siting of the JPADS has been further developed.

3.12.12.3.2 No Action

Under the No Action Alternative, socioeconomic resources would remain as described under baseline conditions.

3.12.12.4 Considerations for Future Planning

Any applicable existing mitigations, BMPs, and SOPs should be included in the pre-planning and definition of this future action. There are no additional recommended measures identified for this resource based on preliminary project parameters.

3.12.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.12.13.1 Affected Environment

The ROI and the affected environment for subsistence resources below and in the vicinity of R-2202 and R-2205 are described in Section 3.2.13.1. More-detailed information on species and habitats in the ROI is provided in Section 3.12.8, Biological Resources.

3.12.13.2 Impact Assessment Methodology

The general methodology pertaining to evaluating subsistence is described in Section 3.8.13.2.

3.12.13.3 Environmental Consequences

3.12.13.3.1 Proposed Action

In order to minimize any potential impacts on subsistence resources, the selection of a JPADS site should consider whether and how often the operation of JPADS would restrict public access. A substantial restriction of access to an area currently accessible to the public may impact the ability of Alaska residents to participate in subsistence activities.

3.12.13.3.2 No Action

Under the No Action Alternative, subsistence activities would continue as they are currently practiced.

3.12.13.4 Considerations for Future Planning

This resource is not affected by this alternative. Considerations for future planning are not required.

3.12.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.14.

3.12.14.1 Affected Environment

The affected environment for the JPADS proposal is the same as described for the Realistic Live Ordnance Delivery proposal in Section 3.2.14.1, Affected Environment. Table 3-39 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas comprising the proposal area.

3.12.14.2 Impact Assessment Methodology

The general methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2 and additional methodology relevant to the six Programmatic Proposals is described in Section 3.7.14.2.

3.12.14.3 Environmental Consequences

3.12.14.3.1 Proposed Action

The JPADS proposal considers two potential locations for this expanded capability within the existing restricted areas of DTA or YTA. The JPADS DZs require restricted areas or warning areas to contain the JPADS safety area, which can be up to a 25-mile radius for drops of 40,000 pounds at FL250. Because of the large zone exposed to surface hazards for this capability, the potential footprint is much larger than existing training areas, and could extend into non-military land. Based on a review of environmental consequences for other resources, adverse impacts could, in many cases, be reduced based on siting and operational criteria, SOPs, BMPs, and continuation of mitigation measures similar to those used previously; however, further study would be needed. Impacts on socioeconomics could be potentially significant (Section 3.12.12.3) because of the proximity of populated areas. Examples of measures to reduce impacts on socioeconomic resources include expansion of public notification of imminent convoy activity and publishing MFE information early.

Siting and operational criteria listed for land use, cultural resources and subsistence also would benefit minority and low-income populations.

For example, in order to minimize any potential impacts on subsistence resources, the selection of a JPADS site should consider whether the operation of JPADS would restrict public access and the frequency of any restrictions. A substantial restriction of an area currently accessible to the public may impact the ability of Alaska residents to participate in subsistence activities.

The information presented below could benefit siting and operations planning by taking into account the location of jurisdictions with greater potential for environmental justice effects:

- If tiered environmental analysis identifies unmitigated impacts in the ROI, evaluate whether any inhabited non-military areas would be affected and if so, whether they have higher percentages of minority and low-income populations than the surrounding borough. If so, additional mitigation measures may need to be evaluated.

- If adverse impacts on traditional cultural resources or Alaska Native activities are identified, develop case-specific mitigations to reduce potential disproportionately high and adverse environmental or health effects on Alaska Natives.

3.12.14.3.2 No Action

The JPADS would not be implemented and current uses would continue.

3.12.14.4 Considerations for Future Planning

Based on preliminary project parameters and findings for other projects that are similar in scope, recommended pre-planning activities, siting criteria, and measures to incorporate into future proposals are provided above in Section 3.12.14.3.1.