CHAPTER 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This section describes the proposed action (construction and operation of two range facilities), and alternatives to the proposed action. The proposed action was developed in accordance with training, range design, and site criteria objectives listed in Chapter 1, Section 1.2, *Purpose and Need for Action*. The following sections describe proposed range infrastructure, use, and location within U.S. Army training lands in Alaska. A viability analysis of alternative range facility locations is presented. The preferred alternative is also identified.

2.2 DESCRIPTION OF THE PROPOSED ACTION

United States Army Alaska (USARAK) proposes to construct and operate two state-of-the-art, fully automated and instrumented combat training facilities on U.S. Army training lands in Alaska. The Army proposes to construct and operate a Battle Area Complex (BAX) to be used for rural training and a Combined Arms Collective Training Facility (CACTF) to be used for urban training. These facilities would support training under realistic rural and urban combat conditions for up to 1,000 personnel and 165 combat vehicles per training event.

The two ranges would be located in proximity to one another to allow for more closely integrated and synergistic training. These two facilities, when located and used together, would provide a level of training efficiency and effectiveness to assigned military units, other Army units, and other Department of Defense (DOD) services, that would be unattainable if constructed and operated at distant, separate locations. Incorporation of other military training activities currently conducted at nearby training support facilities, including airfields, weapons training impact areas, landing and drop zones, and major transportation routes, would further enhance this synergistic training at the BAX and CACTF.

As the Army continues to transform, as discussed in Chapter 1, Section 1.2, *Purpose and Need for Action*, both increases in military activity and changes to the nature of Army combat training in Alaska is inevitable. This increase and change will affect the type and level of training that the Army requires as it transforms and prepares to respond to new challenges in support of National Defense. The design of Army combat training facilities, such as the BAX and CACTF, has taken into account the changing nature of modern warfare and its increased reliance on realistic training for combat. These facilities would allow military units to conduct live-fire combat training that will raise and sustain their war-fighting skills to higher levels than can be achieved using current Army facilities. These combat skills must rise to levels required to effectively conduct operations in the current Global War on Terrorism, to support other worldwide contingency operations, and to be prepared for future global combat operations.

2.2.1 Battle Area Complex (BAX)

The BAX provides a tactical collective live-fire training facility for Brigade Combat Teams, mounted (by vehicle) or dismounted (on foot), to test their ability to detect, identify, engage and defeat stationary or moving combined arms targets in both open and urban terrain environments. The complex also supports tactical live-fire operations independently of, or simultaneously with, support vehicles in free maneuver. The BAX would include mounted qualification lanes to train and test section gunnery skills. The BAX will also support individual and crew gunnery qualification. Approximately 200 Soldiers and up to 25 vehicles would utilize the BAX during training events.

The BAX would be designed to support both mounted and dismounted training activities over a useable area of approximately 3,500 acres. Tactical live-fire operations by dismounted infantry (Soldiers on foot) would be conducted either independent of, or simultaneously with, supporting vehicles. Additional military support actions would be required for effective training at the BAX (and is further described in Section 2.2.1.2.6). The use of public highways, air, and/or railroad systems to transport military equipment and Soldiers within Alaska in support of training operations would occur during use of the BAX. Once Soldiers and their equipment arrive at their training destination, various combat operations and training sustainment activities (unpacking of equipment, setting up encampments, etc.) would occur. Staging and bivouac areas near the BAX would house Soldiers and equipment before and after training events. Transition routes (areas where units go from a column formation to a tactical formation) and maneuver corridors would be used to move equipment and Soldiers between the BAX, CACTF, staging/bivouac areas, and other nearby training support facilities.

2.2.1.1 Design and Construction of the BAX

2.2.1.1.1 BAX Design Requirements

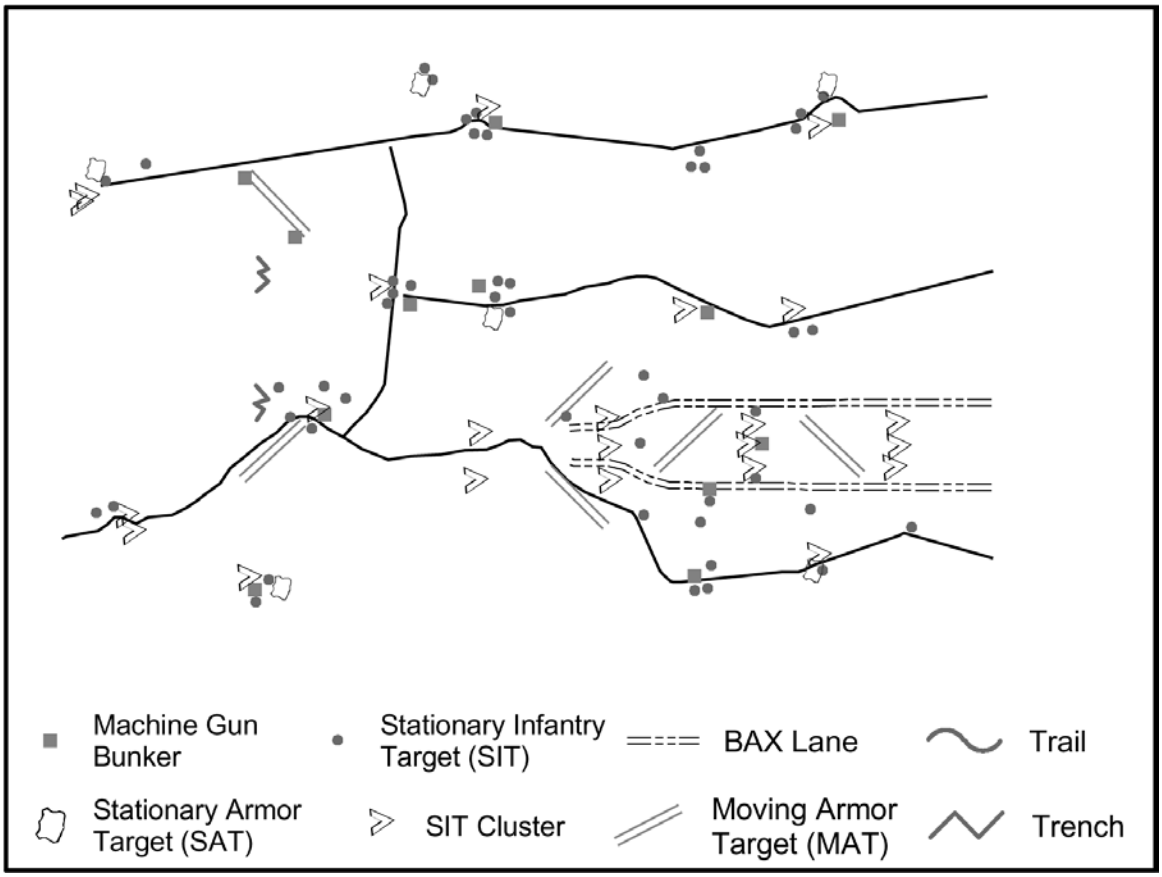
The Department of the Army (DA) Training Circular (TC) 25-8, *Training Ranges*, provides guidance for development and operation of Army ranges. It is a working guide for trainers, range and mobilization planners, engineers, and coordinators at all levels of the Active Army, Army National Guard, and Army Reserve. It is the primary guide for installations, for major Army Command Range Development Plans (RDP), and for developing the Army Master Range Plan. The basic design of the BAX obtained from TC 25-8 is illustrated in Figure 2.a.

The primary features of the BAX include (TC 25-8, April, 2004, p. D-22):

- 43 stationary armor targets (SATs)
- 35 stationary infantry targets (SITs)
- 14 moving infantry targets
- two breach wall/building facades
- two portable shoothouses
- two lanes (two course roads in one lane, no course roads in the free maneuver lane)
- eight hasty battle positions
- three landing zones
- six moving armor targets

- 25 SIT clusters with seven emplacements each
- four machine gun bunkers with sound effects simulator
- two live-fire villages (one with seven buildings and one with five buildings)
- two trench lines
- 18 mortar simulations devices

Figure 2.a Schematic of the BAX as Illustrated in TC 25-8, *Training Ranges*[1].



[1] This diagram is illustrative in nature. The actual range design would be unique to the potentially selected site.

2.2.1.1.2 Description of the BAX and Supporting Features

The BAX is one component of the Army's series of instrumented ranges that are designed to provide enhanced training data collection for After Action Reviews (AAR), to utilize advanced targetry to represent realistic threats, and to simulate digitized force systems. Real-time monitoring and recording during a training event allows data to be played back during AARs in order to assess combat operational effectiveness and to design training programs to overcome identified shortcomings. Targetry is interfaced with a centralized control facility where shots taken against each target are scored and transmitted for review. Targets also have the ability to digitally interact with Soldiers' equipment to simulate shootback capabilities.

Real-time digital capabilities would capture Soldiers' actions during training events and would be available for immediate review. Proficiency can be determined by evaluating the performance data for the adequacy of the training level. This allows units to return immediately to the field to

re-train certain tasks, if necessary. This capability is relatively new to the Army, and it would be the first time wireless digital feedback would be used in relation to maneuver training in Alaska. The BAX offers a unique training environment for an Army unit to involve all of its leadership, from Sergeant to Colonel, in the design, development, and execution of effective combat training as a team. The BAX is designed to support event-specific and scenario-driven training. Unit commanders can develop any scenario to support training to standard, thus providing the potential for a one-of-a-kind training event each time the BAX is used.

The BAX design includes two hardened course roads (with the ability to freely maneuver between the two), stationary and moving targets, machine gun bunkers, breaching obstacles, and indirect fire simulation devices (Figure 2.a). All targets would be fully automated, and would be computer operated and scored from a centralized control facility. The range operating system would be fully capable of providing an instrumented AAR, and requires electricity and fiber optic communications to operate necessary equipment. In addition to the range, the BAX complex would include an ammunition breakdown building with a loading dock, an operations and storage building, restroom facilities, an enclosed observation area, a covered dining area, building information systems, a well system, and storm drainage features.

Tables 2.m, 2.n, and 2.o offer a summary of potential actions and outputs associated with the BAX for each alternative location.

The BAX requires approximately 3,500 acres of constructible and maneuverable land. In addition, a surface danger zone is associated with the BAX and requires an area of approximately 24,000 acres with a range of approximately seven and a half miles (Figure 2.a). (Additional information on surface danger zones can be found in Section 2.2.1.2.2.1, *Safety Precautions*).

2.2.1.2 Operation of the BAX

This complex would be used to train and test combat skills such as the ability to detect, identify, engage and defeat stationary and moving infantry and armor targets in a rural tactical situation. This complex would also support direct live-fire operations, either independent of supporting vehicles (such as the Stryker or High Mobility Multipurpose Wheeled Vehicles [HMMWVs]) or simultaneously with supporting vehicles. This complex would accommodate a variety of training munitions and/or laser training devices.

Realistic training ranges are required to fully train Soldiers. A Soldier does not fire his/her weapon alone in battle. The Soldier's entire squad, platoon, company, and even battalion must coordinate their efforts to prevent any friendly fire accidents. This skill must be practiced on large-scale ranges, like the BAX, that realistically portray a combat environment before going to war. The BAX is the rural range that trains Soldiers how to fight from tree-to-tree and hill-to-hill.

The BAX can be used separately from the CACTF to train specific skills. However, the ability for the two range facilities to be used together to train combat teams provides for training synergism, flexibility, and diversity that is vital to wartime preparedness. During wartime situations, battles would rapidly transition between rural and urban environments and over a wide variety of distances. It is necessary to provide range facilities where all of these skills can be practiced collectively. During training events, the BAX and CACTF would likely be used together.

2.2.1.2.1 Description of Units Using the BAX and Training Requirements

The BAX is designed to accommodate 200 Soldiers (company level) at a time for dismounted and mounted maneuver operations, in addition to individual, crew and section gunnery training and qualification requirements for vehicle-mounted weapon systems. This is the level that range utilization is based on. However, the BAX would be available for use by company or battalion (800 Soldiers) sized units. It can also be used by individuals, sections, squads, or platoons. This unit-level training is not what the range was optimally designed for, as units tend to train at the section, squad and platoon level on facilities near their home stations (Fort Wainwright [FWA] or Fort Richardson [FRA]). However, smaller sized units are not precluded from using the BAX.

As the BAX would be located in Alaska, the primary users of the training facility would be units assigned to USARAK. Other users include institutional groups (field and live-fire requirements of Soldiers attending the Non-Commissioned Officer Officers Academy or the Northern Warfare Training Center), non-tenant organizations (units not assigned to USARAK but who historically utilize USARAK training facilities, including Army National Guard and Army Reserve), DOD organizations, and weapons testing groups.

As explained in the following discussion, the maximum potential throughput or use of the BAX per year would be approximately 238 days. The minimum throughput of the BAX would be approximately 106 days.

Companies from the 172nd Infantry Stryker Brigade Combat Team (SBCT) and 4th Brigade, 25th Infantry Division Airborne Brigade Combat Team (ABCT) are required to train on the BAX. Table 2.a lists the minimum number days that are required to train both units to standard over the course of a year.

Table 2.a Minimum Number of Days Required to Train USARAK Units to Standard on a BAX.

Military Units	**Number of Companies**	**×**	**Number of Training Iterations per Company**	**×**	**Hours per Training Iteration**	**÷**	**Hours of Range Availability per Day**	**=**	**Total Days**
172nd Infantry SBCT	13		8		8		16		52
4-25th ABCT	11		8		8		16		44
Number of Days Required for Retraining Opportunities[1]									10
Minimum Number of Days Required to Train USARAK Units to Standard on a BAX									**106**

[1]An additional 10 percent of the total training days required for each unit is added to the total to account for retraining requirements necessitated by unsuccessful training events.

Additional units can also be expected to utilize the BAX for training to the extent that it is available. Table 2.b lists the maximum number of days the BAX would be utilized for training

within a calendar year (365 days). Training days are subject to change based extreme or "emergency" circumstances (e.g., impending deployment) and could be more than 238 days.

Table 2.b Maximum Number of BAX Utilization Days.

Military Units	Number of Units	×	Number of Training Iterations per Unit	×	Hours per Training Iteration	÷	Hours of Range Availability per Day	=	Total Days
172nd Infantry SBCT Company	13		8		8		16		52
4-25th ABCT Company	11		8		8		16		44
Alaska Army National Guard Company	9		8		8		16		36
172nd Infantry SBCT Cavalry Section	24		16		2		16		48
4-25th ABCT Cavalry Section	18		16		2		16		36
Number of Days Required for Retraining Opportunities[1]									22
Maximum Number of BAX Utilization Days									**238**

[1]An additional 10 percent of the total training days required for each unit is added to the total to account for retraining requirements necessitated by unsuccessful training events.

The actual number of days of training at the BAX primarily depends on the required weapons training strategy for a particular unit. The DA PAM 350-38, *Standards in Training Commission* (STRAC), delineates the ammunition allocated for training events that are required for Soldiers to meet minimum training standards from the basic individual level through the advanced collective unit level. The STRAC also delineates the number of iterations per year these events should be conducted to maintain skill proficiency. This information is combined with information from the RDP to determine the estimated minimum and maximum throughput or use of the BAX. Throughput refers to the total number of Soldiers or units (e.g., crews, sections, squads, platoons, or companies) to be trained in a given period of time. Calculation of throughput is based on the type of training, the time required for a single individual or unit to complete a training event or series of events, and the period of time (minute, hour, day, week, etc.) which applies.

The STRAC requires that eight iterations per company per year be conducted on the BAX. Half of the iterations must be completed during daylight hours and the other half must be completed during nighttime hours. Of those eight iterations, half must be conducted using the "walk" training strategy and the other half must be completed using a "run" training strategy (See Section 2.2.1.2.1.2, *USARAK Training Strategy*, for a description of the "crawl-walk-run"

training method). Typically, one company-level range iteration requires eight hours to complete, and the BAX would be available for training 16 hours per day. Thus, two company-level training iterations could occur per training day. Whereas the SBCT and ABCT would be required to use the BAX to satisfy their company-level training requirements, Alaska Army National Guard companies are not required to do so, but nonetheless would likely use the BAX if it is available, as the BAX would be the best range in Alaska for that purpose.

Cavalry sections are required to complete 16 iterations per year (four per quarter). Half of the iterations must be completed during daylight hours and the other half must be completed during nighttime hours. Of those 16 iterations, half must be conducted using the "walk" training strategy and the other half must be completed using a "run" training strategy. Although use of the BAX is not necessary to satisfy section-level training requirements, once built, the BAX would be the best range available in Alaska for such purposes and thus would be the range most likely used for such purposes by cavalry units based in Alaska. Typically, one section-level range iteration requires two hours to complete. Thus, given that the BAX would be available for training 16 hours per day, eight section-level training iterations could occur per training day.

Training events on the BAX would vary in length based on the training needs and strategy of each unit as determined by the Commander. Training events involving use of the BAX can require scheduling the facility for anywhere from 3 to 45 days. Although this is a wide range, the events would typically occur for approximately two weeks in length. In addition to actual training days, there would also be days required for set up, reset between iterations, and maintenance. Both day and night operations would be conducted on the BAX.

In addition to calendar, weather, and maintenance impacts to BAX availability, the quantity and frequency of scheduled and unscheduled overseas deployments for USARAK's assigned combat forces also affects the utilization rate for the facility. While most deployments are known well in advance, there is always the possibility that forces would deploy more frequently than predicted and not be present in Alaska to train at the BAX. In the event USARAK forces are deployed for an extended period of time, use of the BAX could decline until those units return to Alaska to rest, refit, and return to training.

The largest training event occurring at Donnelly Training Area (DTA) East, to include use of the BAX, could potentially involve a brigade-sized unit (approximately 3,400 Soldiers [or four battalions]) training its assigned battalions over an approximate 45-day period. A training scenario on the BAX could revolve around 15 days on site with 10 days as actual on-the-range, live-fire training exercises per battalion level rotation through DTA. Prior to an actual live-fire exercise on the range complex, the unit would rehearse its actions a minimum of two times. Soldiers are required to conduct these rehearsals on the exact piece of terrain on which they will conduct a live fire. The remaining 35 days would consist of training activities similar to those described in the *Final Environmental Impact Statement for Transformation of U.S. Army Alaska, Vols. 1 and 2* (USARAK 2004a), occurring throughout DTA East. The size of training event could vary and could potentially occur once a year. The brigade would deploy from FWA and/or FRA to conduct "round-robin" type training. This type of training allows different units to train at different stations (Army facilities) for certain periods of time. The length and type of training at each station is determined by the Mission Essential Task List (METL) task to be trained. In this manner, an entire brigade of 3,400 Soldiers can effectively use all of the combat training facilities, including the BAX, while training at DTA over a 45-day period.

An example of a large training event involving four battalions at DTA could involve a battalion (which consists of 800 Soldiers) spending one week training at the CACTF. Simultaneously, a second battalion (which is made up of four companies of 200 Soldiers each) could be training on the BAX. These four companies would be assigned collective tasks related to their METL, which is the training task needed to accomplish the organization's wartime operational mission, that could be performed on the BAX. While one company could be conducting live-fire training on the BAX, a second company could be rehearsing and readying equipment for live-fire training, and a third company could be recovering from previous training on the BAX, conducting AARs, and performing maintenance activities. The fourth company could possibly consist of a headquarters and include other company-support features to provide logistical support. A third battalion could conduct, for example, force-on-force training in another part of DTA East, while the remaining fourth battalion could include approximately 1,000 Soldiers serving in an administrative and logistic support role throughout the training area. The BAX facility, in combination with the proposed CACTF and other existing USARAK range infrastructure, would be able to simultaneously support synergistic training of multiple-sized units up to a brigade level.

2.2.1.2.1.1 Army Training Strategies

Army training includes home station training (in Alaska), combat training center rotations (e.g., Fort Irwin, California), joint training exercises, and operational deployments in support of national directives. The Army utilizes a top-down/bottom-up approach to training as a team. Commanders provide the training focus, direction and resources while subordinate leaders provide feedback on unit training proficiency, identify specific unit training needs, and execute training to standard in accordance with an approved plan. Guidance, based on wartime mission and priorities, flows from the top down and results in the identification of specific collective and individual tasks for subordinate units to support the higher unit's mission. Input from the bottom up identifies training needs to achieve task proficiency on identified collective and individual tasks.

Commanders at all levels are responsible for training their units to standard. Commanders identify the training task needed to accomplish the organization's wartime operational mission. This battle-focused training task is referred to as the METL. Units must be proficient in basic tasks before progressing to more complex and collective (or group) tasks ("crawl-walk-run" method). All basic tasks provide the foundation on which to build performance of individual Soldier tasks, drills, and METL tasks to standard.

A METL is defined at the brigade level and is subsequently broken down into subordinate collective tasks (an action performed by more than one person), which are further broken down into individual Soldier tasks. Each METL follows a similar hierarchy. For example, one of the brigade's many METL tasks is to "conduct an attack." Battalions, companies, platoons, squads, and individuals receive top-down direction on how to achieve this task. The Commander receives bottom-up feedback about the collective and individual tasks associated with the METL (such as conduct squad maneuver, enter/clear a trench line, or engage targets with a light machine gun [5.56mm]), which is considered when determining the unit's current proficiency on these particular METL tasks. The day-to-day training necessary to train METL tasks to standard is variable. Commanders have the freedom (within allocated resources) to design training programs in any way to meet the established METL. As individual echelon leaders evaluate performance

and it filters to the top, it may be obvious that a certain company requires more training in a specific area. The Commander can then modify follow-up training plans to address the deficiency.

At the battalion level, Commanders review company and staff battle task evaluations that impact the battalion's proficiency to execute the METL task. The Battalion Commander conducts this review with the Command Sergeant Major, staff, and Company Commanders. At the brigade level, the Brigade Commander creates the training exercise scenario. Additional players are needed to fill communication, oversight, and scenario development roles as more Soldiers become involved in the training exercise.

2.2.1.2.1.2 USARAK Training Strategy

Although there is no "typical" training event that would occur on the BAX, a general estimate on the training rotation, number of Soldiers, and their location within certain areas during a training event can be made.

USARAK units currently follow a general three-phase "crawl-walk-run" training rotation that involves training rehearsals using blank-fire on the exact terrain to be used for the actual live-fire training exercise. Prior to the "crawl" stage, classroom-oriented activities are usually conducted at the home station (either FRA or FWA) to familiarize units with the planned training mission at the BAX. Typically at the "crawl and walk" stage, units deploy to the BAX where an on-the-ground survey of the training facility prior to conducting the training mission occurs. Blank ammunition and Multiple Integrated Laser Engagement Systems (MILES) equipment are typically used at this stage. Prior to reaching this phase of training, a squad and platoon-level live fire may be conducted to serve as a building block for a larger company-level live fire on the BAX. Prior to moving to the next stage, all units must demonstrate the appropriate level of proficiency. During the final "run" stage, the entire company-level training mission is executed at the BAX. At this stage, live-fire munitions are used, and performance is evaluated at the company-sized level.

In general, squad, platoon and some company training events would be conducted at FRA and FWA, and remaining company, battalion and brigade training events would be conducted at DTA. Unit training events are defined by a basic event type (e.g., command post exercise), the size of the unit (e.g., battalion, company), and the type of unit (e.g., infantry, engineer). Institutional training events, which focus primarily on individual Soldier training, occur at Army schools and training centers throughout the Army and are defined by a Program of Instruction and course module. Once the Soldiers leave the training institution and arrive at their assigned station, training continues on both an individual and unit level. Basic unit training events include the following:

- Individual Weapons Qualification
- Common Military Training
- Crew Weapons Qualification
- Crew Weapons Sustainment
- Command Post Exercise
- Command Field Exercise
- Situational Training Exercise
- Fire Coordination Exercise
- Field Training Exercise

- Live Fire Exercise
- Tactical Exercise without Troops
- Map Exercise

Each of these training events requires different range or training assets and has a different impact on training lands. Activities associated with these events have been analyzed in the *Final Legislative Environmental Impact Statement for Alaska Army Lands Withdrawal Renewal, Vols. 1 and 2* (USARAK 1999) and the *Final Environmental Impact Statement for Transformation of U.S. Army Alaska, Vols. 1 and 2* (USARAK 2004a).

2.2.1.2.2 Munitions Training at the BAX

The BAX would support fully automated, collective direct live-fire operations. A live-fire operation is defined as a training event that uses service (or real) ammunition as opposed to blank ammunition. A direct fire operation occurs when ammunition is delivered on target by sighting directly on the target using the weapon system's sighting equipment. All training at the BAX would be direct fire. During a direct live-fire event, Soldiers maintain an unimpeded direct line-of-sight between their location and the targets while shooting real bullets at those targets.

The BAX contains both mounted (using vehicles) and dismounted (on foot) operations. The mounted portion of the BAX would support a variety of weapons, including the 105mm Stryker Mobile Gun System, which utilizes non-exploding warheads (Table 2.c). These weapons are mounted on Strykers, HMMWVs or other ground combat vehicles. Laser devices would typically be used for evaluating target distances and to designate specific targets. Weapons used on the dismounted portion of the BAX include machine guns and shoulder-mounted anti-tank weapons (Table 2.c). MILES equipment could also be utilized during both live and non-live fire events at the BAX.

Table 2.c Non-Exploding Live-Fire Munitions and Weapons to Be Used at the BAX.

Mounted Use (Vehicle maneuvers)	
Munition	**Weapon**
105mm (inert) High Explosive Plastic	Mobile Gun System
105mm (inert) (HEAT)	Mobile Gun System
105mm (inert) sabot	Mobile Gun System
.50 caliber 4+1	M2 Machine Gun with a tracer every 5th round
7.62mm 4+1	M240 Machine Gun with a tracer every 5th round
830mm wavelength laser	Infrared Aiming Light for Vehicle or TOW
Dual laser system	Pin-Point Aiming, Target Illumination
Lasers	Locator Designator

Dismounted Use (Infantry foot maneuvers)	
Munition	**Weapon**
40mm (training practice round)	MK19 Grenade Machine Gun
40mm (training practice round)	M203 Grenade Launcher
.50 caliber	XM107 Barrett Sniper Rifle
Sub-caliber and/or inert	AT4 Anti-Tank
Sub-caliber and/or inert	Javelin Anti-Tank
Sub-caliber and/or inert	TOW Anti-Tank
5.56mm	M4 Carbine
5.56mm	M16 Rifle
5.56mm 4+1	M249 Machine Gun with a tracer every 5th round
7.62mm	M24 Sniper Rifle
Lasers	MILES, Locator Designator
Dual laser system	Pin-Point Aiming, Target Illumination
9mm tracer	Subcaliber round for AT-4 trainer

Source: USARAK Training Office

Munitions fired at the BAX would be non-exploding munitions. No service munitions that have a secondary explosion when hitting the target would be used on the BAX. Fired projectiles would not contain explosives. However, small arms tracer rounds that illuminate while en route to the target could be used.

The type and amount of munitions used during a training event is determined by the objective of the specific training scenario. A unit commander must design the training scenario that best fulfills the units' training needs and prepares troops for the current real-world threat. The amount of ammunition would not exceed the annual allocation in the STRAC (the ammunition management system that guides ammunition allocations according to their type of organization). The amount of ammunition allocated to the entirety of USARAK on an annual basis totals approximately 16.5 million rounds. DA PAM 350-38 provides a guideline for planning purposes and is updated annually with current Army ammunition allocations. For example, the document directs how rounds of ball ammunition for an M16 rifle are allocated for company live fires, platoon live fires, squad live fires, individual qualifications, and enhanced marksmanship training. The unit commander determines how to best allocate ammunition resources to meet mission requirements.

The Army's ammunition allocation strategy does not provide the ability to estimate the amount of munitions used at a particular range. Munitions are used at different ranges for all types of training. However, at the BAX, the ammunition used would be small arms and non-explosive. In addition, USARAK uses the Range Facility Maintenance Support System, which allows range managers to maintain records on the amounts and type of ammunition used on ranges and track actual range use.

2.2.1.2.2.1 Safety Precautions

The DA Pamphlet (PAM) 385-63, *Range Safety*, establishes and maintains a comprehensive range safety program for the Army. This publication provides implementation guidance, standards and procedures for the safe firing of ammunition, demolitions, lasers, guided missiles, and rockets for training, target practice, and, to the extent practicable, combat. In addition, it provides guidance on use of ranges and airspace, handling of ammunition, firing instructions, and target requirements. Specific range safety topics are discussed in detail in Section 3.2.5, *Human Health and Safety,* definitions and required safety precautions are included in Section 3.2.8, *Airspace*.

Surface Danger Zones

An on-the-ground surface danger zone would be associated with the BAX. The size of a surface danger zone is based on empirical data and is designed to contain all fired rounds. Within the assortment of weapon systems to be used on the BAX, the Mobile Gun System (firing a 105mm cannon Sabot round), a variant of the Stryker vehicle, requires the largest surface danger zone. This system requires a firing distance of approximately seven and a half miles and a somewhat triangular-shaped, three-dimensional surface danger zone of approximately 24,000 acres.

The objective of a surface danger zone is to limit the residual risk of projectile escape and/or other danger to the public that is no greater than one in one million. DA PAM 385-63 defines the space requirements to safely incorporate weapons in live-fire training events. A range must be designed and targets placed totally within Army installation boundaries. The Army also requires the placement of targets and anticipated firing locations (by weapon type) in an area that is able to accurately contain ricochets and establish a safe impact area for all projectiles. This area is large enough to contain projectiles fired at an optimal elevation and ensure that the energy of the fired projectile is totally depleted within the surface danger zone. For example, an M2 .50 caliber round, fired at an elevation to achieve maximum range, will travel 6,400 meters along the gun target line. To either side of the gun target line, there is a 5-degree dispersion area and an additional 5-degree ricochet area. This additional combined 10-degree fan extends along the entire length of travel. Individual fans were created for each weapon and round to be used at the BAX and combined to create a composite surface danger zone that would safely encompass all weapons possibly used during a training event. The composite surface danger zone was designed to lie totally within installation boundaries.

Special Use Airspace

To ensure the safety of both civilian and military aviation personnel and assets, permanent and temporary control measures would be associated with training operations at the BAX. Permanent control measures include existing restricted airspace. Existing restricted airspace over Army land would continue to be utilized under the proposed action. No additional restricted airspace areas are proposed as part of the construction and use of the BAX and CACTF. The flight of aircraft is subject to restrictions within the restricted area over USARAK lands (designated as R2202A/B/C/D). Most military operations would be conducted within this designated airspace in accordance with specific procedures required to maximize flight safety for both military and civilian aircraft. Airspace definitions and required safety precautions are included in Section 3.2.8. Restricted

airspace within DTA East and West will be limited to existing designated areas. USARAK has concluded that no new restrictions are needed for the location of the range projects.

Temporary airspace control measures utilized under the proposed action include Controlled Firing Areas (CFA) and/or a Small Arms Range Safety Areas (SARSA). Special use airspace must be designated and activated prior to conducting any activity over 45 meters (147 feet) above ground level (to include ricochet ordnance) that would be hazardous to aircraft. However, except for activities authorized and conducted in a SARSA or a CFA, training at the BAX does not require special use airspace. Either a CFA or a SARSA would be utilized for training at the BAX. Specific range safety topics are discussed in detail in Section 3.2.5. Airspace definitions and required safety precautions are included in Section 3.2.8.

A CFA that encompasses the maximum utilized area would be established to contain activities that, if not conducted in a controlled environment, would be hazardous to aircraft. Special use airspace responsibilities under the CFA require the Army to provide for the safety of persons and property at ground surface and for the safety of aircraft transiting through these areas. The designation of a CFA does not prohibit an aircraft from crossing the area. Firing would be suspended whenever an aircraft approaches the area in order not to impede general aviation traffic. The military unit using the range complex has the obligation to ensure the safety of the general public.

A CFA also provides a means to accommodate military use of special use airspace without adverse impact to civilian, commercial, or other forms of aviation. CFAs are applicable only to those military training activities that can be immediately suspended upon notice that a nonparticipating aircraft is approaching. Minimum visibility (either by sight or radar) distances are established by FAA as a prerequisite to CFA designation.

SARSAs are Army-established and Army-managed areas designed to contain small arms range activities that, if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft. It is the facility user's responsibility to provide for the safety of persons and property on the surface and in the air. No range activities would be conducted that would endanger aircraft in adjacent airspace. Table 2.d lists standard SARSA use parameters. In addition, aircraft spotters are required for all ranges in a SARSA.

Table 2.d Small Arms Range Safety Area Utilization Parameters.

Ammunition Type	Horizontal Distance (miles)	Vertical Ceiling Above Ground Level (feet)
.22 caliber	6	1,400
.45 caliber	6	1,400
9mm	6	1,400
5.56mm	8	1,700
7.62mm	8	3,400
.50 caliber	9	4,200

Source: Department of Army Pamphlet 385-63

Ammunition Handling

Training situations require ammunition be used at various locations that are temporary or transient by nature. Distribution of ammunition to Soldiers would occur only in areas designated for that purpose, such as ammunition breakdown buildings, ready lines, firing lines, attack positions, assembly areas, or defilade positions. Blank and live-fire ammunition would not be stored in or issued from the same building at the same time. The quantity of ammunition unpacked at the breakdown building or firing line would be kept to the minimum number of rounds needed for efficient firing for the exercise. Packaging material, propellant increments, and fuses would be retained until firing is complete. Units are prohibited from burning wooden containers or indiscriminately firing or disposing of ammunition to preclude its return to a storage facility. Broken and/or unserviceable increments (powder bags) would be handled in accordance with installation range and environmental requirements. All ammunition unpacked for firing, but not fired, would be repackaged into its original packing configuration prior to return to the ammunition supply point.

The collection of spent brass (metal ammunition casings) is not required when ammunition is expended from mounted or dismounted weapons over extended terrain. The type of ammunition that would be used at the BAX has no secondary detonation hazard (explosive warhead) that would require on-the-ground clearing by certified unexploded ordnance (UXO) personnel. However, all residue and visible spent brass would be removed from ranges or training sites and turned into the ammunition supply point. Residue is any material that was not fired down-range and would include packaging and other related refuse.

Actual ammunition usage is tracked and recorded using the Range Facility Maintenance Support System. This program allows range managers to schedule use of ranges, schedule maintenance of ranges, maintain information on the amounts and type of ammunition used on ranges, and track actual range use.

2.2.1.2.3 Mounted and Dismounted Maneuvering at the BAX

During training, Soldiers would transition between rural (BAX) and urban (CACTF) environments using a variety of means including ground vehicles, aircraft, or traveling on foot. The transition between the ranges and within each range complex requires the ability for units to train using vehicles in free maneuver. The SBCT was designed by the Army to move faster and farther and to react more quickly to tactical changes during combat, as compared to past light infantry units (which utilized tanks). In order to achieve this quick adaptability, SBCT units must have the ability to freely conduct (minimal obstructions) all forms of maneuver. In addition, unit leaders must be able to adapt movement or maneuver to the training situation. Thus, units must have the ability to go off-road when required to maximize training (or combat) power.

All vehicles within the Army inventory, including the Stryker, would utilize existing, newly established hardened roads, trails and maneuverable unimproved terrain as part of the proposed action. Soldiers would also maneuver on foot, both on and off-road. While targets would be placed along roads and trails, their locations would not restrict movement to a single, fixed route and would allow Soldiers to maneuver within the range complex. Vehicles and Soldiers

would have the ability to maneuver on all acreage within the BAX as they perform offensive and defensive exercises.

Although off-road vehicle maneuver would be allowed anywhere within the BAX construction footprint and maneuver area, certain areas have been identified that would most likely receive the majority of off-road travel during training events. These maneuver areas are identified for each alternative site location (see Section 2.4.3). In Army combat units such as SBCT or the ABCT, certain ground vehicles are more likely than others to remain on improved roads and trails and avoid off-road movements. For example, large transport trucks carrying heavy volumes of either ammunition or fuel would likely stay on the more trafficable, improved roads and trails when the mission dictates. When those vehicles arrive at their field logistical support base, the brigade would establish operations on trafficable ground that can support their loads without fear of constant vehicle recovery operations in less trafficable areas, such as low-lying, saturated soils. Combat vehicles such as the Stryker possess more off-road maneuverability than the heavy logistical support vehicles. When time is a critical component of the training mission, Strykers would use existing roads and trails. However, roads and trails would not be used at the expense of safety and survival under simulated combat conditions. Strykers are designed to take advantage of available terrain for cover and concealment.

Approximately 80 percent of the vehicle maneuvers conducted at the BAX would be off of the established roads and trails. Vehicle maneuvers are expressed as a "vehicle pass." Section 2.2.1.2.1, *Description of Units Using the BAX and Training Requirements*, states that eight iterations per company per year would be conducted on the BAX. Half of these iterations would be conducted during summer months and the other half would be conducted during the winter months. During the winter months, the ground is frozen at DTA East. Minimal off-road vehicle impacts are expected during frozen soil conditions (winter months). Thus, only "vehicle passes" conducted during the summer will be used to determine the environmental impact of the training iterations. Taking into account the minimum number of SBCT and ABCT units required to utilize the BAX to train (Table 2.a), the BAX must be able to support 1,012 vehicle passes per year during the summer months. Additional units can also be expected to utilize the BAX for training to the extent that it is available. About another 570 vehicle passes a year (for a total of 1,582) would be associated with that additional amount of training, including training conducted by Alaska Army National Guard companies and the cavalry sections contained within the SBCT and ABCT (Table 2.b) (USAG-AK 2006).

While there are a number of types of Army units that could utilize the BAX, Table 2.e shows the vehicle composition of two typical Alaska-based company-sized units: a SBCT company and an ABCT company. The ABCT has different support equipment and vehicles due to its requirement to be more rapidly deployable for early parachute or airland insertion into a combat zone while remaining somewhat self-sustaining on that isolated battlefield. In many instances, due to its better mobility than heavy mechanized infantry or armor units and increased combat power than an airborne unit, the SBCT would follow to either augment or relieve the ABCT once it has assaulted in and established control in an area. At the BAX, approximately 25 vehicles could potentially be maneuvering simultaneously during a company-sized training event.

Table 2.e Vehicle Composition of Companies Utilizing the BAX.

Type of Vehicle	Number of Vehicles	Personnel
Airborne Brigade Combat Team, Infantry Rifle Company		
HMMWV (Army vehicle)	2	200
Medium Tactical Vehicle	1	
Trailer	3	
Total	**6**	
Stryker Brigade Combat Team, Infantry Rifle Company		
Stryker (armored personnel carrier)	21	200
HMMWV (Army vehicle)	2	
FMTV (five-ton, personnel mover (about 25 Soldiers)	3	
Towed Equipment	2	
Total	**28**	

Source: USARAK Training Office

2.2.1.2.3.1 Environmental Precautions

USARAK has developed a hierarchical classification system (termed environmental limitations overlays) for use with existing military installation maps to inform Soldiers and units where, when and how military operations can be conducted. These classifications are applicable to all Alaska Army training lands and are used by military units and Range Control when making scheduling decisions. These overlays serve as the primary guide in regulating and minimizing surface disturbance from maneuver and general military training in the field. Some impacts associated with the use of the environmental limitations overlays have been evaluated in the *Environmental Assessment for the USARAK Five-Year Permit for Training in Wetlands* (USARAK 2000b).

The overlays were created based on the location of wetlands, riparian areas, anadromous streams, open water, and sensitive wildlife habitats within wetlands. Some military operations were precluded from certain areas. Permitted military operations also vary depending on the time of year. Overlays indicate particular environmental limitations by season (summer and winter). Local climatic conditions dictate the particular months corresponding to each season and will vary from year to year. Seasonal overlays were created and, generally, the summer overlay is used from mid-April to mid-September, paying particular attention to sensitive areas during break-up and freeze-up time periods. Natural Resources personnel and USARAK Range Control decide when adequate freeze/thaw conditions exist based on current climatic conditions and snow cover. The winter overlay is used for the remainder of the year.

A Geographic Information System (GIS) classified each area of the environmental limitations overlays into three color-coded categories. Approved or restricted military activities are listed for each category. During summer months, all upland areas are classified as green (no limitations or restrictions). The yellow category was assigned to all wetland areas except those listed as higher

function wetlands as determined by USARAK (based primarily on habitat value and susceptibility to damage). Prohibited activities in the yellow category include laundry and bath facilities, portable latrines, slit trenches, vehicle decontamination training, smoke generation, fuel farms and petroleum, oil and lubricants (POL) distribution. The red category was assigned to higher function wetlands, open water bodies and streams (plus a 50 meter buffer), all anadromous streams and to sensitive wildlife habitat falling within wetland areas. Foot maneuvering is the only approved activity that may take place in the red areas of the environmental limitations overlays during summer months.

During winter months, upland areas remain classified as green (no limitations or restrictions). All wetland areas (higher function and other), sensitive wildlife habitats within wetland areas and riparian areas are classified as yellow, and large water bodies and all anadromous streams are classified as red.

Overlays similar to those described above would be utilized within the designated BAX maneuver area. A specific overlay would be developed for the selected BAX location. All activities occurring within the BAX maneuver area would be subject to the restrictions indicated on the environmental limitations overlays for that specific area. Maneuver would occur on the remaining acreage not indicated on the overlays within the BAX during offensive and defensive exercises.

2.2.1.2.4 Joint Operations – Air Support at the BAX

> "Joint warfare is team warfare. The engagement of forces is not a series of individual performances linked by a common theme; rather, it is the integrated and synchronized application of all appropriate capabilities. The synergy that results from the operations of joint forces according to joint doctrine maximizes combat capability in unified action" (Joint Publication 1, *Joint Warfare of the Armed Forces of the United States*).

The effective integration of Army, U.S. Air Force (USAF), Navy, and Marine Corps combat power (joint operations), along with the addition of combat power from our allies (combined operations), has always been a crucial underpinning to our nation's combat doctrine. Whether in support of direct combat during a war (such as the current Global War on Terrorism) or military operations other than war, joint operations exploit the tremendous advantages our armed forces enjoy over potential adversaries in terms of mobility, combat power, and reach, especially in the current Global War on Terrorism. The construction and operation of the BAX at DTA would provide USARAK-assigned combat forces with the necessary resources to achieve a much higher level of training in a joint operational environment than they would attain without it. For USARAK, the prevalence of USAF combat aircraft in Alaska would provide excellent opportunities to hone those critical joint warfighting skills at the BAX.

Army air assets consist of attack helicopters, troop assault helicopters and equipment/supply helicopters (AH-6, AH-64A/D, CH-47D/E, OH-58D, MH-60L/DAP and UH-60). USAF, Navy, and Marine Corps air assets include equipment or personnel delivery aircraft (C-130, C-17 to either parachute or land), high performance jets that perform close air support (attack enemies on the ground) (F-16, A-10, etc.), and other large aircraft (AC-130 gunship). In general, these assets would play a close air support role including such actions as attacking enemy/suppress targets, providing marking, cover and concealment, reconnaissance, and firing of weapons through an

"off-set" or virtual training process, where close support aircraft would actually operate within a separate range located outside of the BAX and CACTF area.

Fixed-wing aircraft and helicopters would also perform actual troop and equipment transport and delivery actions. Aircraft would have either an air assault role (land or hover) or an airborne role (parachute). During air assault operations, rotary-winged aircraft are used to move troops and equipment around a training area. Troops and equipment are delivered using rappels or the helicopter makes a landing. During airborne operations, troop movement is supported by using currently established drop zones, fixed-wing aircraft (C-130, C-141, and C-17), and occasionally rotary aircraft for small scale operations (Blackhawk and Chinook helicopters).

All branches of the military have the potential to participate in joint/combined flying training and major flying exercises (MFEs) using existing Alaska Military Operations Areas (MOA) airspace. Alaska is the closest U.S.-controlled tactical flying training area available to Pacific Air Force forces and U.S. allies in the Pacific region. In addition, Army and USAF aircraft are permanently assigned to Alaska and conduct routine training missions. All military branches would have the ability to incorporate the BAX and CACTF into joint/combined flying training and MFEs through an "off-set" or virtual training process.

Joint/combined flying training and MFEs are designed to give aircrews their first taste of mock air warfare, ultimately increasing their chances of survival in real combat environments. The complex combat scenarios and advanced capabilities of many of the participating aircraft require large parcels of airspace. Access to air-to-ground weapons ranges and use of ground-based threat radar and weapon system simulators is also a requirement of training missions. Additional support missions such as air refueling, command and control, search and rescue, fighter escort, and electronic warfare further increase the amount of airspace required for MFEs (USAF 1995).

During joint/combined flying training and MFEs, aircraft conduct routine flying training in addition to the scenario developed for the MFE. Routine training involves aircraft departing from their base, participating in training missions that have one or more objectives (e.g., counter air, air interdiction, close air support, forward air control, or suppression of enemy defenses), and returning to base. This scenario (take-off, training flight, and full-stop landing) is called a "sortie." During an MFE, a combat scenario is developed and roles are given to participating aircraft and ground forces. Ground forces would position simulated air defenses throughout the BAX to provide, in conjunction with airborne defenses, a realistic air defense environment. Participating aircraft are temporarily assigned to an airbase in Alaska (most likely Eielson or Elmendorf Air Force Base) from which they depart and to which they return at the end of a sortie (USAF 1995).

2.2.1.2.4.1 Close Air Support at BAX

Close air support would not be utilized during every training event at the BAX. Similar to tactical training, METL tasks also exist for close air support. Achieving METL requirements involves the coordination of air support assets into the combat training scenario. The actual coordination of these features is the METL task for Army combat forces.

Military operations are conducted within a designated airspace where established procedures are used to maximize flight safety for both military and civilian aircraft. Special use airspace includes MOAs, (which were established by the Federal Aviation Administration (FAA) to facilitate day-

to-day military aircraft training), MFEs, Restricted Areas, CFA, Prohibited Areas, Warning Areas, and Alert Areas. Existing special use areas, where applicable, to be utilized during training at the BAX include MOAs and Restricted Areas. Either a temporary CFA or a SARSA would also be utilized for training at the BAX under the proposed action.

During field events at the BAX, an "off-set" training technique would be used to incorporate close air support training for Army ground combat forces. This "off-set" method allows close air support assets, artillery, mortars, and/or attack helicopters to operate using live ordnance in an adjacent, designated impact area outside of the BAX training area while linking (digitally) to a tactical exercise being conducted within the BAX, all in a virtual manner. Distant live fire and airborne assets would be integrated into a training exercise via radio or other digital methods. Aircraft would utilize existing targets and facilities within restricted airspace located over existing impact areas while ground troops are maneuvering at the BAX and/or CACTF. Command and control between the Army and the service providing the close air support is necessary to execute and coordinate joint actions at separate locations.

The USAF prepared an EIS evaluating the potential environmental effects of restructuring and using special use airspace in Alaska (USAF 1995). At the time, the existing MOA airspace did not meet USAF training requirements. The decision to restructure special use airspace ensured that routine flying training and MFE training requirements would be met while minimizing the impacts to the environment and aviation safety. Should the BAX be located within existing MOAs, Army training at the BAX will comply with the decisions and mitigation measures set forth in the USAF's *Record of Decision for the Final EIS Alaska Military Operations Areas* (USAF 1995).

An additional dimension to combat training by USARAK at the BAX would include extensive participation by airborne forces assigned to Alaska. The ABCT, as well as additional airborne forces expected to be assigned to USARAK, would conduct tactical training at the BAX. This approximately 3,400-Soldier ABCT primarily utilizes USAF aircraft such as the C-130 and C-17 for airlift to an area of operations and parachutes personnel and equipment onto the battlefield. These units would use existing drop zones and assault landing strips at DTA to train as realistically as possible at the BAX. USAF airlift assets or Army helicopters would fly over the appropriate drop zones or land on assault landing strips to deliver personnel and equipment to the training area as well as conduct battlefield sustainment operations. Due to the expected increased size of airborne forces assigned to Alaska, military aircraft operations in and around the BAX are likely to increase over current levels.

USAF close air support (i.e., use of A-10s, F-15s, F-16s, or AC-130 gunships) in support of Army ground combat training would remain a key component to effective combat training for USARAK combat units. While the frequency of this joint Army/USAF combat training at the BAX would generally not exceed levels experienced in the past at DTA, it is possible that real-world contingencies could result in periodic but temporary increases in synchronized training with the USAF.

2.2.1.2.5 Support Operations, Transition Routes and Deployments

The use of public highways, air, and/or railroad systems to transport military equipment and Soldiers within Alaska in support of training operations would occur during use of the BAX.

Once Soldiers and their equipment arrive at their training destination, various field sustainment activities would be expected to occur. Staging and bivouac areas near the BAX would house Soldiers and equipment before and after training events. Transition routes, including maneuver corridors, would be used to move equipment and Soldiers between the BAX, CACTF, staging/ bivouac areas, and other nearby training support facilities.

Staging areas are large portions of land that are generally clear of significant amounts of vegetation and used by military units to set up and break down equipment, and to assemble and conduct convoy formation prior to and following training exercises. Staging areas are also used for camping (bivouac), maintenance, and POL distribution activities.

USARAK units deploying to or from DTA to use the BAX are expected to use a variety of transportation routes and assets. As mentioned earlier, airborne forces would rely primarily on aerial delivery of personnel and equipment into and out of the BAX and DTA, although they would still require use of the Richardson Highway (primarily between FRA and DTA) for some ground vehicular movement. Movement of some larger vehicles, equipment, and supplies supporting the FRA-based airborne Soldiers would use rail transport to FWA where it would then be off-loaded for transport south on the Richardson Highway to DTA for training at the BAX. Soldiers and units assigned to FWA, such as the SBCT or military units from outside of Alaska, would be expected to deploy initially to FWA by road, air, or rail and then to further deploy to DTA via the Richardson Highway or by air (either airlanding at DTA or via airborne insertion).

On-post transition routes, or maneuver corridors, would be utilized for travel between the BAX and the CACTF and staging areas. These routes would include existing roads and trails near the proposed range construction site. If necessary, these existing routes would be improved. They would most likely be widened, and installation of adequate drainage structures and compacted gravel and geotextile material would be necessary to improve and extend the overall life of the road. New hardened roads and trails would also be constructed in areas where no transportation routes currently exist. Off-road maneuver, both by vehicle and by foot, would also occur within the transition routes. In forested areas, trees would be thinned and removed to create vehicle “lanes” that would allow safe vehicle maneuver but still provide maximum cover and concealment. Section 2.4, *Location Alternatives Carried Forward for Analysis*, describes specific transition routes for each range location alternative.

USARAK Regulation 55-2, *Transportation Operations and Planning in Alaska*, establishes polices and procedures for USARAK units and agencies using transportation resources in support of Army operations. It covers highway, air, and rail movements to transport brigade equipment and Soldiers within Alaska in support of garrison operations and unit training exercises. The regulation is applicable to all units assigned, attached, or under USARAK’s operational control.

All military convoys moving over the Alaska state highway system require clearance, which is approved or disapproved by USARAK following coordination with Alaska state authorities. Convoy clearances are currently not granted for movement on Sundays or holidays unless the convoy is essential to meet a training requirement. Requests for a convoy clearance require submittal at least 14 days prior to the scheduled movement, which allows for adequate coordination and public notification time.

Convoys are required to be separated into serials totaling a maximum of 20 vehicles. Each 20-vehicle serial is assigned a controlling commander to decrease the possibility of vehicle damage or personnel injury. Several other mandatory control measures are utilized to meet USARAK and Alaska state requirements (Table 2.f).

Table 2.f USARAK Convoy Control Measures.

Convoy Control Measures	Description
Markings	Various colored flags used to mark specific vehicles in the convoy.
Start point/Release point	Marks beginning and end of convoy movement on trip maps.
Strip map	Delineates convoy route and is provided to each element in convoy.
Route reconnaissance	Previews the travel route a day ahead of scheduled movement to report on road and weather conditions. Information provided by the military organization to each element in convoy.
Rate of movement	Speeds not to exceed posted speed limit. Convoy speeds no greater than 40 miles per hour, with a catch-up speed no greater than 45 miles per hour.
Rest halts	A halt in convoy operations is required on every trip longer than 50 miles. One rest halt is required during the first hour of driving time, and thereafter one halt for every two hours of driving time.
Communications	A list of telephone locations along transportation routes in Alaska is available for reference to all convoy elements.
Back-up recovery service	FWA support assets recover any vehicle breakdowns occurring on the Richardson Highway north of Paxson.
Emergency medical service	Convoy, serial, and march unit commanders will carry a listing of available medical services along transportation routes in Alaska during all convoy operations over Alaska state highways. All accidents require reporting to FWA or FRA.
Commander's briefing	A checklist with convoy requirements is provided to commanders and discussed with all convoy elements.
Vehicle operation requirements	Headlights must be on low beam. Drivers cannot drive for more than 10 continuous hours.

Source: USARAK Regulation 55-2

As a result of the transformation of USARAK forces, deployment miles within the state of Alaska would increase from 437,600 to approximately 1,042,000 during the interim stage of transformation in Alaska (2004 to 2009). Total deployment miles are expected to decrease to 937,600 by 2010 (USARAK 2004a). Travel to DTA for training, to include operations at the BAX and CACTF, would not result in an overall increase to total in-state deployment miles.

2.2.1.2.6 Institutional Matters

Institutional matters are the plans and programs that may potentially affect, protect, and manage the biological, physical, and socioeconomic environment at USARAK. Several management programs have been written to address the sustainability of specific resources. The following programs are currently established and operating at USARAK:

- Environmental Management System
- Sustainable Range Program
- Range Management
- Integrated Training Area Management
- Environmental Management
- Sustainment, Restoration and Modernization Program
- Range Development Plan
- Institutional Controls
- Integrated Natural Resources Management Plans
- Integrated Cultural Resources Management Plan

Additional information on these programs can be found in Volume 2, Appendices C and H of the *Final Environmental Impact Statement for Transformation of U.S. Army Alaska* (USARAK 2004a).

Institutional matters focus on the implementation of programs and processes that mitigate impacts of the construction and use of the BAX and all other associated training at Army controlled lands in Alaska. Activities occurring as part of the proposed action would comply with these plans and programs and all other relevant policies and regulations.

2.2.2 Combined Arms Collective Training Facility (CACTF)

The CACTF is an urban combat training facility that replicates a “city” designed to provide a high level of urban combat training realism and effectiveness to sustain required combat readiness for Soldiers (Figure 2.b). This facility would be designed to support mounted (by vehicle) and dismounted (on foot) training operations for up to 800 Soldiers and 140 vehicles. The CACTF requires approximately 1,100 acres of land suitable for construction of buildings and support features. In addition, a surface danger zone is associated with the CACTF and would require an area of approximately 1,300 acres with a firing distance of approximately 2,300 feet (the maximum range of ammunition types used on the CACTF). The surface danger zone would completely surround the CACTF along its outer limits and would be large enough to ensure that the energy of the fired short range training ammunition (non-lethal projectile) is totally depleted within its boundary. (Additional information on surface danger zones can be found in Section 2.2.2.2.2.1, *Safety Precautions*).

Similar to the BAX, the CACTF would require additional military support actions for effective training. The use of public highway, air, and/or railroad systems to transport military equipment and Soldiers within Alaska in support of training operations would occur. The same staging and bivouac areas utilized during training events at the BAX would house Soldiers and equipment before and after training events at the CACTF. Transition routes, including maneuver corridors, would be used to move between the CACTF, BAX, staging/bivouac areas, and other nearby training support facilities.

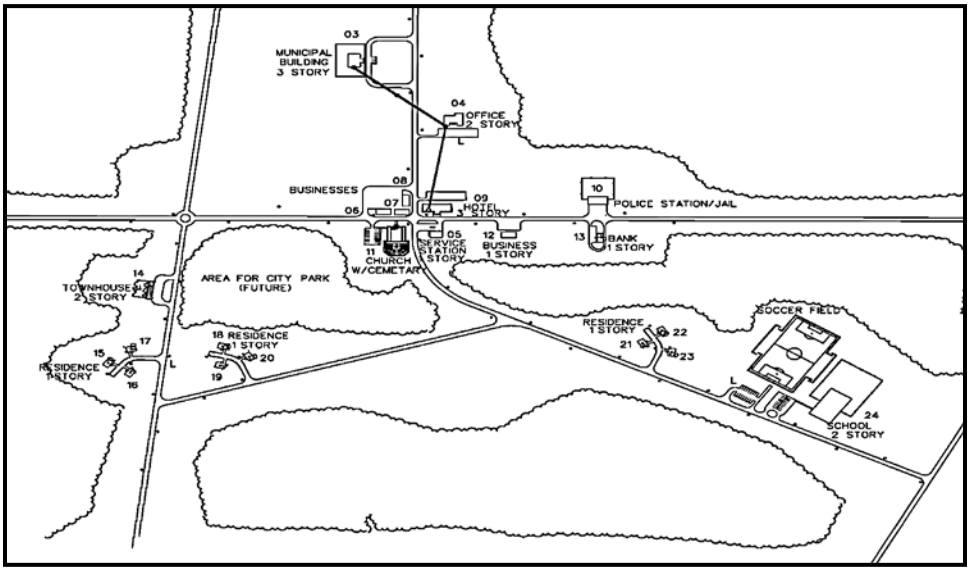
2.2.2.1 Design and Construction of the CACTF

2.2.2.1.1 CACTF Design Requirements

The basic design of the CACTF is illustrated in Figure 2.b. TC 25-8, *Training Ranges*, provides range development and operating guidance. The primary features of the CACTF would include (TC 25-8, April, 2004, p. D-36):

- school
- church/cemetery
- police station/jail
- hotel
- nine residences
- four businesses
- townhouse
- bank
- two warehouses
- government building
- office
- service station
- targets
  - 15 precision/human urban targets (HUTs)
  - 30 stationary infantry targets (SITs)
  - 9 stationary armor targets (SATs)
- associated range operations and control facilities
  - range operations center
  - operations storage building
  - latrine
  - covered mess
  - large After Action Review facility
- recommended features, such as:
  - tunnel/sewer system
  - shantytown
  - one three-story building
  - three two-story buildings
  - breachable walls
  - dynamic entry points
  - mouse holes

Figure 2.b Schematic of the CACTF as Illustrated in TC 25-8, *Training Ranges*[1].



[1] This diagram is illustrative in nature. The actual range design would be unique to the potentially selected site.

2.2.2.1.2 Description of the CACTF and Supporting Features

The CACTF utilizes similar technology to the BAX to facilitate an AAR. All targets are fully automated, providing event-specific, computer-driven scenarios and scoring. Targets are designed to receive and transmit data from the range operations center. This captured data is then compiled and available to the unit during the AAR. All targetry are life-like precision targets.

The CACTF is designed to support a full spectrum of urban operations training. The CACTF would accommodate force-on-force (Soldier vs. Soldier) and force-on-targetry (Soldier vs. target) operations. The proposed CACTF would include a Military Operations in Urban Terrain (MOUT) range support facility, control tower, ammunition breakdown facility, electrical service, restroom facilities, site improvements, and data information systems. A total of 24 structures would be constructed as part of the CACTF. Improved roads, sidewalks, and an underground tunnel system would also be constructed.

Tables 2.m, 2.n, and 2.o offer a summary of potential actions and outputs associated with the CACTF for alternative locations.

2.2.2.2 Operation of the CACTF

The CACTF is designed to train Soldiers and units, up to battalion-sized elements, on the skills and unit teamwork necessary to conduct clearing, breaching, and offensive and defensive operations in an urban setting. This urban setting would be fully automated with digital review capability. Training scenarios would mimic real-world situations as closely as possible.

The training environment within the CACTF must simulate a realistic scenario, complete with buildings, a sewer system, and debris. Soldiers must maneuver through buildings that simulate a town, complete with structures that resemble homes, stores, a school and a church. The buildings

would contain furniture to illustrate the intent of the structure (e.g., couches in homes, display shelves in the stores, etc.) with hidden, movable targets for Soldiers. The buildings would also contain cameras to document training events and to provide immediate feedback and recording capabilities for the AARs.

A Soldier, as part of a squad, platoon, company, or battalion, must coordinate his efforts to prevent friendly fire accidents. To practice this skill, training must be done on a realistic and large-scale range facility in order for Soldiers to experience a realistic combat environment before going to war. The CACTF is an urban range that trains Soldiers how to fight from street-to-street and building-to-building.

The CACTF can be used separately from the BAX to train specific skills. However, the ability for the two range facilities to be used together to train combat teams on synergism, flexibility, and diversity is vital to wartime preparedness. During wartime situations, battles will rapidly transition between rural and urban environments, over all lengths and types of distances. It is necessary to provide range facilities where all of these skills can be practiced collectively. During training events, the BAX and CACTF would likely be used together.

2.2.2.2.1 Description of Units Using the CACTF

The CACTF is designed to accommodate up to 800 Soldiers (battalion level) at a time for individual urban combat training. The CACTF is also available for training by smaller company-sized units (200 Soldiers) and larger brigade-sized units (3,400 Soldiers). Similar to the BAX, the CACTF would be available to all DOD units and elements for training. Expected primary user groups would be similar to those listed in Section 2.2.1.2.1, *Description of Units Using the BAX and Training Requirements*.

Because the urban combat operations training doctrine continues to rapidly evolve, specific throughput requirements cannot be calculated (USARAK 2004c). Units using the CACTF based on current Global War on Terrorism experiences would follow the same training strategy as described for the BAX.

2.2.2.2.2 Munitions Training at the CACTF

Units training at the CACTF would employ a variety of simulated training munitions and laser training devices. Direct, line-of-sight operations would occur on the CACTF. Blank ammunition (no ball or tracer rounds), Short Range Training Ammunition (SRTA), lasers, and simunitions (paint ball-like ammunition) would be utilized during training activities. Simunitions are non-lethal and contain non-toxic color marking compounds designed to function as realistically as actual live ammunition. These types of ammunition allow Soldiers to conduct realistic and interactive combat training in a safe and protected environment.

The CACTF would support both mounted (Soldiers using vehicles) and dismounted (Soldiers on foot) training operations. A variety of weapons utilizing simulated training munitions (Table 2.g) would be used at the CACTF. These weapons are also mounted on vehicles such as the Stryker and HMMWV. Laser devices would typically be used for evaluating target distances and to designate specific targets. MILES equipment would also be utilized during training events at the CACTF. MILES equipment provides non-live fire but realistic combat engagements through

the use of laser emitters and detectors that are either worn by Soldiers or mounted on vehicles. Simunitions also provide realistic non-live fire capabilities.

Table 2.g Munitions and Weapons to Be Used at the CACTF.

Mounted Use (Vehicle maneuvers)	
Munition	**Weapon**
7.62mm (small arms blank or simulation)	M240 Machine Gun
.50 caliber (small arms blank or simulation)	M2 Machine Gun
5.56mm (small arms blank or simulation)	M249 Squad Automatic Weapon
40mm training practice round	M203, MK 19 (offset targets)
830mm wavelength laser	MILES, Infrared aiming light for vehicle or TOW
Dual laser system	MILES, Pin-Point Aiming, Target Illumination
Lasers	MILES, Locator Designator
Dismounted Use (Infantry foot maneuvers)	
Munition	**Weapon**
9mm Simunition	M9 Pistol
5.56mm (small arms blank or simulation)	M4 Carbine
5.56mm (small arms blank or simulation)	M16 Rifle
5.56mm (small arms blank or simulation)	M249 Squad Automatic Weapon
7.62mm (small arms blank or simulation)	M240 Machine Gun
.50 caliber (small arms blank or simulation)	M2 Machine Gun, M107 Rifle
40mm training practice round	M203
Flares	Signal Devices (visual and audible)
Lasers	MILES, Locator Designator
Dual laser system	MILES, Pin-Point Aiming, Target Illumination
Explosives	Small Charges for Dynamic Entry
Simulation device	Soldier Emplaced (no weapon used)
Illumination device	Soldier Emplaced (no weapon used)
Trip flare	Soldier Emplaced (no weapon used)
Inert booby trap	Soldier Emplaced (no weapon used)

Source: USARAK Training Office

The type and amount of munitions used during a training event is determined by the objective of the specific training scenario. A unit commander must design the training scenario that best fulfills the units' training needs and prepares troops for the current real-world threat. The amount of ammunition would not exceed the annual allocation in DA PAM 350-38, STRAC, an ammunition management system that guides ammunition allocations according to their type of

organization. The amount of ammunition allocated to the entirety of USARAK on an annual basis totals approximately 16.5 million rounds. DA PAM 350-38 provides a guideline for planning purposes and is updated annually with current Army ammunition allocations.

The Army's ammunition allocation strategy does not provide the ability to estimate the amount of munitions used at a particular range. Munitions are used at different ranges for all types of training. However, at the CACTF, the ammunition used would be simulated training munitions and laser training devices and non-explosive. Devices simulating explosives would be used at the CACTF, but no explosive constituents are used by these simulators. In addition, USARAK uses the Range Facility Maintenance Support System, which allows range managers to maintain records on the amounts and type of ammunition used on ranges and track actual range use.

2.2.2.2.2.1 Safety Precautions

Surface Danger Zones

A surface danger zone is required to support Short Range Training Ammunition rounds. The largest of these rounds to be utilized at the CACTF requires a firing distance of approximately 2,300 feet (the maximum distance for ammunition used at the CACTF). The largest munition used at the CACTF is the .50 caliber round and is delivered by the M2 machine gun. The surface danger zone would completely surround the CACTF along its outer limits and would be large enough to ensure that the energy of the fired .50 caliber projectile is totally depleted within its boundary.

The objective of a surface danger zone is to limit the residual risk of projectile escape and/or other danger to the public that is no greater than one in one million. DA PAM 385-63 defines the space requirements to safely incorporate weapons in live-fire training events. A range must be designed and targets placed totally within Army installation boundaries. The Army also requires the placement of targets and anticipated firing locations (by weapon type) in an area that is able to accurately contain ricochets and establish a safe impact area for all projectiles. This area is large enough to contain projectiles fired at an optimal elevation and ensure that the energy of the fired projectile is totally depleted within the surface danger zone. Methodology for the development of the surface danger zone at the CACTF is similar to the procedure described for the BAX (Section 2.2.1.2.2.1, *Safety Precautions*).

Ammunition Handling

The type of ammunition that would be used at the CACTF is blank or short range and would not require on-the-ground explosive ordnance clearing. Therefore, there is no munitions cleanup associated with this type of range facility other than picking up blank ammunition brass (or spent casings) from the ground or facility buildings.

Actual ammunition usage is tracked and recorded using the Range Facility Maintenance Support System. This program allows range managers to schedule use of ranges, schedule maintenance of ranges, maintain information on the amounts and type of ammunition used on ranges, and to track actual range use.

2.2.2.2.3 Mounted and Dismounted Maneuvering at the CACTF

During training, Soldiers would transition from rural combat operations (BAX) to urban combat operations (CACTF), using vehicles (mounted) and by traveling on foot (dismounted).

All vehicles within the Army inventory, including the Stryker, would utilize existing hardened roads and trails and those roads and trails newly established as part of the proposed action. Soldiers would also maneuver on foot, both on and off-road. While targets would be placed along roads and trails, their locations would not restrict movement to an established route, and would allow Soldiers to maneuver within the range complex. Vehicles and Soldiers would have the ability to maneuver on all acreage within the CACTF to perform offensive and defensive exercises. However, vehicle travel at the CACTF would primarily be on established roads and trails within the range complex.

Although off-road vehicle maneuver would be allowed anywhere within the CACTF, certain areas have been identified that would most likely receive the majority of off-road travel during training events. These maneuver areas are indicated for each alternative site location (see Section 2.4.3). As was the case for BAX operations (Section 2.2.1.2.3, *Mounted and Dismounted Maneuvering at the BAX*), certain ground vehicles operating in and around the CACTF are more likely than others to remain on improved roads and trails and to avoid off-road movements. Large transport trucks carrying heavy volumes of either ammunition or fuel would stay on the much more trafficable, improved roads and trails and set up operations on trafficable ground that can support their loads. Likewise, combat vehicles such as the Stryker use existing roads and trails or those roads and trails to be constructed as part of this proposed action.

While there are a number of types of Army units that could utilize the CACTF, Table 2.h shows the vehicle composition of two typical Alaska-based battalion-sized units: an SBCT battalion and an ABCT battalion. The ABCT has different support equipment and vehicles, due to its requirement to be self-sustained on an isolated battlefield. The Stryker unit would normally relieve an ABCT once it has assaulted in and established control in an area. At the CACTF, approximately 140 vehicles could potentially be maneuvering simultaneously during a battalion-sized training event.

Table 2.h Vehicle Composition of Battalions Utilizing the CACTF.

Type of Vehicle	Number of Vehicles	Personnel
Airborne Brigade Combat Team Infantry Rifle Battalion		
HMMWV (Army vehicle)	184	800
FMTV (five-ton, personnel mover (about 25 Soldiers)	90	
Towed Equipment	104	
Total	**378**	

Type of Vehicle	Number of Vehicles	Personnel
Stryker Brigade Combat Team Infantry Rifle Battalion		
Stryker (armored personnel carrier)	67	800
HMMWV (Army vehicle)	43	
FMTV (five-ton, personnel mover (about 25 Soldiers))	8	
Towed Equipment	22	
Total	**140**	

Source: USARAK Training Office

The Army would also use the environmental limitations overlays to inform Soldiers and units where, when, and how military operations could be conducted at the CACTF and in training areas surrounding the CACTF. All activities not occurring within the CACTF maneuver area would be subject to the restrictions indicated on the environmental limitations overlays. This hierarchical classification system is the same as was described for the BAX and be found in Section 2.2.1.2.3.1, *Environmental Precautions*.

2.2.2.2.4 Joint Operations – Air Support at the CACTF

Joint warfare training plays the same important role at the CACTF as it does for the BAX (Section 2.2.1.2.4, *Joint Operations – Air Support at the BAX*). The general operational environment – urban instead of rural – is different; however, the effective integration of joint support assets such as USAF close air support will play a vital role in support of Army training at the CACTF. Existing USAF assets in Alaska would support Army training for both close air support and airlift requirements. The previously described "off-set" methodology would enable realistic training for both Army ground forces and USAF supporting assets and take advantage of existing special use airspace and MOAs.

2.2.2.2.5 Training Day Requirements

Unlike the BAX, TC 25-8, *Training Ranges*, does not offer range availability guidance for a CACTF or any other urban training facility. In addition, the STRAC also does not provide the type of weapon or amount of time required to obtain qualification standards for that weapon during urban training operations. However, as evidenced by current everyday operations in the Global War on Terrorism and consistent with *USARAK RTLP Development Plan* (USARAK 2004c), Commanders are strongly encouraged to prepare their Soldiers for urban operations according to the following frequency:

Echelon	Frequency of Use of CACTF
Brigade	Annual
Battalion	Semi-annual
Company	Semi-annual
Platoon	Quarterly
Squad	Quarterly
Individual	Quarterly

Actual utilization of the CACTF can be expected to be similar to the BAX (Tables 2.a and 2.b). Units would likely use the CACTF when they are training at the BAX in order to efficiently expend funding and equipment for training. However, unforeseen adjustments to the number of utilization days to accommodate training requirements may still occur at the CACTF.

A typical training event would last for 15 days. The 15-day event consists of 10 actual on-the-range training days, beginning and ending with two days for travel and preparation. An additional day is typically added to the middle of the training event to allow the unit to reset for further training operations. A typical training day is 16 hours. This training day includes both daytime and nighttime operations. Unit commanders have the authority to train and deploy in smaller-sized elements, dependent on training objectives to be met.

2.2.2.2.6 Support Operations, Transition Routes and Deployments

The same improved and historically used, unimproved staging areas employed during training operations at the BAX would also be used during operations at the CACTF (Section 2.2.1.2.5, *Support Operations, Transition Routes and Deployments*).

On-post transition routes, or maneuver corridors, would be utilized for travel between the BAX and the CACTF. These routes would include existing roads and trails near the proposed range construction site. If necessary, these existing routes would be improved. They would most likely be widened, and installation of adequate drainage structures and compacted gravel and geotextile material would be necessary to improve and extend the overall life of the road. New hardened roads and trails would also be constructed in areas where no transportation routes exist. Off-road maneuver, both by vehicle and by foot, would also occur within the transition routes. In forested areas, trees would be thinned and removed to create vehicle “lanes” that would allow safe vehicle maneuver but still provide varying degrees of cover and concealment. Section 2.4.3 describes specific transition routes for each range location alternative.

USARAK Regulation 55-2, *Transportation Operations and Planning in Alaska*, establishes polices and procedures for USARAK units and agencies using transportation resources in support of Army operations. A brief description of these policies and procedures is presented in Section 2.2.1.2.5, *Support Operations, Transition Routes and Deployments*.

As a result of the transformation of USARAK forces, deployment miles within the state of Alaska would increase from 437,600 to approximately 1,042,000 during the interim stage of transformation in Alaska (2004 to 2009). Total deployment miles are expected to decrease to

937,600 by 2010 (USARAK 2004a). Travel to DTA for training, to include operations at the BAX and CACTF, would not result in an overall increase to total in-state deployment miles.

2.2.2.2.7 Institutional Matters

Institutional matters focus on the implementation of programs and processes that mitigate impacts of the construction and use of the CACTF and all other associated training at Army controlled lands in Alaska. The same plans and programs discussed for the BAX are applicable at the CACTF. Activities occurring as part of the proposed action would comply with these plans and programs and all other relevant policies and regulations.

2.3 DETAILED DESCRIPTION OF LOCATION ALTERNATIVES

All Army training lands within the state of Alaska were considered for siting of the proposed action. Possible locations for the BAX and CACTF range facilities are Tanana Flats Training Area, DTA West, Yukon Training Area, Gerstle River, Black Rapids, FRA, Eddy Drop Zone, Donnelly Drop Zone, and North Texas Range (see Appendix, Figure 2.c). These varying locations represent a full range of alternatives. Each of these locations was evaluated to determine its capability to meet project criteria, and these considerations are presented in this Environmental Impact Statement (EIS). The screening criteria discussed in the following section and in Chapter 1 were developed based on their ability to determine whether alternatives would meet the purpose and need for the proposed action. The EIS evaluates the range of reasonable alternatives that remained following a screening criteria analysis (Section 2.3.3, *Alternative Viability Analysis*).

2.3.1 Introduction

In site selection, USARAK used training, design, siting and cost criteria (including accessibility and environmental impacts) to determine a minimally acceptable site. To provide an optimal site for the Army, maximum flexibility for creating unique training scenarios was also important. Commanders must be afforded the ability to alter training scenarios to produce new and varied challenges to the combat units in order to address specific training objectives. Such flexibility precludes predictive views of targetry and other limitations on effective training. In summary, an ideal site would have sufficient room to alter training scenarios and to force Soldiers to respond to unfamiliar challenges.

2.3.2 Discussion of Screening Criteria

In evaluating potential locations for the construction and use of a BAX and CACTF, four general sets of criteria were developed to determine viability of an alternative:

- *Training objectives* were based on training doctrine requirements, as listed in TC 25-8 (see Chapter 1, Section 1.2.2).
- *Design criteria* were based on design standards, set forth in TC 25-8 and FM 7-0 (see Chapter 1, Section 1.2.3).
- *Siting criteria* were based on each location's physical ability to meet these requirements (see Chapter 1, Section 1.2.4) and design standards within TC 25-8.
- *Disproportionate cost criteria* were based on the reasonableness of agency expenditures.

These initial criteria, based primarily on functional training, range, and funding requirements, were applied to all alternative locations and augmented by specific USARAK training strategies and constructability requirements. For a training area to be considered as a viable alternative and to be carried forward for further analysis, the location must satisfy these screening criteria. However, although funding requirements were considered, no site was eliminated on project cost alone.

2.3.3 Alternative Viability Analysis

The following sections and Table 2.i summarize the site screening conclusions for Tanana Flats Training Area, DTA West, Yukon Training Area, Gerstle River, Black Rapids, FRA, Eddy Drop Zone, Donnelly Drop Zone, and North Texas Range. A No Action Alternative is also being carried forward for further analysis as required by the NEPA and 32 Code of Federal Regulations (CFR) Part 651.

2.3.3.1 Tanana Flats Training Area

The proposed range complex location at Tanana Flats Training Area is located in the lowland area near MacDonald Creek in the southeastern portion of FWA's Tanana Flats Training Area, just southwest of the Tanana River (Appendix, Figure 2.c). This site meets all functional *training criteria*, provides a long-term capability for specific combined arms training operations, and allows for future expansion of training missions. This site offers several hundred thousand acres of training land for mission use in order to satisfy *design criteria*.

However, this location does not satisfy *siting criteria*. No current road access to the site exists to support construction and utilities infrastructure or to assure emergency medical access during periods of inclement weather when aeromedical evacuation is precluded. Construction of a permanent bridge would be required to cross the Tanana River to ensure year-round access to the proposed range location. In addition to the bridge structure, approximately five miles of new two-lane access roads would be required to reach the bridge, followed by another five miles of new road from the bridge to the proposed range site. Construction of the bridge and access roads would add approximately 3.5 years to the project schedule (UAF 2004), thus not meeting the requirement to allow for the completion of range construction within two arctic construction seasons (approximately mid-April to mid-October).

Satisfaction of *siting criteria* and adherence to project timelines would be further complicated by the abundance of wetlands and permafrost areas within that section of Tanana Flats, causing this location to be potentially unsuitable for the range complex. The presence of unsuitable terrain combined with the cost of constructing a bridge (approximately $75 million (UAF 2004)) serve to raise the cost of the BAX and CACTF at Tanana Flats Training Area substantially.

This site is currently not supported by communications or electrical infrastructure. Utilities extension across the Tanana River and to the site would be required. There are also limits to the number of available military communication frequencies the Army may obtain for use within Tanana Flats. Communication frequencies are required for operation of remote targets from the Range Operations Center. Frequencies are limited due to the greater amount of activity within the Fairbanks/Tanana Flats area. This could prevent the accomplishment of training missions.

In summary, this potential location is unacceptable, given the lack of current road access to the Tanana Flats Training Area, the extended time frame needed to overcome physical barriers (bridge, new road construction and utilities extension), limitations on communication frequency use, and substantially greater construction costs associated with unsuitable terrain and site access. For these reasons, the Tanana Flats Training Area was eliminated from further consideration as a reasonable alternative.

2.3.3.2 West Donnelly Training Area

The proposed range complex location within DTA West is located in the lowland and lake area north of the Kansas Lakes Impact Area, near 100-Mile Creek in the northern portion of DTA West (see Appendix, Figure 2.c). This site would meet many functional *training criteria*, provides for limited expansion of training missions, and would allow for specific combined arms training and joint operations. This site would also provide several hundred thousand acres of training land for mission use. *Design criteria* would be satisfied in this location.

This site cannot fully satisfy *siting criteria* based on site access. Construction of a permanent bridge would be needed across the Delta River in order to assure year-round access to the portion of DTA West that could serve as a site for the BAX and CACTF. An adequate route is needed, not only to allow units to move equipment in and out of the range, but to also provide Soldier support during inclement weather or unanticipated emergencies. This location would require approximately five miles of new two-lane access road to reach the bridge and an additional five miles of new road to reach the Richardson Highway. The Delta River is a large, active river. Its course meanders considerably, exacerbating design challenges and making it difficult to predict bridge construction costs. It is likely that construction of the bridge and access roads would add approximately 3.5 years to the project schedule, preventing completion of range construction within two arctic construction seasons.

Any site within DTA West would likely place the range complex and access road atop UXO, requiring extensive UXO subsurface clearance. The extensive road clearance required for new access road construction, a bridge to cross the Delta River, and the likely requirement to remove all UXO prior to construction would increase construction time and cost.

This site also cannot fully satisfy *siting criteria* based on operational and constructability requirements (principally as a result of more difficult terrain). Given topographic and hydrologic challenges, including permafrost and wetlands, considerable fill material would be required for the range complex, access road, and bridge construction. The quantities of suitable fill material necessary for this work are not readily available within the area where the bridge and range complex would likely be built, and obtaining it would be cost prohibitive.

This site also does not provide infrastructure support, including communications and electrical power distribution lines.

In summary, this potential location is unacceptable, given the lack of current road access to DTA West, the extended time frame needed to overcome physical barriers (bridge and new road construction), UXO clearance and substantially greater construction costs associated with unsuitable terrain and site access. DTA West was eliminated from further consideration as a reasonable alternative.

2.3.3.3 Yukon Training Area

Yukon Training Area (YTA) is part of FWA and lies in the Yukon-Tanana Uplands (located east of the installation). These uplands are characterized by rounded, even-topped, unglaciated ranges with gentle side slopes and valley floors. Ridges and high domes can reach elevations of 5,000 feet (Appendix, Figure 2.c). YTA does not have sufficient trafficable land for the required range construction footprint and maneuver area of the proposed facilities, thus *siting* and *design criteria* would not be met at this location. Limiting topographic conditions at YTA include steep terrain characterized by numerous valleys and ridges. Differences of up to 5,000 feet in elevation make it impossible to obtain a safe and adequate line-of-sight and to construct trafficable maneuver corridors without steep grades. Because of the limiting topographic conditions, the *training criteria* would not be satisfied. Additionally, YTA is the location of squad and platoon-level collective training ranges consistent with the USARAK training strategy to train these levels at, or close to, home station. This location was eliminated from further consideration as a reasonable alternative.

2.3.3.4 Gerstle River Training Area

The Gerstle River Training Area lies in a relatively flat region north of the Alaska Range and is located to the east of DTA East, approximately five miles south of the Alaska Highway (Appendix, Figure 2.c). The Gerstle River Training Area cannot accommodate the required surface danger zone for the BAX and CACTF because of limited training area size. Gerstle River is approximately 20,000 acres and is too small to accommodate the range construction footprint, maneuver area, and the surface danger zone. The combined area requirement of the BAX, CACTF, and their surface danger zones is approximately 25,000 acres. This location has insufficient constructible space to satisfy *siting criteria*. Because this location does not meet *training, siting*, and *design criteria*, this site was eliminated from further consideration as a reasonable alternative.

2.3.3.5 Black Rapids Training Area

Black Rapids Training Area is located south of DTA and lies within the Alaska Range (Appendix, Figure 2.c). Black Rapids is approximately 2,780 acres. This site cannot accommodate the range maneuver area and the required surface danger zone for the BAX and CACTF. The combined area requirement of the BAX, CACTF, and their surface danger zones is approximately 25,000 acres. Black Rapids is also predominately mountainous terrain and limited in its potential to provide line-of-site and maneuver corridors, and it has insufficient constructible space to satisfy *siting criteria*. Because this location does not meet *training* and *siting criteria*, this site was eliminated from further consideration as a reasonable alternative.

2.3.3.6 Fort Richardson

FRA is located near Anchorage and lies in an alluvial plain bordered by the Chugach Mountains and Cook Inlet (Appendix, Figure 2.c). FRA cannot accommodate the required surface danger zone for the BAX and CACTF because of limited training area size. Currently, training lands within FRA are fully utilized, and sufficient space to accommodate additional collective live-fire facilities does not exist. The Glenn Highway bisects FRA into two distinct areas, and neither of these portions (north or south of the highway) is large enough to accommodate the BAX and

CACTF. Only 4,000 acres of trainable land on North Post and 3,000 acres of trainable land on South Post are available for construction of the proposed facilities. This location was eliminated from further consideration as a reasonable alternative because it does not meet *training, siting*, and *design criteria*.

2.3.3.7 Eddy Drop Zone

This proposed site is located within the Jarvis Creek floodplain in the northeastern portion of DTA (Appendix, Figure 2.c). This site meets functional *training criteria*, provides for limited expansion of training missions, and allows for specific combined arms training and joint operations. In addition, *design criteria* are satisfied in this location. *Siting criteria*, based on operational and constructability perspectives, can be fully satisfied at this location. This site currently provides year-round ground access via existing roads. Construction would require the improvement of eight miles of existing roads leading to the site. Borrow material is available nearby, limiting required hauling (for construction or maintenance) to less than six miles for any point on the range. Also, on this site, it is unlikely that UXO would be encountered in the area where the range complex would be constructed.

This site currently provides favorable terrain and suitable trafficability and constructability conditions. There is a low occurrence of permafrost and wetlands. The site would require only relatively minor topographic changes and has heavy cover of native grasses. This type of vegetation is resistant to vehicle activity and would enhance trafficability of tactical equipment. Trafficability is defined as the ability of soils to physically support military vehicle maneuvers. While a portion of the site is cleared of overstory (tree and shrub) growth, the eastern portion of the Eddy Drop Zone has not been cleared and provides moderately valuable concealment for training maneuver operations.

While the site currently has no electrical power and no telephone communications, they are within a reasonable distance from the proposed site and can be provided without the construction of new access roads. However, these utilities may require upgrading to accommodate range communications infrastructure.

The Eddy Drop Zone site is acceptable because it provides existing access for construction and subsequent training events, offers a training environment that provides Soldier support and safety particularly during inclement weather, offers adequate access to utilities, does not have substantially greater construction costs associated with unsuitable terrain and site access, and can be built within two arctic construction seasons. Thus, this location alternative was carried forward for further analysis.

2.3.3.8 Donnelly Drop Zone

This site is located in the southeastern portion of DTA (Appendix, Figure 2.c). This site would meet functional *training criteria*, provides for limited expansion of training missions, and would allow for specific combined arms training and joint operations. In addition, *design criteria* can be satisfied at this location. Initially it was thought that *siting criteria*, based on operational and constructability requirements, could also be achieved at this location. However, information acquired during the environmental analysis process indicates that *siting criteria* cannot be achieved at this location due to the high occurrence of wetlands and permafrost, which would

impede maneuvers and require significantly higher amounts of fill for construction of maneuver corridors. Although this alternative does not satisfy all criteria, it will remain as part of the analysis in the EIS for comparative purposes and to maintain continuity between the initial Draft EIS (October 2004), the Supplemental Draft EIS (March 2006), and the Final EIS.

Year-round existing ground access is available at this site. This would require the improvement of approximately five miles of existing roads leading to the site, and would require minor creek crossings at Jarvis and Ober creeks. Four low water crossings would be required for Soldiers to access the range. Borrow material is available nearby, limiting required hauling (for construction or maintenance) to less than six miles for any point on the range. However, extensive fill of wetland areas would serve to substantially increase construction costs. Fill activities would likely prevent the range complex from being constructed within two arctic construction seasons. Also, on this site, it is unlikely that UXO would be encountered in the area where the range complex would be constructed.

Vegetation on the west side of Jarvis Creek, which flows through the proposed range location, is heavily wooded with black spruce and would require clearing. On the east side of the site, vegetation is sparse.

While the site currently has no electrical power and no telephone communications, they are within a reasonable distance from the proposed site and can be provided without the construction of new access roads. These utilities may require upgrading to accommodate range communications infrastructure.

In summary, this potential location is unacceptable due to its inability to achieve *siting criteria*, given the extended time frame needed to overcome extensive wetland and permafrost areas and the greater construction costs associated with unsuitable terrain.

2.3.3.9 North Texas Range

This site is located between the Trans-Alaska Pipeline and the Delta River, and south of Bolio Lake and Mississippi Test Site within DTA East (Appendix, Figure 2.c). This site would meet functional *training criteria*, provides for limited expansion of training missions, and would allow for specific combined arms training and joint operations. In addition, *design criteria* can be satisfied, although constrained, in this location. Initially it was thought that *siting criteria*, based on operational and constructability requirements, could also be achieved at this location. However, information acquired during the environmental analysis process indicates that *siting criteria* cannot be achieved at this location due to the high occurrence of wetlands and permafrost, which would impede maneuvers and require significantly higher amounts of fill for construction of maneuver corridors, and the presence of bison during a substantial part of the year, which would substantially limit the availability of the ranges (see Draft Finding of No Practicable Alternative in Appendix). Although this alternative does not satisfy all criteria, it will remain as part of the analysis in the EIS for comparative purposes and to maintain continuity between the initial Draft EIS (October 2004), the Supplemental Draft EIS (March 2006), and the Final EIS.

Year-round existing ground access is available at this site. It would require the improvement of approximately eight miles of existing roads leading to the site. Borrow material is available nearby, limiting required hauling (for construction or maintenance) to less than six miles for any point on the range. However, extensive fill of wetland areas would serve to substantially increase construction costs. Fill activities would likely prevent the range complex from being constructed within two arctic construction seasons. Some UXO might be encountered at this site, as it has historically been a firing point area.

This site consists of significant rolling terrain with several small lakes and a gravel surface. The vegetation is a combination of sparse native shrub species, heavy grassland understory, and very sparse overstory growth.

This site currently has inadequate existing electrical power and communications infrastructure, but access to necessary utility systems is reasonably available via existing roads, although it would require relatively long utility runs (including fiber optics) around the numerous lakes (approximately 10 miles).

Scheduling conflicts would likely arise with the Cold Regions Test Center (CRTC), as the range construction footprint, maneuver area and surface danger zone at North Texas Range would bisect a large area currently used by both USARAK and CRTC Commands. The surface danger zone would be located within an existing impact area.

The North Texas Range location is unacceptable due to its inability to achieve *siting criteria*, given the extended time frame needed to overcome extensive wetland and permafrost areas and the greater construction costs associated with unsuitable terrain.

2.3.4 Conclusion of Viability Analysis

After the screening of available USARAK properties, three locations remain for further analysis: Eddy Drop Zone, Donnelly Drop Zone, and North Texas Range. Only one of the three sites (Eddy Drop Zone) meets all three screening criteria requirements (Table 2.i). Donnelly Drop Zone and North Texas Range provide ready access for construction and training activities and meet range design and training requirements. However, all three locations will remain as part of the analysis in the EIS for comparative purposes. Existing constraints – which limit the ability to achieve range siting, design, and training requirements within a timely and cost-efficient manner – and a lack of maneuver flexibility make the other six potential locations impracticable. All of these sites, which are located outside of DTA East, require extensive bridge and infrastructure construction, exhibit insufficient maneuver acreage, and/or are unable to accommodate the surface danger zone without unacceptable constraints on the training mission.

Table 2.i Summary of Viability Analysis Based on Screening Criteria.

Location	Training Objectives (See Section 1.2.2)	Range Design Criteria (See Section 1.2.3)	Range Siting Criteria (See Section 1.2.4)
Tanana Flats Training Area	yes	yes	no
West Donnelly Training Area	yes	yes	no
Yukon Training Area	no	no	no
Gerstle River Training Area	no	no	no
Black Rapids Training Area	no	no	no
Fort Richardson	no	no	no
Eddy Drop Zone	yes	yes	yes
Donnelly Drop Zone	yes	yes	no
North Texas Range	yes	yes	no

As described in Section 1.9, *Issues Identified During the Scoping and Public Review Process*, an additional fourth option was developed to address a number of issues identified by the public and Army regarding siting of the BAX within the Eddy Drop Zone. This additional siting alternative would place the BAX and CACTF within two different locations at DTA East. Under this alternative, the BAX would be placed at North Texas Range and the CACTF would be built at Eddy Drop Zone. The siting of the CACTF at Eddy Drop Zone would continue to offer suitable terrain features and provide construction, support feature, and training access. However, the siting of the BAX at North Texas Range would not meet *siting criteria* due to excessive amounts of wetlands and permafrost and the inability to ensure year- round availability.

Relative comparisons of the four alternatives (Eddy Drop Zone, Donnelly Drop Zone, North Texas Range, and North Texas/Eddy Combination) serve to capture the environmental and socioeconomic factors affecting the decision to be made. Chapter 4 offers a comparison of traditional environmental issues at all sites, including the relative effect of the proposed action on wetlands, floodplains, permafrost, wildlife species, vegetation, cultural sites, and other environmental topics. The comparisons will determine which major issues are unique to each site.

A No Action Alternative has also been carried forward for further analysis as required by NEPA and 32 CFR 651 and sets the baseline for the measurement and comparison of impacts. Under this alternative, the proposed BAX and CACTF would not be constructed or operated. However, current day-to-day operations on Army lands within Alaska, including military training and support associated with transformation would continue. Chapter 4 includes the No Action Alternative in the comparison of traditional environmental issues.

The proposed action allows some flexibility in range orientation and location (site adaptation) within each of the alternative locations to minimize or avoid environmental impacts or to better situate the ranges for military training purposes. Any future final orientation changes within the areas of study will not significantly change predicted environmental consequences, and such changes would likely reduce environmental impacts. Proposed range infrastructure and use were previously described in Sections 2.2.1, *Battle Area Complex,* and 2.2.2, *Combined Arms Collective Training Facility.*

2.4 LOCATION ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

2.4.1 General Description

All three alternative range locations are located within DTA East (Appendix, Figure 2.d). DTA is located in central Alaska, within the Tanana River valley and hill area, bordered by the Brooks Mountain Range to the north and the Alaska Range to the south. It is located about 110 road miles southeast of Fairbanks and six road miles south of the junction of the Alaska and Richardson highways. DTA consists of two large training areas, DTA West (approximately 531,000 acres) and DTA East (approximately 93,000 acres), and three outlying sites: Gerstle River Training Area (20,580 acres), Black Rapids Training Site (4,112 acres), and Whistler Creek Rock Climbing Area (542 acres) (USARAK 2002b). The Delta River and its floodplain form the west side of DTA East, and Granite Creek forms the eastern border. The northern boundary roughly parallels the Alaska Highway, and the southern boundary lies at the base of the Alaska Range foothills.

DTA East contains six existing military training areas that are subdivided into 15 sub-training areas, six drop zones, and two combat assault strips. DTA East has served primarily as a maneuver training area. The drop zones are used for airborne testing or training operations, with Donnelly Drop Zone supporting up to a battalion-sized airborne operation. All drop zones are cleared of vegetation and have maintained surfaces. Donnelly Assault Strip is graded and maintained (USARAK 1999a).

Much of the airspace over DTA East and West has been designated as either terminal, en route, or special use airspace by the FAA. The FAA manages all airspace within the United States, including Alaska. The types of airspace include Restricted Airspace (R2202 A, B, C, and D), MOA (Buffalo, Fox 1, Fox 2 and Eielson), USARAK-established CFA (Allen Army Airfield), Visual Flight Rules (VFR) Corridors (Alaska Highway and Richardson Highway), and Class D and E terminal and en route airspace (Appendix, Figure 3.l). The main airfield at DTA East is Allen Army Airfield. Donnelly Assault Strip and the Unmanned Aerial Vehicle (UAV) airstrip also exist within DTA East. DTA West contains three airstrips: Bennett, Sullivan, and Delta Creek Assault Strip.

CRTC uses DTA East for experimental air drops, airborne testing, and testing of clothing, vehicles, and equipment. The Bolio Lake Test Complex, located within DTA East but west of the Richardson Highway, was specifically designed to accommodate the CRTC's test mission.

It is located in a bowl-like setting where the coldest temperatures on DTA occur. The complex contains office facilities, maintenance and storage buildings, and overnight accommodations. The Texas Maintenance facility is also used by CRTC on a daily basis and testing is performed on Texas and Washington Ranges in excess of 100 days a year. Including test site preparation, these ranges are in use 150 to 200 days a year. CRTC uses Meadows Road to access Texas Range for testing. The Mississippi Test Site is also used by the CRTC as a general purpose test facility. It can accommodate large scale demonstrations of ordnance delivery into the adjacent Mississippi Impact Area (USARAK 1999a).

2.4.2 Activity Areas

Analysis of the effects of the proposed action on the human environment is divided into three activity areas for each location alternative: construction footprint, maneuver area, and surface danger zone. Soldier training functions described in previous sections (e.g., construction, training, and live fire) would remain constant at each alternative location. The following sections describe the general activities occurring within each activity area that are applicable to all four siting alternatives.

Construction Footprint – General activities that would occur within the construction footprint include clearing of vegetation and its removal, stockpile, or chipping; site clearing and grading; excavation; gravel extraction and production; road and trail construction; cut and fill of landforms; construction of building foundations and target emplacements; placement of storm water pollution prevention structures; installation of utilities; installation of security measures (fencing and gates); and landscaping, to include planting of low growing shrubs and grasses.

Maneuver Area – General activities that could occur within maneuver areas include transition corridors and staging areas; tracked, wheeled, and foot maneuver; bivouacs, preparation of defensive fighting positions, digging, earth moving, installation of field kitchens; laundry and bath facilities, water purification systems, use of portable latrines; vehicle decontamination training; timber cutting (under four inches in diameter); POL distribution; and smoke generation. These activities are subject to environmental quality and protection procedures as set forth in various USARAK documents, including USARAK Regulation 350-2, *Training*. Travel by both vehicle and foot would take place throughout the maneuver area. This also includes transitioning from nearby bivouac or staging areas and movement between the BAX and CACTF. Hardened roads and trails would be constructed as part of the proposed action. For additional information on maneuver at the BAX, see Section 2.2.1.2.3, *Mounted and Dismounted Maneuvering at the BAX*.

Surface Danger Zone – No noticeable or permanent ground-disturbing activity would take place within the surface danger zone. During training events at the BAX and CACTF, live fire using non-explosive ammunition would be contained within the BAX surface danger zone and training munitions and simulators within the CACTF. Non-dudded ammunition projectiles would be deposited down-range within the surface danger zone. This munitions residue would be concentrated around target areas. In addition, shell casings and other residue would be deposited at the point of fire. Vegetation within the line-of-sight between the point of fire and a target would be removed to allow for direct sighting of the objective. Over time, as vegetation regenerates within the line-of-sight, it would be modified by the trajectory of the bullet. Vegetation will also be removed within a line-of-sight during periodic maintenance activities. When not in use as a

surface danger zone (when the BAX or CACTF is not actively being used for training), the area would available for general military maneuver training or public access.

2.4.3 Description of Location Alternatives

The environment at each of the alternative locations differs considerably. These differences require that design and placement of roads, buildings, targets, utilities, trails, gravel pits, staging areas, maneuver areas, and surface danger zone size and location be unique to each location. These differences are primarily due to local topography, wetlands, vegetation type, streams, lakes, ponds, soil type, permafrost, cultural resources, and existing features including roads, trails, drop zones, and staging areas. Range design differences are explained in the following sections.

The proposed ranges are considered within the larger context of Army transformation at USARAK. Predicted impacts within defined range areas at each alternative location are in addition to those broader, less discrete environmental consequences associated with transformation at DTA East (USARAK 2004a).

Finally, even though the actions occurring within each area are the same, the associated impacts would differ for each alternative location as a result of the different natural settings. A summary of differences between alternative locations is contained in Tables 2.m, 2.n, and 2.o. Table 2.p provides a summary of environmental consequences under the No Action Alternative.

2.4.3.1 Eddy Drop Zone (Alternative 2)

The proposed location of the BAX and CACTF at Eddy Drop Zone lies within an extensive, fairly flat glacial outwash terrace that is bordered by Jarvis Creek and its associated stream channels (Appendix, Figure 2.e). The drop zone topography is flat, but gently rolling to the south and east. Jarvis Creek is a few hundred meters to the west of the proposed BAX location for this alternative, and continues its flow north and east away from the proposed CACTF location for this alternative. Vegetation in the drop zone is composed of low shrubs and grasses. Surrounding areas are composed of thick, stunted spruce and spruce-hardwood forests, ponds and marshes. Eddy Drop Zone proper is rectangular shaped, oriented north/south, and is nearly 200 acres in size (of which 160 are regularly maintained). The site was originally cleared in the 1950s, following a large forest fire that occurred in 1954.

Eddy Drop Zone does not get as much airborne parachute training use as Donnelly Drop Zone (to the south) or Buffalo Drop Zone (to the north), which serve as the main drop zones at DTA. However, other training activities take place at Eddy Drop Zone and the surrounding training areas. An engineer unit excavated a tank trap across Eddy Drop Zone in 2001, and a Forward Arming and Refueling Point (FARP) was constructed in 1991, but it has not been used since. There is evidence of bivouac use on the surrounding trails. Usually, during the two to three large training exercises held at DTA each year, some units would bivouac and establish logistic points in the area and conduct maneuver training in the vicinity of Eddy Drop Zone.

Approximately 350 acres are required for the construction of the BAX and CACTF roads, targetry, and building foundations at Eddy Drop Zone (Table 2.j). The size of the range complex is constrained by the installation boundary and the design of the range to ensure that the surface danger zone does not fall outside of the military boundary. Currently 50 acres are

cleared of vegetation or have been modified or disturbed within the construction footprint. The proposed action requires modification of about 300 additional acres (e.g., vegetation cleared, soil excavation and movement, installation of range infrastructure) for construction. Care would be taken to retain as much of the existing vegetation as possible to provide overhead protection, concealment, and realism while still constructing the range facilities to standard.

Table 2.j Description of Eddy Drop Zone Activity Areas.

Type of Activity Area	Size (acres)	
	BAX	**CACTF**
Construction Footprint	254	96
Maneuver Area[1]	2,872	1,184
Surface Danger Zone	23,741	1,123

[1] = Includes construction footprint acreage.

The maneuver area for the BAX and CACTF at Eddy Drop Zone is approximately 4,050 acres. This area includes a portion of Buffalo Drop Zone that has historically been used as a bivouac/ staging area. In addition, transition corridors between Buffalo Drop Zone and the CACTF and between the CACTF and the BAX have been included within the maneuver area. Approximately 245 acres are currently cleared of vegetation or modified.

The surface danger zone for the BAX at Eddy Drop Zone is approximately 24,000 acres. The proposed firing orientation of the BAX would be towards the south and southwest, away from private residences and the city of Delta Junction (Appendix, Figure 2.e). This places the surface danger zone, the area where the projectiles would be expected to land, to the south of Delta Junction and the BAX and CACTF. The surface danger zone for the CACTF is approximately 1,100 acres and accommodates a firing distance of 2,300 feet.

The majority of soils on Eddy Drop Zone are considered trafficable and can support year-round training with military vehicles. Due to the distribution of trafficable soils within the site, the BAX maneuver area can support 10,001 Stryker vehicle passes in the summer season without becoming impassable. Winter season training is not affected by trafficability.

Access to the BAX and CACTF at Eddy Drop Zone by land would be through the northern entrance point to 33-Mile Loop Road, accessible either from the north or the south along the Richardson Highway located at Mile Marker 264.8. Approximately the first five miles of 33-Mile Loop Road would be used to access the BAX and CACTF under this alternative. The construction and maneuver areas encompass approximately 12 miles of 33-Mile Loop Road. The proposed location of the BAX and CACTF, and their associated surface danger zones, would encompass nine training areas (Training Area 6 through 10, and 19 through 22) at DTA East. During operation of the BAX and CACTF (and their associated surface danger zone), these training areas would be closed to public access (Appendix, Figure 2.e), which includes the 12-mile portion of 33-Mile Loop Road within the construction and maneuver area.

DTA East contains one established staging area specifically built to support training and deployment activities. This facility, the Battalion Bivouac Site, was constructed in 2000 in Training Area 48 along Beales South Road, approximately a half-mile west of Richardson

Highway (Mile Marker 258.8). The Battalion Bivouac Site is about 40 acres in size and has an expansion potential of up to 70 acres (USARAK 2000d).

Several areas within DTA East have historically been used as staging areas. Buffalo Drop Zone, an open, previously disturbed and regularly cleared area (maintained by mowing or burning), is also used to support military staging activities. The open woodland, park-like areas along the northern portion of 33-Mile Loop Road (within Training Area 1) are utilized for bivouacking. Similar areas are also used south of Buffalo Drop Zone in Training Areas 2 and 4. Activities conducted at these locations are discussed in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004a) and the *Alaska Army Lands Withdrawal Renewal Final Legislative Environmental Impact Statement* (USARAK 1999a). These areas would continue to be used as staging areas under the proposed action.

All of the BAX and CACTF construction and maneuver areas and a portion of the surface danger zones fall within the Class D airspace above Allen Army Airfield. A portion of the BAX surface danger zone also falls within the Buffalo Military Operations Area and the Richardson Highway VFR Corridor. No portions of the BAX or CACTF fall within restricted airspace. Use of the BAX and CACTF for military training at the Eddy Drop Zone site is as described in Section 2.2, *Description of the Proposed Action*.

A summary of anticipated action and outputs of the proposed action at Eddy Drop Zone is contained in Tables 2.n, 2.o, and 2.p.

2.4.3.2 Donnelly Drop Zone (Alternative 3)

The proposed location for the Donnelly Drop Zone BAX is located one mile east of the Richardson Highway, in the southeast corner of the DTA East (Appendix, Figure 2.f). The CACTF would be located within two miles of the Richardson Highway. Jarvis Creek runs north-south through the middle of the proposed BAX area. Ober Creek, a tributary of Jarvis Creek, also flows through the proposed range construction footprint and maneuver area. Several small intermittent streams also cross both areas. Topography is generally flat. Vegetation in the area is sub-alpine dwarf shrub, shrub and black spruce muskeg, and there are burned areas of both. The Donnelly Flats Fire burned into the northern portion of the proposed BAX site in 1999.

The southwestern corner of the Donnelly Drop Zone alternative is near a network of gravel trails associated with the old Missile Defense Alarm System (MIDAS) site. Due to the MIDAS site's close proximity to Donnelly Drop Zone and Assault Strip, the area is a favorite bivouac and logistics location. Under the existing force structure and training schedule, this area is used as a logistic supply point two to three times per year by large numbers of troops. At other times, the area is utilized in association with Donnelly Drop Zone and for numerous smaller-sized unit training exercises. This area is also popular because of easy access to the Richardson Highway and well-drained dry dirt or graveled roads that extend two to three miles east of the highway.

Donnelly Drop Zone is the primary drop zone for USAF assault landings at DTA and is always included in training scenarios for Cope Thunder (a major annual USAF flying exercise). A portion of this drop zone is included in the proposed CACTF construction footprint and maneuver area. Butch Drop Zone is in the northern portion of the proposed BAX maneuver area and east of Jarvis Creek. The history of Butch Drop Zone is unknown, but it appears that only a small amount of

land clearing has been done in the area. The Butch Drop Zone is covered by low scrub wetland vegetation that burned in a 1987 fire. Butch Drop Zone is used about once a year in the winter when vehicles can cross Jarvis Creek.

Approximately 550 acres are required for the construction of the BAX and CACTF for roads, targetry, and building foundations at Donnelly Drop Zone (Table 2.k). The size of the range complex is constrained by the location of Jarvis and Ober creeks. The BAX must be designed around these waterbodies, and as a result, portions of the range are located on both the east and west banks of the creeks. Currently 15 acres are cleared of vegetation or have been modified or disturbed within the construction footprint. The proposed action requires modification of about 535 additional acres (e.g., vegetation cleared, soil excavation and movement, installation of range infrastructure) for construction. Care would be taken to retain as much of the existing vegetation as possible to provide overhead protection, concealment, and realism while still constructing the range facilities to standard.

Table 2.k Description of Donnelly Drop Zone Activity Areas.

Type of Activity Area	Size (acres)	
	BAX	CACTF
Construction Footprint	508	44
Maneuver Area[1]	3,413	694
Surface Danger Zone	19,313	871

[1] = Includes construction footprint acreage.

The maneuver area for the BAX and CACTF at Donnelly Drop Zone is approximately 4,100 acres. This area includes a portion of Bear Drop Zone that has historically been used as a bivouac/staging area. In addition, transition corridors between this drop zone and the CACTF and between the CACTF and the BAX, have been included within the maneuver area. The BAX would involve the crossing of Ober and Jarvis creeks. Approximately five crossing sites would be required. Stream crossings would likely be accomplished by installation of bridges. Approximately 100 acres are currently cleared of vegetation or modified.

The surface danger zone for the BAX at Donnelly Drop Zone is approximately 19,300 acres. The firing orientation of the BAX at this site, as dictated by the shape and size of the site, would be towards the north and northeast, in the direction of private residences and the city of Delta Junction (Appendix, Figure 2.f). The area in which the projectiles would be expected to land would be between the city and the range facility. The surface danger zone for the CACTF is approximately 870 acres and accommodates a firing distance of 2,300 feet.

There are not enough trafficable soils on Donnelly Drop Zone to support year-round training with military vehicles without extensive site modification. Due to the distribution of trafficable soils within the site, the BAX maneuver area can only support 988 Stryker vehicle passes in the summer season without becoming impassable. Winter season training is not affected by trafficability.

Access to the BAX and CACTF at Donnelly Drop Zone by land would be accessed through MIDAS Site Road (located at Mile Marker 249.2), which bisects Donnelly Drop Zone, with entry

from the north or the south along the Richardson Highway. The proposed location of the BAX and CACTF, and their associated surface danger zones, encompasses nine smaller training areas (TA 6 through 10 and 19 through 22). During operation of the BAX and CACTF, these training areas would be closed to public access (Appendix, Figure 2.f).

Units would utilize the Battalion Bivouac Site in Training Area 48 along Beales South Road, approximately a half-mile west of Richardson Highway (Mile Marker 258.8). Additional staging areas include existing gravel and concrete pads at the Old Midas Site near Donnelly Drop Zone within Training Area 17, which have been used as individual bivouac vehicle/tent sites. Activities conducted at these locations are discussed in the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004a) and the *Alaska Army Lands Withdrawal Renewal Final Legislative Environmental Impact Statement* (USARAK 1999a). These areas would continue to be used as staging areas under the proposed action.

Only a small portion of the BAX surface danger zone falls within the Class D airspace above Allen Army Airfield. Most of the BAX and CACTF construction, maneuver and surface danger zone areas fall within the Buffalo Military Operations Area. All of the CACTF and a large portion of the BAX construction and maneuver areas are within the Richardson Highway VFR Corridor. No portions of the BAX or CACTF fall within restricted airspace.

Use of the BAX and CACTF for military training at the Donnelly Drop Zone site would be as described in Section 2.2, *Description of the Proposed Action*.

A summary of anticipated action and outputs of the proposed action at Donnelly Drop Zone is contained in Tables 2.n, 2.o, and 2.p.

2.4.3.3 North Texas Range (Alternative 4)

The North Texas Range site is located west of the Richardson Highway along Meadows Road and east of the Delta River (Appendix, Figure 2.g). Topography in this location includes rolling gravelly hills and gentle slopes. Vegetation in the area is tundra, sub-alpine scrub, mixed and burned forest, ponds and associated wetlands. Most of the area burned in 1981, leaving small pockets of mature spruce forest.

Prior to transformation, nearly every training event at DTA utilized some training area or facility along Meadows Road, given its proximity to nearby impact areas for live firing. A majority of DTA's artillery firing points and forward observation posts are in the Meadows Road area. The proposed BAX construction footprint and maneuver area within the North Texas Range alternative includes four firing points and is within three miles of the other two firing points. Two observation points are included in the proposed range construction footprint and maneuver area, with several more scattered north and south along the Delta River.

There is an existing Combined Arms Live Fire Exercise Range within the North Texas Range alternative, including gravel pits and established field latrines, electricity and telephone lines. Units bivouac in numerous locations within the North Texas Range alternative during exercises. A Collective Training Range has been constructed in the vicinity of Texas Range to temporarily meet some unfulfilled collective live-fire training requirements for USARAK Soldiers, until

further siting decisions are made about the BAX and CACTF. Sally Drop Zone, an area with naturally low vegetation, is just south of the North Texas Range alternative.

North Texas Range is intensively used by CRTC, as it is the only available site at DTA East that has established impact areas. CRTC has numerous facilities in the area (which are not utilized by USARAK) including, Bolio Lake, Mississippi Test Site, and Texas Range (different from North Texas Range). Three to eight tests are conducted each winter. Each test is different but consists of many weeks of cold environment testing on ranges, training areas, and roads, especially in the Meadows Road area. Severe impacts to CRTC facilities would be expected under this alternative due to closures of Meadows Road, inhibiting CRTC's access to facilities whenever training on the BAX and CACTF occurs. Additionally, fiber optic and copper cable between Bolio Lake and Texas Range may need to be rerouted to avoid impacts from 105mm use. Close coordination and regular communication between USARAK and CRTC would be required to minimize training and testing scheduling conflicts. In this manner, both organizations can maximize their ability to accomplish their respective missions.

Approximately 660 acres are required for the construction of the BAX and CACTF for roads, targetry, and building foundations at North Texas Range (Table 2.l). The size of the range is constrained by the numerous lakes and wetlands in the area. In addition, the range was oriented for potential utilization of the adjacent existing dudded impact area. Currently, 65 acres are cleared of vegetation or have been modified or disturbed within the construction footprint. The proposed action requires modification of about 595 additional acres (e.g., vegetation cleared, soil excavation and movement, installation of range infrastructure) for construction. Care would be taken to retain as much of the existing vegetation as possible to provide overhead protection, concealment, and realism while still constructing the range facilities to standard.

Table 2.l Description of North Texas Range Activity Areas.

Type of Activity Area	Size (acres)	
	BAX	**CACTF**
Construction Footprint	552	105
Maneuver Area[1]	2,548	771
Surface Danger Zone	22,041	1,318

[1] = Includes construction footprint acreage.

The maneuver area for the BAX and CACTF at North Texas Range is approximately 3,300 acres. This area includes a portion of Sally Drop Zone. In addition, transition corridors between the CACTF and the BAX have been included within the maneuver area. Approximately 135 acres are currently cleared of vegetation or modified.

The surface danger zone for the BAX at North Texas Range is approximately 22,000 acres. The firing orientation of the BAX at this site, as dictated by the shape and size of the site, would be towards the west into existing impact areas and away from residences and the city of Delta Junction (Appendix, Figure 2.g). The area in which the projectiles would be expected to land

would be within existing dedicated Army impact areas. The surface danger zone for the CACTF is approximately 1,300 acres and accommodates a firing distance of 2,300 feet.

The soils on North Texas Range are considered not trafficable enough to support year-round training with military vehicles without extensive site modification. Due to the distribution of trafficable soils within the site, the BAX maneuver area can only support 517 Stryker vehicle passes in the summer season without becoming impassable. Winter season training is not affected by trafficability.

Access to the BAX and CACTF at North Texas Range by land would be through Meadows Road accessed either from the north or the south along the Richardson Highway, located at Mile Marker 257.6. The construction and maneuver areas encompass approximately three miles of Meadows Road. The proposed location of the BAX and CACTF, their associated surface danger zones, and six training areas (TA 52, 53, and 57 through 60) would be closed to public access during military training exercises (Appendix, Figure 2.g). This would include the three-mile portion of Meadows Road within the construction and maneuver area.

The area contains one established staging area specifically built to support training and deployment activities. This facility, the Battalion Bivouac Site, was constructed in 2000 in Training Area 48 along Beales South Road, approximately a half-mile west of Richardson Highway (Mile Marker 258.8). The Battalion Bivouac Site is about 40 acres in size and has an expansion potential of up to 70 acres (USARAK 2000d).

All portions of the BAX and CACTF are located within restricted airspace (R2202).

Use of the BAX and CACTF for military training at the North Texas Range site would be as described in Section 2.2, *Description of the Proposed Action*.

A summary of anticipated action and outputs of the proposed action at North Texas Range is contained in Tables 2.n, 2.o, and 2.p.

2.4.3.4 North Texas Range and Eddy Drop Zone Combination (Alternative 5)

Under this proposal, the BAX would be constructed and operated at North Texas Range and the CACTF would be built at Eddy Drop Zone (Appendix, Figure 2.h). A different range layout and orientation has been proposed for the BAX at North Texas Range under this alternative. The BAX design under this alternative utilizes a greater amount of terrain to allow for increased maneuver and incorporation of existing landforms. This BAX design did not incorporate existing CRTC testing facilities and the UAV landing strip and maintenance facility, as did the BAX design under the North Texas Range alternative where both the BAX and CACTF were adjacently located. The CACTF range design would remain similar to that described for Eddy Drop Zone. In general, factors and conditions as they currently exist would otherwise remain as described in the previous descriptions above for Eddy Drop Zone and North Texas Range.

Approximately 820 acres are required for the construction of the BAX at North Texas Range and the CACTF at Eddy Drop Zone for roads, targetry, and building foundations (Table 2.m). Currently, 40 acres are cleared of vegetation or have been modified or disturbed within the

construction footprint. The proposed action requires modification of about 780 additional acres (e.g., vegetation cleared, soil excavation and movement, installation of range infrastructure) for construction. Care would be taken to retain as much of the existing vegetation as possible to provide overhead protection, concealment, and realism while still constructing the range facilities to standard.

Table 2.m Description of North Texas Range and Eddy Drop Zone Combination Activity Areas.

Type of Activity Area	Size (acres)	
	BAX	**CACTF**
Construction Footprint	727	96
Maneuver Area[1]	4,081	1,184
Surface Danger Zone	23,741	1,123

[1] = Includes construction footprint acreage.

The maneuver area for the BAX at North Texas Range and CACTF at Eddy Drop Zone is approximately 5,300 acres. Approximately 240 acres are currently cleared of vegetation or modified.

The surface danger zone for the BAX at North Texas Range is approximately 24,000 acres. The firing orientation of the BAX at this site, as dictated by the shape and size of the site, would be towards the west into existing impact areas and away from residences and the city of Delta Junction (Appendix, Figure 2.h). The area in which the projectiles would be expected to land would be within existing dedicated Army impact areas. The surface danger zone for the CACTF is approximately 1,100 acres and accommodates a firing distance of 2,300 feet.

The soils on North Texas Range are considered not trafficable enough to support year-round training with military vehicles without extensive site modification. Due to the distribution of trafficable soils within the site, the BAX maneuver area can only support 648 Stryker vehicle passes in the summer season without becoming impassable. Winter season training is not affected by trafficability.

While still in proximity to one another, this option would require different maneuver transition requirements than for the other three siting alternative locations that would allow both facilities closer physical proximity. Instead of using existing maneuver corridors within a particular site and remaining either east or west of the Richardson Highway, units would conduct a more deliberate and longer distance ground movement. For instance, from the CACTF at Eddy Drop Zone, a unit could move to the BAX at North Texas Range north along 33-Mile Loop Road and then west across Jarvis Creek on the Richardson Highway bridge, continuing south to either the Battalion Bivouac Site, and then use a new main supply route to Meadows Road. An alternative means of movement would have the unit continue south on the Richardson Highway to the Meadows Road turnoff, or go further south to the Old Richardson Highway and proceed south to Windy Ridge Road to access the BAX at North Texas Range.

The construction and maneuver areas encompass approximately four miles of Meadows Road. The proposed location of the BAX, its associated surface danger zones, and six training areas (TA 52, 53, and 57 through 60) would be closed to public access during military training exercises (Appendix, Figure 2.h). This would include the four-mile portion of Meadows Road within the construction and maneuver area. The CACTF construction, maneuver and surface danger zone areas encompass approximately three-and-a-half miles of 33-Mile Loop Road.

The CACTF construction and maneuver areas and a portion of the surface danger zone fall within the Class E and proposed Class D airspace above Allen Army Airfield. No portion of the CACTF falls within restricted airspace. All portions of the BAX are located within restricted airspace (R2202).

Use of the BAX at the North Texas Range and the CACTF at Eddy Drop Zone for military training would be as described in Section 2.2, *Description of the Proposed Action*.

A summary of anticipated action and outputs of the proposed action at both North Texas Range and Eddy Drop Zone is contained in Tables 2.n, 2.o, and 2.p.

2.4.3.5 No Action Alternative (Alternative 1)

Consideration of the No Action Alternative, representing the status quo, is required by NEPA and can provide a basis for the comparison of predicted impacts among viable alternatives. Under this alternative, the proposed BAX and CACTF would not be constructed or operated. However, current day-to-day operations on Army lands within Alaska, including military training and support associated with transformation, would continue as described within the *Alaska Army Lands Withdrawal Renewal Final Legislative Environmental Impact Statement* (USARAK 1999a) and the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004a). These operations and associated management actions are summarized below.

Approximately 4,600 acres have been modified throughout DTA since the 1950s by military activity. This includes the development of the cantonment area, ranges and other military infrastructure. An in-depth discussion of past, present and future projects and activities on DTA (Table 4.3.10.c) has been included as part of the cumulative effects analysis of this proposed action.

The *Alaska Army Lands Withdrawal Renewal Final Legislative Environmental Impact Statement, Vols. 1 and 2* was approved in 1999. This document was required by the Military Lands Withdrawal Act (Public Law 99-606, 100 Stat. 3457, et seq.), dated November 6, 1986, for the continued military use of public domain lands by the U.S. Army on FWA and Fort Greely (now DTA East and West), Alaska.

Since the withdrawal renewal involved more than 5,000 acres, Congressional approval (passing of legislation) was required. The DA requested to renew the land withdrawals under the same stipulations and conditions of the Military Lands Withdrawal Act of 1986 and for the same military purposes. The enacted legislation, Public Law 106-65, (October 5, 1999), the “Military

Lands Withdrawal Act of 1999," withdrew all lands and interests in lands, subject to valid existing rights and except as otherwise provided, within the boundaries established at the Fort Greely East and West Training Ranges (commonly referred to as DTA East and West) and the Yukon Training Range of FWA. These lands are withdrawn from all forms of appropriation under the public land laws, including the mining laws and the mineral leasing and geothermal leasing laws. Such lands are reserved for use by the Secretary of the Army for (1) military maneuvering, training, and equipment development and testing; (2) training for aerial gunnery, rocketry, electronic warfare, and tactical maneuvering and air support; and (3) other defense-related purposes consistent with the purposes specified in this paragraph. The withdrawal and reservation of these lands will terminate 25 years after November 6, 2001.

The *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004a) evaluated the U.S. Army's proposal to transform from the Current Force to an Interim Force and eventually a Future Force during the next 30 years. This transformation affects most aspects of the Army's doctrine, training, leader development, organizations, installations, materiel, and Soldiers.

As part of the actions for the development of the Interim Force, the Army transformed the 172nd Infantry Brigade (Separate) into an SBCT and expanded the 1-501st Parachute Infantry Regiment into an Airborne BCT in Alaska. Environmental consequences associated with the transformation of USARAK forces were considered in the *Final Environmental Impact Statement for Transformation of U.S. Army Alaska* (USARAK 2004a).

Changes to force structure and stationing, and increased use of ranges, facilities, and infrastructure are currently occurring. In addition, new systems have been acquired. The Stryker, an eight-wheel-drive, light armored vehicle designed to increase ground mobility and firepower, is used on USARAK lands, and the UAV is utilized for reconnaissance or surveillance training missions. Training will be designed to fulfill the new USARAK transformation mission and increased use of land and impact areas for live fire and maneuver training is expected.

The Army has identified mitigation actions to adopt as practicable means to reduce potential impact and to ensure the sustainability of the biological, physical, and socioeconomic environment of USARAK. While transformation represents increased impacts upon the natural environment, enhanced environmental management practices provide additional programs for continued monitoring, assessing and mitigating measures with the goal of lessening environmental impacts and sustaining natural resources. The mitigation and monitoring measures that were adopted in the 2004 Record of Decision for the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004a) reflect all practicable means to avoid or minimize environmental harm resulting from USARAK transformation. USARAK has created a mitigation effectiveness monitoring plan to ensure that these mitigation measures are fully implemented. This plan provides procedures to track and report the effectiveness of mitigation efforts and to define the goals and objectives of the plan. It shall include status report due dates, monitoring time frames and thresholds. Contingency measures to ensure the plan meets the defined goals and objectives will also be included. The mitigation effectiveness monitoring plan will adhere to the guidance set forth in 32 CFR Part 651, Appendix C.

2.5 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The Army's preferred alternative is to construct and operate a BAX and CACTF range on training lands within Eddy Drop Zone at DTA East. This alternative is described in detail in Section 2.4.3.1.

2.6 COMPARISON OF ALTERNATIVES AND ENVIRONMENTAL CONSEQUENCES

Table 2.n lists the standard actions and outputs associated with the BAX and CACTF, regardless of which action alternative is considered. Table 2.o compares the actions and outputs unique to each action alternative for the BAX and CACTF.

Table 2.n Standard Actions and Outputs at the BAX and CACTF.

Actions and Outputs	BAX	CACTF
Required acres for construction and maneuver	3,500	1,100
Required surface danger zone range	7.5 miles	2,300 feet
Required minimum number of days available for training	106	106
Maximum number of utilization days per year	238	238
Number of Soldiers range must accommodate	200	800
Number of vehicles range must accommodate	25	140
Required minimum number of off-road vehicle passes range must support during summer	1,012	n/a
Maximum likely number of off-road vehicle passes during summer	1,582	n/a
Type of fire	Live fire, non-explosive	Non-live fire, non-explosive
Amount of munitions used per year	Not to exceed 16.5 million rounds	Not to exceed 16.5 million rounds
Use of fog oil smoke	yes	yes
Type of training environment	rural	urban
Number of buildings	16	24
Number of new landing zones	3	3
Typical length of training event (days)	15	15
Length of training day (hours)	16	16
Potential largest event per year (Soldiers)	3,400	3,400
Length of potential largest event per year (days)	45	45
Potential number of times off-set (or virtual) close air support will be utilized during training	238	238

Table 2.o Specific Actions and Outputs at the BAX and CACTF.

BAX	Eddy Drop Zone	Donnelly Drop Zone	North Texas Range	North Texas Range/ Eddy Drop Zone Combination
Actual construction acres	254	508	552	727
Actual maneuver acres	2,872	3,413	2,548	4,081
Actual surface danger zone acres	23,741	19,313	22,041	23,741
Existing cleared/disturbed acres	510	470	336	489
Access roads impacted	33-Mile Loop Road; 12-Mile Crossing	33-Mile Loop Road; 12-Mile Crossing	Meadows Road; Windy Ridge Road	Meadows Road; Windy Ridge Road
CACTF	**Eddy Drop Zone**	**Donnelly Drop Zone**	**North Texas Range**	**North Texas Range/ Eddy Drop Zone Combination**
Actual construction acres	96	44	105	96
Actual maneuver acres	1,184	694	771	1,184
Actual surface danger zone acres	1,123	871	1,318	1,123
Existing cleared/disturbed acres	79	52	74	79
Access roads impacted	33-Mile Loop Road	None	Windy Ridge Road	33-Mile Loop Road

Table 2.p contains a matrix of the action alternatives comparing environmental consequences of construction and use of a BAX and CACTF at each site location for the specific resource categories. In addition, environmental consequences of the No Action Alternative (no range construction, but continuation of Army transformation in Alaska) are included in Table 2.q. Environmental consequences associated with the proposed action are defined as any adverse environmental effects that cannot be avoided (should the ranges be constructed and operated), the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources (should this project be implemented) (CEQ Regulation 1502.16, *Environmental Consequences*).

The proposed BAX and CACTF are considered in this EIS within the larger context of Army transformation at USARAK. Predicted impacts within defined range areas at each alternative location are in addition to those broader, less discrete environmental consequences associated with transformation at DTA East (USARAK 2004a). Thus, under the No Action Alternative, impacts have been assessed on a broader scope, which is defined as DTA East. Environmental consequences associated with the BAX and CACTF take into account transformation activities,

but are focused on the direct and indirect impacts at specific site alternatives (as well as DTA East for some resources, such as wide-ranging wildlife species).

Impact categories associated with construction and operation of the BAX and CACTF will vary according to the resource being assessed and are defined at the beginning of each resource section in Chapter 4. The qualitative terms used in the matrix to assess range construction and operations are generally defined as:

- None – No measurable impacts are expected to occur.
- Minor – Adverse impacts are expected to occur; impacts would be measurable and may have slight effect on resource.
- Moderate – Adverse impacts are expected to occur; impacts would be noticeable and would have a measurable effect on resource.
- Severe – Adverse impacts are expected to occur; impacts would be obvious, are significant and would have serious consequences to resource.
- Beneficial – Only beneficial impacts are expected to occur.
- n/a – The resource or issue is not relevant at that particular location alternative.

Impact categories associated with the No Action Alternative (continuation of Army transformation in Alaska) are defined within each resource section in Chapter 4 of the *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK 2004a). In general, the qualitative terms are similar to those used to assess range construction and operation (defined above).

The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The next category (severe) is considered significant. Mitigation measures have been developed to offset adverse impacts. Existing and proposed mitigation for impacts to resources are located at the end of each resources section within Chapter 4.

Table 2.p Comparison of Action Alternatives and Environmental Consequences.

Resource/Issue	Alternatives				
	Alternative 2: Eddy Drop Zone	Alternative 3: Donnelly Drop Zone	Alternative 4: North Texas Range	Alternative 5:	
				Eddy Drop Zone	North Texas Range
Soil Resources					
Soils					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Moderate	Moderate	Moderate	Minor	Moderate
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Permafrost					
Construction Footprint	Minor	Moderate	Moderate	Minor	Moderate
Maneuver Area	Minor	Moderate	Moderate	Minor	Moderate
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Surface Water					
Waterways					
Construction Footprint	Moderate	Minor	Minor	Minor	Minor
Maneuver Area	Moderate	Moderate	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Flooding					
Construction Footprint	Moderate	Minor	None	Minor	None
Maneuver Area	Minor	Minor	None	Minor	None
Surface Danger Zone	None	None	None	None	None

Resource/Issue	Alternatives				
	Alternative 2: Eddy Drop Zone	Alternative 3: Donnelly Drop Zone	Alternative 4: North Texas Range	Alternative 5:	
				Eddy Drop Zone	North Texas Range
Floodplains					
Construction Footprint	Moderate	Moderate	None	Minor	None
Maneuver Area	Minor	Minor	None	Minor	None
Surface Danger Zone	None	None	None	None	None
Lakes and Ponds					
Construction Footprint	None-Minor	None-Minor	None-Minor	None	None-Minor
Maneuver Area	None-Minor	None-Minor	None-Minor	None	None-Minor
Surface Danger Zone	None-Minor	None-Minor	None-Minor	None-Minor	None-Minor
Surface Water Quality					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Moderate	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Fire Management					
Fire Hazard/Risk					
Construction Footprint	Moderate	Minor	Minor	Moderate	Minor
Maneuver Area	Severe	Moderate	Min-Mod	Severe	Min-Mod
Surface Danger Zone	Severe	Moderate	Min-Mod	Severe	Min-Mod
Fire Policy					
Construction Footprint	None	None	None	None	None
Maneuver Area	None	None	None	None	None
Surface Danger Zone	None	None	None	None	None
Fuels Management					
Construction Footprint	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial
Maneuver Area	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial
Surface Danger Zone	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial
Noise					
Small Arms Noise – Average					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	None	None	Minor	None	Minor
Large Caliber Weapons and Demolition Noise - Average					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	None	None	Minor	None	Minor
Single Event Noise					
Construction Footprint	Moderate	Severe	Moderate	Moderate	Moderate
Maneuver Area	Moderate	Severe	Moderate	Moderate	Moderate
Surface Danger Zone	None	None	Minor	None	Minor
Vehicle Noise					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	None	Minor	None
Aircraft Noise					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Human Health and Safety					
Traffic/Convoys					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Moderate	Moderate	Moderate	Moderate	Moderate
Surface Danger Zone	None	None	None	None	None

Resource/Issue	Alternatives				
	Alternative 2: Eddy Drop Zone	Alternative 3: Donnelly Drop Zone	Alternative 4: North Texas Range	Alternative 5:	
				Eddy Drop Zone	North Texas Range
Hazardous Materials/Wastes					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Contaminated Sites					
Construction Footprint	None	None	None	None	None
Maneuver Area	None	None	None	None	None
Surface Danger Zone	None	None	None	None	None
Use of Munitions					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Range Safety					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Wildlife and Fisheries					
Bison					
Construction Footprint	Minor	Minor	Severe	Severe	
Maneuver Area	Minor	Minor	Severe	Severe	
Black Bear					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Brown Bear					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Caribou					
Construction Footprint	Minor	Moderate	Moderate	Moderate	
Maneuver Area	Minor	Moderate	Moderate	Moderate	
Gray Wolf					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Little Brown Bat					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Lynx					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Meadow Jumping Mouse					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Moose					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Wolverine					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Boreal Owl					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	

Resource/Issue	Alternatives				
	Alternative 2: Eddy Drop Zone	Alternative 3: Donnelly Drop Zone	Alternative 4: North Texas Range	Alternative 5:	
				Eddy Drop Zone	North Texas Range
Great Gray Owl					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Northern Goshawk					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Olive-sided Flycatcher					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Rusty Blackbird					
Construction Footprint	Moderate	Minor	Minor	Minor	
Maneuver Area	Moderate	Minor	Minor	Minor	
Sandhill Crane					
Construction Footprint	Minor	Minor	Moderate	Moderate	
Maneuver Area	Minor	Minor	Moderate	Moderate	
Sharp-tailed Grouse					
Construction Footprint	Moderate	Moderate	Minor	Moderate	
Maneuver Area	Moderate	Moderate	Minor	Moderate	
Trumpeter Swan					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Wood Frog					
Construction Footprint	Moderate	Severe	Severe	Minor	
Maneuver Area	Moderate	Severe	Severe	Minor	
Stocked Fisheries					
Construction Footprint	Minor	Minor	Severe	Severe	
Maneuver Area	Minor	Minor	Severe	Severe	
Wild Fisheries					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Cultural Resources					
Historic Structures					
Construction Footprint	None	None	None	None	None
Maneuver Area	None	None	None	None	None
Surface Danger Zone	None	None	None	None	None
Prehistoric Archaeological Sites					
Construction Footprint	None	None	Minor	None	Minor
Maneuver Area	Minor	Moderate	Minor	None	Minor
Surface Danger Zone	Severe	Severe	Minor	None	Minor
Traditional Cultural Properties/ Grave Sites					
Construction Footprint	Unknown	Unknown	Unknown	Unknown	Unknown
Maneuver Area	Unknown	Unknown	Unknown	Unknown	Unknown
Surface Danger Zone	Unknown	Unknown	Unknown	Unknown	Unknown
Airspace					
Terminal and En Route Airspace					
Construction Footprint	Minor	Minor	None	Minor	None
Maneuver Area	Minor	Minor	None	Minor	None
Surface Danger Zone	Minor	Minor	None	Minor	None

Resource/Issue	Alternatives				
	Alternative 2: Eddy Drop Zone	Alternative 3: Donnelly Drop Zone	Alternative 4: North Texas Range	Alternative 5:	
				Eddy Drop Zone	North Texas Range
Special Use Airspace					
Construction Footprint	None	Minor	None	None	None
Maneuver Area	None	Minor	None	None	None
Surface Danger Zone	Minor	Minor	None	None	None
Air Quality					
Stationary Source Emissions					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Mobile Source Emissions					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Fugitive Dust					
Construction Footprint	Moderate	Moderate	Moderate	Moderate	Moderate
Maneuver Area	Moderate	Moderate	Moderate	Moderate	Moderate
Surface Danger Zone	Moderate	Moderate	Moderate	Moderate	Moderate
Groundwater					
Groundwater Flow					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Groundwater Quality					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Alteration of Groundwater System Due to Permafrost Disruption					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	Minor	Minor	Minor
Wetlands					
Higher Function Wetlands					
Construction Footprint (fill)	Moderate	Severe	Severe	None	Minor
Maneuver Area (fill)	None	None	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	None	Minor	None
Other Wetlands					
Construction Footprint (fill)	Minor	Severe	Severe	Minor	Severe
Maneuver Area (fill)	None	Severe	Severe	Minor	Moderate
Surface Danger Zone	Minor	Minor	None	Minor	None
Vegetation					
Vegetative Cover					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Surface Danger Zone	Minor	Minor	Minor	Minor	
Rare Plants					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Surface Danger Zone	None	None	None	None	
Invasive Plant Species					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Surface Danger Zone	Minor	Minor	Minor	Minor	

Resource/Issue	Alternatives				
	Alternative 2: Eddy Drop Zone	Alternative 3: Donnelly Drop Zone	Alternative 4: North Texas Range	Alternative 5:	
				Eddy Drop Zone	North Texas Range
Forest Resources					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Surface Danger Zone	Minor	Minor	Minor	Minor	
Threatened or Endangered Species and Species of Concern					
Plant Species of Concern					
Construction Footprint	Minor	Minor	Minor	Minor	
Maneuver Area	Minor	Minor	Minor	Minor	
Surface Danger Zone	None	None	None	None	
White-winged Crossbill					
Construction Footprint	Moderate	Moderate	Minor	Moderate	Minor
Maneuver Area	Moderate	Moderate	Minor	Moderate	Minor
Townsend's Warbler					
Construction Footprint	Moderate	Moderate	Moderate	Moderate	Moderate
Maneuver Area	Moderate	Moderate	Moderate	Moderate	Moderate
Blackpoll Warbler					
Construction Footprint	Moderate	Moderate	Moderate	Moderate	Moderate
Maneuver Area	Moderate	Moderate	Moderate	Moderate	Moderate
American Osprey					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
American Peregrine Falcon					
Construction Footprint	None	None	Minor	None	Minor
Maneuver Area	None	None	Minor	None	Minor
Socioeconomics					
Monetary					
Delta Junction Community	Beneficial	Beneficial	Minor	Minor	
Construction Footprint					
Delta Junction Community	Beneficial	Beneficial	Beneficial	Beneficial	
Operation					
Delta Junction Community	Beneficial	Beneficial	Beneficial	Beneficial	
Quality of Life					
Delta Junction Community	Beneficial	Beneficial	Beneficial	Beneficial	
Public Safety					
Delta Junction Community	Beneficial	Beneficial	Beneficial	Beneficial	
Subsistence					
Subsistence Access					
Construction Footprint	Minor-Ben	Minor-Ben	Minor-Ben	Minor-Ben	Minor-Ben
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	None	Minor	None
Subsistence Resource Availability					
Construction Footprint	Minor	Minor	Minor	Minor	Minor
Maneuver Area	Minor	Minor	Minor	Minor	Minor
Surface Danger Zone	Minor	Minor	None	Minor	None
Public Access and Recreation					
Temporal Availability					
Construction Footprint	Severe	Severe	Severe	Severe	Severe
Maneuver Area	Severe	Severe	Severe	Severe	Severe
Surface Danger Zone	Moderate	Moderate	Moderate	Moderate	Moderate

Resource/Issue	Alternatives				
	Alternative 2: Eddy Drop Zone	Alternative 3: Donnelly Drop Zone	Alternative 4: North Texas Range	Alternative 5:	
				Eddy Drop Zone	North Texas Range
Spatial Availability Construction Footprint Maneuver Area Surface Danger Zone	 Severe Severe Moderate	 Severe Severe Moderate	 Severe Severe Moderate	 Severe Severe Moderate	 Severe Severe Moderate
Recreational Availability Construction Footprint Maneuver Area Surface Danger Zone	 Severe Severe Moderate	 Severe Severe Moderate	 Severe Severe Moderate	 Severe Severe Moderate	 Severe Severe Moderate
Environmental Justice					
Minority Communities Southeast Fairbanks Census Area	Minor	Minor	Minor	Minor	
Alaska Native Communities Southeast Fairbanks Census Area	Moderate	Moderate	Moderate	Moderate	
Low-Income Communities Southeast Fairbanks Census Area	Minor	Minor	Minor	Minor	
Children Southeast Fairbanks Census Area	None	None	None	None	

Table 2.q Summary of Environmental Consequences under the No Action Alternative.

Resource/Issue	Alternative 1: No Action
Soil Resources DTA East	
Soils	Minimal impacts when soils are frozen but measurable impacts to unfrozen soils in low-lying areas and areas with poorly-drained soils
Permafrost	Disturbance to permafrost due to high explosive munitions, but limited to impact areas
Surface Water DTA East	
Waterways	Sedimentation caused by vehicle and personnel use of trails, stream crossings, and ice bridge approaches
Flooding	No information available
Floodplains	No information available
Lakes and Ponds	Sedimentation caused by vehicle and personnel use of trails, stream crossings, and ice bridge approaches
Surface Water Quality	Slight sedimentation from trail use and chemical decomposition of munitions constituents from impact area
Fire Management DTA East	
Fire Hazard/Risk	Military training in forested and potentially flammable areas
Fire Policy	No changes to Alaska Wildland Fire Management policy proposed
Fuels Management	INRMP and fire management plans provide for fuels management on training lands
Noise DTA East	
Small Arms Noise – Average	Training occurs at least two miles from residential areas

Resource/Issue	Alternative 1: No Action
Large Caliber Weapons and Demo. Noise – Average	Training primarily occurs in Washington and Mississippi impact areas; noise contours from high-explosive munitions remain within the training areas
Single Event Noise	No information available
Vehicle Noise	Short-term increases during deployments and large-scale training exercises
Aircraft Noise	Aircraft flyovers occur during training exercises, including helicopters and C-130 transport planes; short-term increases during deployments and large-scale training exercises
Human Health and Safety DTA East	
Traffic/Convoys	Periodic traffic congestion due to company and battalion-sized deployments
Hazardous Materials/ Wastes	Possible petrochemical spills due to fuel transport and refueling operations; Army procedures and controls minimize impacts
Contaminated Sites	Possible site contamination due to fuel transport and refueling operations; Army procedures and controls minimize impacts
Use of Munitions	Range safety program and regulations protect Soldiers and civilians
Range Safety	Possible occurrences from airborne training exercises
Wildlife and Fisheries DTA East	
Bison	Army training and infrastructure affect Delta bison herd, but populations have been sustained at current levels up until 2004, when population decline has been observed.
Black Bear	Training activities may disturb individual animals
Brown Bear	Training activities may disturb individual animals
Caribou	Caribou are sensitive to habitat alteration and disturbance; Army training may influence distribution and habitat use
Gray Wolf	Army training and infrastructure affect the distribution of wolves
Little Brown Bat	Information on distribution and abundance of bats in interior Alaska are not well known; these bats are susceptible to logging and habitat disturbance
Lynx	Army training and infrastructure would affect some individuals
Meadow Jumping Mouse	Army activities would impact some portions of the population
Moose	Army training and infrastructure would affect some individuals, but moose are tolerant to disturbance
Wolverine	Army training and infrastructure would disturb individual wolverine and local population
Boreal Owl	Susceptible to forest thinning and clearing, but large scale clearing not planned
Great Gray Owl	Susceptible to forest thinning and clearing, but large scale clearing not planned
Northern Goshawk	Susceptible to forest thinning and clearing, but large scale clearing not planned
Olive-sided Flycatcher	Susceptible to habitat disturbance, but not common on DTA
Rusty Blackbird	Susceptible to habitat disturbance, but not common on DTA
Sandhill Crane	Susceptible to habitat disturbance, but cranes can adapt to human activity
Sharp-tailed Grouse	Susceptible to disturbance during breeding; disturbance rates relatively infrequent
Trumpeter Swan	Susceptible to disturbance during breeding; disturbance rates relatively infrequent
Wood Frog	Training and construction would affect local habitat and populations
Stocked Fisheries	Fish stocking and use on stocked lakes would continue
Wild Fisheries	Training and construction would not affect local habitat and populations (esp. anadromous populations)

Resource/Issue	Alternative 1: No Action
Cultural Resources DTA East	
Historic Structures	No impacts have been identified
Prehistoric Archaeological Sites	Impacts resulting from ongoing vehicular off-road traffic, live-fire munitions, and other training activities
Traditional Cultural Properties/Grave Sites	No TCPs have been identified: Consultations indicate probability of presence is undetermined
Airspace DTA East	
Terminal and En Route Airspace	A Class D area is centralized over the Allen Army Airfield located on Fort Greely
Special Use Airspace	The types of special use airspace are Restricted Areas and MOAs including civilian flight corridors; CFAs and SARSAs are also used by the Army to ensure the safety of aircraft transiting the area
Air Quality DTA East	
Stationary Source Emissions	Temporary impacts to air quality
Mobile Source Emissions	No information available
Fugitive Dust	Levels are below the standard
Groundwater DTA East	
Groundwater Flow	Soil compaction resulting from vehicle and pedestrian use could lead to greater overland flow and reduced groundwater percolation and flow
Groundwater Quality	Possible alteration of groundwater chemistry due to munitions constituents leaching into groundwater
Alteration of Groundwater System Due to Permafrost Disruption	Impacts to vegetation could affect underlying permafrost by changing dynamics between groundwater and surface water or between different groundwater tables
Wetlands DTA East	
Higher Function Wetlands	Forty or more acres of wetlands, including higher function, may be impacted (less than 1% of total wetlands on DTA East)
Other Wetlands	Forty or more acres of wetlands, including higher function, may be impacted (less than 1% of total wetlands on DTA East)
Vegetation DTA East	
Vegetative Cover	Localized impacts from training and land use activities, but impacts are sustainable
Rare Plants	There have not been large-scale impacts to rare plant communities, and relatively few new impacts expected
Invasive Plant Species	DTA is relatively free of widespread invasive plant infestations
Forest Resources	Frequency of fires affects forest resources
Threatened or Endangered Species and Species of Concern DTA East	
Plant Species of Concern	There have not been large-scale impacts to rare plant communities, and relatively few new impacts expected. Currently 18 AKNHP-listed rare plant species have been documented on DTA
White-winged Crossbill	Habitat loss from fires and forest clearing
Townsend's Warbler	Habitat loss from fires and forest clearing
Blackpoll Warbler	Habitat loss from fires and forest clearing

Resource/Issue	Alternative 1: No Action
American Osprey	Ospreys rarely use DTA East
American Peregrine Falcon	American peregrine falcons nest at one location at DTA East
Socioeconomics Delta Junction Community	
Monetary	Beneficial due to construction and operation, but small
Construction	Beneficial, but small and temporary
Operation	Beneficial, but small due to few personnel permanently stationed at DTA
Quality of Life	Beneficial overall due to increased employment and monetary contributions to local economy, although some negative impacts expected from recreational access restrictions
Public Safety	Beneficial due to federal funds for public safety infrastructure
Subsistence DTA East (104,601 acres)	
Subsistence Access	Access closures during military training
Subsistence Resource Availability	Resources unavailable when ranges are closed to public use
Public Access and Recreation DTA East	
Temporal Availability	Range closures during military training
Spatial Availability	Development of new trails increases recreational access; range closures during military training reduce spatial availability of recreation
Recreational Availability	Development of new trails increases recreational access; impacts to hunting/trapping and increased competition for resources
Environmental Justice Southeast Fairbanks Census Area	
Minority Communities	No disproportionate impacts; all communities affected equally by air quality, water resources, socioeconomics, noise, and human health and safety impacts
Alaska Native Communities	Restricted access and/or impacts to cultural sites affects local tribes affiliated with those resources
Low-Income Communities	No disproportionate impacts; all communities affected equally by air quality, water resources, socioeconomics, noise, and human health and safety impacts
Children	No construction or training exercises occurring near schools, day care facilities, or other areas with large populations of children