ACQUISITION,
TECHNOLOGY
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

DEC 07 2012

Finding of No Significant Impact
for
New Fort Riley Middle School
Fort Riley, Kansas

The Department of Defense Office of Economic Adjustment (OEA) has determined that the above-referenced project to construct a new Fort Riley Middle School located on Fort Riley, Kansas and demolish the existing Middle School will have no significant impact on the human environment. This Finding of No Significant Impact is based on the attached *Finding of No Significant Impact – Environmental Assessment, New Middle School, U.S. Army Garrison Fort Riley, Kansas, dated February 3, 2012.*

This document has been independently evaluated by OEA and determined to adequately and accurately discuss the purpose and need, environmental issues, and potential effects of the proposed project. Considering the significance criteria in 40 CFR §1508.27, I have determined that the information provided in the above-referenced document provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. OEA takes full responsibility for the accuracy, scope, and content of the attached document.

Office of General Counsel
Reviewed as to Legal Sufficiency

Initial 30 Aug 2012
Date

Patrick J. O'Brien
Director
Office of Economic Adjustment

Attachment:
As stated

Finding of No Significant Impact
Environmental Assessment
New Middle School
U.S. Army Garrison Fort Riley, Kansas

This Finding of No Significant Impact (FNSI) addresses the Proposed Action to construct a new Fort Riley Middle School on post. The FNSI incorporates by reference the Environmental Assessment (EA) entitled *Environmental Assessment, New Middle School, U.S. Army Garrison Fort Riley, Kansas*, which documents fully the anticipated environmental consequences of the Proposed Action. The EA may be released for public review as an attachment to this FNSI. Information in this FNSI is limited to an overview of key elements of the EA, including conclusions regarding the type and degree of environmental effects expected to occur as a result of the Proposed Action.

Proposed Action and Alternatives Considered:

The Proposed Action is to replace the existing Fort Riley Middle School, which is administered and owned by Geary County Unified School District (USD) 475.

The Department of Defense (DoD) recently assessed its public schools on military posts for deficiencies in capacity and condition. A record of that assessment, dated July 19, 2011, and entitled *Public Schools on Military Installations Priority List*, ranked Fort Riley Middle School in the highest overcapacity category. That same record ranked Fort Riley Middle School in the second-lowest condition category. The DoD invited local school districts on the priority list to submit requests for federal funding to address facilities shortfalls. Geary County USD 475 submitted such a request. Thus, the DoD, through its Office of Economic Adjustment (OEA), proposes to help fund a Geary County USD 475 project to build a new Fort Riley Middle School to address the current middle school's overcrowded condition and functional deficiency.

This Environmental Assessment (EA) analyzes potential environmental consequences of the Proposed Action to construct a new middle school at Fort Riley. This is the Preferred Alternative. A "No Action" Alternative also is considered, and serves to illustrate the baseline condition of Fort Riley's environment. This EA analyzes the effects of each alternative to natural and cultural resources, and the sociological environment.

Anticipated Environmental Effects: Environmental concerns resulting from the alternatives described above were identified during a critical review process that included assessment of potential effects by an EA team; review of published literature; and input from DoD civilian employees, stakeholders, and customers. No significant adverse effects were identified with either of the alternatives considered in this EA.

The construction and use of the proposed new Fort Riley Middle School would eliminate overcrowding, and replace the existing, functionally inadequate school that was originally designed as a junior high. The proposed new Fort Riley Middle School would meet the unique needs of middle school students that experience physical, social, and intellectual changes as they transition from elementary to secondary programs of education. Anticipated minor adverse effects to infrastructure and transportation, noise, air quality, soils, and flora and fauna would coincide with moderate beneficial effects to the sociological environment. Therefore, this is the Preferred Alternative. The Proposed

Action is consistent with federal and state laws and regulations; DoD and Department of Army regulations; and the mission of the Army.

Under the "No Action" Alternative, Fort Riley would not construct and use the proposed new middle school, and the existing school would remain overcrowded and functionally inadequate. A decision of No Action would not fully support middle school education at Fort Riley, and the garrison would forego the Proposed Action's anticipated benefits to the sociological environment. Thus, the "No Action" Alternative is not preferred.

Conclusion: On the basis of the findings of the EA; conducted in accordance with the requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), and Army Regulations; and after careful review of the potential impacts; I conclude that implementation of either the Proposed Action or "No Action" Alternative, conducted in a manner consistent with applicable regulatory requirements, would not result in a significant environmental effect. Thus, an Environmental Impact Statement is not required for this action.

Additionally, as outlined in the EA, I have determined that Fort Riley should implement the Proposed Action to construct the new Fort Riley Middle School. I affirm that Fort Riley is committed to implementing Best Management Practices (BMPs) described in the EA.

Date: 3 FEB 2012

William J. Clark
Colonel, US Army
Garrison Commander

ENVIRONMENTAL ASSESSMENT

New Middle School

U.S. Army Garrison Fort Riley, Kansas

Approved by: _____ Date: 27 December 2011

HERBERT J. ABEL
Chief, Environmental Division

Approved by: _____ Date: 28 DEC 2011

WILLIAM J. CLARK
Colonel, US Army
Garrison Commander

Responsible Agency:

United States Department of the Army
Directorate of Public Works
Environmental Division
Fort Riley, Kansas

PUBLIC WORKS
Fort Riley, Kansas

Proposed Action:
New Middle School
U.S. Army Garrison Fort Riley, Kansas

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Designation:
Final Environmental Assessment

Date:
February 2012

ENVIRONMENTAL ASSESSMENT
NEW MIDDLE SCHOOL
U.S. ARMY GARRISON FORT RILEY, KANSAS

EXECUTIVE SUMMARY

The purpose of the Proposed Action is to replace the existing Fort Riley Middle School, which is administered and owned by Geary County Unified School District (USD) 475.

The Department of Defense (DoD) recently assessed its public schools on military posts for deficiencies in capacity and condition. A record of that assessment, dated July 19, 2011, and entitled *Public Schools on Military Installations Priority List*, ranked Fort Riley Middle School in the highest overcapacity category. That same record ranked Fort Riley Middle School in the second-lowest condition category. The DoD invited local school districts on the priority list to submit requests for federal funding to address facilities shortfalls. Geary County USD 475 submitted such a request. Thus, the DoD, through its Office of Economic Adjustment (OEA), proposes to help fund a Geary County USD 475 project to build a new Fort Riley Middle School to address the current middle school's overcrowded condition and functional deficiency.

This Environmental Assessment (EA) analyzes potential environmental consequences of the Proposed Action to construct a new Fort Riley Middle School. This is the Preferred Alternative. A "No Action" Alternative also is considered, and serves to illustrate the baseline condition of Fort Riley's environment. This EA analyzes the effects of each alternative to natural and cultural resources, and the sociological environment.

The DoD, the Department of the Army, and the U.S. Army Garrison Fort Riley are committed to following all applicable environmental regulations while performing activities that would result from the Proposed Action. This EA was conducted in compliance with the National Environmental Policy Act (NEPA), Council on Environmental Quality Regulations, 40 Code of Federal Regulations (CFR) 1500 et seq., and 32 CFR 651 (*Environmental Analysis of Army Actions*). Fort Riley and Geary County USD 475 would not initiate the Proposed Action until the garrison completed the NEPA process.

The construction and use of the proposed new Fort Riley Middle School would eliminate overcrowding, and replace the existing, functionally inadequate school that was originally designed as a junior high. The proposed new Fort Riley Middle School would meet the unique needs of middle school students that experience physical, social, and intellectual changes as they transition from elementary to secondary programs of education. Additionally, the construction, operation, and maintenance of the proposed new Fort Riley Middle School would contribute to the economic environment of the local community.

Under the Proposed Action, Fort Riley anticipates beneficial effects to the sociological environment. Activities to construct the proposed new Fort Riley Middle School would adversely affect a number of environmental elements, but those effects would remain below thresholds considered significant. The installation anticipates minor adverse effects to infrastructure and transportation, noise, air quality, soils, and flora and fauna.

Under the "No Action" Alternative, Fort Riley would not construct the proposed new Fort Riley Middle School, and the existing school would remain overcrowded and functionally inadequate. A decision of "No Action" would not fully support middle school education at Fort Riley, and the garrison would forego the Proposed Action's anticipated benefits to the sociological environment. Therefore, the "No Action" Alternative is not favored.

ENVIRONMENTAL ASSESSMENT
NEW MIDDLE SCHOOL
U.S. ARMY GARRISON FORT RILEY, KANSAS

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ENVIRONMENTAL ASSESSMENT
NEW MIDDLE SCHOOL
U.S. ARMY GARRISON FORT RILEY, KANSAS

1.0 INTRODUCTION

This Environmental Assessment (EA) analyzes a Proposed Action to build a new middle school on Fort Riley.

1.1. Project Authority

Fort Riley is home to one middle school (Fort Riley Middle School). The Geary County Unified School District (USD) 475 administers that middle school, and owns the facilities. Conventionally, the children of military personnel living on post attend Fort Riley Middle School.

The Department of Defense (DoD) recently assessed its public schools on military posts for deficiencies in capacity and condition. A record of that assessment, dated July 19, 2011, and entitled *Public Schools on Military Installations Priority List*, ranked Fort Riley Middle School in the highest overcapacity category. That same record ranked Fort Riley Middle School in the second-lowest condition category.

Using the *Public Schools on Military Installations Priority List*, the DoD invited local school districts to submit requests for federal funding to address facilities shortfalls. Geary County USD 475 submitted such a request. Thus, the DoD, through its Office of Economic Adjustment (OEA), proposes to help fund a Geary County USD 475 project to build a new Fort Riley Middle School.

1.2. Purpose

The purpose of the Proposed Action is to address Fort Riley Middle School's overcrowding, functionally inadequate space, and poor physical condition. The proposed new construction of a middle school would create an adequately sized academy for Fort Riley, and a state-of-the-art environment for learning.

1.3. Need

The existing Fort Riley Middle School, constructed in 1963, has a design capacity of 421 students (Geary County USD 475, 2011). Given the existing middle school's current enrollment of approximately 700 students, the facility is about 66% overcapacity. Fort Riley and Geary County USD 475 anticipate an enrollment of about 720 students in 2016, which would be 71% overcapacity. In addition to overcrowding, the current Fort Riley Middle School does not meet the functional and instructional needs of middle school students. The current middle school, designed as a junior high, does not meet the unique needs of middle school students that experience physical, social, and intellectual changes as they transition from elementary to secondary programs of education.

To alleviate middle school overcrowding and to provide functional middle school space, the DoD proposes to help fund the construction of a new 800-student academy at the existing, on-post Fort Riley Middle School grounds.

1.4. Scope of the Analysis

Analysis of the Proposed Action to construct a new Fort Riley Middle School constitutes the scope of this EA. This EA will identify, discuss, and analyze:

- The Proposed Action to construct a new Fort Riley Middle School,
- Demolition of the existing middle school,
- Any soil borrowing activities that may be required,
- Beneficial and adverse environmental effects of the Proposed Action and the No Action alternative, and
- The anticipated cumulative environmental effect of each alternative course of action.

The discussion in this EA covers several topics: the Proposed Action to construct a new Fort Riley Middle School; a No Action alternative; the local and regional environment as affected by each alternative; and conclusions of the EA to facilitate informed decision-making. Fort Riley analyzes the potential effect of the Proposed Action alternative to natural and cultural resources, human health and safety, land use, and the sociological environment. The EA will analyze the potential implementation effects of each alternative, and will then analyze each alternative in relation to other reasonably foreseeable actions to examine potential cumulative effects.

1.5. Issues and Public Concerns

A team of Geary County USD 475 personnel, Fort Riley civilians, and military personnel prepared the proposal to construct a new Fort Riley Middle School. The team developed the Proposed Action alternative during a series of planning sessions. Those sessions helped identify the alternative's environmental issues and potential public concerns, which Fort Riley analyzed in detail during the writing of this EA. Sources included Geary County USD 475, Army trainers and Command, DoD civilian employees, published literature, stakeholders, and customers.

The identified issues include:

- The potential for the Proposed Action to affect protection of children and environmental justice,
- The potential for the Proposed Action to adversely affect community noise by causing annoyance in the local community during construction,
- The potential for the Proposed Action to adversely affect human health and safety,
- The potential for the Proposed Action to adversely affect the flow of vehicle traffic on 1st Division Road, and
- The potential for the Proposed Action to affect migratory birds and other wildlife, including threatened and endangered species.

1.6. Regulatory Compliance

As required by law, the purpose of this EA is to evaluate beneficial and adverse environmental effects of the Proposed Action to construct a new Fort Riley Middle School. This EA complies with the National Environmental Policy Act (NEPA), Council of Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations (CFR) 1500 et seq.), and 32 CFR 651, *Environmental Analysis of Army Actions*.

The NEPA of 1969, as amended (Public Law 91-190, 42 United States Code 4321 et seq.) and implemented by the CEQ regulations, was created to prevent, eliminate, or minimize adverse environmental effects from federal projects and activities during the planning stages through mitigation, avoidance, or both. Any action that could have an effect on human health, any natural system (air, water, soil, plant, animal, or other resources) or any social or economic system, upon which there is an expenditure of federal funds, must receive some level of environmental analysis to determine the effects of that action.

2.0 ALTERNATIVES CONSIDERED

2.1. Introduction

This section includes the following elements:

- A description of the process used to formulate the alternatives that were analyzed in detail,
- A description of the Proposed Action alternative and the No Action alternative, and
- The identification of the preferred alternative.

An interdisciplinary team from Geary County USD 475 and Fort Riley formulated feasible alternatives based on: the commitment of Geary County USD 475 and Fort Riley to provide an optimal environment for middle school learning; guidance provided by military personnel and DoD civilians; and input from staff of the Environmental Division, Directorate of Public Works (DPW), Fort Riley. Other critical factors taken into account during the development of alternatives included public concerns and issues.

2.2. Alternative 1 – Construct a New Fort Riley Middle School

Under Alternative 1 (preferred alternative), Geary County USD 475 would construct a new 800-student Fort Riley Middle School at the current school grounds. Figure 2-1 shows the location of the existing grounds and Fort Riley Middle School (labeled "Fort Riley Junior High School"). Under the Proposed Action, Geary County USD 475 would reuse the existing middle school site and construct an approximately 170,000 square-foot academy. Figure 2-2 shows a preliminary site plan for the proposed new Fort Riley Middle School (minor changes to the preliminary site plan could occur during the design process for the proposed new school).

Geary County USD 475 would likely continue to use the existing middle school while workers would construct the new one. Were the new construction footprint to overlay part of the existing middle school, construction workers would demolish that overlaid portion of the old school to make way for construction activities. Project managers would separate the existing middle school's students and staff from construction or demolition activities to ensure safety. Standard protocols such as gating, fencing, barriers, signage, and other access controls would ensure separation and safety.

The proposed new Fort Riley Middle School would have approximately 170,000 square feet of space and a capacity designed for 800 students. Project planners anticipate a modern configuration of school space that would house various functional areas and curriculums: general classrooms, computer labs, special education, family and consumer science, art, explorations of technology, music, library and media center, auditorium, food service and maintenance, physical education and athletics, mechanical systems, and administration.

Construction of the new middle school could require fill materials (soil or aggregate). Any fill materials not purchased off post would originate from existing Fort Riley borrow areas, or a new borrow site or sites that project managers would open for the new middle school project. Prior to opening any new borrow site, Fort Riley would perform an environmental review to ensure the avoidance or minimization of adverse effects to environmental elements (e.g., cultural resources, water resources, endangered species). Geary County USD 475 would demolish the existing middle school to complete the project.

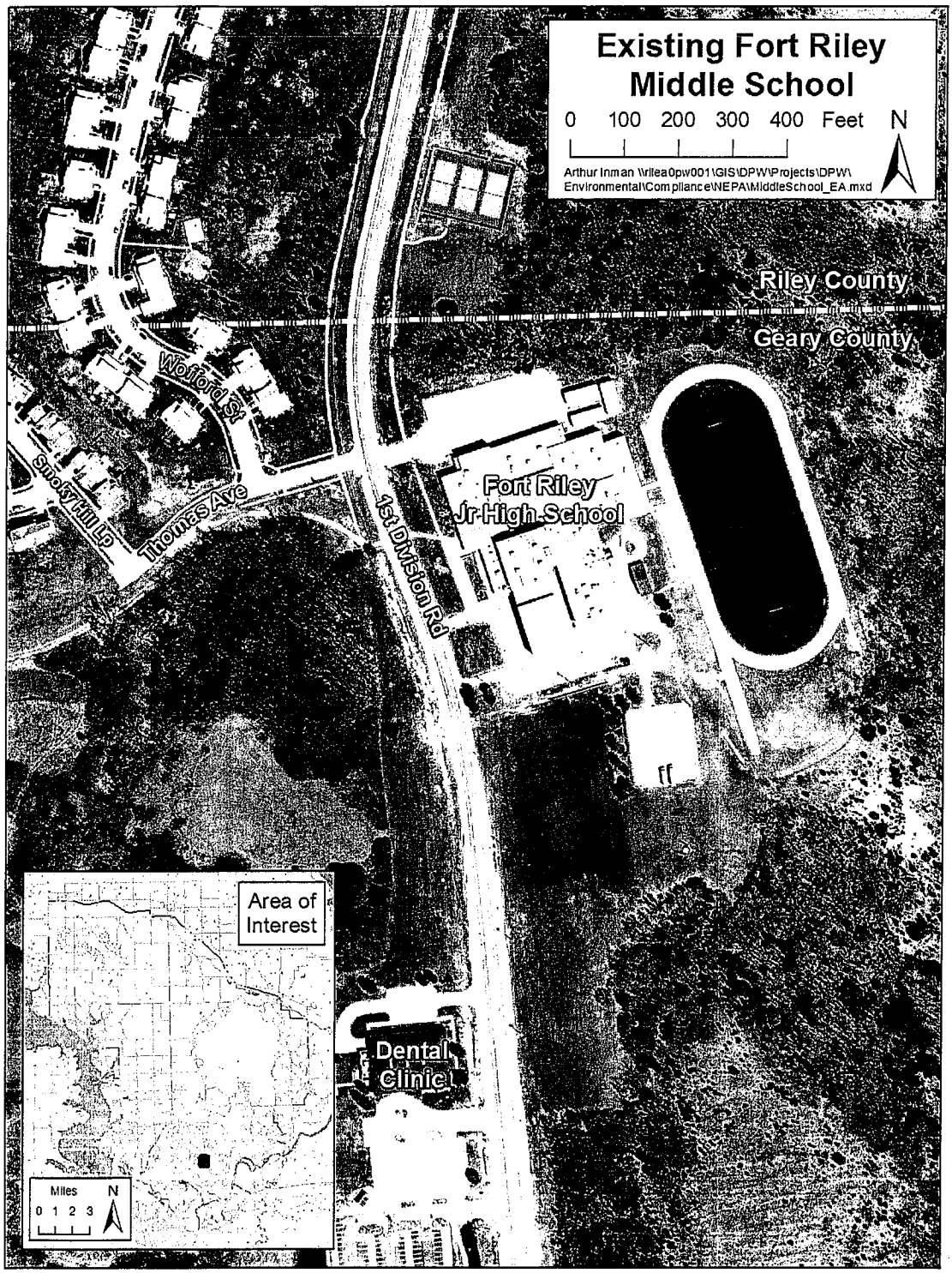


Figure 2-1 Location of Existing Fort Riley Middle School

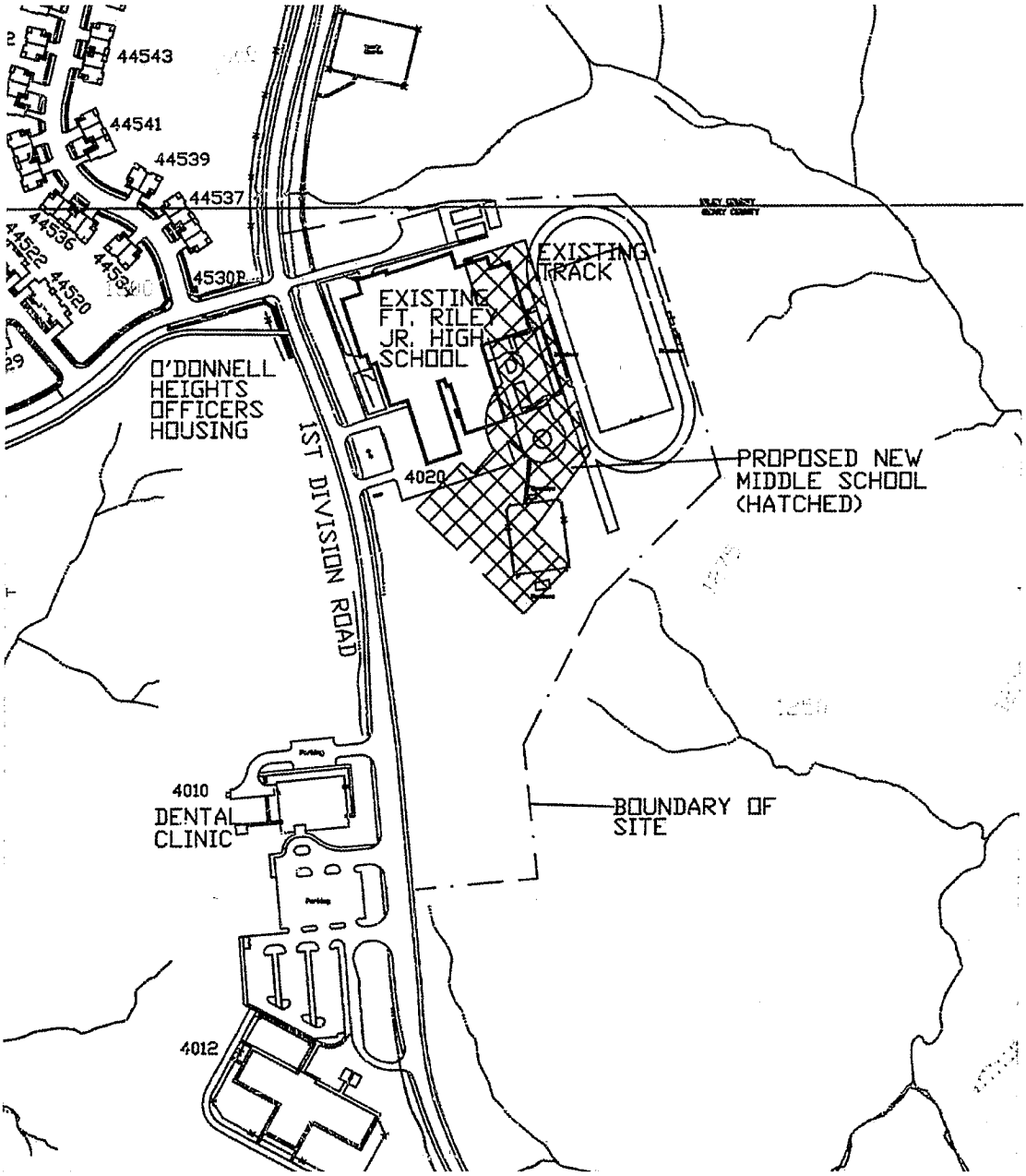


Figure 2-2 Preliminary Site Plan for the Proposed New Fort Riley Middle School

2.3. Alternative 2 – No Action

Under the No Action alternative, Geary County USD 475 would not construct a new Fort Riley Middle School. Geary county USD 475 would continue to use the existing middle school on Fort Riley. The No Action alternative serves to define the existing condition of Fort Riley, and contributes to the description of the environmental baseline as is required by the CEQ.

3.0 DESCRIPTION OF FORT RILEY

This section describes those Fort Riley attributes that the Proposed Action would not affect. These are physical attributes such as location, setting, geology, and climate.

3.1. Location

Fort Riley is an Army garrison located in Geary, Riley, and Clay counties of northeastern Kansas (Figure 3-1) approximately 135 miles west of Kansas City and 130 miles north-northeast of Wichita.

3.2. Setting

The general character of the area surrounding Fort Riley is rural with small farm communities. Lands north of Fort Riley support row crop and cereal grain production. Lands to the south are predominantly rangeland. The Republican, Smoky Hill, and Kansas Rivers form part of the southern boundary of the garrison. Milford Lake, a 15,000-acre impoundment of the Republican River, forms part of the garrison's west boundary. Fort Riley is adjacent to one sizeable community to the southwest (Junction City) and lies near another sizeable community to the east (Manhattan).

The ecoregional province in which Fort Riley lies is Prairie Parkland (temperate) (Bailey, 1995). Fort Riley's parkland system is maintained primarily by anthropogenic (human-produced) influences and, secondarily, by natural factors. The grasslands are interspersed by linear communities of woodlands, highly variable in width, that are associated with streams, other woodland plantings, relatively small, man-made water impoundments, and structures. The closer the tributary streams are to the Republican or Kansas Rivers, the greater their influence on flora and fauna. The flora and fauna in some locations are further influenced by their proximity to Milford Lake.

3.3. Topography and Geology

Fort Riley lies within the Osage Plains section of the Central Lowlands physiographic province. It is bordered by the Great Plains on the west and the Ozark Plateau on the east. Elevations on Fort Riley vary from 1,025 to 1,365 feet above mean sea level. Terrain varies from alluvial bottomlands along the Republican and Kansas Rivers on the southern portion of the garrison, through the hilly to steep lands in the central and east portions, to the high uplands in the north and west portions.

Fort Riley consists of three types of topographical-physiographic area: 1) high upland prairies; 2) alluvial bottomland flood plains; and 3) broken and hilly transition zones. The high upland prairies consist of alternating layers of very gently dipping (less than one degree) Permian limestone and shale. The uplands often contain various shale units that cover the escarpment-forming limestones. The cutting action of streams on the thick shale units has sculpted much of the area into a rolling plateau. Two types of alluvial bottomlands exist at Fort Riley: wide meandering floodplains of major rivers, with associated terraces; and areas created by smaller creeks and streams that cut the uplands. The transitional areas, extending from the uplands down to the valley floors are broken, sloping to steep country composed of alternating limestones and shales.

Fort Riley and Vicinity

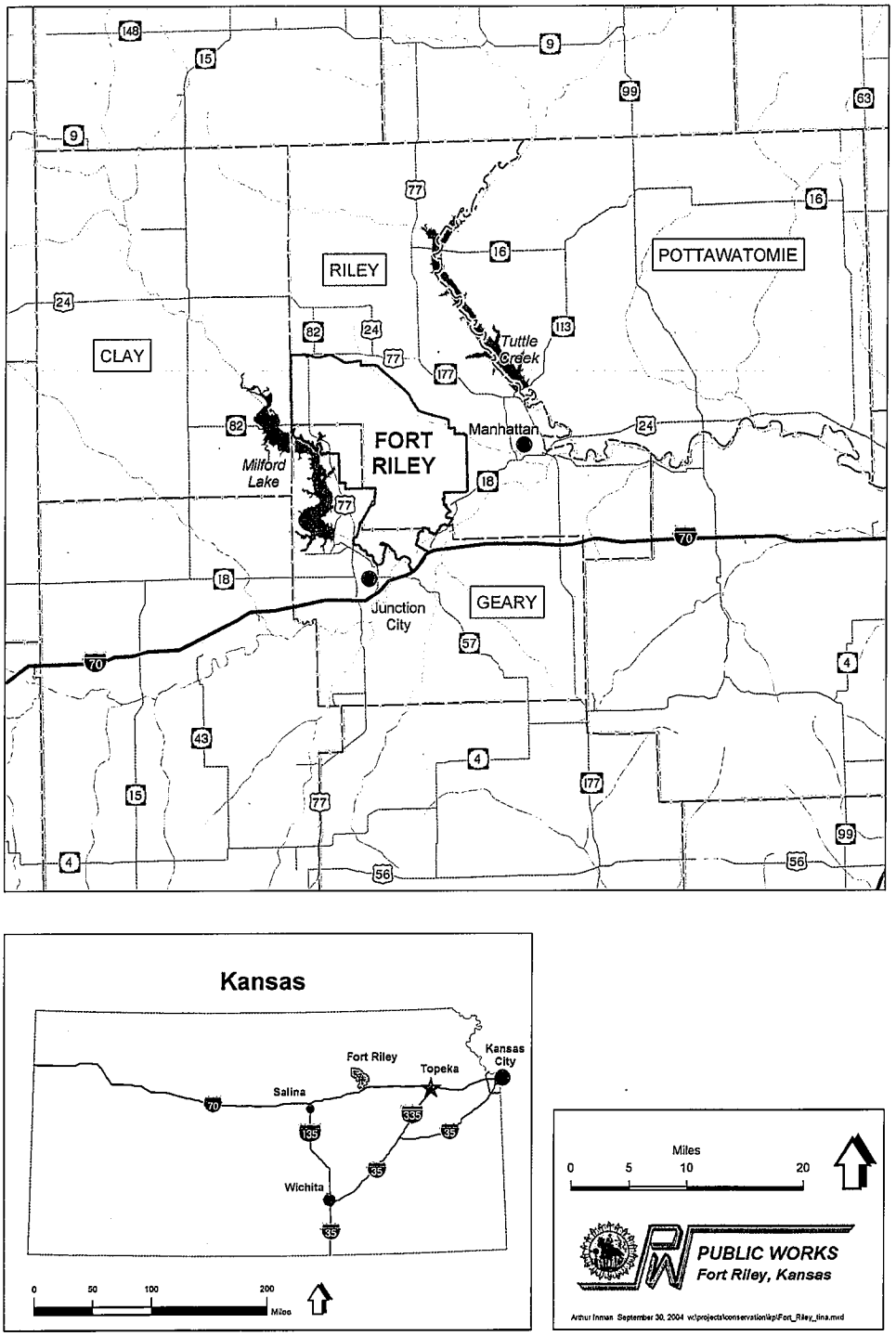


Figure 3-1 Location of Fort Riley

Fort Riley is located within an area that has the possibility of earthquakes producing moderate structural damage. A small fault located northeast of Fort Riley near Tuttle Creek Lake appears to be inactive. No other identified geologic hazards exist in the Fort Riley area.

3.4. Climate

The description of Fort Riley's climate is taken from the U.S. Department of Agriculture (USDA) soil survey for Riley County (USDA, 1975) and is based on 60- to 100-year data. Although these data were published in 1975, they continue to be reflective of the Fort Riley region. Fort Riley has a temperate continental climate characterized by hot summers, cold, dry winters, moderate winds, low humidity, and a pronounced peak in rainfall late in the spring and in the first half of summer. Prevailing winds are from the south to southwest during most of the year. During February and March, the prevailing winds are from the north.

Temperatures in the Fort Riley area vary widely and often fluctuate abruptly throughout the year. July and August are the hottest months, averaging 80° F. January is the coldest month, averaging 26° F. The average date of the last killing frost in spring is 22 April, and the average date of the first killing frost of the fall is 17 October. The area has an average of 180 frost-free days per year.

Average yearly precipitation is 31.64 inches (in.) and most of the precipitation (75%) falls within the six-month period from April through September. The three highest rainfall months (May, June, and July) each average more than 4 in. per month. Much of this precipitation occurs during severe thunderstorms, when 2 in. or more of rain may fall in one storm. December, January, and February are the driest. An average of about 22 in. of snowfall occurs annually.

Insufficient precipitation is one of the major limiting factors to plant growth at Fort Riley. Spring rains normally are adequate to recharge soil moisture before the summer months when evapotranspiration rates typically exceed precipitation rates. This is especially the case during the latter half of the summer. Soil moisture in the upper soil levels is depleted, which stresses shallow rooted plants during years of below average rainfall.

4.0 AFFECTED ENVIRONMENT

Pursuant to 32 CFR 651, this section focuses on those elements of the environment that could potentially sustain an effect from the Proposed Action. For this analysis, these environmental elements include land use; infrastructure and transportation; safety; noise; air quality; soils; water resources; flora and fauna, including threatened and endangered (T&E) species; cultural resources; contaminated sites; asbestos, lead, and other hazardous materials; protection of children; environmental justice; and the sociological environment.

4.1. Land Use

Fort Riley consists of 101,733 acres. Military maneuver and training activities at Fort Riley use 92,144 acres of training and range area or 91 percent of the total garrison land area. Units assigned to Fort Riley; active Army units from other garrisons; and U.S. Army Reserve, National Guard, and Air Force units use the training areas and the firing ranges extensively throughout the year. Military field training occurs within 103 designated training areas. Fort Riley consolidates its training areas into 19 larger Maneuver Areas. Figure 4-1 shows the Training and Maneuver Areas.

4.2. Infrastructure and Transportation

Fort Riley consists of 101,733 acres (Plans, Analysis, and Integration Office, FY10). Military maneuvers and training take place on 92,144 acres of training and range area, or 91 percent of total garrison lands. Fort Riley has 2,007 buildings totaling 16,949,425 square feet, and 259 miles of paved roads. The primary paved roads that connect Fort Riley's population and activity centers are Huebner Road, Trooper Drive, Henry Drive, McCormick Road, and 1st Division Road (U.S. Army Military Surface Deployment and Distribution Command, 2010). Secondary paved roads are Williston Point Road, Caisson Hill Road, Estes Road, and Rifle Range Road.

4.3. Safety

The Army provides service-wide oversight for safety through its Army Safety Office (ASO), commanded by the Director of Army Safety (DASAF). For all safety matters, the DASAF is the principal advisor to the Secretary of the Army (SA), the Chief of Staff, Army (CSA), and Headquarters, Department of Army (DA) unified staff. Additionally, the DASAF directs the Army Safety Program and serves as the Army's primary advocate for Composite Risk Management (CRM).

The Army Safety Program encompasses several spheres of mission support: military training, work-related activities, and recreation associated with the Army or its lands. Aspects of the program often apply to personnel while on- or off-duty, or on- or off-post. Thus, the Army Safety Program regulates safety not only for Soldiers, but for government employees, contractors, and the public as well. To ensure safety, the Army uses the CRM process to identify, assess, and control risk arising from operational factors, and to make decisions that balance risk cost with mission benefits.

Fort Riley implements the Army Safety Program through its Garrison Safety Office (GSO). The Fort Riley GSO provides Army safety policy, programs, and expertise to military units and garrison organizations on post. The garrison follows safety guidelines established by Army Regulation (AR) 385-10, *The Army Safety Program* and DA Memo 385-3, *HQDA MACOM Safety Program.*

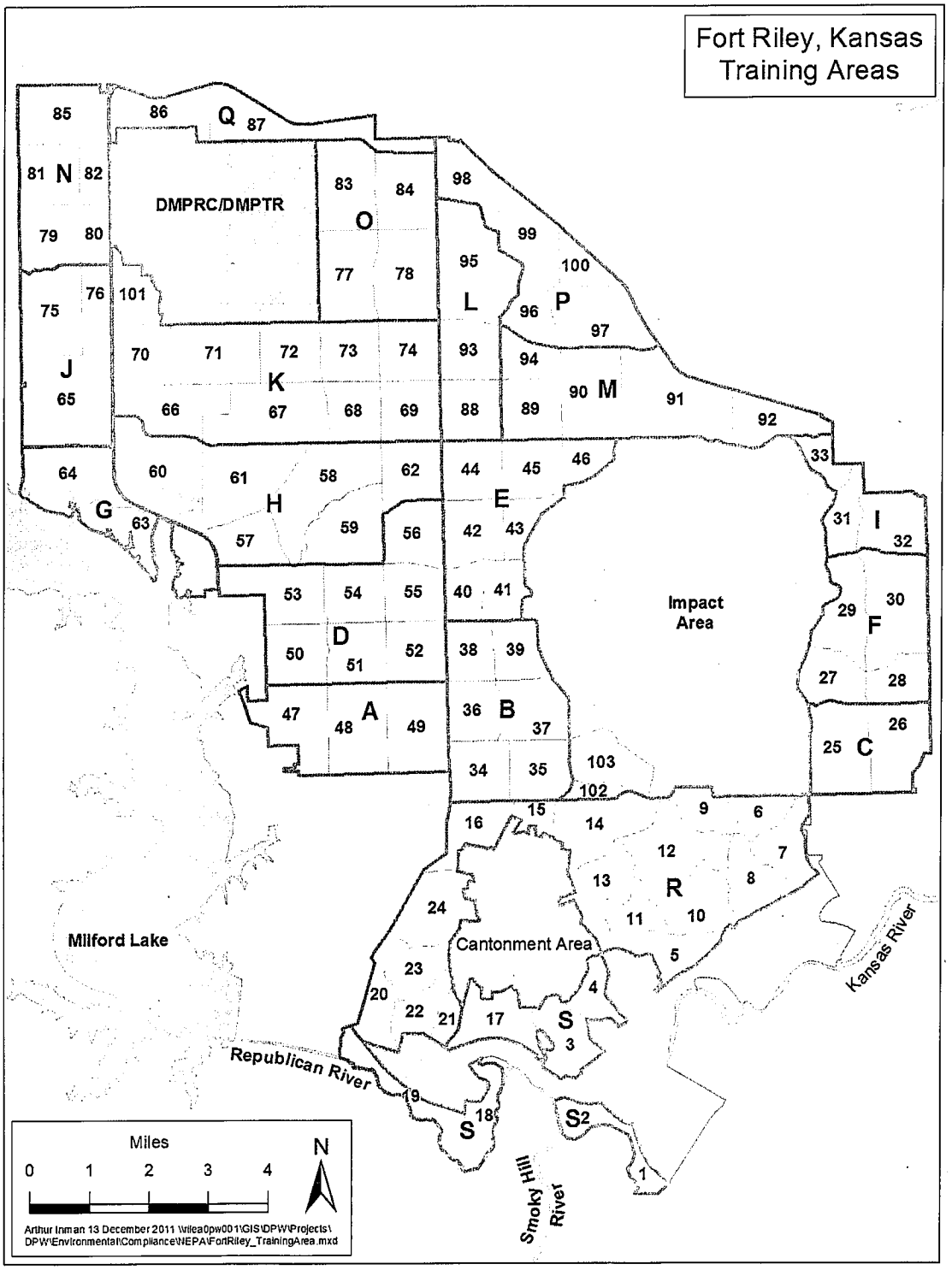


Figure 4-1 Fort Riley Maneuver and Training Areas

4.4. Noise

The noise environment created by operations at Fort Riley is similar to the noise environment at many other Army garrisons. Garrison noise falls in two basic categories: noise from community activities and noise from military training. The Proposed Action does not include military training, and thus, this EA analyzes community noise only. Community noise on Fort Riley originates primarily from maintenance and shop operations, vehicular traffic, and construction projects. This EA analyzes community noise sources from equipment and vehicles associated with construction.

The Federal Interagency Committee on Urban Noise (FICUN) defines noise as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (FICUN, 1990). Human response to noise can vary according to the type and character of the noise source, distance between noise source and receptor, receptor sensitivity, time of day, and season.

Due to wide variations in sound levels, sounds are measured using a logarithmic scale expressed in decibels (dB). Thus, a 10-dB increase in noise corresponds to a 100 percent increase in perceived sound. Adjusted levels of measured or predicted sound that correspond to the frequency sensitivity of the human ear, known as A-weighted sound levels, assess community response to noise. The dB is used to measure A-weighted sound levels, often expressed as dBA.

4.5. Air Quality

Fort Riley's location in portions of Riley, Geary, and Clay Counties places the garrison within the North Central Kansas Intrastate Air Quality Control Region (AQCR). All three counties are in attainment (i.e., meet all National Ambient Air Quality Standards) for the six criteria pollutants: particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead.

Fort Riley is a major source of air pollutants and regulates air emissions through a Class I Air Emission Source Operating (Title V) Permit. The permit number is 1610001. Primary stationary sources include boilers, generators, fuel storage and dispensing areas, and surface coating operations.

Since Fort Riley is located in an attainment area, there is no requirement to conduct a conformity analysis. The garrison anticipates that its activities will not trigger the Prevention of Significant Deterioration requirements of the Clean Air Act (CAA).

4.6. Soils

Fort Riley is part of the Great Plains Winter Wheat and Range Soil Resource Region. A foot or less of loess (windblown material) covers the region. The loess rests upon alternating layers of weathered limestone and shale. Most soils are friable, silty loam 6 to 12 inches thick, overlying nearly impervious clays. Fort Riley's soils developed residually from parent materials and from other parent materials carried by water or wind and deposited at the garrison. The permeability of garrison soils varies from excessively drained sandy lowland soils to tight clays with very slow permeability. Bedrock depths under these soils vary from less than one foot in upland areas to 40 to 60 feet in many areas of Main Post.

The USDA Natural Resources Conservation Service (NRCS) (1996) mapped 36 soil series on Fort Riley and taxonomically categorized them into six soil associations. Figure 4-2 shows a simplified soil type map of Fort Riley.

4.7. Water Resources

Waters on Fort Riley are surface water in rivers, other perennial and intermittent streams, ponds and lakes, and groundwater aquifers. The Republican and Kansas Rivers form the southern boundaries of Fort Riley. With the exception of oxbow lakes, the 174 lakes and ponds on Fort Riley are constructed impoundments. Aquifers receive water through alluvial deposits of streams and rivers, porous surface deposits, and fissured limestone in uplands by means of infiltration of rain and seepage from rivers into limestone and shale. Figure 4-3 shows surface waters on Fort Riley.

4.7.1. Groundwater

Groundwater aquifers occur in the alluvial deposits of the major streams and rivers, in the porous surface deposits, and in the fissured, near-surface limestone of the upland areas. Saturated, water-bearing sediments in the Kansas River valley range from zero to 90 feet in thickness. In the Kansas River valley, wells in aquifers 20 to 40 feet thick can yield 300 to 1,000 gallon per minute, while wells in aquifers that exceed 40 feet in thickness can yield in excess of 1,000 gallons per minute.

Moderate quantities of groundwater occur in the bedrock formations of the area, in particular the Fort Riley and Florence Limestone Formations. Wells in fractured limestones, some of which have water-bearing cavities, can yield 100 gallons per minute or more. Wells that penetrate shales in the upland area will generally yield up to several gallons per minute.

Discharge from the valley-fill sediments, the major water-bearing deposits, is by seepage to major streams, evapotranspiration, and withdrawal by wells. Recharge of these deposits is by direct infiltration of precipitation, seepage from streams and ponds, return flow from irrigation, and seepage from the bedrock formations that border and underlie the valley.

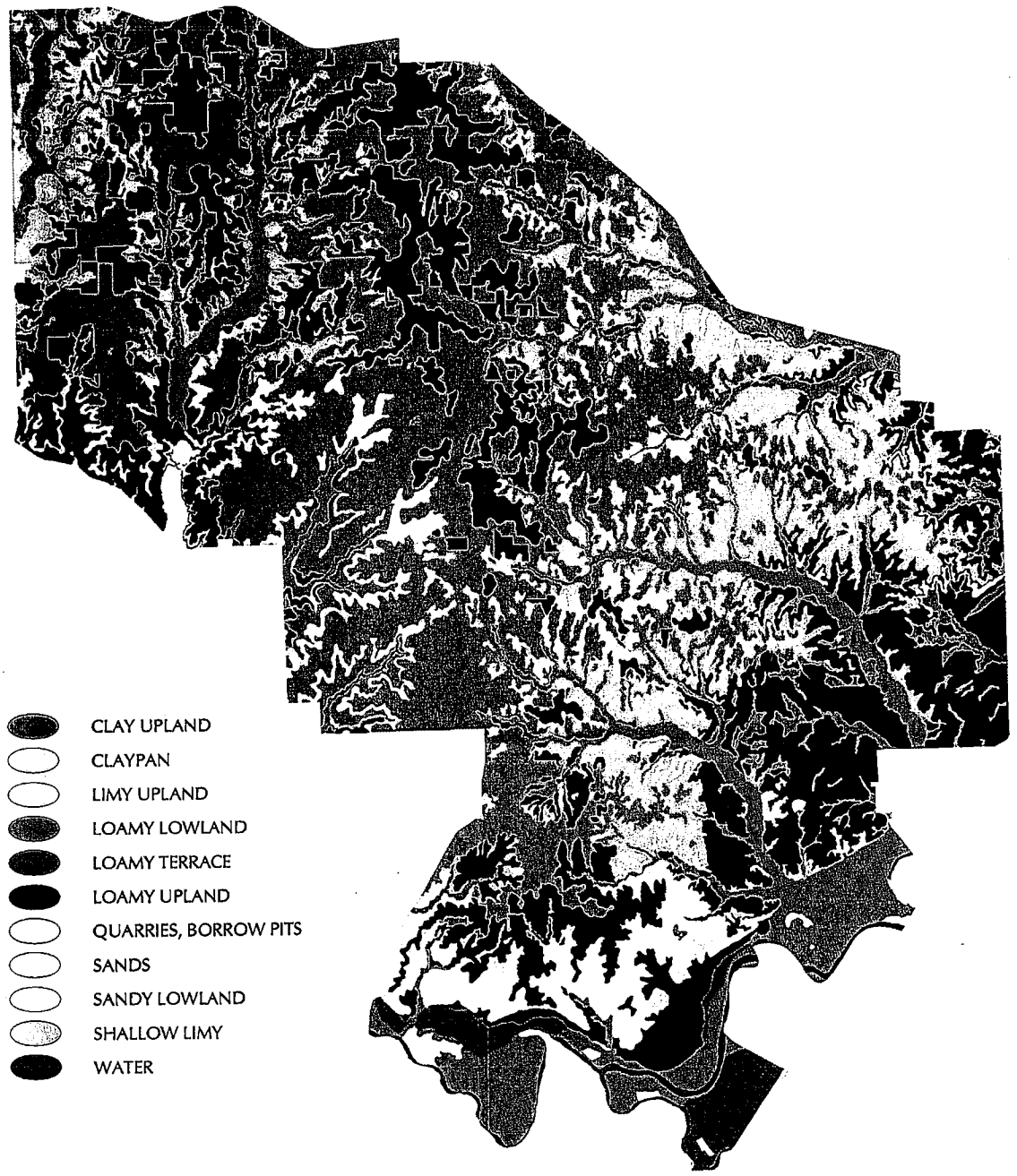
4.7.1. Surface Water

Surface waters at Fort Riley are located within the Kansas River basin and consist of rivers, perennial and intermittent streams, ponds, and lakes. Nearly 145 miles of rivers and streams, consisting of 14 miles of rivers and 131 miles of streams, are present on Fort Riley. All 14 streams are intermittent except for Wildcat, Sevenmile, Madison, and Timber Creeks. Streams in the southern portion of Fort Riley drain to the south to the Republican or Kansas Rivers, which form the garrison's southern boundary. Streams in the western portion of Fort Riley drain toward the southwest to Milford Lake on the Republican River. Streams in the northeastern portion of Fort Riley drain to Wildcat Creek, a perennial stream that runs along the northeastern boundary of the garrison. Wildcat Creek ultimately drains to the Kansas River south of Manhattan.

4.7.1. Wetlands

Wetlands are defined as "those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Part 328.3 (b); 40 CFR Part 230.41 and Part 230.3).

Simplified Soil Classifications, Fort Riley, KS.



SOURCE: Soil Survey Geographic (SSURGO),
USDA Natural Resources Conservation Service, 1996.

1 June 2000

Figure 4-2 Fort Riley Soil Types

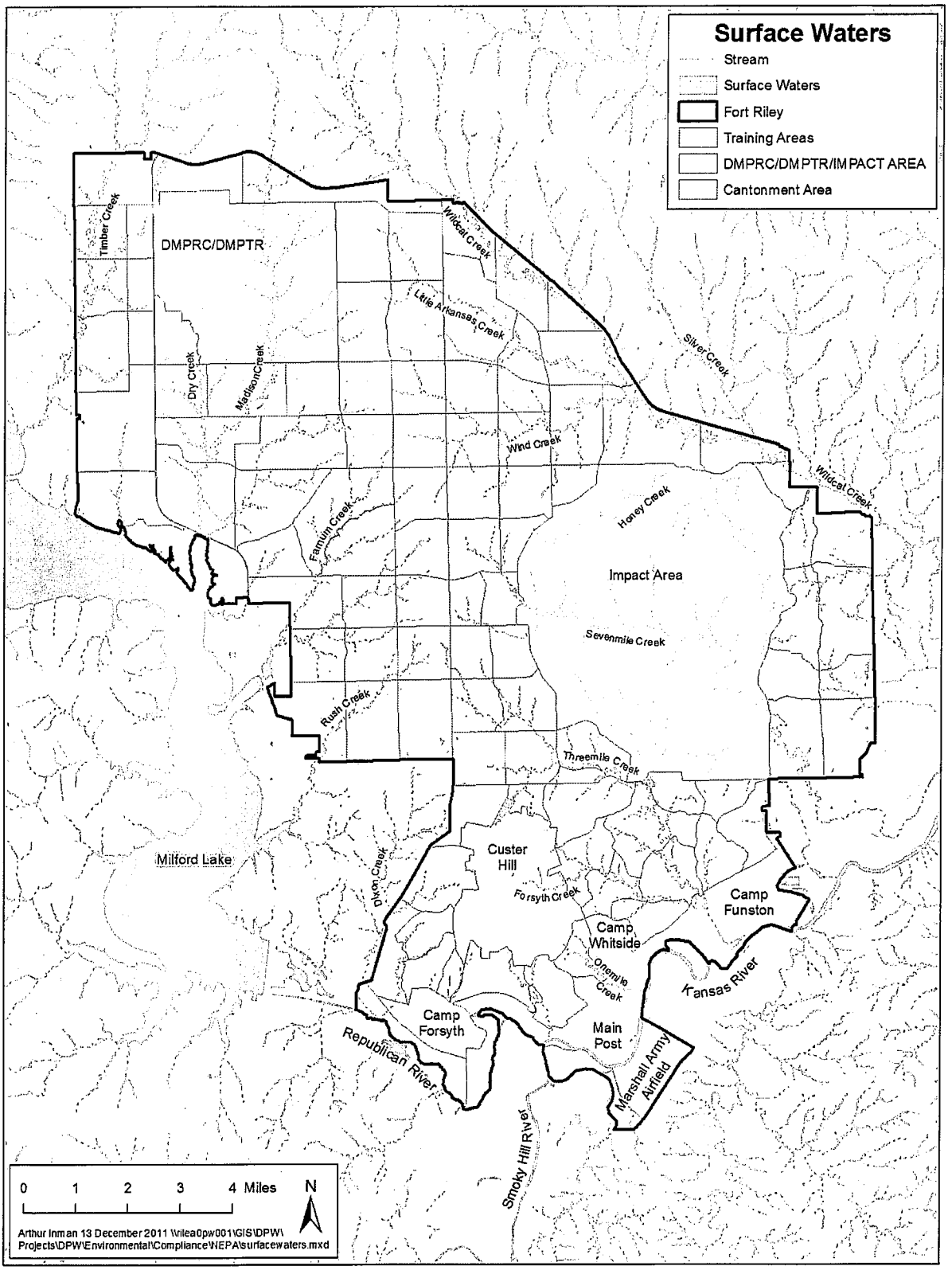


Figure 4-3 Fort Riley Surface Waters

Wetland areas on Fort Riley include springs and seeps, streams, rivers, ponds and lakes, low areas behind terraces in abandoned crop-fields, and emergent marshes along the periphery of water bodies, such as those within the Madison Creek and Farnum Creek arms of Milford Lake. In 1991, the U.S. Fish and Wildlife Service (USFWS) documented approximately 1,449 acres of wetlands. Since the USFWS inventory Fort Riley has constructed another 84 acres (total 1,533 acres in 2002). Of this total, 972 acres comprise permanently inundated wetlands. Fort Riley has 145 miles of riverine habitat that encompasses 748 acres.

4.8. Flora and Fauna

DoD and Army policies are to manage natural resources through an ecosystems approach that emphasizes the maintenance and integrity of native biodiversity. The management of entire floral and faunal communities is the core of ecosystems management. Thus, the EA describes biotic resources in terms of communities.

4.8.1. Floral Communities

This region consisted of tall- and mixed-grass prairies dominated by big bluestem, indiangrass, and switchgrass under natural conditions (Kuchler, 1974). The pre-settlement prairie was maintained through recurring wildfires and grazing by herbivores. Woodlands were present within moist bottomlands of floodplains and along perennial stream corridors. However, past and current land management practices, such as the suppression of wildfires, the introduction of agriculture and stock grazing, and the construction and expansion of military facilities, have resulted in the establishment and expansion of several vegetation classes at Fort Riley. Figure 4-4 shows the coverage of four broad categories of land cover type on the garrison. These categories are grassland, woodlands and forests, water, and urban areas.

The results of a 2004 Kansas Biological Survey (KBS) study of the vegetation of Fort Riley indicate that more than 80 families and nearly 520 species of plants are present on the garrison (Freeman and Delisle, 2004).

4.8.1.1. Grasslands

Approximately two-thirds of Fort Riley is grassland that conforms to one of two basic types: native prairie or "go-back" grasslands. Areas designated as "go-back" are grasslands established on lands that were once cultivated. Fort Riley estimates that about 40% of the garrison's grassland is native prairie, and that the remaining 60% is "go back" grassland (or highly disturbed grassland).

The native grasslands of Fort Riley consist primarily of tallgrass prairie. Some elements of the mixed-grass prairie exist because Fort Riley is located near the transition zone between the tallgrass prairie and the mixed-grass prairie to the west (Kuchler, 1974).

The native grasslands on Fort Riley generally do not exhibit dominance patterns of big bluestem, indiangrass, switchgrass, and mid-grasses, such as little bluestem and sideoats grama. Past land use and management, and military training exercises have produced native grasslands intermixed with woody species. Soil disturbance increases some grass species, such as tall dropseed, tall witch grass, and foxtail. The grasslands with the least soil disturbance contain the highest percentages of native warm-season grasses, such as those mentioned above, and associated forbs (U.S. Army Corps of Engineers, 1991).

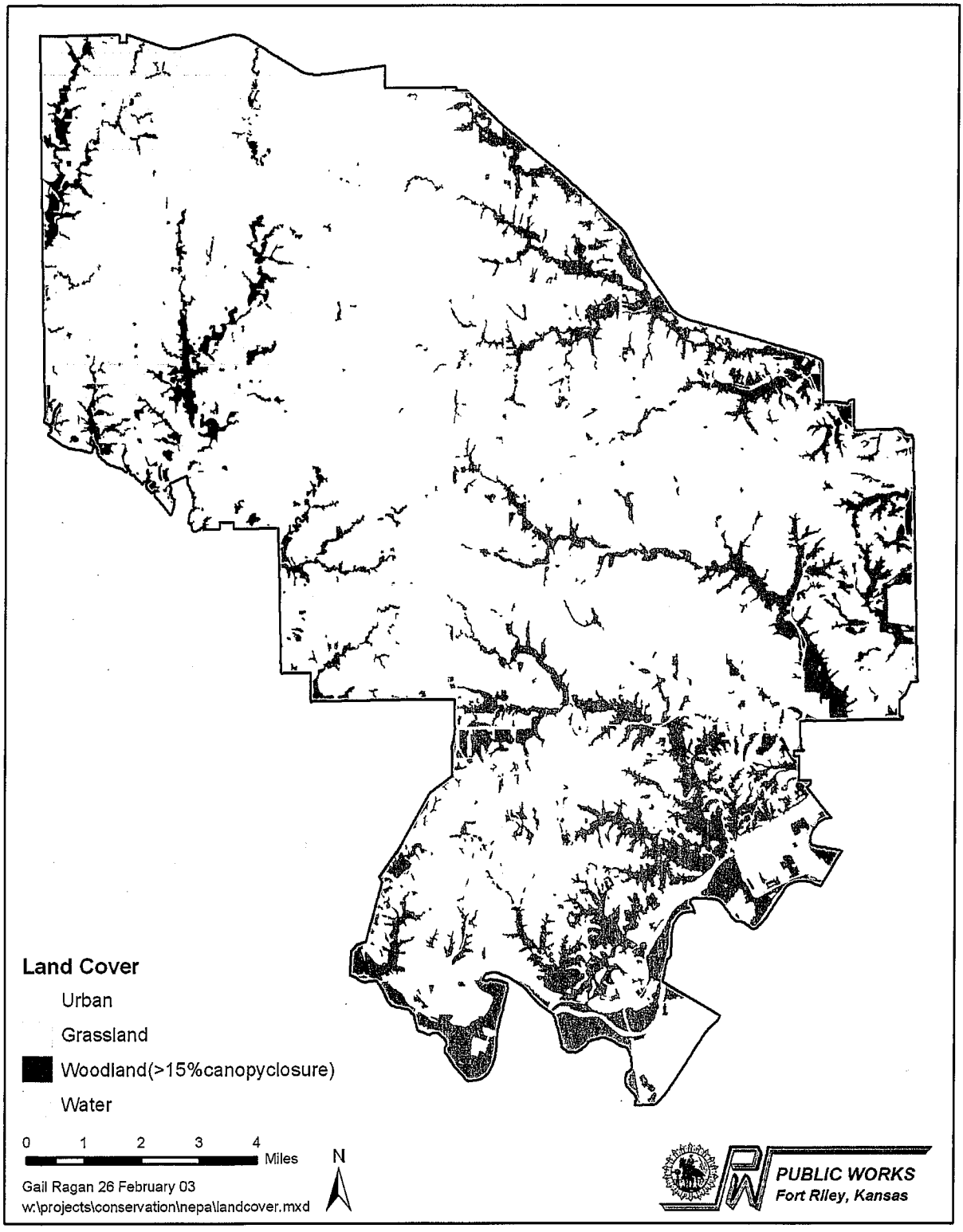


Figure 4-4 Fort Riley Land Cover Types

Some of the "go-back" grassland areas on Fort Riley ceased to be cultivated prior to their acquisition by the Army. Most ceased to be cultivated after acquisition. The "go-back" lands are in various stages of ecological succession. Early seral stages consist of annual grasses (prairie threeawn, green bristlegrass, Japanese brome). Forbs (Missouri goldenrod, daisy fleabane, snow-on-the-mountain, western ragweed) are present in areas that continue to have frequent vehicular traffic (e.g., parts of Maneuver Areas A, D, B and E).

Other "go-back" grassland areas not as frequently or intensively affected by military vehicles are in slightly further developed seral stages. Dominant species in these areas are those typically occurring in the garrison's native grasslands or cool season perennial "tame" grasses (mainly smooth brome and lesser amounts of tall fescue) or mosaics of native tallgrass prairie species and perennial cool season "tame" grasses. More than 75% of Maneuver Area O consists of "go-back" and disturbed, but not previously cultivated, grasslands. In addition, Maneuver Areas D, H, and K each have more than 2,500 acres of "go-back" land primarily in their eastern portions.

4.8.1.1. Shrublands

Extensive areas of shrubland are not a historic feature of the prairie environment. The reduction in wildfires and grazing practices employed prior to the garrison's acquisition by the federal government, as well as the abandonment of cropfields upon the area's acquisition and subsequent fire suppression efforts, has contributed to the establishment of shrublands on Fort Riley. Nevertheless, shrublands remain a minor component of the garrison's landscape, covering no more than 2 to 5 percent of the post.

Shrublands are located along the edges of woodlands, and in isolated patches along the smaller intermittent drainages and ravines, and sheltered areas within grasslands. The vegetation represents a successional stage between grassland and young woodland. The most common species include American plum, rough-leaved dogwood, smooth sumac, buckbrush, eastern red cedar, Arkansas rose, and smaller individuals of hackberry, American elm, and other trees.

4.8.1.2. Forestlands

Approximately 16,400 acres of Fort Riley is forestland. Most of this acreage is associated with the bottomland forests along the Republican and Kansas Rivers and the woodlands within the drainages of Threemile, Sevenmile and Wildcat Creeks. The bottomland forests along the Republican and Kansas Rivers have a tall canopy formed by cottonwood, hackberry, green ash, red mulberry, sycamore, American elm, red elm, bur oak, chinquapin oak, and black walnut. The understory of these woodlands consists of woody shrubs or herbaceous cover.

Bur oak and chinquapin oak, American elm, red mulberry, bitternut hickory, black walnut, green ash, and honey locust dominate forests at higher elevations in smaller stream valleys and ravines. The understory consists of grasses, forbs, shrubs, and young canopy species with varying densities and dominance patterns. Hackberry and American elm mixed with shrubs, forbs, and grasses dominate the pole-size stands at higher elevations near the heads of drainages and in isolated patches. Upland forests are more extensive on the north and east aspects than on south or west aspects.

Surveys have documented 28 tree species on Fort Riley. A Forest Inventory conducted 1997-1998 showed the most common species were (in descending order) American elm (21.6%), hackberry (19.4%), and chinquapin oak (9.1%). The median forest tree was eleven inches

Diameter at Breast Height (DBH) and was just less than 40 feet tall and about 40 years old. Most stands had a considerable number of pole size trees and were relatively young; only five of the 292 trees aged were more than 100 years old. Twenty percent of the trees were saleable, but they fell predominantly in the 16-20 inch DBH class. A significant portion (7.4%) of the standing trees in forest plots were snags, and nearly a quarter of the post's woodlands had excessive basal area (over 100 square feet per acre), which would require some form of thinning to maintain forest health.

Most areas contain mixed species, but some have primarily chinquapin oak or hackberry. The most common species of woody regeneration are American elm (24%) and hackberry (18%). Species composition, however, is generally shifting from an oak and hickory composition to nearly pure stands of hackberry. Although the regenerating hackberry is less abundant than American elm, hackberry is generally present in larger size classes than elm. The primary factor for the species change is lack of disturbance in forest stands. This allows shade tolerant hackberry to rise from the understory to codominance.

The most common non-tree plants in the understory are rough-leaved dogwood (19%), Virginia creeper (12%), buckbrush (9%), and poison ivy (8%), and the average height of understory plants is just over three feet. Approximately one percent of the understory vegetation in woodland plots is listed by Kansas as a noxious weed, the principal one being sericea lespedeza.

Most stands (83%) have minimal fuel-loading levels. The remaining stands have a moderate fuel loading level (fuels would burn from 1-10 hours).

4.8.1.3. Savannas

Fort Riley's ecosystem has natural components that are not unlike those in savannas, often considered ecotones between forests and grasslands. Savannas have four characteristics: tree canopy coverage from 5-15%, trees open-grown, acreage of one or more, and associations with typical prairie vegetation. Fire affects the composition and density of savanna vegetation. Consequently, the pattern and extent of present savannas depend on recent fire histories and the land's geomorphology. Most sites on Fort Riley meeting the above criteria for a savanna are in Maneuver Areas A, D, J, and N. The total area of savanna sites on Fort Riley is approximately 450 acres.

In 1999, Fort Riley surveyed its savannas. The survey revealed that savannas averaged 25 trees per acre and had 13 tree species. The most common species were hackberry (33%), American elm (22%) and green ash (12%). One-fourth of survey plots had trees with significant visible fire indicators. The savanna survey identified 62 species of understory plants; the most common were smooth bromegrass (37%), big bluestem (12%), Japanese bromegrass (5%), and little bluestem grass (5%). Notably, noxious weeds were very rare on the savanna sites (0.1%).

4.8.1.4. Croplands

Croplands are a minor component of the Fort Riley ecosystem. Approximately 1,420 acres are located along much of east, north, and west boundaries of Fort Riley. The garrison leases those acres to local farmers. Approximately 500 additional acres of croplands serve as wildlife foodplots throughout the garrison.

4.8.2. Faunal Communities

Fort Riley habitat supports at least 43 species of mammals, 223 species of birds, 44 species of reptiles and amphibians, and 51 species of fish (U.S. Army, Fort Riley, Environmental Division, DPW, 2010; Pitts et al., 1987; U.S. Army Corps of Engineers, 1991; U.S. Fish & Wildlife Service, February 1992; Busby, et al., 1994; Quist, 1999). Many of these species are year-round residents although most of the birds are seasonal migrants.

4.8.2.1. Game Animals and Furbearers

Fort Riley supports viable populations of all of the typical game species found in this region of Kansas, as well as a huntable elk population (1998 to present). Upland game birds include bobwhite quail, ring-necked pheasant (the only exotic terrestrial game species on Fort Riley), prairie-chicken, turkey, mourning dove, and woodcock. In addition, a variety of ducks is common. Fox squirrels and cottontail rabbits are common; gray squirrels are uncommon; and observations of jackrabbits are rare. Those species on Fort Riley that the state defines as "big game", are white-tailed deer, mule deer (rarely present), and elk. Furbearer species are badger, bobcat, mink, muskrat, opossum, raccoon, red fox, gray fox, striped skunk, coyote, and beaver.

4.8.2.2. Non-Game Animals

Fort Riley has documented 24 species of non-game mammals on the garrison. Observations of 37 species of reptiles and amphibians include 19 species of snakes, 9 lizards, and 9 amphibians. The most common amphibian is the western chorus frog and the most common reptile is the ringneck snake. Fort Riley has seven species of turtles (of the group Chelonia).

Numerous inventories have documented 51 species of fish in Fort Riley's streams, lakes, and ponds. The Kansas, Smoky Hill, and Republican Rivers have yielded 34 fish species. Species managed for recreational fishing largely represent the fish assemblages in ponds and lakes. Fort Riley has inventoried its perennial streams for aquatic insects and mussels. Those inventories have documented 19 orders/families of aquatic insects and evidence of 17 species of mussels. Of those 17 mussel species, seven were extant (still existing) on the garrison. The other 10 mussel species apparently no longer exist on the garrison.

4.8.2.3. Migratory Birds

Fort Riley has been host to numerous bird inventories, resulting in the observation of 223 species, most of which are migrant, non-game passerines. Many of these species are Neotropical Migrant Birds (NTMBs). Birds occupy a wide range of habitats on Fort Riley, from riverine sandbars to interior woodlands.

Grassland birds have experienced the most severe decline in population of any type of land bird in North America. Fort Riley's predominant cover type is grassland, and provides habitat for some grassland species in decline throughout their range. Fort Riley also contains substantial woodland habitat. These woodlands attract NTMBs that are characteristic of interior woodland tracts. Many species of interior woodland NTMBs have experienced population declines throughout their ranges. Historically, the conservation community has directed little effort toward specific management of nongame birds unprotected by federal or Kansas endangered species laws. However, the DoD and the Army place special emphasis on protecting NTMBs through participation in the Partners in Flight program, and strongly advocates their management.

The DoD has an authorization to take migratory birds, with limitations, that result from DoD military readiness activities. The 2003 National Defense Authorization Act strictly defines a "military readiness activity": all training and operations of the Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. Military readiness activities do not include the routine operation of garrison support facilities such as administrative offices; military exchanges; commissaries; water treatment facilities; storage facilities; schools; housing; motor pools; laundries; morale, welfare, and recreation activities; shops; mess halls; industrial facilities; or the construction or demolition of garrison support facilities.

As appropriate, the Environmental Division, DPW and U.S. Department of Agriculture-Wildlife Services (USDA-WS) take or possess migratory birds under federal and state permits. The USDA-WS possesses a federal "Special Purpose" permit that allows the take of migratory birds (except bald or golden eagles and threatened or endangered species). The permit also authorizes retrieval and possession of injured migratory birds "including eagles". The USDA-WS also possesses a State of Kansas Scientific, Education or Exhibition Permit that allows the collection of all native Kansas species, including any sick, injured, or otherwise incapacitated migratory bird species, or body parts and carcasses thereof. The Environmental Division, DPW possesses a State of Kansas Scientific, Education or Exhibition Permit as well.

4.8.3. Threatened and Endangered or Rare Species

Numerous systematic surveys conducted since 1990 have documented the presence of six federally and/or state-listed T&E species, and eighteen rare species (Table 4-1). No recorded observations exist for 12 other listed or rare species, but there is a possibility that one or more of those species could occur on Fort Riley. Rare species are those designated by the Kansas Department of Wildlife and Parks (KDWP) as "Species in Need of Conservation" (SINC) or by the Army as "Species at Risk" (SAR). The SINC and SAR designations confer no legal protection under the Endangered Species Act or the Kansas Nongame and Endangered Species Conservation Act (KNESCA). Federally listed species receive legal protection under the Endangered Species Act (ESA).

Table 4-1 Federally- and State-Listed Species and Other Rare Species That Occur or Could Occur on Fort Riley

Species	Federal	State	Possibility on Fort Riley
Common shiner, *Luxilus cornutus*		SINC	Resident
Southern redbelly dace, *Phoxinus erythrogaster*		SINC	Resident
Johnny darter, *Etheostoma nigrum*		SINC	Resident
Bobolink, *Dolichonyx oryzivorus*		SINC	Migrant
Black rail, *Laterallus jamaicensis*		SINC	Migrant
Black tern, *Chlidonias niger*		SINC	Migrant
Eskimo curlew, *Numenius borealis*	E	E	Possible
Ferruginous hawk, *Buteo regalis*		SINC	Migrant - possible winter resident
Golden eagle, *Aquila chrysaetos*		SINC	Transient
Henslow's sparrow, *Ammodramus henslowii*	SAR	SINC	Summer resident

Species	Federal	State	Possibility on Fort Riley
Least tern, *Sterna antillarum*	E	E	Migrant – possible nesting
Piping plover, *Charadrius melodus*	T	T	Migrant – possible nesting
Rusty Blackbird, *Euphagus carolinus*	SAR		Migrant
Short-eared owl, *Asio flammeus*		SINC	Resident
Snowy plover, *Charadrius alexandrinus*		T	Migrant
Whip-poor-will, *Caprimulgus vociferous*		SINC	Summer resident
Long-billed Curlew, *Numenius americanus*		SINC	Possible
Whooping crane, *Grus Americana*	E	E	Possible
Yellow–throated Warbler, *Dendroica dominica*		SINC	Possible
Southern bog lemming, *Synaptomys cooperi*		SINC	Resident
Eastern spotted skunk, *Spilogale putorius*		T	Possible
Franklin's Ground Squirrel, *Spermopilus franklinii*		SINC	Possible
Eastern hognose snake, *Heterodon platirhinos*		SINC	Possible
Timber rattlesnake, *Crotalus horridus*		SINC	Possible
Western hognose snake, *Heterodon nasicus*		SINC	Resident
Texas horned lizard, *Phrynosoma cornutum*	SAR		Resident
Blue sucker, *Cycleptus elogatus*		SINC	Resident
Highfin Carpsucker, *Carpiodes velifer*		SINC	Possible
Plains minnow, *Hybognathus placitus*		T	Confirmed
Silver chub, *Macrhybopsis storeriana*		E	Possible
Sturgeon chub, *Macrhybopsis gelida*		T	Resident
Topeka shiner, *Notropis Topeka*	E	T	Resident
American burying beetle, *Nicrophorus americanus*	E	E	Possible
Prairie mole cricket, *Gryllotalpa major*		SINC	Resident
Regal fritillary butterfly, *Speyeria idalia*	SAR	NA	Resident
Western prairie fringed orchid, *Platanthera praeclara*	T	NA	Possible

E = Endangered, In danger of extinction throughout all or a significant portion of its range.

T = Threatened, Likely to become endangered within the foreseeable future.

SAR = Species at Risk, US Army designation for priority species in need of conservation on installations.

SINC = Species in Need of Conservation, Questionable ability to be self-sustaining species in Kansas.

Possible = Habitat is present and species range overlaps the area but the species is not documented on FRK.

4.8.3.1. Plant Species

The only plant species federally listed as threatened or endangered that possibly may exist on Fort Riley is the western prairie fringed orchid. However, systematic surveys have not found any plants of that species.

4.8.3.2. Animal Species

Three animals found on Fort Riley are federally listed species. Two are birds: the least tern and piping plover, neither of which are year-around residents (they are uncommon migratory transients). When present, those two species generally use the major rivers and reservoir areas around the periphery of the post.

The Topeka shiner, a small fish, is the third species and the only federally listed species on Fort Riley year-round (Quist, 1999). Surveys have found Topeka shiners in Wildcat, Sevenmile, Wind, Little Arkansas, Honey, and Silver Creeks, all of which are streams on the east side of the garrison. Systematic surveys have not found Topeka shiners in other Fort Riley streams.

The bald eagle was removed from the federal list (June 28, 2007) and the state list (June 25, 2009) of T&E species. Bald eagles winter on Fort Riley, often roosting or foraging along the Republican and Kansas Rivers, and Milford Lake as well. In recent years, nesting has occurred on and near the garrison. Even though the bald eagle has been de-listed, Fort Riley's management of the species will remain largely unchanged, because the garrison will comply with the Bald and Golden Eagle Protection Act (amended 1962) and the USFWS management guidelines released on the bald eagle's delisting date (June 28, 2007). For the five years after delisting, bald eagle management will comply with the Fort Riley Integrated Natural Resources Management Plan (INRMP) also.

Eighteen animal species considered rare are present on Fort Riley. Most of these are birds, two are reptiles or amphibians, four are fish, two are insects, and one is a mammal. Details pertaining to the management of the three federally listed and recently delisted species present on Fort Riley are contained in the garrison's INRMP.

4.8.3.3. Listed Habitats

There is no federal threatened and endangered species critical habitat on Fort Riley. However, the state has designated critical habitat on post for five species: Topeka shiner, piping plover, least tern, sturgeon chub, and plains minnow. For the least tern and piping plover, the State of Kansas has listed as state-designated critical habitat all waters within the corridor along the main stem of the Kansas River. State-designated critical habitat for the sturgeon chub and plains minnow is the main stem of the Kansas River from its confluence with the Republican and the Smoky Hill Rivers to its confluence with the Missouri River. Stretches along Wildcat, Little Arkansas, Wind, Honey, Seven Mile and Silver Creeks are state-designated critical habitat for the Topeka shiner.

4.9. Cultural Resources

Cultural resources include any prehistoric or historic district, site, building, structure, or object significant in American history, architecture, archeology, engineering, or culture that is listed in or potentially eligible for listing in the National Register of Historic Places (NRHP). Cultural Resources include artifacts, records, and material remains related to such a property or resource. Fort Riley is responsible for identifying and protecting significant archeological and architectural

resources in order to comply with the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archaeological Resources Protection Act (ARPA) of 1979. Fort Riley has conducted a number of cultural resource surveys to inventory and document archeological and architectural resources.

In 1974, Fort Riley secured the listing of its Main Post area in the NRHP as a National Register Historic District. Nearly 300 historic buildings and structures are present in the district. These include officer and enlisted soldiers quarters, barracks, historic hospitals, stables, headquarters, supply buildings, garages, and pump houses. In addition to the standing structures listed on the NRHP, the Main Post Historic District (MPHD) also includes 102 archeological sites and numerous historic landscapes. The first Territorial Capitol Building of Kansas, located near the Kansas River on Fort Riley, is an independent listing on the NRHP. Outside of the MPHD, Fort Riley has identified the locations of 249 prehistoric, 706 historic, and 29 multi-component (prehistoric/historic combination) sites.

A Programmatic Agreement (PA) among the DA, Fort Riley, the Kansas State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) addresses activities at the garrison that affect historic properties included in or potentially eligible for inclusion in the NRHP (U.S. Army, Fort Riley, Environmental Division, DPW, 2006). The PA ties together the more specific management practices and activities that the garrison had been accomplishing under several individual management plans and agreements. These other plans and agreements include the following:

- The garrison's Integrated Cultural Resources Management Plan (ICRMP), which provides a programmatic basis and guidance for the management and preservation of cultural resources in accordance with the Archeological Collections Management Recommendations (CERL, 1996).
- The Comprehensive Agreement Regarding Inadvertent Discovery and Intentional Excavation of Native American Human Remains and Cultural Items for which the (Kaw or Pawnee) Nation May Have Priority of Custody Within Lands Owned or Controlled by the U.S. Army at Fort Riley, Kansas. This agreement covers the treatment of Native American Human Remains and Cultural Items as defined by the Native American Graves Protection and Repatriation Act (NAGPRA).
- The Historic Landscape Inventory for the Main Post at Fort Riley, Kansas (CERL, 1995), which provides the garrison with a brief analysis regarding the evaluation of eleven landscapes on Main Post and vicinity relating to the NHPA.
- The Historical and Architectural Documentation Report (CERL, 1993), drafted to assist Fort Riley in the effective management of historic structures. The report includes the Historic American Buildings Survey Level IV inventory results; an historical overview of Fort Riley; recommendations for the establishment of NRHP districts and thematic groups within the districts at Fort Riley; and a management overview of the recommendations made.

Pursuant to Section 110 of the NHPA, Phase I archeological and architectural surveys at Fort Riley are ongoing to provide a complete inventory of prehistoric and historic cultural resources. The ICRMP also identifies and evaluates treatment or protection standards that would ensure the

preservation and/or reduction of adverse effects on significant historic properties (e.g., districts, buildings, structures, objects, and archeological sites).

4.10. Contaminated Sites

Numerous environmental investigations and sampling events performed at Fort Riley have identified facilities and activity locations where suspected releases of hazardous substances into the environment have occurred. The Fort Riley Installation Restoration Program (IRP) manages these sites on the garrison.

The IRP is a program within the Defense Environmental Restoration Program (DERP) established by Section 211 of the Superfund Amendments and Reauthorization Act (SARA) of 1986. The scope of the program includes identification, investigation, research and development, and cleanup of contamination from hazardous substances and pollutants. Initial studies performed by the U.S. Army in 1984 and 1988 identified areas at Fort Riley that required further sampling and/or remedial action and formed the foundation for the Fort Riley IRP. Figure 4-5 shows contaminated sites and landfills on Fort Riley.

4.11. Asbestos, Lead, and Other Hazardous Materials

The construction, operation, management, or demolition of facilities can potentially involve hazardous materials. Across the building industry, hazardous materials commonly found in facilities include asbestos-containing materials, lead-based paint, equipment with polychlorinated biphenyls (PCBs), mercury-containing components, and other materials. Many federal, state, and local regulations govern the creation, handling, storage, transport, and disposal of hazardous materials, and the safety protocols for workers during building construction or demolition activities.

4.12. Protection of Children

Health impact to children must be analyzed pursuant to EO 13045 (April 21, 1997), *Protection of Children From Environmental Health Risks and Safety Risks*. This EO recognized that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. It is the Army's policy to comply fully with EO 13045 by incorporating these concerns in decision-making processes supporting Army policies, programs, projects, and activities. In this regard, the Army ensures that it will identify, disclose, and respond to potential adverse social and environmental impact on children within the area affected by a proposed Army Action.

4.13. Environmental Justice

On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*. The purpose of this Executive Order is to avoid the disproportionate placement of adverse environmental, economic, social, or health impact from Federal actions and policies on minority and low-income populations or communities.

It is the Army's policy to comply fully with EO 12898 by incorporating environmental justice concerns in decision-making processes supporting Army policies, programs, projects, and activities. In this regard, the Army ensures that it will identify, disclose, and respond to potential adverse social and environmental impact on minority and/or low-income populations within the area affected by a proposed Army action.

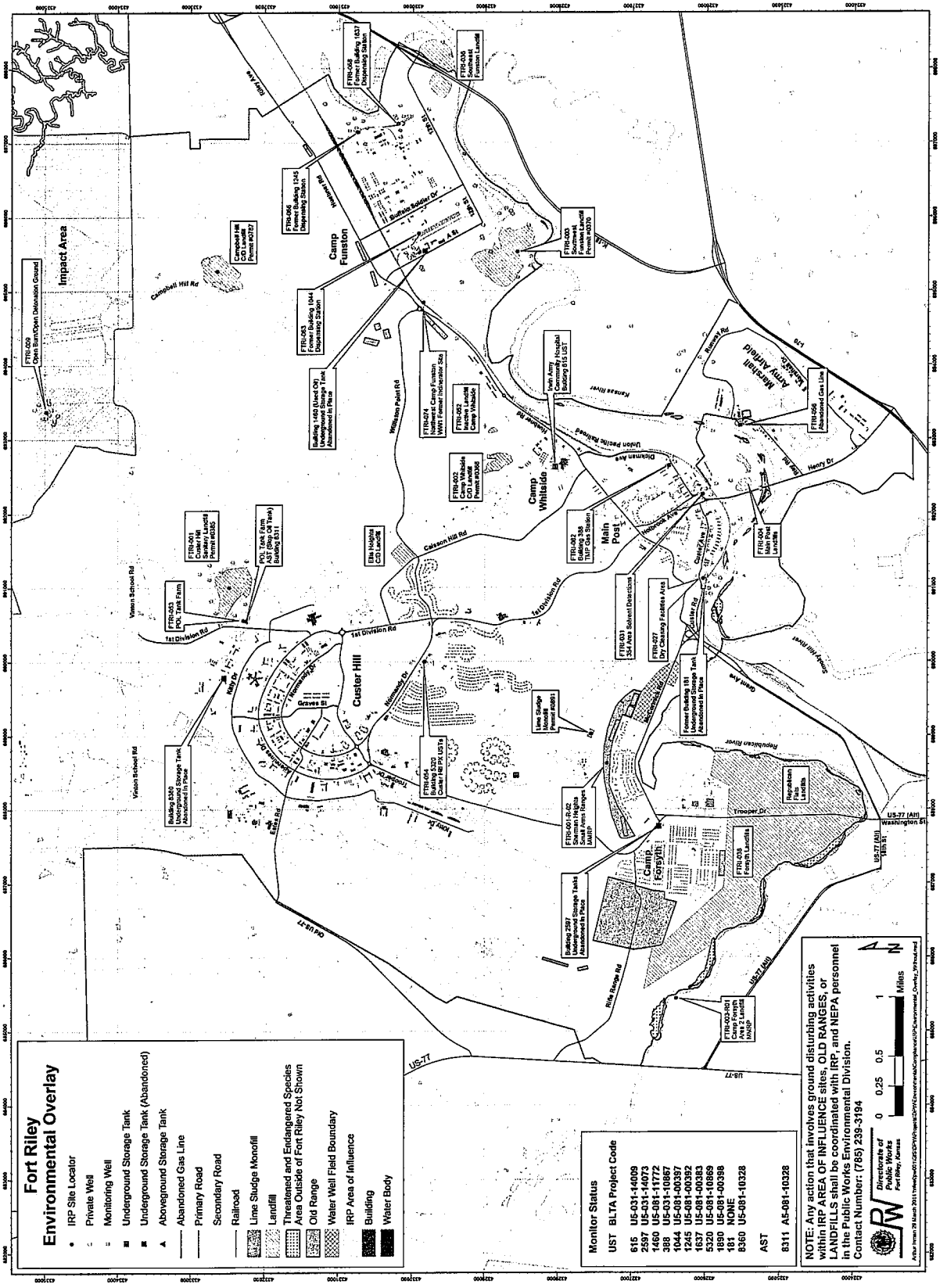


Figure 4-5 Landfills and Contaminated Sites on Fort Riley

In August of 1996, the Federal Facilities Enforcement Office (FFEO) initiated the Federal Facilities Environmental Justice Enforcement Initiative (FFEJEI) (EPA, 1997). The goal of the FFEJEI was to assist in the identification of Federal facilities that may pose environmental justice concerns to low income or minority communities surrounding the facilities. This initiative employed several systems to screen Federal facilities for possible Environmental Justice concerns:

1. The 191 Federal installations that reported releases under the Toxic Release Inventory (TRI) program in 1994 were first screened using the TRI Relative Risk-Based Chronic Health Indicator model.
2. The second screen employed several enforcement databases to evaluate the compliance records of the facilities. In addition, the FFEO relied on community reports of environmental justice concerns and geographic distribution to identify facilities posing potential environmental justice concerns.
3. Geographic Information System (GIS) maps were then generated for the 45 sites identified in the two prior screens to illustrate the low income and or minority communities surrounding the facilities.

Based upon this screening process, Fort Riley was identified in the U.S. Environmental Protection Agency (USEPA) report dated 1977 as a potential installation of concern for environmental justice concerns.

The initial step in the evaluation of environmental justice concerns posed by a proposed action or its alternatives is the identification of minority and low-income populations that could absorb an effect were a project proponent to implement a proposed action. These populations are individuals or groups that are subject to an actual or potential health, economic, or environmental threat arising from existing or proposed Federal actions and policies.

Low-income, or the poverty threshold, is defined as the aggregate annual mean income for a family of four (with two children under age 18) in 2009 correlating to $21,756 (U.S. Census Bureau, 2011a). This EA compares low income and minority population data for Geary and Riley counties, the Fort Riley Region of Influence (ROI), and the State of Kansas (Table 4-2). According to the 2005-2009 American Community Survey (U.S. Census Bureau, 2011b), the percent of low-income persons is higher for the Fort Riley ROI (16.2 percent) than for the State of Kansas (12.2 percent), while the percent minority population is lower for the ROI (13 percent) than for Kansas (14.2 percent). Compared to the Fort Riley ROI and the State of Kansas, Geary County and Riley County have a higher percentage of minority population (28.2 and 14.8 percent, respectively). Geary County has a lower percentage of population below poverty level (11.5 percent) than the Fort Riley ROI and the State of Kansas, while Riley County has a higher percentage of population below the poverty level (26.0 percent). The community of Junction City in Geary County has the highest percentage of minority population (33.5 percent), while the City of Manhattan in Riley County has the highest percentage of population below poverty level (31.5 percent). The high percentage of population below the poverty level in Riley County and Manhattan is due to the concentration of students at Kansas State University (KSU).

Table 4-2 Low-Income and Minority Populations

Region	Minority Percentage of Population[1]	Low-income Percentage of Population[2]
Riley County	14.8	26.0
Geary County	28.2	11.5
Fort Riley ROI	13.0	16.2
State of Kansas	14.2	12.2
[1] Non-white population, 2005-2009 American Community Survey.		
[2] All ages in poverty, 2005-2009 American Community Survey.		
Source: U.S. Census Bureau, 2011		

4.14. Sociological Environment

This section considers the sociological attributes potentially affected by the Proposed Action. The EA describes the following attributes:

- The demographics of Fort Riley and its ROI
- Economics
- Visual and aesthetic values
- Recreational activities

4.14.1. Demographics

Fort Riley lies in portions of Geary, Riley, and Clay counties. The nearest communities to the garrison are Grandview Plaza, Junction City, Manhattan, Milford, Ogden, Riley, Wakefield, Bala, and Keats. The area of socioeconomic impact, influenced by Fort Riley, extends beyond Geary, Riley, and Clay counties.

Fort Riley's presence has had a measurable effect upon the overall population and employment levels surrounding the garrison. The following sections describe the current demographics and demographic trends for Fort Riley and the surrounding area, defined as the ROI.

4.14.1.1. Fort Riley Population

Fort Riley supports a population of more than 51,568 composed of 18,553 Soldiers, 24,678 family members, and 8,337 civilian employees (U.S. Army, PAI, 2010). Another 3,389 retirees are dependent on Fort Riley services. The civilian workforce consists primarily of DA appropriated funds employees, DA non-appropriated funds employees, contractors, school employees, Army – Air Force Exchange System employees, and tenants. The majority of the military personnel residing off post live in Junction City or Manhattan.

Fort Riley processed 14,005 annual, weekend, or mobilized reserve component trainees during Fiscal Year (FY) 2010.

4.14.1.2. Regional Population

The area considered as Fort Riley's ROI, as defined by the U.S. Army's Economic Impact Forecasting System (EIFS), incorporates surrounding counties within an approximate 50-mile commute of the garrison. Based upon this and other criteria, the ROI for Fort Riley consists of eight counties: Clay, Dickinson, Geary, Morris, Ottawa, Pottawatomie, Riley, and Wabaunsee. Geary and Riley counties, within which Fort Riley is located, receive the majority of the direct and indirect social and economic effects from Fort Riley. For example, Fort Riley's population of 51,568 Soldiers, family members, and civilian employees equates to approximately 50 percent of the total populations of Geary and Riley Counties according to the 2005-2009 American Community Survey.

Census records further suggest that the presence of Fort Riley contributes to local population maintenance and growth, and that the garrison exerts a stabilizing influence on the population of the ROI. For example, U.S. Census Bureau data (State Library of Kansas, 2011) indicates that during the 100-year period from 1900 to 2000, five of the eight ROI counties have declined in population, and that one county steadily lost population through the 1970s before rebounding in the year 2000 to the level of 100 years earlier. Those trends are consistent with decades-long population declines in many rural Midwestern counties. In contrast, the populations of Geary and Riley counties have grown dramatically over the past 100 years (Geary County population has nearly tripled and Riley County population has more than quadrupled), which more than offsets population losses in nearby counties. Overall, the population of the eight-county Fort Riley ROI grew by almost 35% from 1900 to 2000. The military mission at Fort Riley, combined with economic activities in Junction City and Manhattan, has provided a growing economic base for the ROI and its population over the last 100-plus years.

4.14.1.3. Elementary, Middle, and Secondary Schools

The total number of military and civilian personnel assigned to Fort Riley affects area schools. Children of military personnel that reside on-post attend schools in the Geary County USD 475. The majority of Fort Riley military and civilian personnel that reside off-post live in or near Junction City and Manhattan, and their children attend school at Geary County USD 475 or Manhattan USD 383. According to the Fort Riley Economic Impact Summary (U.S. Army, PAI, 2010), children of personnel assigned to Fort Riley comprise 63% of the student population of Geary County USD 475. Children of personnel assigned to Fort Riley comprise 27% of the student population of Manhattan USD 383.

The U.S. Department of Education provides federal impact aid to school districts that have federal lands in their jurisdiction. School districts receive federal impact aid for each student whose parents live or work on federal property. Estimated federal impact aid payments to Geary County USD 475 and Manhattan USD 383 reported in 2010 were $12,277,037 for USD 475 and $349,625 for USD 383 (U.S. Army, PAI, 2010).

4.14.2. Economics

The capacity of a community to provide employment for its citizens is an indicator of that community's economic health. Table 4-3 summarizes the employment environment of the Fort Riley ROI. Riley, Geary, Pottawatomie, and Dickinson Counties have the largest work forces. Residents of those four counties comprise more than 80% of the Fort Riley ROI work force, and many of those workers find employment at the economic hub of the ROI: Fort Riley, Manhattan,

and Junction City; communities that are the largest in the area and that constitute a nearly contiguous urban area of economic activity. The unemployment rate in the Fort Riley ROI was 6.0% in March 2011, less than the State of Kansas unemployment rate of 7.1% for the same period (Kansas Department of Labor, 2011). According to the U.S. Census Bureau (2011c), the median household income in 2009 for the Fort Riley ROI ranged from $40,612 in Riley County to $55,341 in Wabaunsee County. The statewide median household income was $47,709 in 2009.

Table 4-3 Fort Riley ROI Employment Summary (2011)

County	Work Force	Employed	Unemployed	Percent Unemployed
Clay	5,577	5,305	272	4.9
Dickinson	10,859	10,112	747	6.9
Geary	14,824	13,596	1,228	8.3
Morris	3,137	2,884	253	8.1
Ottawa	3,221	3,031	190	5.9
Pottawatomie	11,476	10,887	589	5.1
Riley	39,250	37,313	1,937	4.9
Wabaunsee	3,722	3,460	262	7.0
ROI	92,066	86,588	5,478	6.0

Source: *Kansas Department of Labor, 2011*

As described above and in Section 4.14.1.2, the economic impact of Fort Riley to the surrounding area is substantial. Fort Riley contributed $2,225,511,361 to the local economies in Fiscal Year 2010; i.e., October 1, 2009 through September 30, 2010 (Table 4-4).

Table 4-4 Fort Riley expenditures, Fiscal Year 2010

Activity	Amount ($)
Payroll[1]	1,484,281,090
Contracts, Supplies, and Services	374,700,181
Construction Projects	229, 931,478
Other Miscellaneous Expenditures[2]	136,598,612
Total	**2,225,511,361**

[1]Pay for military personnel, civilian employees, and Army retirees.

[2]Funds for education, health care, and Combined Federal Campaign.

Source: Plans, Analysis, and Integration Office, *Economic Impact Summary FY 2010 Fort Riley, Kansas*

Fort Riley operations generate substantial revenues to local economies through wage and salary payments to military and civilian employees, construction contractor payments, and operating costs such as rent and lease payments for various types of equipment, utilities, telephone, office supplies, and non-construction contracts. Purchases in the area by the 18,553 military personnel assigned to Fort Riley and their 24,678 family members make a significant contribution to the retail and service segments of the regional economy.

The positive contribution of Fort Riley to local economies can be expressed in another way – induced direct and indirect employment, or the number of jobs that are induced in the private sectors as a direct result of military troop levels and off-post expenditures. Despite the apparent day-to-day operation of Fort Riley as a self-sustaining garrison, personnel and their dependents make considerable use of retail and service facilities, while the various groups and commands on-post annually contract or purchase millions of dollars in goods, services and equipment from area businesses. Those actions result in induced employment.

The concept of induced employment related to military garrisons was addressed in a number of studies and these studies have developed multipliers, which can be used to estimate the number of jobs that are created based upon a garrison's military population and the number of civilians employed. The multipliers to be used to estimate the induced employment associated with the number of military personnel assigned to a garrison range from 1.08 to 1.80. Put another way, this means that between 108 and 180 permanent jobs will be created in the private labor sector for each 100 military personnel assigned. The application of those multipliers reveals that between 20,037 and 33,395 jobs in the surrounding community have been created to support the 18,553 military personnel assigned to Fort Riley.

The civilian employees at Fort Riley also have an effect on private employment in the surrounding communities. They spend a high proportion of their pay in the local communities. Consequently, civilian workers at Fort Riley induce a proportionately higher number of jobs in the private sector than do the military personnel. It is estimated that the employment multiplier for civilian employees ranges between 2.5 and 3.0. This means that between 250 and 300 jobs are created for each 100 civilian employees at Fort Riley. On this basis, from 20,842 to 25,011 jobs are created because of the approximately 8,337 civilians employed on Fort Riley.

Based upon the analysis described above, the employment induced into the area around Fort Riley (from the multiplier effect of assigned military personnel and civilian employees) could range from as low as approximately 40,879 jobs to a high of around 58,406 jobs. The employed workforce in the Fort Riley ROI totaled 86,588 in 2011. Employment induced by Fort Riley compared to total employment in the Fort Riley ROI indicates that about one-half to two-thirds of existing nonmilitary jobs in the region result from the presence of the garrison.

4.14.3. Visual and Aesthetic Values

Natural resources enhance the aesthetic quality of Fort Riley. Located in the Flint Hills, Fort Riley contains rolling prairie hilltops with rugged riparian valleys, quality streams, and an abundance of fish and wildlife. The major stream corridors have retained much of their natural appearance and the bluffs and ridges of the Flint Hills provide panoramic views.

Aesthetically pleasing historic native limestone buildings arranged on the landscape with ample green space characterize the MPHD. Fort Riley's retention of the historical character of the MPHD provides an exceptional visual experience to residents, employees, and visitors.

The garrison's layout reflects natural features, formal or informal designs, and distinctive styles and building materials. Features such as rivers, floodplains, hillsides impose natural constraints on the physical layout of Fort Riley. Cantonment (urban) areas, particularly those in the MPHD, appear interwoven among the natural features and interconnect with one another. The use of cultivated plants in cantonment areas, combined with native plants in undeveloped areas, results in a pleasing variety of vegetative environments on post. Significant natural areas that remain relatively undisturbed include woodlands and native prairie tracts.

4.14.4. Recreational Activities

Common outdoor recreation activities at Fort Riley include organized sports (e.g., football, soccer, softball, golf), bird watching, hunting, hiking, fishing, mushroom hunting, walnut gathering, and mountain biking. The organized sports take place predominately in the Camp Forsyth area or on Custer Hill, in the southern portion of the garrison. The other activities occur throughout the garrison, except where prohibited (e.g., within the garrison's permanent impact area).

Hunting and angling in particular account for many recreational outings taken by Soldiers, their families, and the public. Fort Riley typically supports approximately 7,000 hunting trips annually. The public, including many non-residents, account for about 50% of the hunting trips. Creel censuses during past years indicate that approximately 15,000 fishing trips are taken on Fort Riley each year.

5.0 ENVIRONMENTAL CONSEQUENCES

During the planning and assessment phase of this project, Geary County USD 475 and Fort Riley developed alternative courses of action to fully investigate potential environmental effects of the Proposed Action:

- To construct a new Fort Riley Middle School (preferred alternative), and
- No Action.

This section describes probable consequences (effects) of both alternatives on selected environmental resources and associated attributes. The resources and their attributes that are assessed are those directly linked to the relevant issues listed in Section 1.0, *Purpose and Need.*

Effects are changes from the current situation. The expected changes are described in quantitative and qualitative terms to aid in evaluating and contrasting the alternatives. The degree of change is described in terms of significance, duration and magnitude. The section includes discussion of:

- Direct effects and their significance.
- Indirect effects and their significance.
- Cumulative effects and their significance.
- Long- and short-term effects.
- Unavoidable effects and any mitigation measures that would be implemented.
- Possible conflicts between the Proposed Action and the objectives of federal, regional, state, and local land use plans, policies and controls for Fort Riley.
- Any irreversible and irretrievable resource commitments.

The Environmental Consequences section is the scientific and analytical basis for comparison of the alternatives. Geary County USD 475 and Fort Riley will use the information in this section to help determine which of the identified alternatives will be implemented.

Section 5.0 is organized by alternative, and the effect associated with each alternative. Resource effect assessment matrices have been included near the beginning of each subsection to summarize the effect of proposed actions and related alternatives. The reader should refer to the text narrative for information regarding the specific nature and extent of effect illustrated in these generalized summary matrices. The presence of effect, however, does not necessarily equate to significant effect. Effect can be minor and localized and not rise to the level of significance. Significance is determined based on magnitude and duration.

Each "Alternative" section is divided into subsections evaluating effects to natural resources related attributes (abiotic and biotic), cultural resources, and the sociological environment.

5.1. Definition of Key terms

5.1.1. Direct versus Indirect Effect

The terms consequences, impact and effect are synonymous as used in this EA. Effect may be determined to be beneficial or adverse, and may apply to the full range of natural, aesthetic, historic, cultural, and economic resources of Fort Riley and its environs. Where applicable, effect may be classified as direct or indirect. Definitions and examples of direct and indirect

effect as used in this document are as follows:

- **Direct Effect.** *A direct effect is caused by the Proposed Action, and occurs at the same time and place.* For example, loss of tree cover would be classified as a direct effect associated with construction of a new building on an existing woodland site.
- **Indirect Effect.** *An indirect effect is caused by the Proposed Action and is later in time or farther removed in distance, but still reasonably foreseeable.* Indirect effect may include induced changes in the pattern of land use, population density or growth rate, and related effects on air, water, and other natural and social systems. Referring to the direct effect described above, the clearing of trees for new development may have an indirect effect on area streams by increasing the amount of soil erosion and sediment that reaches these streams during construction.

5.1.2. Short-term versus Long-term Effect

In addition to indicating whether effect is direct or indirect, the environmental consequence analysis also distinguishes between short-term and long-term effect. In this context, short-term and long-term do not refer to any rigid time period and are determined on a case-by-case basis. In cases where both short-term and long-term effect is expected, the effect evaluation matrices generally illustrate the long-term consequences. Referring to the direct and indirect effect examples described above, the clearing of trees on a new construction site would be classified as a long-term effect, while erosion and siltation in nearby streams during the construction period would be classified as a short-term effect.

5.1.3. Significance

The term "significant", as defined in Paragraph 1508.27 of the regulations for implementing NEPA (CEQ 40 CFR 1500 et seq.), requires consideration of both the context and intensity of the effect evaluated. Significance can vary in relation to the context of the Proposed Action, and thus the significance of an action must be evaluated in several contexts and this varies with the setting of the Proposed Action. For example, context may include consideration of effects on a national, regional, and/or local basis depending upon the action proposed. Both short-term and long-term effects may be relevant.

In accordance with Paragraph 1508.27 of the regulations and the CEQ implementing guidance, effect also is evaluated in terms of its intensity or severity. Factors contributing to the evaluation of the intensity of an effect include, but are not limited to:

- The degree to which the action affects public health or safety.
- Unique characteristics of the geographic area where the action is proposed such as proximity to parklands, historic or cultural resources, wetlands, prime farmlands, wild and scenic rivers, or ecologically critical areas.
- The degree to which the effects on the quality of the human environment are likely to be controversial.
- The degree to which the effects of the action on the quality of the human environment are likely to be highly uncertain or involve unique or unknown risks.
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- Whether the action is related to other actions with individually insignificant but

cumulatively significant effect. Significance exists if it is reasonable to anticipate a cumulatively significant effect on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.
- The degree to which the action may adversely affect an endangered or threatened species, or its habitat, that was determined to be critical under the Endangered Species Act of 1973.
- Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

An Environmental Impact Statement (EIS) would be required if it is determined, as part of this EA, that the alternative chosen for implementation would create significant effect. The EIS would investigate effect in more detail as well as identify mitigation strategies designed to minimize effect.

5.2. Effects of Alternative 1 – Construction of a New Fort Riley Middle School

Fort Riley anticipates short-term and long-term **moderate** beneficial effects to the sociological environment under the Proposed Action (Table 5-1). Effects of the proposed construction of the middle school would adversely affect a number of local environmental elements, but those effects would remain below threshold levels considered significant. Fort Riley anticipates **minor** adverse effects to infrastructure and transportation, noise, air quality, soils, and flora and fauna.

The Proposed Action would not compromise the commitment of Fort Riley to maintain, protect, and improve human health and welfare; and to protect and enhance biological communities, particularly those of sensitive, rare, threatened and endangered species. Therefore, the Proposed Action is the preferred alternative. Discussion of specific resource areas and environmental consequences under the Proposed Action follows.

5.2.1. Land Use

Fort Riley anticipates **no** adverse effect to land use under the Proposed Action. The proposed new Fort Riley Middle School would occupy existing school grounds (or grounds planned for cantonments if the school site were to expand).

5.2.2. Infrastructure and Transportation

Fort Riley anticipates **minor**, direct, short-term adverse effect to transportation under the Proposed Action. The area near the proposed new Fort Riley Middle School site, at the intersection of 1st Division Road and Thomas Avenue, would experience a temporary increase in the volume of construction-related vehicle traffic. During construction, drivers could face slower traffic flow and occasional traffic disruptions on 1st Division Road. Those traffic impediments could also affect Thomas Avenue traffic flow at its intersection with 1st Division Road. The appropriate establishment and use of construction entrances, equipment staging areas, signage, and other traffic management strategies would help lessen the adverse effects to traffic. Over the long term, Fort Riley anticipates continued high traffic volume during the typical morning drop-off and afternoon pick-up times for students.

Table 5-1 Anticipated Effects of Construction of a New Fort Riley Middle School

	Direct Effects	Indirect Effects	Short-Term Effects	Long-Term Effects
Land Use	0	0	0	0
Infrastructure and Transportation	-	-	-	0
Safety	0	0	0	0
Noise	-	-	-	0
Air Quality	-	-	-	0
Soils	-	0	-	-
Water	0	0	0	0
Flora and Fauna				
Flora	-	-	-	-
Fauna	-	-	-	-
Cultural Resources	0	0	0	0
Contaminated Sites	0	0	0	0
Asbestos, Lead, Other Materials	0	0	0	0
Protection of Children	0	0	0	0
Environmental Justice	0	0	0	0
Sociological Environment	++	++	++	++

Effect expected: (+) minor beneficial (++) moderate beneficial (-) minor adverse (--) moderate adverse (0) none

5.2.3. Safety

Fort Riley anticipates **no** adverse effect to safety under the Proposed Action. To ensure on-the-job safety, project managers would ensure that qualified personnel performed all construction activities. Only properly trained personnel would use tools and heavy equipment. Construction personnel would perform all activities in accordance with the standards specified in Occupational Safety and Health Act (OSHA) regulations.

Under the Proposed Action, Geary County USD 475 would simultaneously construct the new Fort Riley Middle School and continue to use the existing middle school. Project managers would separate the existing middle school's students and staff from construction or demolition activities to ensure safety. Standard protocols such as gating, fencing, barriers, signage, and other access controls would ensure separation and safety. Project managers would ensure that all appropriate safety controls were in place prior to construction and demolition activities to alert students, pedestrians, and motorists to project activities.

5.2.4. Noise

Fort Riley anticipates **minor**, indirect, short-term adverse effect to noise under the Proposed Action. The operation of equipment (e.g., trucks, loaders, excavators, electric saws, generators, and compressors) typically used for construction and demolition projects would generate noise in the vicinity. That noise could annoy students and staff at the existing Fort Riley Middle School during construction of the proposed new middle school on the same grounds. Project managers anticipate some noise disturbance, as construction activities and school instruction would likely

take place simultaneously during daylight hours.

A lesser degree of noise annoyance could occur in the Family Housing neighborhood west of the project site. The nearest home is about 300 feet from the existing Fort Riley Middle School, ultimately planned for demolition. A preliminary site plan for the new middle school would place most activities to erect the new structure likely more than 500 feet from that neighborhood. The effect of distance would lessen noise effects for the neighborhood, as would the daytime scheduling of construction and demolition activities. Over the long term, Fort Riley anticipates **no** effect to noise levels.

5.2.5. Air Quality

Fort Riley anticipates **minor**, direct and indirect, short-term adverse effect to air quality under the Proposed Action.

Construction and demolition activities such as earthmoving and materials hauling with heavy equipment would introduce particulate matter (dust) into the atmosphere. Heavy equipment and trucks would create temporary sources of exhaust emissions. Both the dust emissions and exhaust emissions that construction activities would produce would be temporary and originate primarily in the project area. However, indirect short-term adverse impacts to air quality would occur if dust or vehicle emissions generated by construction or demolition activities were to travel off-site.

Project managers would employ the following air quality related Best Management Practices (BMPs) during construction activities:

- Personnel would minimize as feasible the release of fugitive emissions. For example, during dry weather conducive to high dust emissions, personnel would apply suppression measures to construction sites. Fugitive emissions control would conform to applicable regulations.
- Personnel would conduct open burning, if used, in accordance with applicable regulations. This EA defines open burning as "the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the outdoor atmosphere without passing through a stack or chimney." The only materials that might be open-burned would be trees and similar plant materials that construction personnel would remove from the project footprint. Personnel would burn those plant materials at an on-post site where the Kansas Department of Health and Environment (KDHE) has authorized that activity under the terms of a permit.

5.2.6. Soils

Fort Riley anticipates **minor**, direct, short-term and long-term adverse effect to soils under the Proposed Action. Construction personnel would disturb soils during earthmoving activities to construct the proposed new middle school. However, several factors would lessen the effect to soils. The original development to construct the current middle school has altered the grade of the existing school grounds, and thus the soils are already disturbed. Under the Proposed Action, additional construction activities for the proposed new Fort Riley Middle School would disturb few areas of virgin soil.

As discussed under Section 2.2, construction of the new middle school could require fill materials (soil or aggregate) not available at the proposed construction site. Any fill materials not purchased off post would originate from existing Fort Riley borrow areas, or a new borrow site or sites that project managers would open for the new middle school project. Borrow site

activities would have **minor**, direct long-term adverse effect to soils.

Short-term soil erosion would occur at construction sites or borrow sites. Project managers would use the following BMPs to reduce the potential for soil erosion at and near project sites:

- Project managers would use and maintain vegetation and structural erosion control practices according to standards and specifications of the State of Kansas, the USEPA document entitled *Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (1992), or both. Project managers would employ the more stringent of the standards. All areas disturbed by construction activities would be seeded or have sod placed over them, and fertilized unless the area is to be paved or built upon.
- Landscaping of the construction sites would include the removal and stockpiling of top soil prior to repair activities, spreading top soil after construction activities, replanting of areas with appropriate vegetation, and mulching all seeded areas at project sites.
- Personnel would not conduct soil-disturbing activities during periods of excessively wet weather. Performing potentially erosive earthmoving during dry periods and utilization of proper construction techniques would minimize possible impacts to water quality.
- Erosion and sediment control measures would be maintained during construction efforts, and afterwards until vegetation has established in a manner to ensure compliance with Clean Water Act (CWA) regulations. Project managers would implement erosion control measures in accordance with normal construction practices required by the U.S. Army Corps of Engineers (USACE) for all construction activities. Costs associated with erosion control plans are included in the funded project.

Although BMPs are not 100 percent effective in preventing sediment runoff, Fort Riley would attempt to ensure that construction personnel remain in compliance with established permit and BMP requirements.

5.2.7. Water Resources

Fort Riley anticipates **no** adverse effect to surface water under the Proposed Action. The site for the proposed new middle school lies in the uplands. The nearest stream channels, which are ephemeral, originate off the proposed project site and drain to Onemile Creek. Fort Riley anticipates that stormwater controls, in combination with the filtering capacity of vegetation adjacent to the site, would filter any eroded soil from surface water runoff prior to its arrival at stream channels. Project managers would implement stormwater controls as applicable throughout the lifespan of the Proposed Action, regularly inspect those controls (as would personnel from the Environmental Division, DPW), and implement corrective measures as needed to ensure adequate filtering of stormwater runoff.

If project managers were to expand the site for the proposed new middle school beyond the current school grounds, then sloping terrain would pose development challenges. A substantial amount of cut and fill activity could be required to build upon undeveloped and sloping land north, south, and east of the school grounds. Such activity could affect ephemeral stream channels in the Onemile Creek watershed. Section 404 of the CWA regulates the discharge of fill material into streams and other waters of the U.S. If the scope of work for the Proposed Action were to expand to include the discharge of fill material into stream channels, then project planners would contact the USACE and that agency would determine the applicability of Section 404 permitting. Project planners would fulfill all Section 404 permit requirements.

5.2.8. Flora and Fauna

This section describes anticipated effects to native flora and fauna, including T&E and rare species.

5.2.8.1. Floral Communities

Minor, direct and indirect, short-term and long-term adverse effects to floral communities would occur under the Proposed Action. Regularly mowed lawn vegetation and widely spaced trees compose the essentially cultivated floral community on the existing middle school grounds (where the Proposed Action would occur). Typically, cultivated landscapes exhibit low levels of species diversity, and exist as communities not considered natural or unique. Thus, Fort Riley anticipates minimal direct adverse effects to native floral communities. However, earthmoving and construction activities would remove lawn vegetation in some project areas, and could remove or damage trees as well. Following construction, project managers would reestablish grasses on any exposed soil. The reestablishment of grasses and any woody landscaping would lessen the adverse construction effects over the long term.

5.2.8.2. Faunal Communities

Fort Riley anticipates **minor**, direct and indirect, short-term and long-term adverse effects to faunal communities in a small, localized area under the Proposed Action. School construction activities would eliminate habitat for urban wildlife by the removal of lawn vegetation and woody landscaping. Faunal species that are not highly mobile could be injured or killed during site-disturbing activities to construct the proposed new middle school. Upon completion of construction activities, the re-vegetation of any exposed soil would lessen the effect of the loss of urban habitat. Fort Riley anticipates **no** effect to T&E species or habitats.

5.2.9. Cultural Resources

Fort Riley anticipates **no** direct or indirect adverse effects to cultural resources under the Proposed Action. No known historic properties exist within the Area of Potential Effect (APE) for the proposed new Fort Riley Middle School.

Fort Riley would implement the following BMPs designed to either reduce or eliminate effects to cultural resources:

- Compliance with Sections 106 and 110 of the NHPA prior to construction activities would ensure avoidance of effects to sites that could potentially exist within the project area. Protection of resources also would adhere to Appendix D, Standard Operating Procedures (SOPs) #1, #8, #9 of the ICRMP and AR 200-1.
- If an unexpected archaeological discovery occurs during construction activities, the Emergency Discovery of Archaeological Properties [Appendix D, SOP 10] as defined in the Fort Riley ICRMP would be followed. If archaeological properties were discovered, excavation and disturbance of the site would cease. The Cultural Resources Management Administrator (CRMA) or staff archaeologist would be notified immediately. The CRMA or staff archaeologist would evaluate the significance of the finding and issue new guidance through the Environmental Division, DPW.
- If, because of construction activities, an important archaeological site, Traditional Cultural Property (TCP), or above ground property is damaged, the incident would be reported and a reasonable effort would be made to identify the responsible parties and to

repair/replace the damaged resources in an effort to mitigate the loss pursuant to SOP #5 of Fort Riley's PA with the SHPO.

- Should Native American human remains, of which the Kaw or Pawnee Nations of Oklahoma may have custody, be inadvertently discovered and unintentionally excavated, procedures as outlined in the Comprehensive Agreements between Fort Riley and the Kaw and Pawnee Nations of Oklahoma would be followed (Appendix F.1 of the ICRMP).
- If there is an inadvertent discovery of human remains determined to be Native American, of which the Kaw or Pawnee Nations of Oklahoma do not have custody, then procedures as outlined in the NAGPRA SOP #1 would be implemented (25 U.S.C. 3002, Sec. 3(d); 43 CFR 10.4; AR 200-1).
- If an intentional archaeological excavation of Native American human remains, associated funerary objects, sacred objects, and/or objects of cultural patrimony would occur, procedures as dictated by NAGPRA, Appendix F.2, NAGPRA SOPs #2 and #3 of the ICRMP would be followed (25 U.S.C. 3002, SEC. 3(c); 43 CFR 10.3; AR 200-1).

5.2.10. Contaminated Sites

Fort Riley anticipates **no** effect to contaminated sites under the Proposed Action. No known contaminated sites exist at the proposed site for the new Fort Riley Middle School.

5.2.11. Asbestos, Lead, and Other Hazardous Materials

Fort Riley anticipates **no** effect from asbestos, lead, or other hazardous materials under the Proposed Action. The proposed demolition of the existing Fort Riley Middle School would generate the most concern with hazardous materials. Project managers routinely encounter asbestos-containing materials or lead-based paint during demolition activities. Given the age of the existing Fort Riley Middle School (constructed in 1963), demolition personnel should expect to encounter asbestos-containing materials, or lead-based paint, or both, and potentially other hazardous materials.

Geary County USD 475 contracted for asbestos inspections of the Fort Riley Middle School in 2009 (OCCU-TEC, 2009). The inspector assumed in 2009 that floor tile, floor tile mastic, ceiling tile, carpet mastic, baseboard and mastic, ceiling texture, drywall and joint compound, fire doors, and boiler insulation were asbestos-containing materials. An earlier contracted laboratory analysis (ACT, 2006) found that boiler insulation in "Boiler A" and "Boiler B" did not contain asbestos. Demolition personnel would use the 2006 and 2009 findings as baseline information and ensure that materials listed in the analyses could be located on-site. Without further testing to verify the 2009 inspection findings, demolition personnel would handle materials "assumed" to contain asbestos as genuine asbestos-containing materials.

In accordance with applicable federal, state, and local regulations, project managers and workers would properly handle and dispose any hazardous materials (or suspected hazardous materials) discovered during demolition activities. Project managers would complete the required Asbestos Demolition Notification Form and submit that completed form to the Bureau of Environmental Health, KDHE at least 10 working days prior to the start of demolition activities. Construction personnel would properly treat any hazardous materials generated or used during construction of the proposed new Fort Riley Middle School.

5.2.12. Protection of Children

Fort Riley anticipates **no** effect to protection of children under the Proposed Action. The proposed construction of the new Fort Riley Middle School would not have disproportionate environmental health or safety effects on children.

5.2.13. Environmental Justice

Fort Riley anticipates **no** effect to environmental justice under the Proposed Action. The proposed construction of the new Fort Riley Middle School would not have disproportionate environmental, economic, social, or health effects on any low-income or minority groups.

5.2.14. Sociological Environment

Fort Riley anticipates **moderate**, direct and indirect, short-term and long-term beneficial effect to the sociological environment under the Proposed Action.

Fort Riley anticipates **minor**, direct and indirect, short-term and long-term beneficial effects to the economies of the region under the Proposed Action. Direct payments to construction contractors would contribute to regional employment, income, and sales volume in the short-term. Secondary sales, employment, and income that could flow from primary sources to communities during construction activity would produce indirect short-term benefits to local and regional economies. Over the long term, periodic maintenance and renovation of the proposed new school would benefit the economies of the region.

Fort Riley anticipates **moderate**, direct, short-term and long-term beneficial effects to demographics under the Proposed Action. Schools are part of the demographic environment discussed under Section 4.14.1.3. The Proposed Action would replace the overcrowded existing Fort Riley Middle School with a new academy appropriately sized for the anticipated annual enrollments over the long term.

Fort Riley anticipates **no** significant effects to visual and aesthetic values, or recreation under the Proposed Action.

5.3. Effects of Alternative 2 – No Action

Under the No Action alternative, Geary County USD 475 would not construct the proposed new Fort Riley Middle School. Fort Riley anticipates that the No Action alternative would yield **moderate** adverse effects to the sociological environment (Table 5-2).

Under the No Action alternative, Geary County USD 475 would fail address the undersized and outdated Fort Riley Middle School. Thus, implementation of the No Action alternative is not favored.

5.3.1. Land Use

Fort Riley anticipates **no** effect to land use under the No Action alternative, because activities that could alter land use would remain at the baseline level.

5.3.2. Infrastructure and Transportation

Fort Riley anticipates **no** effect to infrastructure and transportation under the No Action alternative, because activities that could affect changes would remain at the baseline level.

5.3.3. Safety

Fort Riley anticipates **no** effect to safety under the No Action alternative, because activities that could affect safety concerns would remain at the baseline level.

5.3.4. Noise

Fort Riley anticipates **no** effect to noise under the No Action alternative, because activities with the potential to affect the noise environment would remain at the baseline level.

Table 5-2 Anticipated Effect of the No Action Alternative

	Direct Effects	Indirect Effects	Short-Term Effects	Long-Term Effects
Land Use	0	0	0	0
Infrastructure and Transportation	0	0	0	0
Safety	0	0	0	0
Noise	0	0	0	0
Air Quality	0	0	0	0
Soils	0	0	0	0
Water	0	0	0	0
Flora and Fauna				
Flora	0	0	0	0
Fauna	0	0	0	0
Cultural Resources	0	0	0	0
Contaminated Sites	0	0	0	0
Asbestos, Lead, Other Materials	0	0	0	0
Protection of Children	0	0	0	0
Environmental Justice	0	0	0	0
Environment	--	--	--	--

Effect expected: (+) minor beneficial (++) moderate beneficial (-) minor adverse (--) moderate adverse (0) none

5.3.5. Air Quality

Fort Riley anticipates **no** effect to air quality under the No Action alternative, because activities with the potential to affect air quality would remain at the baseline level.

5.3.6. Soils

Fort Riley anticipates **no** effect to soils under the No Action alternative, because activities with the potential to affect soils and geology would remain at the baseline level.

5.3.7. Water Resources

Fort Riley anticipates **no** effect to water resources under the No Action alternative, because activities that could cause erosion and sedimentation would remain at the baseline level.

5.3.8. Flora and Fauna

Fort Riley anticipates **no** effect to flora and fauna under the No Action alternative, because activities that could that could affect those two resources would remain at the baseline level.

5.3.9. Cultural Resources

Fort Riley anticipates **no** effect to cultural resources under the No Action alternative, because

activities with the potential to affect cultural resources would remain at the baseline level.

5.3.10. Contaminated Sites

Fort Riley anticipates **no** effect to contaminated sites under the No Action alternative, because activities with the potential to affect contaminated sites would remain at the baseline level.

5.3.11. Asbestos, Lead, and Other Hazardous Materials

Fort Riley anticipates **no** effect from asbestos, lead, or other hazardous materials under the No Action alternative, because activities with the potential to affect those materials would remain at the baseline level.

5.3.12. Protection of Children

Fort Riley anticipates **no** effect to protection of children under the No Action alternative, because no activities would occur with the potential for disproportionate environmental health and safety effects to children.

5.3.13. Environmental Justice

Fort Riley anticipates **no** effect to environmental justice under the No Action alternative, because no activities would occur with the potential for disproportionate environmental, economic, social, or health effects on any low-income or minority groups.

5.3.14. Sociological Environment

Fort Riley anticipates **moderate**, direct and indirect, short-term and long-term adverse effect to the sociological environment under the No Action alternative. As discussed under Section 1.3, the existing Fort Riley Middle School is currently 66% overcapacity and projected to be 71% overcapacity by 2016. Under the No Action alternative, the existing Fort Riley Middle School's overcrowded condition would persist and grow worse in the future due to enrollment growth. Given that outcome, Geary County USD 475 would endure a direct, adverse effect. Indirect adverse effects of the No Action alternative could occur if Geary County USD 475 were to have to use district resources programmed for other facilities or programs to address the space or condition shortfalls at the existing Fort Riley Middle School.

5.4. Cumulative Effects

A cumulative effect is defined as an effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place locally or regionally through time.

5.4.1. Alternative 1 – Construction of a New Fort Riley Middle School

The Proposed Action ultimately results from Fort Riley's population growth, an outcome of the 2005 Base Realignment and Closure (BRAC) action and other stationing actions. The Army has completed those major stationing actions at Fort Riley, and completed or funded most of the facilities requirements for the larger Soldier population. A larger population of dependent children accompanies the larger population of Soldiers at Fort Riley, and thus the need for more middle school space.

The Proposed Action is consistent with the land use plans of Geary County USD 475 and Fort Riley. Construction of the proposed Fort Riley Middle School would not likely spur further residential, business, or government development in the immediate area. Rather, the proposed

new middle school would be an outcome of previous growth and development. Therefore, Fort Riley anticipates **minor**, if any, cumulative effects.

5.4.2. Alternative 2 - No Action

Fort Riley anticipates **no** cumulative effects under the No Action alternative.

6.0 CONCLUSION

This EA was conducted in compliance with the NEPA CEQ Regulations, 40 CFR 1500 et seq., and 32 CFR 651 (*Environmental Analysis of Army Actions*). The results of this EA indicate the following conclusions:

This EA analyzed resources potentially subject to an effect by the Proposed Action. The analysis identified **no** significant effects for land use; infrastructure and transportation; safety; noise; air quality; soils; water resources; flora and fauna; cultural resources; contaminated sites; asbestos, lead, or other hazardous materials; protection of children; environmental justice; and the sociological environment. Obtaining and implementing permit requirements along with appropriate BMPs would minimize or avoid potential effects of the Proposed Action.

Fort Riley anticipates that **no** significant environmental effects would result from the Proposed Action, and thus, preparation of an EIS is not required. Therefore, a Finding of No Significant Impact (FNSI) and a Notice of Availability (NOA) have been prepared for this action.

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Appendix A: Acronyms Defined

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
AQCR	Air Quality Control Regions
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
ASO	Army Safety Office
BMP	Best Management Practice
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRM	Composite Risk Management
CRMA	Cultural Resources Management Administrator
CSA	Chief of Staff, Army
CWA	Clean Water Act
DA	Department of the Army
DASAF	Director of Army Safety
dB	Decibel
DBH	Diameter at Breast Height
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DPW	Directorate of Public Works
EA	Environmental Assessment
EIFS	Economic Impact Forecasting System
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FFEJEI	Federal Facilities Environmental Justice Enforcement Initiative
FFEO	Federal Facilities Enforcement Office
FNSI	Finding of No Significant Impact
FY	Fiscal Year
GIS	Geographic Information System
GSO	Garrison Safety Office

ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
KBS	Kansas Biological Survey
KDHE	Kansas Department of Health and Environment
KDWP	Kansas Department of Wildlife and Parks
KNESCA	Kansas Nongame and Endangered Species Conservation Act
KSU	Kansas State University
MPHD	Main Post Historic District
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTMB	Neotropical Migrant Bird
OEA	Office of Economic Adjustment
OSHA	Occupational Safety and Health Act
PA	Programmatic Agreement
PCB	Polychlorinated Biphenyls
ROI	Region of Influence
SA	Secretary of the Army
SAR	Species at Risk
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Officer
SINC	Species in Need of Conservation
SOP	Standard Operating Procedure
TCP	Traditional Cultural Property
T&E	Threatened and Endangered Species
TRI	Toxic Release Inventory
USD	Unified School District
USDA	U.S. Department of Agriculture
USDA-WS	U.S. Department of Agriculture-Wildlife Services
USEPA	U. S. Environmental Protection Agency

USFWS	U. S. Fish and Wildlife Service
VOC	Volatile Organic Compound