

Fort Leavenworth, Kansas
Integrated Natural Resources Management Plan
February 2019 – January 2024



I. In accordance with Title 10, U.S. Code Section 2671; Title 16, U.S. Code, Section 670; and in Public Law 86-797, as amended, the Department of Defense, Department of Interior, and the State of Kansas, through their duly designated representatives whose signatures appear below, approved the following Integrated Natural Resources Management Plan (INRMP) for the protection, development and management of natural resources on the Fort Leavenworth Military Reservation, Kansas.

II. This INRMP will be in full force and effect upon its adoption. Adoption will be indicated by signatures below of duly authorized representatives of the three agencies first above named; will remain in full force and effect as long as permitted by the cited authorities under which it is entered.

III. This INRMP revises the previous *INRMP 2013-2018*, signed in 2014 by duly authorized representatives of Fort Leavenworth, the Kansas Department of Wildlife and Parks and the U.S. Fish and Wildlife Service. This INRMP may be amended or revised by agreement among all parties hereto. Any proposed amendment of this Plan may originate with any of the participating agencies.

HARRY D. HUNG **Date**
Colonel, U.S. Army
Garrison Commander
Fort Leavenworth, Kansas

BRAD LOVELESS **Date**
Secretary
Kansas Department of Wildlife, Parks, & Tourism

JASON LUGINBILL **Date**
Kansas Field Supervisor
U.S. Fish & Wildlife Service

Executive Summary

Purpose

The purpose of this Integrated Natural Resources Management Plan (INRMP) is two-fold. The main purpose of this INRMP is to ensure to guide natural resource management in a manner consistent with and supportive of the Fort Leavenworth military mission and to integrate natural resource conservation measures and Army activities on mission land to be consistent with federal stewardship requirements. The secondary purpose of this INRMP is to provide recreation, education, and consumable forest products for installation personnel and the peoples of the United States.

Environmental Compliance

The Integrated Natural Resources Management Plan is prepared in accordance with several laws and regulations including the Sikes Act Improvement Act (16 U.S.C. 670a., et seq.), Department of Defense (DOD) Instruction 4715.3 (Environmental Conservation Program), and Army Regulation 200-1 (Environmental Protection and Enhancement). The Sikes Act requires that INRMPs include the following:

- No net loss in the capability of military lands to support the mission of the installation
- Habitat improvements for fish and wildlife
Land rehabilitation to support wildlife
- Control of off-road vehicles (ORV)
- Specific habitat improvements and protection for threatened and endangered species
- Wetlands protection, restoration and creation where necessary for support of fish or wildlife

The Sikes Act requires that the United States Fish and Wildlife Service and the Kansas Department of Wildlife, Parks, & Tourism approve the fish and wildlife portions of an INRMP.

Additional legal requirements are contained within:

- National Environmental Policy Act (NEPA)
- Endangered Species Act of 1973
- National Historic Preservation Act of 1966
- Archeological Resources Protection Act of 1979
- American Indian Religious Freedom Act of 1978
- Native American Graves Protection and Repatriation Act of 1990
- Federal Noxious Weed Act of 1974
- Clean Water Act of 1987
- Clean Air Act
- Federal Insecticide, 2003 Fungicide and Rodenticide Act
- Protection of Wetlands 1977, Executive Order 11990
- Migratory Bird Treaty Act

Scope

The INRMP is relevant to all parties internal and external to Fort Leavenworth who are concerned with the proper management of the installation's natural resources. This relevance includes but is not limited to active duty units, National Guard and Reserve Components, directorates, Fort Leavenworth personnel, government agencies, private groups and individuals in the surrounding community. This INRMP is integral to the proper operation of Fort Leavenworth and a functional part of the Fort Leavenworth Installation Master Plan.

Relationship to the Military Mission

The INRMP objective is to protect and conserve the natural resources of Fort Leavenworth while providing an environment to accomplish the military mission, and manage renewable resources in an environmentally sound manner. The plan is intended to provide compatible methods of management for land and grounds maintenance, forestry, fish and wildlife, and outdoor recreation programs.

The primary mission of the Combined Arms Center (CAC) is to provide Army-wide leadership and supervision for leader development and professional military and civilian education; institutional and collective training; functional training; training support; battle command; doctrine; lessons learned; and other specified areas that the TRADOC Commander designates. All of these are focused toward making CAC a catalyst for change and to support the development of a relevant and ready ground force to support joint, interagency and multinational operations anywhere in the world. Fort Leavenworth also provides specialized correctional treatment, care, training, and custodial supervision necessary to prepare prisoners for return to society. The INRMP provides knowledge of the natural resources on the installation, which allows managers to choose locations best suited for a particular activity, continue to minimize adverse impacts, and improve habitat for wildlife. The INRMP will support the military mission by ensuring the natural resources on Fort Leavenworth are managed conservatively. Impacts to air, soil, water, vegetation, wildlife, recreation, and human health and safety will be kept to a minimum through the wise use of the installation's resources.

Partnerships

Fort Leavenworth benefits from the assistance of organizations external to the installation. Major signatory partners in the implementation of the Fort Leavenworth INRMP are the United States Fish and Wildlife Service, and the Kansas Department of Wildlife, Parks, & Tourism.

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A. Management Overview:

- 1. Purpose and Scope** - The Integrated Natural Resources Management Plan (INRMP) is prepared in accordance with several laws and regulations including the Sikes Act Improvement Act (16 U.S.C. 670a., et seq.), Department of Defense (DOD) Instruction 4715.3 (Environmental Conservation Program), and Army Regulation 200-1 (Environmental Protection and Enhancement). The purpose of this INRMP is two-fold. The main purpose being to ensure no net loss of capability of military lands to support the mission of the installation and to integrate natural resource conservation measures and Army activities on mission land to be consistent with federal stewardship requirements. The secondary purpose of this INRMP is to guide natural resource management in a manner consistent with and supportive of the Fort Leavenworth military mission by providing recreation, education, and consumable forest products. These two purposes are relevant to peoples living on Fort Leavenworth and those living in surrounding communities. The INRMP is integral to the proper operation of Fort Leavenworth and a functional part of the Fort Leavenworth Installation Master Plan.

As part of the main purpose of the INRMP, this document is intended to show the good faith efforts of the Army in maintaining habitats for wildlife on the installation and maintaining all wildlife populations. The natural resources program at Fort Leavenworth is designed to keep common species common and to stabilize or increase species in decline. As such this document can serve to limit the designation of critical habitat on Fort Leavenworth for species that are being actively positively managed for.

- 2. Management Philosophy** - The Natural Resources of the installation will be managed in a way that maintains the land for the current and future military missions as well as complies with federal natural resource regulations. This management will include using an ecosystem approach, adaptive management, repairing environmental damage caused by military activities, minimizing impacts and preventing the spread of invasive species from the installation, incorporating ecosystem programs and initiatives from both Kansas and Missouri state natural resource agencies, improving sustainable outdoor recreational opportunities, and increasing awareness of natural resource issues and opportunities of installation residents, employees, and visitors.
- 3. Mission and Natural Resource Management History** - Founded in 1827, Fort Leavenworth is the oldest active military installation west of the Mississippi River in continuous service to the nation. Colonel Henry Leavenworth sited the Fort within 20 miles of the Missouri and Little Platte Rivers as directed by the War Department. Being centrally located on the Missouri River, near the starting points of the Santa Fe and Oregon trails the Fort was instrumental in westward expansion. It served as a base of operations and for training military forces during the Mexican War, Civil War, and the Indian Wars (Freeman et al, 1997).

As a frontier cavalry installation much of Fort Leavenworth was used to pasture and stable horses. This pasture area has dwindled as have horse numbers, now approximately 70 horses are stabled here and graze approximately, 20 acres. Fort Leavenworth has also been home to an Army Disciplinary Barracks (USDB) since 1875. The USDB operated a farm on site to supplement the food supply until 1995. The farm occupied all of the present-day open fallow fields in the uplands and in the floodplain. In the uplands, this caused head cutting erosion which continues to this day. The invasion of honey locust and Johnson grass can also be attributed to the USDB Farm. The cessation of farming operations has allowed the land to revert back to old fields which are used for unit training exercises and other natural resource recreational activities. The cessation of farming did not doom the USDB, as a new facility was built in 2002, and it continues to operate to this day (Freeman et al, 2003).

Almost as old is the installation's history of training America's soldiers. In 1881, General William T. Sherman established the School of Application for Cavalry and Infantry. In 1902, the school became the General Service and Staff College teaching tactics and doctrine. Since the end World War 1, the school has remained open continuously as the Command and General Staff College and teaches Army leaders techniques for service in both peace and war. This education mission has little impact on natural resources besides building siting and the natural resources as part of the historical context for the significant cultural resources here (Freeman et al, 1997).

4. Goals and Objectives

Goal	Objectives	INRMP Section	Targets	Indicators of Target Effectiveness
No net loss in the capability of military lands to support the military mission of the installation.	Manage ESA species and other regulated species to preclude new restrictions.	Section A-F	Conduct bat inventories every 3 years for NLEB	No new restrictions placed on training lands
Establishment of specific natural resource management goals and objectives and time frames for proposed action.	Maintain and restore old growth and second growth floodplain forest, bluff forest, wetlands, and tallgrass prairie.	Section A, D, F	Limit floodplain development, prevent training damage to old growth trees, and replant areas where tree cover is removed	Old growth trees persist in the floodplain and acres of floodplain forest do not decrease
Integration of, and consistency among, the various activities conducted under the plan.	Review all plans so they are compatible with all AR's, DoDI's, and local regulations	Section C	Ensure compliance and that activities are additive to each other	No out of compliance findings and activities have synergy

Fish and wildlife management, land management, forest management, and fish and wildlife oriented recreation.	Plan maintenance and enhancement of native forests and grasslands.	Section D	Fish, wildlife, and plants are enhanced and the local populace enjoys it	Surveys reflect stable or increasing wildlife numbers and recreational users
Fish and wildlife habitat enhancement or modification.	Enhance the floodplain forests, bluff forests, and prairie remnants.	Section D5 and 18	Increase the size and diversity of remnant habitats	Surveys show increased area and diversity of said habitat
Wetland protection, enhancement, and restoration where necessary for support of fish and wildlife.	Maintain and enhance wetlands to include removing invasive species.	Section D3 and 18	Improve and increase wetlands without encroaching on mission activities	Surveys show maintenance or increased wetland acres and wildlife
Maintain public access to the installation for sustainable use of the natural resources in a manner that is consistent with the military mission and the needs of the fish and wildlife resources	Encourage the public to visit the unique natural resource areas and describe the Army's role in maintaining those resources.	Section D14	Inform the public of their ability to access and enjoy the unique natural resources.	Document activities by the general public where public access was granted
Sustainable use by the public of natural resources to the extent such use is not inconsistent with the needs of fish and wildlife resources management.	Provide high quality natural resources-based recreational opportunities at Fort Leavenworth	Sections D5, 6, 11, 12, and 14	Inform the public of their ability to utilize installation natural resources	Document groups, such as fishers and birders, utilizing the installations natural resources
Enforcement of applicable natural resource laws and regulations.	Maintain a Conservation Law Enforcement Presence at Fort Leavenworth	Section D4	Maintain wildlife populations free of illegal activity	A lack of noticeable impacts, caused by illegal activities, to installation wildlife
Review of INRMP as to operation and effect by the parties on a regular basis, but not less often than every 5 years.	Maintain the INRMP as a current living document and ensure partners are still in agreement	Section A5	Maintain buy in of state and federal wildlife agencies	Signed Annual and 5 year reviews

Limitation on designation of critical habitat on any lands owned or controlled by DoD, if INRMP is determined to provide a benefit to the species for which critical habitat is proposed.	Prevent the designation of critical habitat on the installation and adding encroachments to training lands, if listed species are already benefiting from current management	Section A1	Prevent restrictions from being placed on training lands by critical habitat designations	No additional restrictions are placed on training lands by critical habitat designations
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5. Review, Revision, and Reporting – Preparation and implementation of the INRMP is required by the Sikes Act and Army Regulations and thus must be funded according to DoDI 4715.3, OMB Circular A – 106 rules and Department of Army Regulations. An annual review will be undertaken each year by the Natural Resources Specialist and the revision to the INRMP forwarded to Kansas Department of Wildlife and Parks & Tourism (KDWP&T) and the United States Fish and Wildlife Service (USFWS) for their concurrence or comments. Every fifth year a more thorough review will be undertaken by the Natural Resources Specialist and the entire INRMP will be reviewed by other installation branches, KDWP&T and the USFWS and new signatures of concurrence obtained.

The INRMP is a living document so even annual reviews can result in substantial revisions if circumstances dictate. During the annual review processes if either the state or federal game and fish agency feels that the annual changes are substantial then they can consult with the installation for an expanded review and new signatures. The installation can request new signatures of the state and federal agencies during the annual review process too.

B. Installation Overview

1. Maps (See Following Pages)

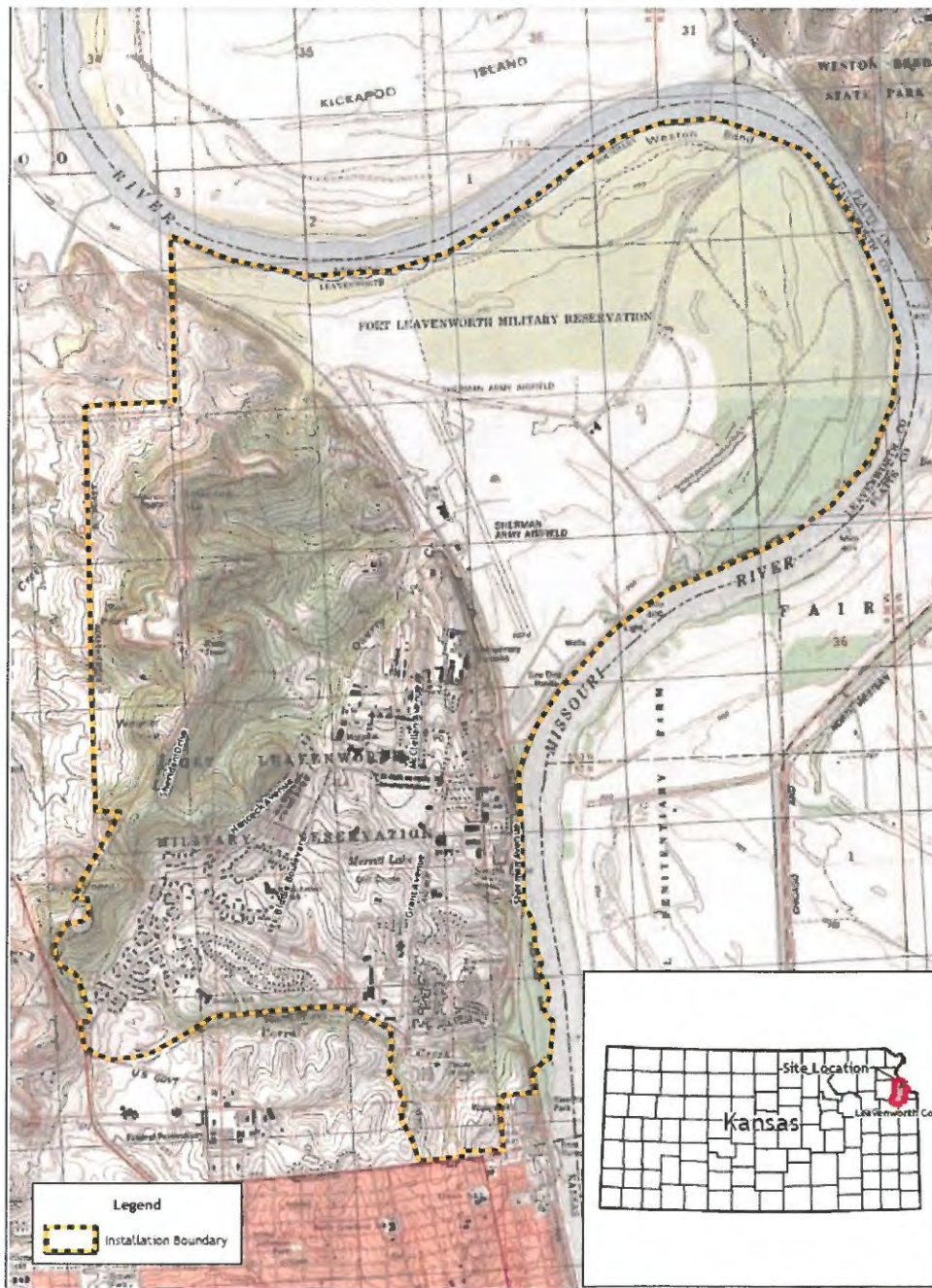
2. General Installation Information

Fort Leavenworth is home to the Command General Staff College (CGSC), the United States Army Combined Arms Center (CAC), and the United States Disciplinary Barracks (USDB). The continuing mission of the CAC and CGSC is to develop and train confident, competent leaders who in turn will train their units to win on the battlefield. These trained leaders will also integrate verified doctrine, new organization, and new equipment into the Total Army as well as the effort of the Army's combat and combat support schools and centers. The continuing mission of the USDB is to provide correctional supervision for military prisoners.

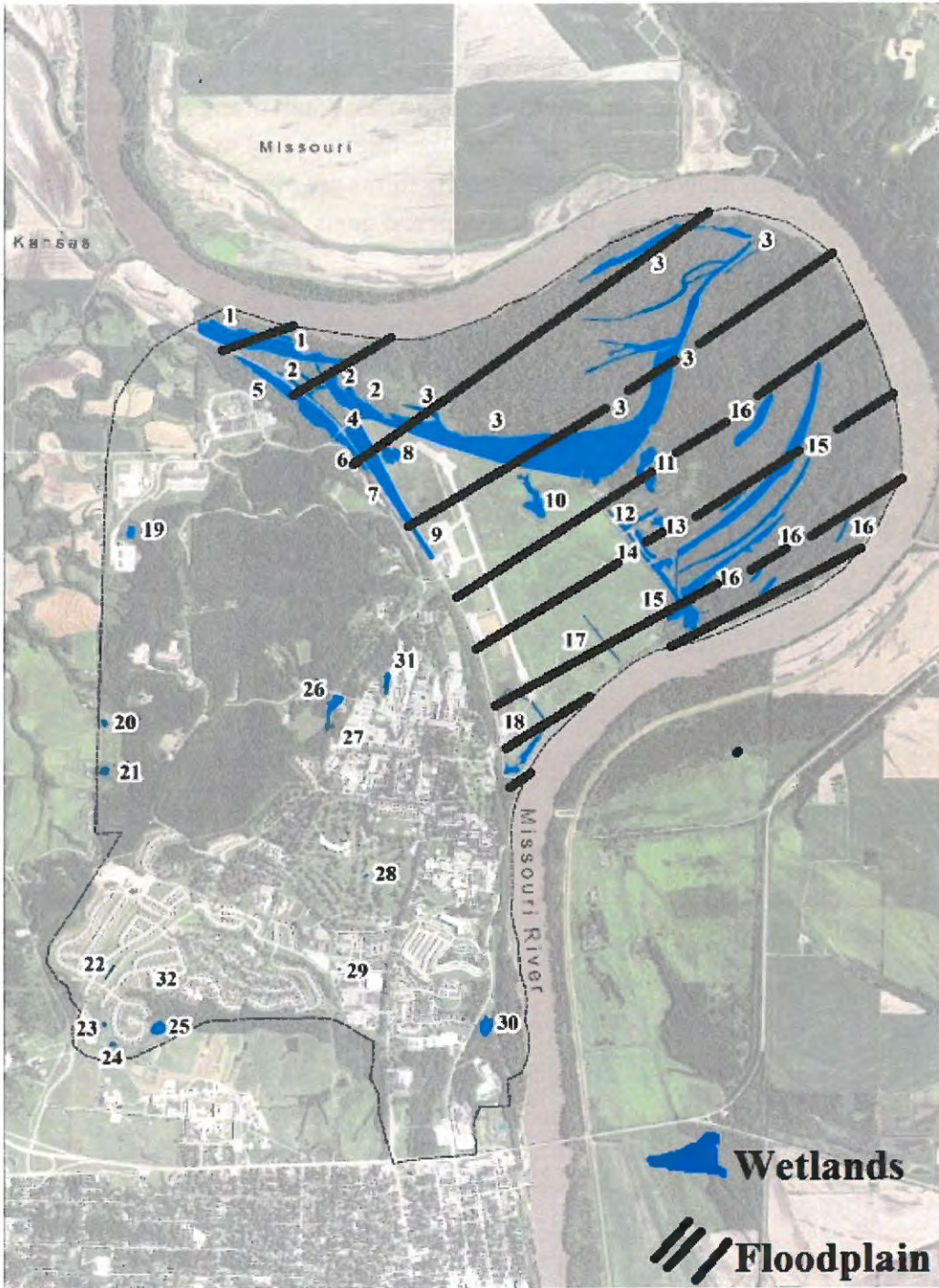
The installation also supports the Sherman Army Airfield which serves the army for landing dignitaries and prisoner transfers. The airfield is also shared with the city of Leavenworth under a joint use agreement. The entire airfield is located in the floodplain of the Missouri River but is protected by a local levee.

3. Regional Land Use and Setting

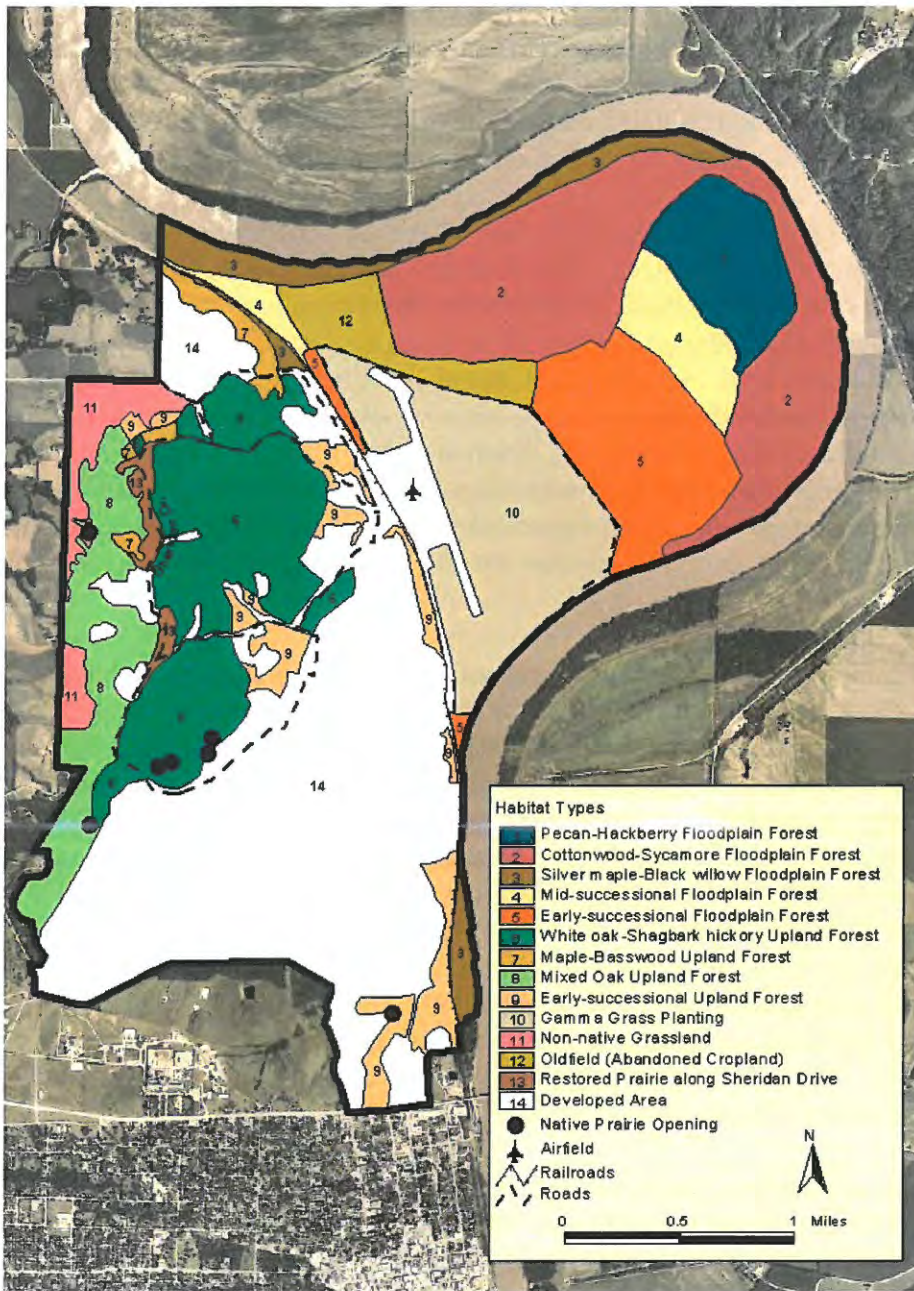
Leavenworth County is primarily agricultural with six relatively small urban municipalities including the largest of Leavenworth and Lansing to the immediate south of the reservation. Agricultural uses are croplands, soybeans, corn and wheat, pastureland, and woodlands. The county is urbanizing with growth in more and smaller hobby farms growing the same things as larger farms but also including some alpacas, llamas, sheep, and goats.



a. Installation Map



b. Constraints Maps



c. Vegetation Map

The area directly south of the installation is the city of Leavenworth and the United States Penitentiary. Immediately to the east is the Missouri River and rural agricultural Missouri. The west and north of the installation is also surrounded by rural agricultural areas but in Kansas.

4. Natural Environment

Being on the state border of Kansas and Missouri both State Wildlife Action Plans (SWAP) were consulted. In the Missouri SWAP, areas adjacent to the installation lie within the Central Dissected Till Plains. The installation contains portions of the Forest and Woodland, Weston/Iatan River Corridor, and a Major River Opportunity Areas (MDC, 2015).

The Kansas SWAP has Fort Leavenworth located in the Tallgrass Prairie Conservation Region and the Missouri River Ecological Focus Area. This plan also discusses the eastern deciduous forest located along the Missouri River Bluffs, of which the installation has 940 acres of this habitat. There are 1,470 acres of floodplain forest with no levee protection that is part of the Missouri River Ecological Focus area. An additional 364 acres of land in varying successional states are also unprotected in the floodplain providing rare river-floodplain connectivity. There is a 632 acre levee protected area that encompasses Sherman Army Airfield. Grassland, comprised of introduced pasture grasses and remnant tallgrass prairie occupies another 71 acres (Rohweder, M.R., 2015). Unimproved or semi-improved lands, that are a mix of trees and grass are scattered across the installation, comprise another 496 acres. Lastly, the cantonment occupies 1,661 acres.

Topographically the installation is comprised of two areas: the floodplain and the uplands. The floodplain is relatively flat with elevations ranging from 760 feet above mean sea level (MSL) at the edge of the Missouri River to 780 feet MSL at the base of the bluffs. The uplands have a more undulating topography comprised of loess hills shaped by the winds and stream eroded valleys. The uplands range in elevations from 780 feet MSL to 1080 feet MSL. Fort Leavenworth has a continental climate characterized by cold winters, hot summers and moderate to low rain fall. Low temperatures in the winter, December thru March, average about 30 degrees F in January and 0 degrees or less being common during the winter months. The summer, June thru September, is as hot as the winters are cold. The average highs are in July and are 79.8 degrees with temperatures over 100 being recorded. The growing season, April 11 thru October 20, is about 180 days. Annual average precipitation is 36 inches with most falling during the growing season. The winter months are the driest, but average snowfall is 18.9 inches. Snowfalls of 10 inches or more are not uncommon.

Prevailing wind direction at Sherman Army Airfield, on Fort Leavenworth, is from the south, followed by north by northwest. Wind velocities are highest in the winter and average surface wind velocity is 7.5 miles per hour but can occasionally exceed 71 miles per hour with passing frontal systems. A significant number of tornadoes occur in the area, primarily between April and August with the majority occurring in May and June.

Previously mentioned loess overlies limestone in much of the upland areas. There is a coal seam that was historically important to the installation and the region also located in the uplands. The floodplain soils are all alluvial and can be changed with every flood event on the Missouri River. Major flooding events in 1993, 2007, 2008, 2010 and 2011 all changed the soil composition of the floodplain soils.

5. Installation History

a. Pre-Military History

Fort Leavenworth is the oldest active military installation west of the Mississippi River in continuous service to the nation. Colonel Henry Leavenworth founded Fort Leavenworth in 1827. Prior to 1827 the area was occupied by the Kansa or Kaw tribe of Native Americans. There was previous occupation by the Kansas City Hopewell and earlier pre-Columbian cultures. The French had Fort De Cavagnial in the area from 1746 to 1764 and Lewis and Clark visited the remains of the fort in 1804, still seeing the remains of the stockade and buildings. By 1827, the area of Fort Leavenworth was a mix of floodplain forest, eastern deciduous forest, and tallgrass prairie. Signs of previous occupation by man were minimal or nonexistent. Major forces shaping the land at the time of the Fort’s establishment would have been flooding on the Missouri River and fire in the grasslands.

b. Installation Military History

Fort Leavenworth achieved early prominence as an administrative and logistical center for frontier activities, because it was centrally located on the Missouri River, near the starting points of the Santa Fe and Oregon trails. During the Mexican War, Civil War, and the Indian Wars, Fort Leavenworth served as a base of operations and for training military forces as the frontier expanded westward. Since 1875 the Fort has also been home to the Army’s Disciplinary Barracks.

Since 1881, Fort Leavenworth has had a pre-eminent role in the training of military leaders. This is when General William T. Sherman founded the School of Application for the Infantry and Cavalry here. In 1902, following the Spanish American War and the Philippine Insurrection, the one year General Service and Staff College opened. The curriculum expanded beginning with the end of World War I and became the United States Army Command and General Staff College. It has remained open continuously educating Army leaders for service in both peace and war. The Disciplinary Barracks also continue to operate to this day. Further historical, and more in depth, information can be obtained from the Fort Leavenworth Integrated Cultural Resources Management Plan.

6. Current Military Missions

Installation Users	Primary Mission	Garrison Resources Utilized
U.S. Army Combined Arms Center (CAC)	CAC teaches the army combined arms tactics on a theater scale, leadership development, and lessons learned and doctrine.	CAC utilizes cantonment building space, residential housing, DFMWR building space, and recreational land

Munson Army Health Center	Munson Army Health Center provides compassionate, efficient and highly reliable healthcare to enable soldier readiness and health promotion to all beneficiaries.	Munson Army Health Center utilizes cantonment building space, residential housing, DFMWR building space, and recreational land
902ND Military Intelligence Group	902nd Military Intelligence Group conducts proactive counterintelligence activities to detect, identify, assess, and counter, neutralize or exploit foreign intelligence entities and insider threats in order to protect Army and designated Department of Defense forces, information and technologies worldwide.	902nd Military Intelligence Group utilizes cantonment building space, residential housing, DFMWR building space, and recreational land
U.S. Disciplinary Barracks (USDB)	USDB incarcerates U.S. military prisoners with long term confinement, conducts correctional and treatment programs to maintain good order and discipline and reduce recidivism upon release; and, on order, provides trained and ready Soldiers to conduct world-wide deployments in support of contingency operations.	USDB utilizes cantonment building space, residential housing, DFMWR building space, and recreational land
Joint Regional Correctional Facility (JRCF)	The JRCF incarcerates U.S. military prisoners for short term confinement, such as pre trial and post trial up to five years. It also conducts correctional and treatment programs to maintain good order and discipline and reduce recidivism upon release; and, on order, provides trained and ready Soldiers to conduct world-wide deployments in support of contingency operations.	JRCF utilizes cantonment building space, residential housing, DFMWR building space, and recreational land

C. Integration Overview
1. Authorities and Responsibilities

Law/Reg/MOU	Law/Reg/MOU Title	Responsible/ Administering Agency(s)	Responsible Directorate & Personnel Position Title(s)
7 U.S.C. §136 <i>et. seq.</i>	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended	Environmental Protection Agency	DPW - Neil Bass – Natural Resources Specialist DPW – John Yunker - Entomologist
7 U.S.C. § 426-426b	Animal Damage Control Act	U.S. Department of Agriculture	DPW - Neil Bass – Natural Resources Specialist ID – Training - John McCoy – Airfield Manager
7 U.S.C. § 2801	Federal Noxious Weed Act of 1974	Secretary of Agriculture	DPW - Neil Bass – Natural Resources Specialist DPW – John Yunker - Entomologist
7 U.S.C. §4201 <i>et. seq.</i>	Farmland Protection Act	Natural Resource Conservation Service	DPW - Neil Bass – Natural Resources Specialist
10 U.S.C. §2665	Timber Sales on Military Lands	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
10 U.S.C. §2671	Hunting, Fishing and Trapping on Military Lands	Department of Defense	DPW - Neil Bass – Natural Resources Specialist

16 U.S.C. §§668-668d	Bald & Golden Eagle Protection Act	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §670a-f	Sikes Act	U.S. Fish & Wildlife Service, State DNR	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §701, 702	Lacey Act of 1900	Secretary of the Interior	DPW - Neil Bass – Natural Resources Specialist DES – Jesse Brown – DES CLEO
16 U.S.C. §703 <i>et. seq.</i>	Migratory Bird Treaty Act, as amended	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §718-718k	Migratory Bird Hunting Stamp Act	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §§1241-1249	National Trails Systems Act of 1986	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §1531-1543	Endangered Species Act of 1973, as amended	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §1601 <i>et. seq.</i>	Forest and Rangeland Renewable Resources Planning Act of 1974	Secretary of Agriculture	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §2001	Soil and Water Conservation Act	Secretary of Agriculture	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §2901 – 2911	Fish and Wildlife Conservation Act of 1980	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist

16 U.S.C § 3901-3932	Emergency Wetlands Resources Act of 1986	Secretary of the Interior	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. 4301 <i>et. seq.</i>	Cave Resource Protection Act	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
16 U.S.C. §460I	Outdoor Recreation on Federal Lands	Department of Defense	DPW - Neil Bass – Natural Resources Specialist DFMWR – Jeff Honey – Outdoor Recreation Director
16 U.S.C. 4701–4751	Aquatic Nuisance Prevention and Control	Department of Defense, State DNR, & International Partners (As Applicable)	DPW - Neil Bass – Natural Resources Specialist DPW – John Yunker - Entomologist
33 U.S.C. §401 <i>et. seq.</i>	Rivers and Harbors Act of 1899	U.S. Army Corps of Engineers	DPW - Neil Bass – Natural Resources Specialist
33 U.S.C. §1251 <i>et. seq.</i>	Clean Water Act	Environmental Protection Agency	DPW – Patrick Udeh – Environmental Resources Specialist
33 U.S.C. § 1251-1376	Federal Water Pollution Control Act of 1977 (Clean Water Act), as amended	Environmental Protection Agency	DPW- Patrick Udeh- Environmental Engineer
42 U.S.C. § 7401-7642	Clean Air Act	Environmental Protection Agency	DPW - Neil Bass – Natural Resources Specialist
43 U.S.C. §315 <i>et. seq.</i>	Taylor Grazing Act	Bureau of Land Management	DPW - Neil Bass – Natural Resources Specialist

43 U.S.C. §1701	Federal Land Policy and Management Act of 1976	Department of Defense	DPW – Neil Bass – Natural Resources Specialist
43 U.S.C. § 1701 et. Seq., 18 U.S.C. §641, and 18 U.S.C. §1361	Protection of Fossils on Federal Lands	Department of Defense	DPW – Elizabeth Jackson – Cultural Resources Specialist
U.F.C. 3-210-10	Low Impact Development	Department of Defense	DPW – Tom Dow – Civil Engineer
32 C.F.R. 190	Natural Resource Management Program for the Department of Defense	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
32 C.F.R. § 989	Environmental Impact Analysis	Department of Defense	DPW-Debbie Hazelbeck-Environmental Resource Specialist
50 C.F.R. 10-16	Taking, Possession, Transportation, Sale, Purchase, & Barter, Exportation & Importation of Wildlife & Plants	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist DES – Randall Collins – DES CLEO
50 C.F.R. 13 para 12-4	Permit Procedures of the USFWS	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist
Executive Order 11988	Floodplain Management, May 24, 1977	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
Executive Order 11989	Off-Road Vehicles on Public Lands, May 24, 1977	Department of Defense	DPW - Neil Bass – Natural Resources Specialist DES – Jesse Brown – DES CLEO

Executive Order 11990	Protection of Wetlands, May 24, 1977	Department of Defense, U.S. Fish & Wildlife Service, & U.S. Army Corps of Engineers	DPW - Neil Bass – Natural Resources Specialist
Executive Order 12962	Recreational Fisheries, June 7, 1995	Department of Defense & State DNR	DPW - Neil Bass – Natural Resources Specialist
Executive Order 13112	Invasive Species, February 3, 1999	Department of Defense, State DNR, & other Federal Agencies (As Applicable)	DPW - Neil Bass – Natural Resources Specialist
Executive Order 13186	Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist
Executive Order 13693	Planning for Federal Sustainability in the Next Decade, March 19, 2015	Department of Defense, State DNR, & other Federal Agencies (As Applicable)	DPW- Bill Bringhurst- Energy Engineer
Public Law 91-190, 42 U.S.C. §4321-4347	National Environmental Policy Act (NEPA) of 1969, as amended	Department of Defense	DPW - Neil Bass – Natural Resources Specialist DPW – Debbie Hazelbeck – Environmental Protection Specialist
P.L. 94-265, as amended at P.L. 109-479	Magnuson-Stevens Fishery Conservation and Management Act	Regional Fishery Management Councils (both Federal and State Agencies)	DPW - Neil Bass – Natural Resources Specialist

P.L. 102-440, Title 1, signed October 23, 1992 (106 Stat. 2224)	Wild Bird Conservation Act	U.S. Fish & Wildlife Service	DPW - Neil Bass – Natural Resources Specialist
P.L. 107-314	National Defense Authorization Act for Fiscal Year 2003	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
P.L. 108-136	National Defense Authorization Act for Fiscal Year 2004	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
Sikes Act Tripartite MOU	Cooperative Integrated Natural Resource Management Program on Military Lands	Department of Defense, U.S. Fish & Wildlife Service, & Association of Fish & Wildlife Agencies	DPW - Neil Bass – Natural Resources Specialist
DoD 5400.7-R	DoD Freedom of Information Act Program, September 4, 1998	Department of Defense	IMLV-HRA-F - Teresa Dickerson – Privacy Act Officer
DoD Financial Management Regulation 7000.14-R, Vol. 11A, Ch.16	Accounting for Production and Sale of Forest Products, August, 2002.	Department of Defense	DPW - Neil Bass – Natural Resources Specialist DRM – Kathy Sullins – Budget Analyst
DoD & USFWS MOU	Promote the Conservation of Migratory Birds	Department of Defense	DPW - Neil Bass – Natural Resources Specialist
DoD & the Pollinator Partnership MOU	Conservation of Pollinators MOU	Department of Defense & The Pollinator Partnership	DPW - Neil Bass – Natural Resources Specialist
DoDI 6055.06	DoD Fire and Emergency Services Program, December 21, 2006	Department of Defense	DES – Chief Maciorowski – Fire Chief

2. External Stakeholders

External Stakeholder	Type	Document/Agreement & Hyperlink	Brief Description
Kansas Department of Wildlife, Parks, and Tourism	Required Partnership	SWAP http://ksoutdoors.com/Services/Kansas-SWAP	INRMP developed and updated in coordinated with State to address SWAP goals where mutually agreed.
USFWS local field office	Required Partnership	Fish and Wildlife Coordination Act	INRMP developed and updated in coordinated with USFWS local office to address Recovery goals where mutually agreed.

3. Internal Integration

a. Installation Plans

Responsible Directorate	Installation Plan (Date of Approval)	Personnel Position Title(s)	Integration Methods	Contact Frequency
DES	Directorate Of Emergency Services SOP #2.35 Installation Conservation Law Enforcement Operations (2015)	Jesse Brown – DES CLEO	Natural Resources Committee Meeting	Quarterly
DPW - Environmental	EIS/PEIS (2016)	Debbie Hazelbeck – Environmental Specialist	Staff Meeting	Weekly

DPW – Natural Resources	Endangered Species Management Component (2018)	Neil Bass – Natural Resources Specialist	Natural Resources Committee Meeting Staff Meeting	Quarterly Weekly
DPW	Erosion and Sediment Control Component (2018)	Tom Dow – Environmental Engineer Neil Bass – Natural Resources Specialist	As needed face to face meetings, e-mail, and phones	Intermittent
DPW – Master Planning	Installation Master Plan (2017)	Vacant – Master Planner	As needed face to face meetings, e-mail, and phones	Intermittent
PAIO	Installation Strategic Plan (In Review)	Vacant – Plans Specialist	As needed face to face meetings, e-mail, and phones	Intermittent
DPW	Integrated Cultural Resources Management Plan (2018)	Elisabeth Jackson – Cultural Resources Manager	As needed face to face meetings, e-mail, and phones	Intermittent
DPW – Entomology	Integrated Pest Management Plan (2016)	John Yunker - Entomologist	As needed face to face meetings, e-mail, and phones	Intermittent

DPW – Natural Resources	Integrated Wildland Fire Management Plan (2016)	Neil Bass – Natural Resources Specialist	Natural Resources Committee Meeting Staff Meeting	Quarterly Weekly
DPW – Natural Resources	Invasive Species Management Component (2018)	Neil Bass – Natural Resources Specialist	Natural Resources Committee Meeting Staff Meeting	Quarterly Weekly
DPW – Master Planning	Real Property Master Plan 4 Components: Vision Plan 2015 Installation Planning Standards 2015 Long Range Component Plan 2016 Capital Investment Strategy 2017	Vacant – Master Planner	As needed face to face meetings, e-mail, and phones	Intermittent
ID-Training	WASH Plan (if applicable) (2015)	John McCoy – ID Training	As needed e-mail, phone, and in person meetings	Intermittent

b. Installation Programs

Responsible Directorate	Personnel Position Title(s)	Communication Methods	Contact Frequency
DPTMS	Range Officer	Range Meeting	Quarterly
DPTMS	Scheduler	Range Meeting	Quarterly

DPTMS	Range Planner	Range Meeting	Quarterly
DPW	Master Planning	Informal	Monthly
DPW	Env. Compliance	Staff Meeting	Weekly
DES	Fire Chief	Informal	Intermittent
DES	CLEO	Nat Res Committee	Quarterly
DFMWR	Chief Recreation Officer	Nat Res Committee	Quarterly

D. Program Elements

1. Threatened, Endangered, and Species of Concern for both State and Federal Listings.

There are two federally threatened plant species, which may occur in Leavenworth County. They are: *Asclepias meadii* (Mead's milkweed) and *Platanthera praeclara* (western prairie fringed orchid). However, after several visits by the State Biological Survey Herbarium, University of Kansas, it has been determined that these plants are not present on Fort Leavenworth.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Botanical Surveys conducted as part of the Natural Areas Inventory of Fort Leavenworth.	<p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003</p> <p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. 1997</p>	Sporadic, nothing has occurred to indicate the above species have moved into the area.	11/2003

The NLEB was captured on Fort Leavenworth in 2002, it was listed, as Federally Threatened under the ESA, in 2015. Follow up bat surveys, acoustic and mist netting, conducted in 2016 and 2017 failed to capture any NLEB. Acoustic sampling may have detected NLEB during both years. Future detection of NLEB or other ESA listed species could place constraints on the Army but at this time there are currently no such listed species known from the installation.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Bat surveys were conducted as part of an IMCOM wide survey of federally listed bat species.	Mist Net Survey For Threatened and Endangered Bats at Fort Leavenworth, Kansas. December 2016. A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003	Sporadic, surveys were conducted in 2003 and then more rigorous surveys were conducted in 2016 and 2017	05/2017

The least tern and piping plover are two federally listed bird species, Endangered and Threatened, respectively. They could stop over at Fort Leavenworth on migration. No habitat favored by these two birds is found on the installation and any occurrence would be transient.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Bird surveys were conducted as part of the Natural Areas Inventory of Fort Leavenworth.	A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003.	Never specifically surveyed for on the installation. Surveys, by others on the Missouri River have not found these birds in the area.	NA

The American Burying Beetle was added the Federal Endangered Species List in July 1989. It was surveyed for at Fort Leavenworth in 1996 and 2002. No American Burying Beetles were found. None of this species has been found in Leavenworth County nor any of the surrounding counties.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Carrion Beetle surveys were conducted as part of the Natural Areas Inventory of Fort Leavenworth.	<p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003.</p> <p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. 1997.</p>	Sporadic, surveys were conducted in 1996 and 2003.	09/2003

The Eastern Spotted Skunk is currently, May 2018, under a twelve month review by the USFWS. It is also a Kansas state listed. They have been found in Leavenworth County in the past but were not discovered during survey efforts in 1996 nor 2003.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Mammal Surveys were conducted as part of the Natural Areas Inventory of Fort Leavenworth.	<p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. 1997</p> <p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003</p>	Sporadic, surveys were conducted in 1996 and 2003	2003

The Monarch Butterfly is also currently, May 2018, under a twelve month review by the USFWS. They have been observed on Fort Leavenworth as recently as September 2018.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Insect Surveys were conducted as part of the Natural Areas Inventory of Fort Leavenworth.	Monarch Butterflies are currently present on Fort Leavenworth September 2017.	Sporadic, surveys were conducted in 1996 and 2003. Monarchs are regular visitors on installation, anecdotal observations.	05/2017 05/2018

There are several State Listed Species in Need of Conservation on or near the installation. These species are all lumped in the following listing. There is no legal mandate for the U.S. Army to protect these species nor their habitats but as part of a good neighbor policy and in an effort to preclude future federal listing and to comply with the Sykes Act these species are managed for and protected when possible.

Smooth Earth Snake have been documented from Leavenworth County and Redbelly Snakes from close to the county line both to the west and north. Numerous herp surveys known to inhabit open sandstone woods, rocky hillsides in moist woodlands, deciduous forests, wooded urban areas, woodland edge situations, open brushy woodlands without a continuous leaf canopy, and abandoned fields. Fort Leavenworth has most of these habitats.

The Southern Bog Lemming was listed in Kansas in 1987. Fort Leavenworth has habitat for the species. No bog lemmings have been captured in past survey efforts.

The Black Tern was listed in 1993. It has not been documented nesting in Leavenworth County but could be a migrant through the installation. There is not a large quantity of nesting habitat available on the installation.

The Short-eared Owl is a statewide migrant that was listed in 1993. Few nesting pairs are thought to occur in the state and none have been documented from the installation.

The Highfin Carpsucker was listed in 1987. Its preferred habitat does not exist on the installation. No previous sampling, on installation, has captured this species.

The Timber Rattlesnake was listed in 1993. Its preferred habitat occurs on installation. A Timber Rattlesnake has not been observed on the installation in decades.

The Southern Flying Squirrel was listed in 1987. Habitat for this species occurs on the installation. Surveys in 2003 also verified the squirrel on the installation at that time. There is currently a nest box survey taking place, as of September 2017.

The Eastern Hognose Snake was listed as Threatened in 1987 but down listed to SINC in 1993. There is sandy habitat that is preferred by the species. Its proximity to the Missouri River may make the habitat on the installation less than optimal.

The Bobolink and Henslow Sparrow were listed in 1987. The tallgrass habitats preferred by these birds are very marginal at the installation. Encroachment of trees and invasive Species into the grasslands of the installation have made the habitat here less than optimal.

Yellow-throated and Cerulean Warblers and Eastern Whip-poor-will, were all listed in 1987, and have been documented from the installation in past surveys. The most recent known detection of this species occurred as follows: Yellow-throated Warbler, 2017; Cerulean Warbler, 2018; and Whip-poor-will 2002. They all depend on deciduous forest habitat, of which the installation has an abundance.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
The Natural Areas Inventory of Fort Leavenworth in 1996 and 2003 would have included general searches for all of these species. Other random and current surveys have been done detecting some of these species on the installation.	<p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. 1997</p> <p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003</p>	Sporadic, surveys were conducted in 1996 and 2003. Surveys continue to be conducted at the installation, for most of these species.	<p>08/1997</p> <p>12/2003</p> <p>Anecdotal Observations from 09/2017</p>

2. The Bald and Golden Eagle Protection Act.

Bald eagles regularly use the bottomland timber during the winter. The large trees along the river are used as perches for various reasons by the eagles. Similar timber at Weston Bend State Park, north of the installation on the opposite side of the river, is presently being used as a nesting site for bald eagles.

Golden Eagles, while much more common in western Kansas are known to move as far east as western Missouri in the winter. Around Fort Leavenworth they would occupy similar habitats with a little more terrestrial focus than the bald eagle.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Surveys were conducted as part of the Natural Areas Inventory of Fort Leavenworth 1997 and 2003. Previous winter aerial counts were conducted by KDWP&T in 1991 through 1993.	<p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. 1997</p> <p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003</p>	Surveys were conducted in 1991, 1992, 1993, 1996 and 2003. Bald eagles are regular visitors to the installation, and anecdotal observations persist to the present.	<p>08/1997</p> <p>12/2003</p> <p>Anecdotal Observations from 07/2017</p>

3. Wetlands and Deep Water Habitat Management

There are 332.1 acres of wetlands and 12.1 acres of deep water habitat. Most of the deep water is comprised of the 5 and 4.5 acre Merritt and Smith lakes, respectively. The additional acres are a 1.5 acre old farm ponds and two scour holes, 0.5 and 0.6 acres, in the Missouri River floodplain.

No real management of the wetlands is currently occurring on the installation. The wetlands fluctuate with the local hydrologic cycles and beaver manipulation. In accordance with state and federal laws, Executive Orders, directives and rules, wetlands are protected on installations to the greatest extent possible. Future management options for wetlands include enhancing or constructing some local wetlands to be used as a mitigation bank for the installation. Adding greater connectivity to the river and its floodplain wetlands to provide more inundation time. Working with a partner to provide for a pump to mechanically fill some wetland areas.

Some active management does occur on the deep water habitats but this is only on the two lakes. In 2017, Merritt Lake was treated with diquat to control duckweed and filamentous algae. Smith Lake could at times receive similar treatment. There is also the stocking of fish by the KDWP&T. The state stocks the lakes throughout the summer with channel catfish, and then to a lesser extent bluegill and largemouth bass. The Rod and Gun Club has also added fish attractant structures to the lakes. Supplemental food is provided to the fish because of high stocking densities.

Both lakes have been recently renovated, 2014 for Smith and 2016 for Merritt. This renovation included draining and excavation, with the removal of thousands of cubic yards of sediment. The excavation deepened both lakes by more than 20 feet in depth.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
A wetland survey was completed for the installation in March 2016. The deep water habitat was inventoried using aerial photos in September 2017.	Wetlands Delineation Report. March 2016. Wetlands Delineation Report. June 1995.	Comprehensive Surveys were conducted 1995 and 2016. Project specific delineations are done on an as needed basis	March 2016

4. Law Enforcement of Natural Resources Laws and Regulations

As of November 2018, the current Lieutenant of the Conservation Law Enforcement Officers on Fort Leavenworth has received the Army sponsored CLEO training. The other two CLEO have been trained by the lieutenant. These three part time Directorate of Emergency Services traffic officers are assigned to work with the Natural Resources Specialist and can enforce natural resource laws and regulations. Enforcement of natural resource laws and regulations relies on vigilant users and natural resource staff, which must report violations to the assigned traffic officers. The Conservation Officers of the KDWP&T can also enforce state game laws on the installation but must first coordinate with the Provost Marshall's Office.

5. Fish and Wildlife Management

The Natural Resources Specialist confers with federal and state fish and wildlife management professionals on fish and wildlife issues. All hunting and fishing activities are managed through DFMWR and an installation appointed Hunting and Fishing Coordinator. These activities are coordinated with the Natural Resources Specialist and harvest information shared in order to monitor game species population levels.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
Fish and wildlife surveys have been completed in previous natural areas inventories in 1996 and 2003. As well as some limited surveys occurring in 2015, 2016, and 2017.	<p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. 1997</p> <p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003</p>	<p>The most comprehensive surveys were conducted 1996 and 2003. Sporadic surveys were conducted 2015 to 2017 and larger studies are funded for 2018.</p>	Funded projects in 2018 and sporadic surveys on going.

a. Recreation

Most unimproved grounds on the installation have a recreation designation placed on it by DFMWR. The unimproved areas are hunting areas, interspersed by multi use trails, scout recreation and camping areas, or part of an outdoor adventure race series. The few off limits areas are associated with the Disciplinary Barracks, housing on the west side of the installation, Kinder Range, the Boy and Girl Scout camps and the Recreational Vehicle Storage lot.

Most people have access to the installation if they go through the vetting process at the Visitor Center.

Eligibility Category	Hunting	Fishing Merritt and Smith Lakes	Fishing Other Locations	Archery 3-D Shoot	Brunner Range
Active Duty Military	yes	yes	yes	yes	yes
National Guard and Reserves	yes	yes	yes	yes	yes
Active Duty Military Dependents and Family Members (w/DOD-ID**)	yes	yes	yes	yes	yes
Military Retirees (w/DOD-ID)	yes	yes	yes	yes	yes

Department of Defense Civilian Retirees (w/DOD-ID)	no	yes	no	yes	yes
Employees of Installation Prime Contractors (w/DOD-ID)	no	yes	no	yes	yes
General Public	no	yes	no	yes	yes

b. Fisheries Management

The installation DFMWR and Natural Resources Specialist coordinate with KDWP&T in order to be a part of the Kansas Community Lakes Program. As part of this program the, KDWP&T provides a fisheries biologist to monitor fish populations in Merritt and Smith Lakes. They also stock the lakes on a regular rotation.

The channel catfish fishery is managed as a put and take fishery. The only license requirements for this is a Kansas state fishing license. Creel limits on the installation are more restrictive than state regulations and can be found in CAC & FT Leavenworth Regulation 200-3. All fishing regulations can be found in 200-3.

A creel survey was conducted by a volunteer in 2016. This survey and other anecdotal observations showed that little fishing occurs on the installation before March or after September and most fishers utilize catch and release. Very little fishing occurs at locations other than Merritt and Smith Lakes.

c. Game Management

The installation DFMWR and Natural Resources Specialist coordinate with the KDWP&T on administering installation hunting. A special timing for deer rifle season is coordinated annually with KDWP&T for Fort Leavenworth. The timing is selected in a way that minimizes the impact of hunting on day to day operations. Rifle deer season on the installation is stretched out over holidays and weekends for the same number of days as the statewide season, which runs consecutively.

The same two groups are also responsible for establishing the CAC & FT Leavenworth Regulation 200-3. This regulation establishes some requirements, such as weapon choice, that are more restrictive than the statewide Kansas hunting regulations. If not listed in 200-3 then the hunting regulations follow statewide regulations.

Hunting regulation enforcement falls on three part time positions in DES. These positions can work in coordination with KDWP&T wildlife conservation officers if enforcement actions are required. All state hunting licenses and special tags requirements are in effect for the installation as well.

Harvest data is available from 2014 until the present. The limited harvest data indicates at worst a steady population. Efforts are under way to increase data collection of harvested animals and to conduct other surveys that will provide a valid population estimate for the installation.

The DFMWR and the Natural Resources Specialist collaborate in the hunting operations. DFMWR has delegated most of the operations of hunting and fishing programs over to the, all volunteer, Fort Leavenworth Rod and Gun Club (Rod and Gun). Rod and Gun administer hunting briefings, check in stations, and deer stand drawings. The Natural Resource Manager provides input to the Rod and Gun club on management concerns and issues.

d. Non-Game Management

Species	Data Collected	Frequency of Collection	Last Update
Herptiles	Presence/Absence and Trend	Annually	05/2017
Birds	Presence/Absence and Trend	Annually	09/2017

Herptile surveys are promoted every spring to the Fort Leavenworth community. The Kansas Herpetological Society (KHS) last conducted these surveys in 2003. Occasional coordination with KHS would provide a larger scale and more thorough survey.

Five Kansas Species in Need of Conservation the spring peeper, northern crawfish frog, timber rattlesnake, smooth earth snake and the redbelly snake could occur on Fort Leavenworth. All three snake species have adequate habitat on the installation. Both frog species are known from adjacent counties but have not been documented on the installation in decades. These annual surveys plus additional, more targeted, surveys have failed to locate these species.

The unique quality of the forested habitat provided at Fort Leavenworth makes it a favorite area for local birders. Several birders partner with the Natural Resource Specialist and provide their bird lists to the installation. This provides multiple data points from many different areas and makes birds the most recorded group of animals on the installation.

Boy and Girl Scout projects have been used to provide survey data and watchable wildlife. Four turtle basking platforms have been placed in Merritt and Smith Lakes and have high visibility. Eighteen flying squirrel nest boxes have also been placed in areas that were known to have flying squirrels in the past. Lastly, bird watching tours are sometimes provided for groups such as local Audubon Chapters.

6. Forestry Management

The Natural Resources Specialist confers with other federal, state, and university foresters on issues concerning forestry. A comprehensive forestry survey has not been

conducted in the past 40 years, but virtually no marketable timber occurs on the installation. Most timber is suitable only for firewood or pallet wood. The first is sold but that type of forestry requires very little to no forestry management.

Firewood Sales are very small usually amounting to just a few hundred dollars a year. This money is collected by the Environmental Division and then submitted to Conservation Reimbursable and Fee Collection Program. The installation receives a few hundred dollars each year from the Conservation Reimbursable and Fee Collection Program to enhance forestry operations and applies annually for additional funds through the Forestry Reserve Account.

Recent, in the past 5 years, invasion by the Emerald Ash Borer (EAB) has led to changes in the composition of the urban forest at Fort Leavenworth. An inventory, done in 2016, found 383 ash trees. All of which will eventually be killed by the EAB.

Approximately 10 of these trees, large ash trees in the historical district, were selected to receive Triage. Triage is an insecticide that is injected into the tree and prevents the EAB from infesting the tree. The chemical is too expensive to treat all the ash trees but has for the past 3 years preventing the loss of the selected and treated trees. All other ash trees are being removed and replaced with tree species not susceptible to EAB.

7. Vegetative Management

The Natural Resources Specialist confers with other federal, state, and university specialists on vegetative management issues.

Data Description	Information Form & Hyperlink	Frequency of Collection	Last Update
General forestry and vegetation surveys have been conducted as part of the Natural Areas Inventory of Fort Leavenworth.	<p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. II. 2003</p> <p>A Natural Areas Inventory of the Fort Leavenworth Military Reservation, Leavenworth County, Kansas. 1997</p>	Sporadic, there have been no occurrences to alter large areas of forest or vegetation on the installation since 2007.	11/2003

8. Migratory Birds Management

The Natural Resources Specialist confers with other federal, state and university specialists on issues that concern migratory bird management. As of July 2018, a group of volunteers survey bird species presence or absence and provides their data to the Natural Resources Specialist. See 5.d.

9. Invasive Species Management

The Natural Resources Specialist confers with other federal, state, and university specialists on issues of invasive species management. A closer coordination occurs between the Natural Resources Specialist and DPW. This includes direct control actions coordinated with Entomology, as well as review of species being purchased by Roads and Grounds, and review of the Installation Design Guide plant list which is used for landscaping and new construction projects. These actions help prevent future introductions.

As a DoD Certified Pesticide Applicator, the Natural Resources Specialist uses chemicals to address invasive species issues. Pesticide application is done in coordination by DPW Entomology and Natural Resources. The quantity of the actions taken is reliant on manpower and funding for such actions.

In order to secure funding, definitively, for invasive species control grant opportunities will be pursued. Two such funding sources are the Legacy Program and the National Public Lands Day grants. Opportunities to coordinate regular installation activities and utilize them for invasives control will also be explored. Examples of this would be adjusting annual mowing of certain landfills in order to prevent teasel from seeding or changing restrictions against prescribed burning on same landfills. Utilizing other mowing activities to target and prevent the seeding of other invasives.

The Federal Noxious Weed Act and E.O. 13112 require federal agencies to control noxious and invasive weeds on federal properties. In addition Kansas has a Noxious Weed Law, Kansas Statutes Annotated 2-1314, that requires control of listed weeds, of which Fort Leavenworth has five: field bindweed, Canada thistle, musk thistle, Johnson Grass, and sericea lespedeza.

Invasive species control and eradication of the nonnatives will be the goals of the natural resources staff. The strategy to attain these goals will be to use Natural resources, Entomology, and Roads and Grounds staff to identify invasive species and then to alert their chain of command to the presence of invasives. Then control will utilize Integrated Pest Management principles which will include education, cultural control, mechanical control, and chemical control.

Johnson Grass is the installations biggest invasive species threat. It currently occupies approximately 500 acres in old fields, native prairies, and roadsides. This includes over 300 acres in Area F, see Map in Appendix 9, and in Area E1. The remaining acres are

scattered in small pockets under an acre in size. Some even existing in the cantonment. This species will be controlled by mowing before seed formation, hand pulling, and chemical treatment using glyphosate. The above techniques will be used on small dispersed patches of Johnson Grass. Ag leasing, with Round-Up Ready crops, may be a solution for the infestations in Area F.

Sericea lespedeza is present in a small infestation along Sherman Avenue in Area E1. It is less than an acre in size. This is a small infestation that can still be managed. Management of *sericea* is still feasible using mowing before seed formation, hand pulling, and chemical treatment using glyphosate and Remedy.

Field bindweed, Canada thistle, and musk thistle occur throughout the installation but as single plants or small groups of plants, all less than an acre. These state noxious weeds are controlled with 2, 4 – D, mechanical and cultural control.

Other invasive weeds that are to be controlled on the installation are: teasel, Tartarian honeysuckle, Autumn Olive, fescue, crown vetch, garlic mustard, poison ivy, and locust trees.

Teasel is the most visible and recognizable invasive on the installation. It currently covers approximately 50 acres in Areas F, E, E1, and D. These are all old fields or disturbed areas. In Area E teasel is being controlled by mechanical means of digging rosettes and cutting the stalks before seed set. Chemical control will take place using glyphosate to treat rosettes after warm season grasses have gone dormant. Area F should be mowed before seed set and chemical treatment using 2, 4 – D or glyphosate. Ag leasing in Area F could be a solution for teasel also.

Tartarian honeysuckle is probably the most widespread of the invasives listed in this section covering at least 1,000 acres of the forested lands on the installation. Of this total approximately 500 acres are severely infested where the honeysuckle shades out almost all other understory plants. It is located in all Areas except Area F, and even in the riparian areas in the cantonment. Treatment of small targeted riparian areas have taken place using cutting and then chemical application to the cut stump. Chemicals used have been Tordon and glyphosate. These targeted areas have been done using volunteer labor.

Autumn Olive is scattered in old fields and the understory of some forested areas on the installation. The entire area impacted by Autumn Olive is less than 10 acres. These plants should be cut and the stumps treated with Tordon or glyphosate as they are encountered.

Fescue is used as a turf grass in parts of the cantonment but as it escapes into the old fields and native grasslands and has become a problematic invasive. The areas where fescue is problematic is probably Areas A, A1, B, C, and G and comprises 150 acres. Where fescue invasion is found in native grasslands it should be treated with glyphosate. This can be most effective if done when fescue is actively growing and the warm season vegetation is dormant.

Crown Vetch is located along roadsides and areas that have been planted to prevent erosion. Crown vetch infestations are scattered around the installation but all are small and comprise less than 10 acres installation wide. These patches of crown vetch should be treated as encountered using chemical controls of glyphosate or 2, 4 – D.

Garlic mustard is established in the riparian areas along the Missouri River, Areas D and E. The total area covered by garlic mustard is over 100 acres. Garlic mustard has been treated effectively with chemical and mechanical control. Chemical control is spot spraying with hand held sprayers of glyphosate or 2, 4 – D. Mechanical controls have been hand digging.

Poison ivy while native to Kansas can become invasive and shade out ground vegetation as well as negatively impact trees. Poison Ivy grows as a low shrub on the forest edge and quickly out competes other native vegetation. It grows as a vine up many trees both in the cantonment and in the undeveloped areas, covering over 100 acres. When encountered in cantonment areas of other high use areas, poison ivy should be cut and the stump treated with glyphosate or Tordon.

Locust trees are native or have been naturalized to Leavenworth County, Kansas and are also invasive in the area. Being fast growing trees they can out compete the slower growing oaks and hickories that are native and preferred in the area. These trees are scattered as singles throughout the installation. They are of particular concern on approximately 60 acres of old field where they have become the dominant tree, in Areas G and some of the horse pastures. When small these trees should be burned, mowed or cut to prevent their infestation. Once the trees have reached a size too large for local mowers, they must be cut and treated with glyphosate or Tordon.

10. Pest Management

The Natural Resources Specialist confers with other state, university and Fort Leavenworth pest management personnel on issues of pest management.

11. Land Management

The Natural Resources Specialist confers with other federal, state, university, and Fort Leavenworth grounds personnel on issues related to land management. When siting or relocating multi use trails be aware of the soils and erosion potential. Some soils cannot support grades of over 5% and none should exceed 10%.

12. Off-Road Vehicles

Due to the erosional nature of the upland forest soils and the impacts of Missouri River hydrology on the floodplain soils and trails, private ORV's are not allowed to be driven on the installation. Exceptions can be made, by special use permit, to accommodate those with limited mobility.

13. Agricultural Outleasing

There are an assortment of former USDB Farm Activity fields both in the uplands and in the floodplain that were used for farming operations; however, there are no AG Lease activities on the reservation at this time. At one time, there were cattle on the upland fields, but these fields are subject to erosion if they are over-grazed and it is not recommended to place large grazing animals on these fields unless they are few in numbers and are moved often enough to prevent erosion. There were also sheep for a number of years and they were rotated often enough to not cause erosion, but the lack of adequate permanent fencing often resulted in animals escaping through the portable electric fencing and onto the roads. The floodplain fields were primarily used for annual grain production and they are in a fallow condition at this time. The natural resources specialist confers with state, university, USAEC, and local agriculturists on issues relating to AG Leases and their management.

14. Geographical Information Systems Management

There is one GIS person in the Garrison who is primarily responsible for the program management for the reservation. It is possible to request some minimal GIS support when it is needed to produce maps and data input.

15. Outdoor Recreation

Natural resources-based outdoor recreation is the responsibility of the Commanding General and he has delegated said authority to the Garrison Commander, who further delegated the authority to the Director of FMWR (DFMWR). The DFMWR delegates their responsibilities further to the Director of Outdoor Recreation (DOR). The DOR coordinates natural resource actions with the Hunting Coordinator and the Natural Resources Specialist. This coordination is done to insure that there are no conflicts with recreational and land management activities. Some of this coordination takes place during the quarterly Natural Resource Committee meetings. The natural resources specialist also confers with the military units and FMWR on issues of specific military unit use of the natural resources areas for exercise activities.

The Hunting Coordinator position is appointed by the Commanding General to manage the Hunting Program on Fort Leavenworth. The duties of the Hunting Coordinator are to confer with the Natural Resources Specialist and the DOR to ensure that hunting and natural resource management are complimentary not conflicting. This should ensure good game and nongame wildlife populations, good consumptive and non-consumptive experiences for outdoor recreationists, and good management of installation natural habitats. Complete details of the Fort Leavenworth Hunting Program can be found in Appendix 9.

16. Bird Aircraft Strike Hazard

The Airfield Manager confers with the Natural Resources Specialist on wildlife issues related to the airfield. The fence around the airfield deters deer and vegetation management deters birds; however, the airfield is located in the Missouri River floodplain and is near the river on three sides with significant sources of waterfowl, especially during migration seasons. For additional information see Appendix B6. Sherman Army Airfield WASH Plan.

17. Wildland Fire Management

The Natural Resources Specialist works with the Fire Department, which is part of the DES, to manage the wildland/urban interface for wildfire control. The Wildland Fire Management policy on Fort Leavenworth is to maintain plant species with low fire risks in the wildland/urban interface. There is very little risk of fire spreading from the wildlands to the urban environment largely due to the extremely low risk of fire in the woodlands. For example, past attempts to conduct prescribed burns in the woodlands were unsuccessful. Beyond the woodlands, the urban interface consists of a mowed roadside or mowed strip of land before it becomes a backyard. There are very few areas where a roadside near a woodland is also near a house. Prescribed burns are conducted on an as-needed basis to control vegetation for wildlife management purposes and they are not conducted annually. None of the prescribed burns would be conducted in areas near housing or other buildings. With those considerations in mind, the risk for wildland fire crossing into the urban environment is extremely low. The risk will remain low especially if low fire-risk plant communities are maintained in the urban interface. The Fort Leavenworth Integrated Wildland Fire Management Plan is based on the minimal risks and prescribed burns expected on the installation. The plan can be found in appendix 10.

18. Training of Natural Resources Personnel

Fort Leavenworth has one Natural Resources Specialist on staff. Therefore, that individual has responsibilities for all of the installation natural resources. In order to have the best technical advice available for the Garrison Commander, the Natural Resources Specialist, regularly, confers with other professionals in federal, state, and university agencies and institutions as well as those in national, state, and regional non-profit organizations. In the past, the Natural Resources Specialist has also sent grounds personnel to university classes on urban tree care, especially those persons responsible for tree trimming and removal. Otherwise, the Natural Resources Specialist maintains contact with other professionals and maintains professional reading of magazines, journals, websites, etc.

19. Floodplains Management

Approximately one-half of Fort Leavenworth lies within the Missouri River floodplain and is subject to significant flooding. The larger floods always carry large objects across

the forested floodplain including trees, large propane tanks, metal drums, and other detritus that can damage standing timber. These floods also damage the road system. The tree species in the floodplain are generally not of high economic value and the distance to markets for chips for fuel wood make transportation costs prohibitive; therefore, the primary use of the floodplain forest is for wildlife management, both for game and non-game species.

20. Other Leases

There are no natural resources-related leases on the reservation.

E. Implementation

1. Environmental Awareness

Fort Leavenworth gets a yearly influx of new students and their families. Shortly after these families have relocated the DFMWR organizes a Post Activities Information and Registration (P.A.I. R.) Day to familiarize the newcomers with the amenities of the installation. The Natural Resources Section has staffed a booth and made many contacts informing them of the installations natural resources.

The Fort Leavenworth Rod and Gun Club has an annual influx of between 10 and 20 percent of the incoming students becoming members or at least hunting on the installation. To qualify to hunt here every hunter must take an hour long class on the natural resources and regulations pertaining to the installation. The Natural Resources Specialist coordinates with the Hunting Coordinator and DOR to incorporate natural resource concerns into the hunting briefings. The Natural Resources Specialist also attends some Rod and Gun Club meetings and is an occasional speaker.

Two more outreach opportunities used are the Earth Day celebration and summer programs with the Youth and Teen centers. For Earth Day several hundred students from USD 207 tour an area with a hundred vendors who show them ways they are protecting the environment. The Natural Resources Specialist has a booth and introduces the students to some element of the natural resources of the installation. During the summer the Natural Resources Specialist partners with the Osage Child Development Center and the Harold Youth Center to provide a weekly one hour long program to each group. The programs are always centered on natural resource from the local area. The ages of the kids involved in these programs range from 8 to 15.

2. Natural Resource Staff and Training

The Natural Resources Staff at Fort Leavenworth is comprised of one full time Natural Resources Specialist. Historically, this has been the staffing level. The position requires a biology background. Additional labor is provided on occasion by other divisions or by volunteers. Examples of this would be the DES Fire Department conducting prescribed

burns that were planned by the Natural Resources Specialist or scouts volunteering to cut invasive species and plant native plants.

The Natural Resources Specialist should have knowledge or training in the Endangered Species Act in order to coordinate consultation with the USFWS, currently only for the northern long-eared bat. Knowledge or training in wetlands and the Clean Water Act 404 permitting process are also important. The installation has many jurisdictional waters and wetlands. Knowledge and or training of the eastern deciduous forest and tallgrass prairie ecosystems is also important to manage the existing natural habitats.

3. Knowledge and Information Gaps

Fort Leavenworth has had a good baseline of data for most floral and faunal groups found here. For most floral and faunal groups the data is relatively old, about 15 years. Comprehensive surveys were completed in 1996 and 2003. More recent surveys were completed in 2017 and there are several Planning Level Surveys to be conducted in 2018. These Planning Level Surveys should be revisited approximately every six to ten years. Driven by the listing of the northern long-eared bat, a two year inventory of bats was completed in 2017. Per an IMCOM and USFWS agreement, bat surveys will be replicated every 3 years to maintain the informal consultation status of the agreement.

Management Objective	Target	Research Requirement	Priority
Manage ESA species and other regulated species in order to preclude new restrictions.	Complete bat surveys to verify presence or absence of northern long-eared bats and other bats subject to future listing.	No survey work had been completed since 2002.	This was a top priority and was funded by IMCOM. Tier 1
Manage ESA and other regulated species to preclude new restrictions.	Complete a standardized bird survey of the area.	No standardized bird survey has been completed since 2002.	This is a medium priority and has been funded. Tier 2
Manage ESA species and other regulated species in order to preclude new restrictions.	Complete a standardized terrestrial insect survey.	No comprehensive survey of terrestrial insects has been completed.	This is a medium priority and has been funded. Tier 2
Manage ESA species and other	Complete a standardized and	No survey work on stream fish	This is a high priority and has been funded.

regulated species to preclude new restrictions.	repeatable stream fish survey.	assemblages has been completed.	Tier 1
Manage ESA species and other regulated species to preclude new restrictions.	Complete a standardized and repeatable aquatic insect survey.	No comprehensive survey of aquatic insects has been completed.	This is a medium priority and has been funded. Tier 2
Restore and maintain old and second growth forest, bluff forest, wetlands, and tallgrass prairie	GPS coordinates of all old growth trees. Clear woody encroachment from prairie areas.	The exact location of the old growth trees, and how many trees there are is lacking.	This is a top priority to be accomplished in house. Tier 1
Sustainable use by the public of natural resources.	Complete creel surveys for fishing and hunting on the installation.	This data is used for data calls and management of harvested species.	This is a top priority to be accomplished in house with volunteers. Tier 1

4. Funding

Many natural resource projects are funded on the five year POM cycle. Fort Leavenworth, with only 3,173 acres of natural habitat and one listed species, does not have a need for large natural resource expenditures limiting POM requests. The forested habitat which requires at least 50 years of regeneration time and the education mission of Fort Leavenworth further limit a need for short duration repeat POM requests.

The annual reoccurring budget funds most natural resource projects on the installation. This funding is allocated based on the IMCOM Environmental Financial Assessment Model. Once the funding arrives on the installation it is further divided based on project prioritization.

Other funding opportunities are also utilized. These opportunities vary from National Public Lands Day grants, to Forest Reserve Account Funding, and using year end monies. Volunteer labor is also utilized to complete many natural resource projects.

F. Five Year Implementation Plan

INRMP Objective	Driver (Law/Reg/Agreement)	Proposed Project Title	Execution Timeframe	Effectiveness Indicator	Monitoring Frequency	Reporting
Manage ESA species and other regulated species in order to preclude new restrictions.	ESA	Mist Net Survey for Threatened and Endangered Bats at Fort Leavenworth, Kansas	04/2019 to 11/2020	No new restrictions placed on training lands.	Every 3 years	Survey information will be shared with USFWS and KDWP&T upon request and with the public through the local paper, Facebook, presentations.
Maintain and restore old growth and second growth floodplain forest	E.O. 11988 Floodplain Management; E.O. 13186 Roles of Federal Agencies to Protect Migratory Birds	Maintain Floodplain integrity and forest health	01/2018 to 12/2023	Old growth trees persist in the floodplain and no loss of forested floodplain acres	Annually	This information will be provided to the USFWS and Kansas Forest Service upon request and any changes will be noted in the INRMP
Maintain and restore bluff forests	E.O. 13186 Responsibilities of Federal Agencies to Protect Migratory Birds	Maintain a Healthy Bluff Forest community	01/2018 to 12/2023	No unnecessary loss of bluff forest acres and limit fragmentation	Annually	This information will be provided to the USFWS and Kansas Forest Service upon request and any changes will be noted in the INRMP

Maintain and restore wetlands	CWA Sec. 404, E.O. 11990 Protection of Wetlands	Maintain and restore wetlands	01/2018 to 12/2023	No unpermitted loss of wetland acres and restoration and enhancement of wetland areas	Annually	This information will be provided to the USFWS and KDHE upon request and any changes will be noted in the INRMP
Maintain and restore tallgrass prairie	Tallgrass prairie remnants persist at Fort Leavenworth and should be promoted in order to maintain biodiversity	Maintain, manage and restore tallgrass prairie	01/2018 to 12/2023	No loss of prairie acreage, conduct restoration actions on the 5 remnants listed in the floristic inventory from 2003.	Every 5 years	This information will be provided to the USFWS and KDWP&T upon request and changes will be noted in the INRMP
Manage maintenance contracts to enhance native habitats	Timing of maintenance activities can harm or benefit ecosystems, they should be timed to be a benefit	Coordinate timing of maintenance activities to benefit local ecosystems	01/2018 to 12/2023	Change maintenance dates to promote native vegetation and decrease invasives	Annually	This information will be recorded in the various maintenance contracts

Maintain public access to the installation that is compatible with mission requirements and sustainability of natural resources	Sikes Act (P.L. 86-797)	Promote public access to the installation for enjoyment of the unique natural resources and the Army's role in their preservation	01/2018 to 12/2023	Presentations are made to groups that are not familiar with the installations natural resources	Annually	No records are maintained for installation visits to view or harvest natural resources
Promote recreational opportunities that sustainably use natural resources	Sikes Act (P.L. 86-797)	Promote sustainable use natural resources	01/2018 to 12/2023	Conduct programs that utilize and raise awareness of fishing, hunting, hiking and other outdoor recreational opportunities on the installation	Annually	No records are maintained on programs conducted to promote installation natural resources

Appendices

A. References

A1. List of Acronyms

AR	Army Regulation
CAC	Combined Arms Center
CGSC	Command and General Staff College
DOD	Department of Defense
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DPW	Directorate of Public Works
GIS	Geographic Information System
INRMP	Integrated Natural Resource Management Plan
KDHE	Kansas Department of Health and Environment
KDWP&T	Kansas Department of Wildlife and Parks and Tourism
NEPA	National Environmental Policy Act
ORV	Off-Road Vehicles
PMO	Provost Marshall Office
TRADOC	Training and Doctrine Command Review
USC	United States Code
USDB	United States Disciplinary Barracks
USFWS	United States Fish and Wildlife Service

A2. Literature Cited

Freeman, C.C, W.H. Busby, C.L. Lauver, K. Kindscher, J. Elliott, and D.A. Eifler. 1997. A natural areas inventory of the Fort Leavenworth Military Reservation, Leavenworth, Kansas. Rpt. State Biol. Surv. Kansas 77. 257 pp.+ appendix.

Freeman, C.C, W.H. Busby, J. Delisle, W.D. Kettle, K. Kindscher, H. Loring, C.A. Morse, and V.B. Salisbury. 2003. A natural areas inventory of the Fort Leavenworth Military Reservation, Leavenworth, Kansas. II. Open-file Report No. 117. Kansas Biological Survey. Lawrence, KS. 199 pp.

Missouri Department of Conservation. December 2015. Missouri Wildlife Action Plan. Missouri Department of Conservation. 247 pp.

Rohweder, M.R. December 2015. Kansas Wildlife Action Plan. Ecological Services Section, Kansas Department of Wildlife, Parks and Tourism in cooperation with the Kansas Biological Survey. 176 pp.

A3. Summary of Changes to INRMP

2018 – INRMP underwent a 5 year review and changed format entirely.

A4. Specific Agreements

1. Informal Conference & Management Guidelines on the Northern Long-eared Bat (Myotis septentrionalis) for Ongoing Operations on Installations Management Command Installations May 2015.....44

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1. Informal Conference & Management Guidelines
on the
Northern Long-eared Bat (*Myotis septentrionalis*)
for
**Ongoing Operations on Installation Management
Command Installations**

May 2015



Prepared By:

U.S. Army Environmental Command

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I. General

A. *Purpose.* Pursuant to Section 7(a)(4) of the Endangered Species Act (ESA), federal action agencies are required to confer with the United States Fish and Wildlife Service (USFWS) if their proposed action is likely to jeopardize the continued existence of a listed species (50 CFR 402.10(a)). Action agencies may also confer with the USFWS if the proposed action may affect a proposed species or proposed critical habitat. Species listed as threatened or endangered under the ESA are afforded protection against “take”. After the listing becomes effective, pursuant to Section 7(a)(2) of the ESA, federal action agencies are required to consult with the USFWS if their proposed action may affect the listed species (50 CFR 402.14(a)).

The intent of this informal conference and subsequent consultation is to evaluate military operations and sustainment/enhancement activities on Installation Management Command (IMCOM) installations and facilities that may affect, but are not likely to adversely affect (NLAA) the Northern long-eared bat (*Myotis septentrionalis*; NLEB), a species to be listed as threatened under the ESA on 04 May 2015 (USFWS 2015). No additional species are addressed or covered within this action. IMCOM has determined effects and proposes conservation measures to avoid or minimize adverse effects to the NLEB. If USFWS concurs in the resulting conference report, this will be a programmatic informal conference and programmatic informal consultation. Any activities not included in this consultation will be subject to separate section 7(a)(2) consultation after the listing becomes effective.

This evaluation includes: 1) consultation requirements; 2) IMCOM structure; 3) distribution and status of the species; 4) description of Military Missions and Operations; 5) survey results; 6) proposed conservation measures to limit potential impacts from Military operations and activities; and 7) conclusions.

The resulting conference report will serve as guidelines that establish a programmatic baseline for managing the NLEB on applicable IMCOM installations and facilities to avoid likely future conflicts. It can be used in developing management and conservation goals and objectives for the NLEB as part of an installation’s Integrated Natural Resource Management Plan (INRMP). An installation INRMP will supplement these guidelines with detailed measures to meet installation-specific NLEB conservation and unique military mission needs. The requirements established for the NLEB in the INRMPs will apply to all activities on the installation.

B. *Applicability.* The programmatic guidelines are applicable to IMCOM installations and areas of operations identified in this document. Some of these IMCOM installations have already completed an informal/formal conference/consultation with their local USFWS Field Office and will not be subject to this programmatic conference but instead retain the requirements within their specific document, unless the requirements are complimentary and/or the installation, in coordination with USFWS, chooses to adopt the conservation measures defined herein. The remaining IMCOM installations identified in this document with no prior USFWS coordination will be subject to this programmatic conference and consultation. All IMCOM installations outside the known range of the NLEB are not considered in this programmatic document. The overarching intent is to facilitate IMCOM installations ability to

utilize the most appropriate conservations measures in regards to NLEB though section 7 conference/consultation.

C. *Timeline and Revision.* HQ IMCOM will revise these guidelines as necessary to be consistent with the listing rule of the NLEB, future Recovery Plans, or incorporation of the latest and best scientific data available. This informal conference will cover a period of three years but will be reviewed annually for applicability and continued concurrence between IMCOM & USFWS on its content. During the annual review if there is continued concurrence or if the document needs to be amended IMCOM and USFWS will coordinate according to the guidelines in the conference report. At any time, IMCOM or the USFWS may revoke or revise this programmatic consultation if it is determined that it is not being implemented as intended.

D. *Goal.* This documents intent is to provide programmatic coverage to all IMCOM installations for the training and land management activities and processes that are similar throughout. Additionally it is IMCOM's goal to implement management guidelines that will allow the accomplishment of military missions & sustainment while concurrently developing and implementing methods to assist in the conservation of the NLEB.

II. Additional Conference/Consultation

A. *Conference/Consultation Requirement.* In proposing actions that deviate from these guidelines that "may affect" the NLEB or for actions in which further consultation has been agreed to, IMCOM installations will comply with the conference/consultation requirements of section 7 of the ESA per the implementing regulations at 50 CFR part 402; and Army policies and guidance.

1. *Informal Conference/Consultation.* IMCOM recognizes that informal conference/consultation with the USFWS is critical to resolving potential problems and establishing the foundation to address issues in a proactive and positive manner. For any "may affect" determinations, IMCOM and IMCOM installations will seek to modify proposed actions and work with the USFWS to obtain concurrence on a "may affect, but not likely to adversely affect" (NLAA) determination. Issue resolution through informal conference/consultation is the preferred method.

2. *Formal Consultation.* If implementation of these guidelines is not possible or feasible for a proposed action and adverse effects cannot be avoided, the subject IMCOM installation will initiate formal Section 7 conference/consultation in accordance with the procedures in 50 CFR 402 and applicable Army policies and guidance. For formal consultations, the IMCOM installation will implement the reasonable and prudent measures (RPMs) identified in the Biological Opinion (BO) to ensure no impacts on mission implementation.

B. *Confirmation.* IMCOM will re-initiate consultation on these guidelines if (i) information arises indicating that implementation of the guidelines may not avoid adverse impacts on the NLEB for certain activities; (ii) data/new research endorses inclusion of new, or modification of established, measures in the guidelines that still support a NLAA determination; or

(iii) a “take” occurs even though IMCOM is fully implementing the guidelines. IMCOM will notify USFWS within five business days if issues pertaining to (i) and/or (iii) arise, and work with the USFWS on addressing such issues through informal consultation. IMCOM will make the necessary changes to the guidelines, if any, and conduct the necessary internal staffing prior to submitting the revised document to USFWS for concurrence. During this period, the NLAA concurrence will still be valid for the conservation measures not subject to any scrutiny or concern.

C. *Programmatic Informal Consultation Process.* Each IMCOM installation will screen applicable installation activities through an IMCOM/USFWS cooperatively generated checklist to ensure the activity is conducted as described in this BE. For each activity completed under the programmatic informal consultation, each installation will document their activities and actions taken describing how compliance was maintained with the conservation guidelines within this document. IMCOM will collectively report annually to the USFWS on information collected in the annual Army Environmental Database Environmental Quality (AEDB-EQ) data call for actions taken in regards to NLEB at each installation. This informal conference will cover a period of three years but will be reviewed annually for applicability and continued concurrence between IMCOM & USFWS on its content. All other species that require Section 7 consultation or Migratory Bird Treaty Act compliance will be reported in separate documentation by the individual installation if applicable.

D. *Emergency Consultation.* Unpredictable catastrophes such as wildfires, tornados, or significant hurricane damage may present conditions that cannot be anticipated under these guidelines. In the case of a catastrophic event, IMCOM installations will implement these guidelines to the greatest extent possible, but imminent threat to life or property may take precedence. IMCOM installations will record impacts on NLEB habitat and any definitive impacts on bats resulting from the event, and document any actions that were necessary during the event such as creation of fire breaks, removal of hazardous trees, etc. The subject IMCOM installation(s) will initiate emergency consultation with their associated USFWS field office as soon as possible. IMCOM will reevaluate conservation and management requirements, if necessary, to better prepare for the conservation of the NLEB during such unanticipated events.

E. *Endangered Species Act 4(d) Rule.* With a 4(d) rule in place, any actions taken by an agency that are exempted in the 4(d) rule will not require an incidental take statement in a biological opinion. Therefore installations could drastically reduce the consultation timeframes and conservation measures required for forestry activities (including harvest & prescribed burning), prairie management, right of way expansion, and other activities defined therein by conducting Section 7 Consultation only on activities contained within the 4d Rule.

F. *Other Listed Species.* Other ESA listed Threatened or Endangered species may occur on IMCOM installations listed in this BE. This BE only addresses the NLEB because consultation has already occurred for the other listed or, depending on the IMCOM installation, activities may have no effect on other listed species. Prior to implementing any Conservation Measure identified in this PBE, the IMCOM installation will address and assess impacts of such measures on applicable listed species. Conservation Measures and Reasonable and Prudent Measures of any relevant Biological Opinion(s) will continue to be implemented for listed species on sites subject to this consultation. If necessary, the IMCOM installation will informally consult with the USFWS to

address a situation where implementation of a Conservation Measures may affect NLEB or other listed species.

III. Installation Management Command (Action Area).

Military installations particularly those managed by IMCOM have a demonstrated track record of sound natural resource stewardship and management. This demonstrated ability creates some of the most diverse natural resource areas supporting a multitude of rare and imperiled species while seamlessly blending that with the daily needs of advanced military training. It is the blending of these two seemingly contradictory things which continues to be the IMCOM goal as training capability is directly dependent on our ability to maintain the natural infrastructure of Army lands.

The primary purpose of IMCOM installations is to provide for the sustainment, enhancement, and readiness of the U.S. Military. Military training and enhancement activities are generally divided into the following categories: sustainment operations, engineering operations, air operations, water operations, field training operations, live munitions training, demolition, smokes/obscurants, and research, development, testing, and evaluation (RDTE). All of these activities occur in dispersed Training Areas; some of these activities occur in localized Training Areas year-round at all times of the day and night. Natural resource management activities also occur on most IMCOM installations which may include forest management, prairie management, wildlife management, recreation, erosion control, and other land management activities and uses as described in each installations INRMP.

The U.S. Army Command, IMCOM is a federal agency, and as such, must comply with Federal statutes and regulations. IMCOM supports active and reserve military installations worldwide. IMCOM is organized into four regions (Europe, Atlantic, Central, & Pacific), of which the Atlantic and Central Regions are within the range of the NLEB. There are 19 individual Army installations within the Atlantic Region and 6 installations within the Central Region that have the potential for NLEB's. Table 1, below, lists each installation, its IMCOM Regions, the State in which it exists, and its approximate size. While there are approximately 809,000 million acres in total for these installations only 453,000 of that is forested habitat which may or may not be suitable NLEB habitat.

IMCOM Region	Installation Name	State	Approx. Size (ac.)	Approx. Forrested (ac.)	Indiana or Gray Bat	NLEB	Bat Surveys	Hibernacula <=5 miles	Consultation	WNS Decon
ATL	Aberdeen Proving Ground*	MD	72,500	18,000			Scheduled FY 15	No	No-poor habitat	NA
ATL	Carlisle Barracks*	PA	500	0						
CEN	Detroit Arsenal*	MI	341	0			None			
ATL (Reserve)	Deven's Reserve Training Facility	MA	5,000	4,000	Verified Absence	Historic Presence	Occasional	No	No	NA
ATL	Fort AP Hill	VA	76,000	66,500	Out of Range	Historic Presence	Occasional	No	Informal	No
ATL	Fort Belvoir	VA	8,658	4,300	Indiana	Assumed	By Project & Annual	No	Consultation in Progress	Developing
ATL	Fort Campbell	KY	102,414	48,200	Indiana & Gray	Present	By Project & Annual	Yes and On-site	Informal and Formal with INRMP	Yes
ATL	Fort Detrick*	MD	12,000	82			None	No Known	No	No
ATL	Fort Drum	NY	107,625	74,000	Indiana	Present	Annual	No	Informal and Formal BO	Yes
ATL	Fort George G. Meade	MD	5,100	1,700	Out of Range	Assumed	None	No Known	Informal	NA
ATL	Fort Hamilton*	NY	50	0			None			
ATL	Fort Knox	KY	109,000	81,000	Indiana	Present	Annual	Yes and On-site	Informal and Formal with INRMP	Yes

IMCOM Region	Installation Name	State	Approx. Size (ac.)	Approx. Forrested (ac.)	Indiana or Gray Bat	NLEB	Bat Surveys	Hibernacula <=5 miles	Consultation	WNS Decon
CEN	Fort Leavenworth	KS	5,600	3,500	Verified Absence	Not Detected	Occasional	No Known	No	NA
ATL	Fort Lee*	VA	5,376	2,300	Not Detected	Not Detected	Periodic (every 2-3 years)	No	No-poor habitat	Yes
CEN	Fort Leonard Wood	MO	61,000	44,500	Indiana & Gray	Present	Annual	Yes and On-site (Indiana)	Informal	
CEN (Reserve)	Fort McCoy	WI	60,000	45,400	Out of Range	Present	Periodic (every 2-3 years)	Yes	Informal	No
CEN	Fort Riley	KS	100,656	16,400	Out of Range	Verified Absence	Annual	No	Informal	Yes
ATL	Joint Base Myer-Henderson Hall*	VA	270	0		None				
ATL	Natick Soldier System Center*	MA	124	0						
ATL	Picatinny Arsenal	NJ	6,400	4,000	Indiana	Present	Occasional	Yes	Informal	Yes
ATL	Red Stone	AL	38,000	23,900	Gray	Present	By Project & Annual	Yes	Informal	Yes
CEN	Rock Island Arsenal	IL	946	200	Verified Absence	Assumed	Periodic (every 2-3 years)	No	Informal	Developing
ATL	U.S. Army Adelphi	MD	200	120			Scheduled FY-15	No Known	No	Developing

IMCOM Region	Installation Name	State	Approx. Size (ac.)	Approx. Forrested (ac.)	Indiana or Gray Bat	NLEB	Bat Surveys	Hibernacula <=5 miles	Consultation	WNS Decon
ATL	U.S. Army Adelphi – Blossom Point*	MD	1,600	1,000			None	No	No –poor habitat	NA
ATL	West Point Military Reservation	NY	16,800	14,000	Possible Historic Presence	Present	Annual	Yes and On-site	Informal	Yes
Total			809,348	453,102						

Table 1: IMCOM Installations Within the Range of the Northern Long-eared Bat.

* Indicates no habitat or highly unlikely to occur due to unsuitable habitat.

Funding and policy guidance for natural resources management on installations are provided by IMCOM. IMCOM also provides natural resources technical support, and is responsible for tracking projects, quality assurance of compliance documents, and execution of funds. While IMCOM provides support across its installations, the individual installations are relatively autonomous in their completion of day-to-day management of the installation. Therefore some installations have conducted or are in the process of conducting individual Section 7 actions as it relates to their local situation and may not need the programmatic coverage provided by this document.

IV. Distribution and Status of the NLEB.

According to the NLEB final rule (USFWS 2015), the bat is known or believed to occur throughout or part of 37 States and the District of Columbia within the US. In Canada it is found from all Provinces from the Atlantic Coast westward to the southern Yukon Territory and eastern British Columbia. The northeast is considered to be the core range of the species and the area that has been hit hardest by white-nose syndrome. Based on hibernacula data, population numbers of NLEB have experienced a decline of approximately 99% in this core area (USFWS 2013). White-nose syndrome is the most severe and immediate threat to NLEB survival, and is the basis for the final listing of the species as threatened IAW ESA sections 3(6) and 4(a)(1) – Factor C: Disease or Predation. Currently, 12 IMCOM installations representing 9 States assume NLEB presence or have recorded the NLEB potentially occurring on site (Table 1). A few other IMCOM installations have the potential for the NLEB to occur onsite, but surveys have not been completed to date. In general, the status of the species as a whole is declining and the status of the species on various installations ranges from declining in the east to stable in areas where effects of WNS have not yet occurred.

The active season of the NLEB is roughly April – October (USFWS 2015a). However, the spring staging and fall swarming periods can begin earlier in mid-March and extend to late November (USFWS 2014) (refer to Table 2). During the active season NLEBs roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and snags, typically ≥ 3 inches diameter at breast height (DBH) in over 35 different tree species. They are also known to roost in sheds and barns, but the overwhelming majority of roosts are in trees (USFWS 2014). NLEBs have been known or suspected of occurring on some of the installations listed in Table 1. Tree species such as black and red oak, silver and sugar maples, hickories, American beech, short-leaf pine, hemlock, birch, spruce, etc. ≥ 3 inches DBH are known to occur on IMCOM installations throughout the range of NLEB. Summer roosting habitat is available and possibly used on these sites.

As described in the final rule (USFWS 2015), NLEBs predominantly overwinter in hibernacula that include caves and abandoned mines. The hibernacula are typically large, with large passages and entrances, relatively constant, cooler temperatures (0 to 9 °C (32 to 48 °F),

and with high humidity to such a large degree that droplets of water are often observed on their fur. The NLEB has also been found to overwinter in structures resembling mines and caves such as abandoned railroad tunnels and hydro- electric dam facilities, to name a few. There are only a few known NLEB hibernacula on or within five miles of the IMCOM installations. Through development of the IMCOM INRMPs and the Army ACUB program, IMCOM installations have a very good knowledge base on hibernacula occurring on the installation or in the local region. This document addresses potential impacts on or conservation of hibernacula and associated swarming and staging areas for known hibernacula on or within 5 miles of an IMCOM installation. More specific information on NLEB seasons by state is depicted in Table 2.

IMCOM installations, described in Table 1, have conducted both project-level and installation-wide bat surveys to support the military mission. Installations will continue to survey at the level necessary to meet their mission requirements and comply with ESA. Installations that have not surveyed will conduct NLEB surveys to determine presence/absence in suitable habitat as funding allows.

More detailed information on the life history and habitat requirements of the NLEB can be found in the 2015 final rule (USFWS 2015).

Table 2: Active Season Dates for the Northern Long-eared Bat based on Table 1 of the Northern Long-Eared Bat Conference Guidance (USFWS 2014). Individual IMCOM installations should confirm dates with their local USFWS Field Office.

State/Region	Active Season
Alabama	Apr 1-Nov 30
Illinois	Apr 1-Nov 15
Kansas	Apr 1-Nov 1
Kentucky	Apr 1-Nov 15
Massachusetts	Contact FO
Maryland	Contact FO
Michigan	Apr 1-Oct 1
Missouri	Apr 1-Nov 15
New Jersey	Apr 1-Nov 15
New York	Apr 1-Oct 30
Pennsylvania	Contact FO
Virginia	Apr 1-Nov 15
Wisconsin	Apr 1 - Oct 15

As used in this BE, known roost trees are defined as trees that NLEBs have been documented as using during the active season (approximately April–October). Once documented, a tree will be considered to be a “known roost” as long as the tree and surrounding habitat remain suitable for NLEB. However, a tree may be considered to be unoccupied if there is evidence that the roost is no longer in use by NLEB (USFWS 2015).

Known, occupied hibernacula are defined as locations where one or more northern long-eared bats have been detected during hibernation or at the entrance during fall swarming or spring emergence. Given the documented challenges of surveying for northern long-eared bats in the winter (use of cracks, crevices), any hibernacula with northern long-eared bats observed at least once, will continue to be considered “known hibernacula” as long as the hibernacula and its surrounding habitat remain suitable for northern long-eared bat. However, a hibernaculum may be considered to be unoccupied if there is evidence (*e.g.*, survey data) that it is no longer in use by following the USFWS Indiana Bat Hibernacula Survey protocols (USFWS 2015). Refer to the Glossary, Section X, for additional definitions.

V. Activities That Will Not Affect NLEB.

All activities at installations outside the range of the NLEB will result in no effect to the species. Within the range, all activities that occur in unsuitable habitat will result in no effects to the species and do not require the implementation of any conservation measures. The Northern Long-eared Bat Interim Conference and Planning Guidance (USFWS 14) states, “Trees found in highly-developed urban areas (*e.g.*, street trees, downtown areas) are extremely unlikely to be suitable NLEB habitat.” Therefore, IMCOM considers that all sites within highly-developed urban areas that are not within 1000 feet of suitable forested/wooded habitat are excluded from these guidelines and ESA conference/consultation requirements. Examples of highly-developed areas include but are not limited to: some cantonment areas, some housing areas, industrial areas, highly developed training sites, and developed testing facilities.

IMCOM determines that all of the above proposed actions and sites will have “no effect” on the NLEB.

VI. Activities That May Affect NLEB.

For installations that contain habitat elements for the NLEB within its range, as identified in Table 1, IMCOM will adopt the below conservation practices, unless the installation has verified NLEB absence by utilizing the published USFWS Indiana bat (and NLEB) summer survey protocols.

A. *Existing Military Training, Firing and Maneuver ranges:* Military training activities are generally divided into the following categories: sustainment operations, engineering operations, air operations, water operations, field training operations (such as but not limited to: foot training, bivouacking, etc), live munitions training, demolition, smokes/obscurants, and research, development, testing, and evaluation (RDTE). All of these activities occur in dispersed Training Areas; some of these activities occur in localized Training Areas. Firing and maneuver ranges on IMCOM installations provide training and testing for the M16/M4 weapons family, M249 and M240 series machine guns, M9 and M1911 series pistols, M203 and MK19 grenade launchers, anti-tank weapons, helicopter gunnery, tank firing, 105 mm through 203 mm cannons, tracked and wheeled vehicles, live grenades, demolitions, and

other military operations. The NLEB within these active ranges have been repeatedly exposed to loud noises associated with munitions, detonations, and training vehicles. Camp Atterbury (USFWS 2010), Fort Leonard Wood (USFWS 2010), and Fort Drum (USFS 2008) have assessed range and training noise impacts on Indiana bats (*Myotis sodalis*). Fort Leonard Wood monitored radio-telemetered Indiana bats and found that the bats did not avoid active ranges or alter foraging behavior during night-time maneuvers. A 2002 study on Camp Atterbury found that five of eleven Indiana bats tracked with radio transmitters periodically roosted in the impact area (Whitaker & Gummer 2002). Given these findings, along with the abundance and installation-wide distribution of the bats on the sites, they concluded, and USFWS concurred, that sound intensity and duration associated with past training events have not adversely affected Indiana bats due to the bats having become habituated to such stimuli. It is reasonable to believe that the NLEB have also become habituated to ongoing operational noise on existing IMCOM ranges.

Recent studies have indicated that anthropogenic noise can alter foraging behavior and success of bats, including some gleaning species like the NLEB (Bunkley et al., 2015; Schaub et al., 2008; Siemers and Schaub, 2011). Based on the potential that new sound stimuli may affect the NLEB by influencing foraging behavior and success, the relevant IMCOM installation will consult with the USFWS when new activities are proposed that significantly differ in sound intensity, quantity/duration of noise events, from those described above.

Bats are vulnerable to mortality from vehicle strikes (Siebert and Conner, 1991; Glista and DeVault, 2008; Russell et al., 2009). Collisions with vehicles are documented for the endangered Indiana bat, as well as the NLEB (Russell et al., 2009). In this study, researchers monitored highway crossings of a roost of approximately 23,000 bats, mainly little brown bats (*Myotis lucifugus*). A total of 26,442 occurrences of bats crossing the highway during dusk (10 days) and dawn (six days) were recorded and 29 road-killed bats were found, one being an Indiana bat. In Glista and DeVault (2008), researchers surveyed 158.5 km of roads for mortality of vertebrates. A total of one road-killed bat (eastern red bat, *Lasiurus borealis*) was found during the road mortality detection surveys – travelling at speeds less than 40 km/h). Finally, Siebert and Connor recorded one road-killed bat during their 50 surveys of a 1.6km of highway (U.S. 33 NW of Athens, OH) spanning from June 1987 to August 1988. The Biological Opinion for Construction, Operation, And Maintenance of the U.S. 33 Nelsonville Bypass Road, OH (USFWS 2005), identified vehicle collision as an anticipated take of Indiana bat. Although we might expect bat mortality associated with vehicle collisions to diminish along with road size/traffic volume, the frequency at which bats attempt to cross roads, especially forest species like the NLEB, likely increases as road size and traffic decrease. Effects of vehicle collisions to bats are likely to be discountable regardless of road size, but should be considered that bats may respond differently to different types of roads. However, in contrast to the roads and maneuver sites on IMCOM installations, the stretches of road discussed above have a constant volume of traffic during times of bat activity, and vehicles are travelling at greater speeds than what typically occurs on IMCOM installations. The numbers and intensity of night time maneuvers and vehicle use on IMCOM installations, as well as operating speed of such vehicles, do not rise to the level associated with public highway use. Therefore, the likelihood of bat road mortality occurring during dusk to dawn on IMCOM installations is determined to be discountable.

In conclusion training activities at firing and maneuver ranges are not likely to adversely affect the NLEB.

B. Aircraft Operations. As with ranges, flight training has and continues to occur on multiple IMCOM installations within the range of the NLEB. Studies have shown that helicopters tend to elicit a heightened response compared to fixed-wing aircraft. Even though that may be the case, helicopter training on IMCOM installations usually occurs as hovering operations occurring over fields or other open areas, thus any impacts from noise or downdrafts would be temporary and minimal to roosting bats and trees. For ongoing night time operations, foraging bats will continue to be exposed to sound levels that have been shown not to alter foraging behavior (USFWS 2010). Given that NLEB forages in the canopy layer (USFWS 2013), collision during night time flight operations are very unlikely to occur. Based on the nature and implementation of air operations, and the assumed level of habituation to flight training stimuli, it is determined that sound generated by ongoing training activities at existing ranges is not likely to adversely affect the NLEB. Similar conclusions were made at Fort Leonard Wood, (3D/I 1996), involving night-time maneuvers; air operations at Fort Drum, (USFWS 2009); and ongoing training activities at Camp Atterbury (USFWS 2010).

If there are any indications that flight training may be adversely impacting bats such as the observation of tree limbs and/or bark being blown off by helicopter downdraft, the applicable IMCOM installation will initiate consultation with their local USFWS field office. Consultation with the appropriate USFWS field office will also occur if flight training activities are introduced to new sites that have new impacts not discussed above, or if there is intensive low level hovering over forested areas during the active season (summer maternity season, and if applicable to the site, spring staging and fall swarming season), or if there is any other change to flight operations that may affect NLEB in a manner significantly different than those described above.

In conclusion, use of aircraft is not likely to adversely affect the NLEB.

C. Military Training Smoke and Obscurants: Smoke/obscurants are used to conceal military movements and help protect troops and equipment in combat conditions. They can be used throughout the Training Area as part of another military operation, or as part of an independent training scenario. Although they would be primarily used during the day, smoke/obscurants may be deployed at night. Training on some IMCOM installations may include, but is not limited to smokes and obscurants such as fog oil, colored smoke grenades, white phosphorous, and graphite smoke. The effects of these smokes and obscurants were assessed in the Fort Drum (USFS 2008; Army 2014; USFWS 2009; USFWS 2013; USFWS 2015) and Camp Atterbury BAs and associated BOs (USFWS 2010). Research was cited indicating that prolonged dermal and respiratory exposures to these items, except for the graphite smoke, could have adverse effects on roosting and foraging Indiana bats. Given the similar roosting behavior and foraging locations of the NLEB, it is likely they will also be adversely affected by these smokes and obscurants. However, measures can be taken to avoid adverse effects of some smokes.

Camp Atterbury (USFWS 1998) conducted an ecological risk assessment (ERA) to assess which training materials and pesticides may cause adverse effects to Indiana bats. The ERA indicated that chemicals found in M18 colored smoke grenades may cause acute toxicological effects. They determined that Indiana bats roosting within 36 meters of the deployed grenades may inhale unsafe concentrations of M18 colored smoke during a one-minute period following release. To avoid the potential for adverse effects from colored smoke on NLEB, installations will not release M18 colored smoke grenades within 50 meters of forested suitable NLEB habitat during the active season if USFWS protocol surveys have not been completed. However, sites where surveys have been conducted and determined NLEB roost locations, M18 colored smoke grenades will not be used during the NLEB active season within 50 meters of known roost trees, which are described in Section IV of this document. Therefore, by implementing this measure, it is believed the effects of colored smoke on NLEB will be insignificant.

Citing data from a National Research Council's report on the toxicity of military smokes and obscurants, Fort Drum determined that based on the low toxicity on experimental animals, the use of graphite smoke may affect, but is not likely to adversely affect the known and undiscovered maternity colonies of Indiana bats. The USFWS concurred that any adverse effects associated with graphite smoke are discountable or insignificant (USFWS 2009).

In the 2012 Fort Drum BO (USFWS 2012), the USFWS included a table of a number of studies that provided estimates of fog oil concentrations from typical smoke screening operations. The highest level of fog oil recorded was 140 mg/m³, which was the upper level of a range for a 30 minute release that averaged a 51.8 mg/m³ concentration 200 meters from the source. A 120 min release recorded a maximum level of 105 and 102 mg/m³ at 200 and 100 meters, respectively, from the source of release. The COE Engineer Research and Development Center conducted a study to evaluate the health effects of fog oil aerosols in a surrogate species (Red-winged Blackbird) for the Red-cockaded Woodpecker (Driver et al. 2002). Based on the results of the study, they concluded that adult Red-winged Blackbirds can apparently sustain fog oil exposures of about 400 mg/m³ for 4 hours with no detectable adverse effects.

The Lethal Concentration (LC)₅₀ of rats for inhalation of fog oil after 3.5 hours was 5,200 mg/m³. Less than 15% of the rats died at 4,000 mg/m³ (NRC 1999). Roosting NLEBs would most likely be exposed to fog oil levels well below those lethal to rats and having no detectable adverse effects on blackbirds. It would appear that release of fog oil at least 100 meter from any known or suspected roost sites would be sufficient to avoid impacts on NLEB. However, in a study conducted on Fort Leonard Wood, it was estimated that Indiana bats within 4,000 m of static smoke training and 7,000 m of mobile smoke training had the potential to inhale unsafe quantities of fog oil (USFWS 2009). To ensure that NLEB are not adversely affected by fog oil, IMCOM sites will not use fog oil during the NLEB active period, unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.

White phosphorous (WP) ignites when it is exposed to air and may cause burns. Smoke typically lasts up to 15 minutes. Rats exposed to WP for 15 min/day, 5 days/week for 13 weeks at 1,740 mg/m³ (H₃PO₄) resulted in the death of 32% of the rats within 6 weeks. Rats produced

clear signs of irritation when exposed to H3PO4 at a concentration of 525 mg/m3 for 60 minutes. Longer term exposure at concentrations of 884 mg/m3 (15 min per day, 5 days per week for 6 or 13 weeks), resulted in slight laryngitis and tracheitis. A similar exposure, but at higher concentrations (H3PO4 at 1,742 mg/m3), resulted in wheezing, dyspnea, moderate-to-severe laryngitis and tracheitis, and interstitial pneumonia. No such effects were reported for rats exposed for 15 min per day, 5 days per week for 13 weeks with H3PO4 at 280 mg/m3. Reproduction and development of rats showed that higher WP exposure (1,742 mg/m3 for 15 min/day, 5 days/week for 10 weeks) were associated with lower natal weights and had severe effects on survivability (NRC 1999).

Table 3. 2012 Fort Drum BO of Estimates of Fog Oil Concentrations Resulting From Typical Smoke Screening Operations at Given Distances From the Source.

Study	Distance from source (meters)	Average (mg/m3)	Range (mg/m3)	Maximum (mg/m3)
Lilegren et al. 1988 ^A	100	7.7		
	200	3.6		
	400	2.6		
Policastro et al. 1989 ^A	25	116		
	100	8		
	200	3		
Driver et al. 1993 ^B (30 min release)	100	64.3	27-120	
	200	51.8	7-140	
	400	27.9	1.8-93	
	1000	6.9	1.6-24	
Driver et al. 1993 ^B (300 min release)	100	64		
	200	29		
	400	8.7		
	1000	1.6		
Getz et al. 1996 (120 min release)	100	64	25-102	
	200	56	8-105	
	500	46	1.3-90	
	1000	13	0.8-25	
U.S. Army 1997 ^B	100	3.8		13.5
	250	3.5		12.7
	500	2.7		11.2
	1,000	1.2		4.3
Department of the Army 1997 (30 min release)	100		0-14	
	1000		0.1-1	
A- Results from studies conducted in the field B- Results from modeling				
Table is summarized from Getz et al. 1996 and ENSR 1999.				

It has been estimated that an exposure concentration of WP could reach 202 mg/m3 (H3PO4) 100 m downwind from deployment and about 1.4 mg/m3 (H3PO4) 5,000 m downwind. It was cited that the EPA does not expect community exposures to be severe at a distance of greater than 300 m; however, particularly susceptible individuals might experience respiratory irritation even at a distance of 5,000 m (NRC 1999).

To avoid the potential for adverse effects WP on NLEB, installations will not release WP within 200 meters of forested suitable NLEB habitat during the active season if USFWS protocol surveys have not been completed. However, sites where surveys have been conducted and determined NLEB roost locations, WP will not be used during the NLEB active season within 200 meters of known roost trees, which are described in Section IV of this document. Therefore, by implementing this measure, the anticipated level of WP at that distance should not expose NLEB to concentrations of H₃PO₄ that would be likely to adversely affect them.

For “other” smokes and obscurants, we cannot negate the potential for adverse effects on NLEB from exposure. Therefore, to avoid any potential for adverse effects, these items will not be employed during the NLEB active season. IMCOM installations will consult with the USFWS if any of these “other” smokes or obscurants are being considered for release during the NLEB active season and there is scientific evidence to support that such substances can be released in a manner to avoid adverse effects or ensure such effects are insignificant or discountable.

Summary of Conservation Measures for Military Smoke & Obscurants:

- 1) M18 colored smoke grenades will not be used within 50m of forested suitable NLEB habitat during the NLEB active season (see Table 2) unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.
- 2) M18 colored smoke grenades will not be used within 50m of known roost trees during the active season (see Table 2) after USFWS protocol surveys have been completed or site specific consultation has been completed with the local USFWS Field Office.
- 3) Fog oil will not be released within forested suitable NLEB habitat during the NLEB active season (see Table 2) unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.
- 4) WP will not be released within 200 meters of forested suitable NLEB habitat during the NLEB active season (see Table 2) unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.
- 5) WP will not be used within 200m of known roost trees during the active season (see Table 2) after USFWS protocol surveys have been completed or site specific consultation has been completed with the local USFWS Field Office.

6) Other smoke/obscurants will not be employed during the NLEB active season (see Table 2) unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.

7) No smoke or obscurants will be released within 0.5 miles of known hibernacula outside of the active season as defined in Table 2.

In conclusion military smoke and obscurants may affect, but are not likely to adversely affect the NLEB by implementing the above conservation measures.

D. *Construction:* Construction projects can include new buildings, building additions, new or upgraded utilities, etc. As part of construction there may be multiple activities including tree removal, site preparation, equipment staging and maintenance areas, etc. On IMCOM installations where NLEB are known (or assumed – no P/A surveys conducted to date but within range and suitable summer habitat) to roost, tree cutting and clearing for construction projects will occur during the NLEB inactive season (Table 2) or when verified absence has been determined utilizing the published USFWS protocols. If there is a need to remove a single or small cluster of trees during the active season, the installation will follow procedures listed in Section VI.G. below to determine if such removal can be done with insignificant or discountable effects on NLEB. Tree cutting and clearing may cause loss of habitat; however, inactive season tree removal effects would be discountable by following similar conservation measures to the Federal Highway Administration and Federal Railroad Administration’s Range-wide Biological Assessment for Transportation Projects for Indiana Bat and NLEB (FHA 2015)

Other construction activities such as site grading, road construction, vertical and horizontal building, and other activities are likely to occur during the NLEB active season during day light hours. Noise and vibrations generated by heavy equipment within or directly adjacent to roosting trees could temporarily disturb roosting bats. For known roost sites, or areas of suitable habitat without verified absence, that are greater than 100m from the construction site, it is anticipated that the intensity of noise and vibration associated with the construction will diminish a sufficient amount to reduce the likelihood of disturbing bats that roost in these particular areas. Also High light levels may deter bats from areas as their nocturnal behavior may have evolved in response to predation risks (Speakman 1991, Sparks et al. 2005). By angling the light away from potential foraging and roosting areas, the area will be darker thus providing bats more protection from predators. By implementing 100 meter buffers around areas of suitable habitat without verified absence, IMCOM determines that such activities “may affect, but not likely to adversely affect” the NLEB in regards to disturbance activities related to construction. Additional coordination will occur for projects within 0.25 miles of known roosts.

Hibernacula may be affected by construction activities if the activity is conducted too close to or during the inactive season. Construction activities such as site grading, road construction, vertical and horizontal building, and other activities are likely to occur during the NLEB inactive season (Table 2) during day light hours. Noise and vibrations generated by heavy equipment within or directly adjacent to hibernacula could temporarily disturb roosting bats. Because all construction activities will occur >0.5 miles from hibernacula during the winter to be included as part of this informal consultation, no direct effects to NLEB will occur. Additional

consultation is required for any construction activities <0.5 miles from hibernacula.

In addition, in areas where NLEBs are already subject to noise and vibrations associated with ongoing actions, construction activities occurring in such area would not likely have an adverse effect on NLEBs.

Additionally, site-specific consultation with the local USFWS field office will often be needed to adequately assess the potential direct and indirect effects associated with construction projects. However, across the range of the species no effects are anticipated if construction projects:

- 1) Are located entirely (including staging areas & construction footprint) beyond 100m of NLEB suitable summer habitat and 5 mi of hibernacula¹ OR
- 2) Involve maintenance, alteration, or demolition of bridges/structures without any signs of bats as verified by a trained biologist, pest management specialist, or similar professional individual.

Some projects may occur near or within suitable NLEB habitat, but the project will result in no effects or discountable likelihood of effects even without the implementation of any avoidance or minimization measures, if the proposed project is based on the following:

- 1) Activities are completely within existing road surfaces (e.g., road line painting).
- 2) Activities are within existing ROWs or at existing facilities that contain suitable habitat but that do not remove or alter the habitat (e.g., mowing, brush removal).
- 3) Activities are wetland or stream protection associated with wetland mitigation without any tree removal.
- 4) Are located in areas with verified absence determined by USFWS protocol surveys²

Other projects may occur near or within NLEB suitable habitat which will require the implementation of conservation measures to avoid or minimize impacts to the point of insignificant/discountable for the projects to be included in this programmatic consultation. Construction projects that involve any of the features listed below are not likely to adversely affect NLEBs.

- 1) Structure Maintenance: during the active season (Table 2) that does not bother roosting bats in any way (e.g., activity away from roosts inside common rooms in structures, normal cleaning and routine maintenance).
- 2) Bridge Maintenance: during the active season (Table 2) that does not bother roosting bats in any way (e.g., road paving, wing-wall work, work above that does not drill down to the underside of the deck, some abutment, beam end, scour, or pier repair).

¹ Addresses potential for noise/disturbance adjacent to suitable habitat.

² See protocols for minimum number of years negative survey results are valid

3) Structure or Bridge Maintenance: outside the active season that does not alter roosting potential for bats.

4) Tree Removal must occur outside the active season (Table 2) AND must not remove known roosts (as defined herein) AND must be entirely within 100 feet of existing road surfaces in order to have no linear acreage limits; (this would include roads within cantonment, state, local roads, paved roads, and developed hard packed roads, but does not include trails or other travel corridors in training areas) OR if located >100 feet of existing road surfaces, must be limited to no more than 10 acres per project (10 acres is 5% of a 200 acre home range).

The following additional conservation measures will be taken for all construction to further eliminate the potential to affect NLEB:

1) Roost Tree Protection. No known roost trees, as defined herein, will be felled, unless there is a human health and safety concern. If there is a need to remove a known roost tree, the installation will follow procedures listed in Section VI.G. below to determine if such removal can be done with insignificant or discountable effects on NLEB.

2) Construction activities outside of suitable habitat will not occur within 100 meters of any known roost trees without additional site-specific consultation.

3) Construction activities that remove suitable habitat within 0.25 miles of any known roost trees without additional site-specific consultation. Construction activities will also take into account factors such as the surrounding landscape, habitat connectivity, and distance to other roosts, distance to known foraging areas, and any other issue important NLEB.

4) Time of Year Restriction for Tree Falling. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect known or potential roost trees during the active season (see Table 2), unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.

5) Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any construction activities for a given project. Flagging will be removed upon completion of the project.

6) Via Scope of Works, Contracts, Briefings, etc., all personnel responsible for construction activities will be informed about the need to follow design plans, stay within flagging, and minimize impacts to wildlife and other environmental concerns.

7) Outdoor Lighting Minimization. For all future projects, IMCOM will evaluate the use of outdoor lighting and seek to minimize light pollution by angling lights downward or via other light minimization measures.

8) Demolition. If the building has pre-existing known NLEB colonies, then the appropriate environmental personnel of the IMCOM installation must be contacted before demolition is to occur. If during the course of demolition, NLEB are discovered, then all work must cease and USFWS must be immediately contacted. If the structure is safe to leave as is, then it will be left until after October 15, or until bats have stopped using the structure. If the structure is unsafe and poses a risk to human health and safety, IMCOM will attempt to exclude the bats immediately. If this is not possible, or NLEB are found to be using the structure during the maternity season when pups are not volant, IMCOM will contact USFWS to discuss the most appropriate next course of action.

9) Water Quality BMPs will be established for each construction site in accordance with the appropriate federal laws and state permits.

In conclusion construction & maintenance activities may affect, but are not likely to adversely affect the NLEB by implementing the above screening criteria and conservation measures.

E. *Forest management*: Forest management includes both even-aged (e.g. clearcutting or shelterwood) and uneven-aged (single tree or group selection) harvest methods to manage forests to support military training, timber production/health, and wildlife habitat creation/enhancement. Environmental conditions (e.g., wet or rocky soils), training requirements, and stand characteristics dictate harvest methods. Forest management practices such as timber harvest and silviculture are essential to maintaining diverse quality forested habitat for both the NLEB and military training. A number of forest management practices occur on military installation such as but not limited to: harvest, thinning, and/or planting operations. Operations that require tree removal have the potential to alter NLEB habitat. In the final listing rule USFWS anticipates that habitat modifications resulting from forest management and silviculture will not significantly affect the conservation of the northern long-eared bat. However, timber harvest operations performed during the species' active season may directly kill or injure individuals.

Removal of trees could have an indirect effect from loss of potential roosting and foraging areas. The degree of potential impact would be dependent on whether the removal is temporary (i.e., timber harvest, to include clearcuts) or permanent (construction). As stated in the proposed listing rule for NLEB (USFWS 2013), studies to date have found that NLEBs show a varied degree of sensitivity to timber harvesting practices and the amount of forest removal occurring varies by State.

The following additional conservation measures will be taken for all forest management activities to further eliminate the potential to affect NLEB:

1) Time of Year Restriction for Tree Falling. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect known or potential roost trees during the active season (see Table 2) unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office

2) Roost Tree Protection: No known roost trees, as defined herein will be felled, unless there is a human health and safety concern. If there is a need to remove a known roost tree, the installation will follow procedures listed in Section VI.G. below to determine if such removal can be done with insignificant or discountable effects on NLEB. Clearcutting or similar harvest will not occur within 0.25 mi (250 m) and overstory roost tree removal within 100 meters of documented maternity roost trees without further consultation with the USFWS. Tree thinning/removal will also take into account factors such as the surrounding landscape, habitat connectivity, and distance to other roosts, distance to known foraging areas, and any other issue important to NLEB.

3) Forest Management will not be conducted within 0.5 miles from “known hibernacula” when bats are present during the inactive season. Forest management near hibernacula may affect swarming and staging areas through habitat loss around the hibernacula. Additional site-specific consultation will occur for forest management within 0.5 miles of hibernacula.

4) Tree Removal Acreage Limits: if located >100 feet of existing road surfaces, must be limited to no more than 10 acres of clearcutting (or similar forest practice like seed tree or shelterwood harvest) per project (10 acres is 5% of a 200 acre home range). NOTE: There is no acreage limit for selective harvest practices conducted during winter, as roosting habitat will remain available.

OR

must be entirely within 100 feet of existing road surfaces in order to have no acreage limits; (this would include roads within cantonment, state, local roads, paved roads, and developed hard packed roads, but does not include trails or other travel corridors in training areas)

5) Snag Retention. All snags will be left in silvicultural treatments unless there is a safety concern for the contractor or the military units training in the stands (e.g., maneuver corridors), or unless the treatment is a salvage harvest or clearcut. Snags should be distributed and retained throughout the landscape.

In conclusion forest management activities may affect, but are not likely to adversely affect the NLEB by implementing the above screening criteria and conservation measures.

F. *Prescribed Burns*: Prescribed fire is used to improve line-of-sight on ranges and observation points for direct and indirect firing, maintain grassland/open shrubland for open maneuver training, reduce fuel accumulation to minimize wildfire risk, and manage species habitat. It is also used as a tool to maintain ecological health of grassland and forested areas and regenerate oak ecosystems. The majority of natural and prescribed fires on IMCOM installations occur in impact or surface danger zone areas, due to live fire training and testing operations. The vegetation that occupy these areas are fire dependent. Other prescribed fires are generally conducted in grasslands and forests, during the growing and dormant seasons, and all prescribed fires are implemented in accordance with the installation’s Integrated Wildland Fire Management Program and State regulations.

Prescribed fire is gaining acceptance as a means of restoring and perpetuating oak (*Quercus*) dominated ecosystems in the eastern U.S. (Dickinson et al., 2010). As stated in the final listing rule (USFWS 2015), a U.S. Forest Service review of prescribed fire and its effects on bats generally found that fire had beneficial effects on bat habitat. Bats are resilient to fire and some species prefer burned areas for foraging and roosting (e.g. Boyles and Aubrey 2005, Loeb and Waldrop 2007). There is little scientific evidence to indicate that fire has adverse effects on NLEB. NLEB roost-switching frequency, distance between successive roosts, and duration of individual roost tree use were similar between fire and control treatment areas (Johnson et al. 2009). Following prescribed fires, NLEB benefit from increased abundance of insects and availability of roost sites (Lacki et al. 2009). During prescribed fire, NLEB have been shown to exit their roosts during the day and switch roosts as necessary to limit their exposure (Dickinson et al. 2009). In fact, most bats are quick and highly vagile so that escape and relocation to unburned areas easily can occur (Carter et al. 2009). However, neonatal bats that cannot fly would be at greater risk to smoke and fire effects than juveniles or adults. Although, exposure of tree roosting bats to carbon monoxide (CO) is unlikely to be a concern when fireline intensity is low (~1.5 m flame length) (Dickinson et al., 2010). In largely forested landscapes, there are infinite amounts of available roosts for alternate use (Carter et al. 2000). During the active season, bats frequently roost-switch but use torpor to conserve energy and extra arousals when bats are in deep torpor are a cause for concern. The maternity roosting season, from 01 June to 31 July when young pups are not Volant, and to a much lesser extent during the active season, is the only time NLEB might be directly affected by prescribed burns to elicit take. During all other times of the year research has shown that NLEB are not adversely affected by burns conducted under prescribed conditions.

Conservation Measures for Prescribed Burning:

- 1) Not within 0.5 miles from “known hibernacula” when bats are present during the inactive season (see Table 2 for active season).
- 2) Not within forested suitable NLEB habitat during the active season (see Table 2) unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.
- 3) Prescribed burns will be conducted under a site specific burn plan per the Installation Integrated Wildland Fire Management Plan which is integrated with the ecosystem management goals and objectives of a tripartite approved (IMCOM, State, and USFWS) Integrated Natural Resource Management Plan (INRMP).
- 4) Time of Day Restriction. For prescribed burns not within forested suitable NLEB habitat, whenever possible, all efforts will be made to have all flames extinguished and smoke generation minimized by sunset to reduce potential direct impacts to foraging bats during the active season (see Table 2)
- 5) Containment Measures. For prescribed burns within 100 meters of forested suitable NLEB habitat, make use of naturally occurring firebreaks or, if necessary,

establish wet lines to preclude fire from entering the adjacent NLEB habitat during the active season (see Table 2), unless USFWS protocol surveys have been completed to verify absence or site specific consultation has been completed with the local USFWS Field Office.

In conclusion prescribed burning activities may affect, but are not likely to adversely affect the NLEB by implementing the above conservation measures. Additionally prescribed burning is determined to provide an overall beneficial effect to overall habitat quality.

G. Specific Single, Group, or Hazard Tree Removal: Removal of single, multiple, or cluster of trees during the active season in suitable habitat, trees that do not pose a risk to human life or property will be analyzed for signs of bats being present (emergence surveys) prior to removal according to USFWS Indiana bat (and NLEB) summer survey protocols. If NLEB are roosting in such tree(s), the applicable IMCOM installation will consult with their local USFWS field office. If bat species are determined present and immediate removal of the tree(s) is necessary, the tree(s) will be removed in a manner that will minimize impacts on the bats such as first disturbing the tree(s) to cause them to abandon the roost. If there are hazard trees that are considered an imminent threat to human life or loss of property and need to be removed during the active season, the IMCOM installation will remove such trees and inform the USFWS field office of the action only if NLEB are present on the installation and the IMCOM installation will initiate emergency consultation per the procedures in accordance with 50 CFR 402.05.

H. Pesticide Use: All pesticides will be applied in accordance with their label and applicable laws and regulations. All pesticides are also applied in accordance with the installation INRMP and the Integrated Pest Management Plan (IPMP). IMCOM installations will regularly check Protection Bulletins on EPA's Endangered Species Protection Program (ESPP) website to determine whether pesticide use in a certain geographic area may affect NLEB. Limitations on pesticide use will be implemented as required to protect NLEBs in all areas. Application of pesticides in and around buildings or other structures are not likely to have any effect on NLEB. If NLEBs are found roosting in a building, then pesticides will be used sparingly and no foggers will be used in and around the occupied building.

To minimize the exposure of NLEB to pesticide and to keep in from drifting into known roost tree areas or water bodies the following conservation measures will be followed:

Conservation measures for Pesticide use:

- 1) Only pesticides registered by the EPA and State of use may be applied and only in accordance with their label.
- 2) Aerial application of pesticide will only occur outside the active season unless additional consultation with the USFWS is accomplished. Aerial applications will occur between the hours of sunrise and one hour before sunset. This will protect foraging bats in undiscovered foraging areas from direct exposure.
- 3) Whenever possible, herbicides that have low toxicity to mammals will be utilized

with the tow behind power blowers. Herbicides that may be somewhat toxic to mammals will be mixed and applied at a rate that should minimize any potential exposure concerns.

4) Application of pesticides from ground mounted vehicles (i.e., ATVs, tractors) that spray chemicals directly onto the ground and do not result in broad dispersal will be conducted at least 100 ft (30 m) from known roost trees during the active season (coordinate with local USFWS field office).

5) Application of pesticides that result in broad dispersal (e.g., tow behind power blowers) will be conducted at least 250 ft (76 m) away from known roost trees during the active season (coordinate with local USFWS field office). Pesticides will not be applied between sunrise and one hour before sunset. Location-specific applications (i.e. hatchet or stem injections of trees, individual application to specific plants) may be used within 50 ft (15 m) of known roosts. This measure minimizes the risk of exposure to bats and potential effects from pesticides.

6) Pesticides applied from tow behind power blowers will use appropriate nozzles and drift control additives, and will be applied using low pressure to reduce drift and potential swirling motion from the blower. All efforts will be made to only spray 10 feet from ground level or below.

7) Pesticides will not be applied outdoors when the wind speed exceeds 8 mi/hr for all applications except power mist blowers. Pesticides applied via power mist blower will only be applied with wind speeds <5 mi/hr. This is to reduce the risk of pesticide drift, which could impact water quality or non-target areas. Care will be taken to make sure that any spray drift is kept away from non-target areas and individuals. Additionally, aerial application utilizing helicopters should employ large droplet technology through special nozzles on drop tubes to ensure the herbicide stays on target.

8) If a bat colony is found roosting in a building, then insecticides will be used sparingly and no foggers will be used. This will minimize impacts to roosting northern long-eared bats if they are found within a building.

In conclusion by implementing these conservation measures IMCOM believes the effects on NLEB will be insignificant.

I. Pest Control: IMCOM facilities may have pest control complaints, such as but not limited to bats, moles (order Insectivora), raccoons (*Procyon lotor*), squirrels (order Rodentia), skunks (order Carnivora), woodchucks (order Rodentia), insects, and other such species. Each issue is handled on a case-by-case basis depending on the pest species and the situation. When possible, wildlife will be deterred from areas by removing features that are attractive to the species (e.g. eliminating potential food/nesting sources, plugging openings into buildings, etc.). If deterrence efforts are ineffective, then it may be necessary to set live traps and relocate or

ethanize animals, or use lethal control methods such as trapping, shooting, and/ or chemical control. All pest control efforts are performed in accordance with the installation INRMP and the IPMP.

Lethal traps are primarily used for rodents and moles. Adhesive traps are allowable for rodent and insect control in buildings, however, if placed incorrectly, they may inadvertently capture bats. Both adult and juvenile bats are susceptible to capture in glue traps which could result in injury or mortality. To prevent accidental capture of bats, no adhesive traps can be placed in such a manner that they could capture bats. Glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur. If bats are present within the building, then live traps for rodents will be used instead of glue traps.

If there are large scale infestations of rodents and moles, chemical means may be necessary to effectively manage the outbreak. Bait stations will not be placed where it may be accessible to children or pets and must be monitored to prevent access to non-target animals.

Conservation Measures for Pest Control:

1) No Lethal Control. No lethal control methods are permitted for bats unless there is a suspected human health risk for exposure to rabies or other disease. If individual bats are in buildings and there is no evidence of maternity use, then all efforts will be made to safely capture and release individual bats. Or, the bats will be excluded by establishing one-way valves over the roost's exit (if feasible).

2) Time of Year Restriction for Exclusion. The exclusion will only be done during times of the year when pups are not present or when they are volant (i.e., August - early May). The time of year restriction will minimize the risk of separating mothers from non-volant young, so it will prevent potential pup mortality during exclusion activities. Sealing cracks and crevices in buildings will also be done during the late fall through early spring. Sealing cracks and crevices prevents bats from entering a building and reduces human/bat conflicts.

3) Adhesive Trap Restrictions. No adhesive traps used for rodents or insects will be placed in such a manner that they could capture bats—glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur.

4) Chemical Measures. Any use of chemical or insecticides will be utilized in accordance with section "H" above.

In conclusion by implementing these conservation measures IMCOM believes the effects on NLEB will be insignificant in regards to pest control management activities.

J. Recreational Activities: Recreational activities on IMCOM installations typically hunting, fishing, trapping, hiking, mountain biking, camping, horseback riding, wildlife

watching, and other consumptive and non-consumptive activities. These activities whether dispersed or concentrated are low impact activities that do not alter the landscape or generate a disturbance that would be considered to affect the NLEB. Continued use of IMCOM installations for these or similar activities is expected to continue without restriction, in accordance with the Sikes Act (16 U.S.C. 670, et seq.). However development of new areas for these activities that would be considered construction or habitat alteration “may affect”; therefore those projects would utilize the conservation measures identified earlier in this document for those actions.

Hunting activities have the potential to directly affect roosting NLEB if a hunter should place a stand in a NLEB roost. Hunters are unlikely to place tree stands in snags due to the instability of snags and the risk that the tree may fall. Thus, NLEB roosting in standing dead trees are not likely to be adversely affected by tree stands during the non-hibernation seasons. Tree stands may disturb roosting NLEB or damage roosts that are located within crevices of live trees or are in a dead tree limb of a live tree. Installation of a tree stand may cause NLEB to abandon the roost. Hunting primarily occurs in the fall-winter when NLEB are moving to the hibernacula or are already in the hibernacula, so NLEB are more likely to roost alone or in small groups within trees or are within the hibernacula. But since hunting typically occurs in seasons when NLEB are less likely to be present, the use of tree stands may affect but is not likely to adversely affect roosting NLEB.

Hunting activities also have the potential to directly affect roosting NLEB if a hunter should shoot at game flying through the air or in a tree and the shot hits a tree containing roosting NLEB. The likelihood of this happening is expected to be extremely rare, given the combination of occurrences that need to come together (i.e., the hunter being in a location suitable for NLEB to be roosting and game birds or waterfowl to be flying, the hunter shooting at the right angle into a tree to hit and kill a NLEB, etc.). Additionally, most NLEB would presumably be within the hibernacula when the majority of hunting is conducted (October-February).

There is potential that individuals hunting game may shoot into a forested area which has NLEB roosts. Fired projectiles may strike a NLEB roost and remove bark from the tree, rendering the roost unsuitable for future use. Snags are ephemeral in nature and frequently slough bark. NLEB are known to frequently switch roosts assumed because of the fleeting nature of snags. Since strikes of snags are expected to occur infrequently, NLEB are unlikely to be adversely affected by hunting. Thus effects are discountable.

Skeet shooting could potentially result in injury or mortality of a foraging NLEB if skeet shooting was conducted in extreme early morning or at sunset when NLEB may be active. Skeet ranges located adjacent to suitable NLEB summer foraging habitat have a likelihood that a NLEB could be struck during skeet shooting but is highly improbable.

Legal use of Off Road Vehicles (ORV) should have no known indirect effects to NLEB as ORV's will remain on the road at all times and will not damage vegetation in the area. However, unauthorized ORV use off-trail may damage vegetation which can expose the soil to the elements and could lead to increased soil erosion. Soil erosion may lead to declines in water quality. Lower water quality may reduce aquatic insect availability, which are prey for NLEB. In addition, streams/wetlands may be converted overtime into mud pits that are unsuitable for drinking by NLEB. Given the amount of ample water and natural habitat available on IMCOM installations, it is unlikely that ORV use will adversely affect NLEB. Thus, effects are discountable.

Recreational activities that occur in the vicinity of hibernacula are pass through in nature except possibly for stationary hunting. Stationary hunting would only create a disturbance when a shot or shots were fired but no different than the single unlikely instance as with pass through hunting. Additionally as in section "A" noise activities associated with the firing of weapons has been shown to not adversely affect NLEB.

In conclusion, the majority of recreational activities with the exclusion of ORV use, hunting, and skeet shooting, are expected to have no known effects on NLEB. Given the conservation measures for each and remote nature of potential effects, recreational activities may affect but are not likely to adversely affect NLEB.

VII. Additional General Conservation Measures

This section identifies the Conservation Measures (CM) proposed throughout this document that are considered necessary to either avoid adverse effects or to ensure the expected effects are beneficial, insignificant or discountable. Additional CMs are also proposed to promote the conservation of the NLEB. IMCOM will use the most current National WNS Decontamination Protocols approved by USFWS for planned activities that involve close or direct contact with bats, their environments, and/or associated materials.

- IMCOM will explore cooperative management efforts with adjacent landowners, if such efforts would complement installation NLEB conservation initiatives and/or support mission implementation.
- IMCOM will explore cooperative NLEB management strategies, solutions, and efforts with other federal, state, and private organizations and landowners in the region.
- IMCOM will seek funding opportunities to conduct USFWS presence/absence surveys on individual installations subject to the availability of funds.
- IMCOM installations will continue to manage their ecosystems to support and enhance military training, testing, & readiness in accordance with their INRMP to retain habitat and biological diversity, and long term sustainability.
- IMCOM & the USFWS will develop a screening criteria check list so individual installations may quickly and categorically apply the above listed measures described in the programmatic process.

- IMCOM will centrally report activities taken by individual installations under this programmatic opinion annually to the USFWS from data gathered through the annual AEDB-EQ installation data call.

VIII Conclusions

A. Northern Long-Eared Bat. Based on IMCOM’s intent to follow USFWS guidance on NLEB management, carry out actions as described in Section V, and to implement the conservation measures identified in Section VI, IMCOM has determined that implementation of actions IAW with this document “may affect, but not likely to adversely affect” the NLEB as a threatened species listed under the ESA.

B. Request of Conference Report.

IMCOM requests that the USFWS review our findings and determinations stated herein and provide a conference report that reflects IMCOM’s proposed conservation measures for reducing adverse effects. If necessary, the applicable IMCOM installation(s) will initiate site specific consultation with their USFWS Field Office on activities that are not included in this BE or if there is additional site specific information to suggest alternate conservation measures.

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X. Glossary

Action area - all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action.

Active season – the time period when bats are not in hibernation. This includes spring emergence, young rearing, and breeding (swarming) and is typically from April through October (specific dates are defined by geographical area see Table 2).

Critical habitat - (i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the provisions of the ESA, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species (defined in Section 3 of the ESA).

Emergency - An emergency is a situation involving an act of God, disasters, casualties, national defense or security emergencies, etc., and includes response activities that must be taken to prevent imminent loss of human life or property.

Exfoliating bark - tree bark that peels away from a trunk or a branch of a tree; when a tree dies, plates of bark spring away from the bole of the tree. Some living trees, such as shagbark hickory and white oak, have bark that peels back from the living cambium.

Hibernaculum (plural **hibernacula**) - a site, usually a cave or mine, where any bat species hibernates during the winter (see suitable habitat).

Is likely to adversely affect – the appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial.

Known hibernacula – a location where one or more northern long-eared bats have been detected during hibernation or at the entrance during fall swarming or spring emergence. Given the documented challenges of surveying for northern long-eared bats in the winter (use of cracks, crevices), any hibernacula with northern long-eared bats observed at least once, will continue to be considered “known hibernacula” as long as the hibernacula and its surrounding habitat remain suitable for northern long-eared bat. However, a hibernaculum may be considered to be unoccupied if there is evidence (*e.g.*, survey data) that it is no longer in use by northern long-eared bats (USFWS 2015).

Known roost tree – a tree that male or female NLEBs have been documented as using during the active season (approximately April–October). Once documented, a tree will be considered to be a “known roost” as long as the tree and surrounding habitat remain suitable for NLEB.

However, a tree may be considered to be unoccupied if there is evidence that the roost is no longer in use by NLEB (USFWS 2015).

May affect - the appropriate conclusion when a proposed action may pose any effects on listed species or designated critical habitat.

No effect - the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or designated critical habitat.

Not likely to adversely affect (NLAA) - the appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. **Beneficial effects** are contemporaneous positive effects without any adverse effects to the species. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Discountable effects** are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

Snag - a standing dead (or mostly dead) tree, generally with <10 percent living canopy.

Staging - the departure of bats from hibernacula in the spring, including processes and behaviors that lead up to departure (see suitable habitat).

Suitable habitat - Summer and/or winter habitat that is appropriate for use by NLEB (may be known or unknown in terms of documented use). See most recent summer survey guidance)

Winter (hibernacula) is restricted to underground caves and cave-like structures (e.g., abandoned mines, railroad tunnels). These hibernacula typically have large passages with significant cracks and crevices for roosting; relatively constant, cooler temperatures (0-9 degrees C) and with high humidity and minimal air currents.

Summer for NLEB consists of the variety of forested/wooded habitats where they roost, forage, and travel. This includes forested patches as well as linear features such as fencerows, riparian forests and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree and are less than 1000 feet from the next nearest suitable roost tree, woodlot, or wooded fencerow. May also include structures for roosting (e.g., barn).

Spring staging/fall swarming for NLEBs consists of the variety of forested/wooded habitats where they roost, forage, and travel within 5 miles of a hibernaculum. This includes forested patches as well as linear features such as fencerows, riparian forests and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree and are less than 1000 feet from the next nearest suitable roost tree, woodlot, or wooded fencerow.

Suitable roost tree - any tree in which bats roost when they emerge from the hibernacula. Females gather in maternity colonies and males may roost singly or in small groups. During summer NLEBs roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and snags, typically ≥ 3 inches dbh.

Survey - a method of sampling, such as mist netting, that provides data concerning the presence/absence of bats at a site; also, the act of enumerating the bats hibernating in a cave or mine. NLEB summer survey guidance can be found at <http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>

Swarming - A phenomenon in which, during late summer and autumn, numerous bats are observed entering and exiting entrances to caves and mines, but few, if any, of the bats may roost within the site during the day. Swarming probably is related to fall breeding activities and locating potential hibernation sites. (See suitable habitat).

Take - Take is defined in Section 3 of the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Torpor – a period of inactivity, with reduced body temperature and metabolism.

Volant - able to fly.

Verified absence - refers to known or suitable habitat determined to be unoccupied at the time of impact by utilizing USFWS approved protocols.

XI. Summary of IMCOM NLEB Programmatic Biological Evaluation Conservation Measures

A) Activities/Areas Not Subject to Conservation Measures:

- Any Activity that occurs outside the known range of the NLEB (see Section V for details)
- Any activity that occurs within the known range of the NLEB but does not contain suitable NLEB habitat. (see Section V for details)
- Any activity in a highly developed urban area that is <1000' from suitable NLEB habitat. (see Section V for details)
- Any area where NLEB absence has been verified by USFWS Protocol survey.
- Any activity that is conducted under a site specific consultation with the local USFWS Field Office.
- All military activities such as but not limited to: air operations, water operations, field training operations, live munitions training, demolition, and research, development, testing, and evaluation (RDTE). (see Section VI-A for details)
- All activities involving the use of aircraft such as but not limited to: fixed wing, rotary wing, drone, etc...(see Section VI-B for details)
- All categories of outdoor recreation such as but not limited to: hunting, fishing, trapping, hiking, mountain biking, camping, horseback riding, wildlife watching, and other consumptive/non-consumptive activities. (see Section VI-J for details)

B) Activities Subject to Conservation Measures:

- Military Training Smoke and Obscurants: (see Section VI-C for details)
 1. M18 colored smoke grenades will not be used within 50m of forested known/presumed occupied NLEB during the active season (see PBE Table 2 Below). Or within 50m of known roost trees during the active season if USFWS protocol surveys have been completed.
 2. Fog oil will not be released within forested known/presumed occupied habitat during the NLEB active season (see PBE Table 2 Below).
 3. WP will not be released within 200 meters of forested known/presumed occupied NLEB during the active season (see PBE Table 2 Below). Or within 200m of known roost trees during the active season if USFWS protocol surveys have been completed.
 4. Other smoke/obscurants will not be employed during the NLEB active season (see PBE Table 2 Below).
 5. No smoke or obscurants will be released within 0.5 miles of known hibernacula outside of the active season as defined in PBE Table 2 Below.
- Construction: (see Section VI-D for details)
 1. If there is a need to remove a single or small cluster of trees during the active season, the installation will follow procedures listed in that section below.
 2. Consult with USFWS for projects within 0.25 miles of known roost trees. Buffers may also take into account factors such as the surrounding landscape, habitat connectivity, and distance to other roosts, distance to known foraging areas.
 3. Implement a 0.5 mile buffer around “known” hibernacula where additional consultation is required
 4. Conduct structure, sign, utility, & bridge maintenance: during the active season that

does not bother roosting bats in any way (e.g., activity away from roosts inside common rooms in structures, normal cleaning and routine maintenance)

5. Tree removal outside the active season (see PBE Table 2 Below), that is entirely within 100' of an existing road surface has no acreage limit. This would include roads within cantonment, state, local roads, paved roads, and developed hard packed roads, but does not include trails or other travel corridors in training areas)
6. Tree removal outside the active season (see PBE Table 2 Below), that is >100' of an existing road surface has a 10 acre per project limit.
7. Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any construction activities for a given project. Flagging will be removed upon completion of the project.
8. Via Scope of Works, Contracts, etc., all personnel responsible for construction activities will be informed about the need to follow design plans, stay within flagging, and minimize impacts to wildlife and other environmental concerns.
9. Outdoor Lighting Minimization. For all future projects, IMCOM will evaluate the use of outdoor lighting and seek to minimize light pollution by angling lights downward or via other light minimization measures.
10. Demolition. If the building has pre-existing known NLEB colonies, then the environmental contact of the IMCOM installation must be contacted before demolition is to occur. If during the course of demolition, NLEB are discovered, then all work must cease and USFWS must be immediately contacted. If the structure is safe to leave as is, then it will be left until after October 15, or until bats have stopped using the structure. If the structure is unsafe and poses a risk to human health and safety, IMCOM will attempt to exclude the bats immediately. If this is not possible, or NLEB are found to be using the structure during the maternity season when pups are not volant, IMCOM will contact USFWS to discuss the most appropriate next course of action.
11. Water Quality BMPs will be established for each construction site in accordance with the appropriate federal laws and state permits.

- Forest management: (see Section VI-E for details)

1. IMCOM will screen projects that required tree removal for forest management activities the same as identified for construction.
2. If there is a need to remove a single or small cluster of trees during the active season, the installation will follow procedures listed in that section below.
3. Implement a 0.25-mile buffer around known roost trees where additional consultation is required for clearcutting or similar harvest. Buffers may also take into account factors such as the surrounding landscape, habitat connectivity, and distance to other roosts, distance to known foraging areas.
4. Implement a 0.5 mile buffer around "known" hibernacula where additional consultation is required.
5. Tree removal outside the active season (see PBE Table 2 Below), that is entirely within 100' of an existing road surface has no acreage limit. This would include roads within cantonment, state, local roads, paved roads, and developed hard packed roads, but does not include trails or other travel corridors in training areas)
6. Clearcutting or similar harvest outside the active season (see PBE Table 2 Below),

that is >100' of an existing road surface has a 10 acre per project limit. No acreage limit on selective harvest.

7. Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any forest management activities for a given project. Flagging will be removed upon completion of the project.

8. Snag Retention. All snags will be left in silvicultural treatments unless there is a safety concern for the contractor or the military units training in the stands (e.g., maneuver corridors), or unless the treatment is a salvage harvest or clearcut.

- Prescribed Burns: (see Section VI-F for details)
 1. Will not be conducted within 0.5 miles from “known hibernacula” when bats are present during the inactive season (see Table 2 for active season).
 2. Will not occur within forested suitable NLEB habitat during the active season (see PBE Table 2 Below).
 3. Prescribed burns will be conducted under a site specific burn plan per the Installation Integrated Wildland Fire Management Plan
 4. Whenever possible, all efforts will be made to have all flames extinguished and smoke generation minimized by sunset to reduce potential direct impacts to foraging bats during the active season (see PBE Table 2 Below)
 5. Make use of naturally occurring firebreaks or if necessary, establish wet lines 100m around forested known/presumed occupied NLEB habitat during the active season (see PBE Table 2 Below), to preclude fire from entering, to the maximum extent practicable.

- Specific Single, Group, or Hazard Tree Removal (see Section VI-G for details)
 1. Removal of single, multiple, or cluster of trees during the active season, in areas where there are known roost trees, trees that do not pose a risk to human life or property will be analyzed for signs of bats being present (emergence surveys) prior to removal according to USFWS Indiana bat (and NLEB) summer survey protocols.
 2. If known roost tree removal is determined to be necessary, the applicable IMCOM installation will consult with their local USFWS field office.
 3. If such tree removal is preferred immediately, the applicable IMCOM installation will consult with their local USFWS field office.
 4. If non-ESA bat species are determined present and immediate removal of the tree(s) is necessary, the tree(s) will be removed in a manner that will minimize impacts on the bats such as first disturbing the tree(s) to cause them to abandon the roost.
 5. If there are hazard trees that are considered an imminent threat to human life or loss of property occurring in suitable NLEB habitat and need to be removed during the active season, the IMCOM installation will remove such trees and inform the USFWS field office of the action only if NLEB are present on the IMCOM installation will initiate emergency consultation per the procedures in accordance with 50 CFR 402.05.

- Pesticide Use: (see Section VI-H for details)
 1. Only pesticides registered by the EPA and State of use may be applied and only in accordance with their label.
 2. Aerial applications will occur outside the active season (see PBE Table 2 Below)

and between the hours of sunrise and one hour before sunset. When utilizing helicopters for application they should employ large droplet technology through special nozzles on drop tubes to ensure the herbicide stays on target.

3. Whenever possible, herbicides that have low toxicity to mammals will be utilized with the tow behind power blowers. Herbicides that may be somewhat toxic to mammals will be mixed and applied at a rate that should minimize any potential exposure concerns.

4. Application of pesticides from ground mounted vehicles (i.e., ATVs, tractors) that spray chemicals directly onto the ground and do not result in broad dispersal will be conducted at least 100 ft (30 m) from known roost trees during the active season (see PBE Table 2).

5. Application of pesticides that result in broad dispersal (e.g., tow behind power blowers) will be conducted at least 250 ft (76 m) away from known roost trees during the active season (see PBE Table 2 Below) and will not be applied between sunrise and one hour before sunset.

6. Location-specific applications (i.e. hatchet or stem injections of trees, individual application to specific plants) may be used within 50 ft (15 m) of known roosts.

7. Pesticides applied from tow behind power blowers will use appropriate nozzles and drift control additives, and will be applied using low pressure to reduce drift and potential swirling motion from the blower. All efforts will be made to only spray 10 feet from ground level or below.

8. Pesticides will not be applied outdoors when the wind speed exceeds 8 mi/hr for all applications except power mist blowers. Pesticides applied via power mist blower will only be applied with wind speeds <5 mi/hr.

9. If a bat colony is found roosting in a building, then insecticides will be used sparingly and no foggers will be used. This will minimize impacts to roosting northern long-eared bats if they are found within a building.

- Pest Control: (see Section VI-I for details)

1. No Lethal Control. No lethal control methods are permitted for bats unless there is a suspected human health risk for exposure to rabies or other disease. If individual bats are in buildings and there is no evidence of maternity use, then all efforts will be made to safely capture and release individual bats. Or, the bats will be excluded by establishing one-way valves over the roost's exit (if feasible).

2. Exclusion will only be done during times of the year when pups are not present or when they are volant (i.e., August - early May). Sealing cracks and crevices in buildings will also be done during the late fall or early spring.

3. No adhesive traps used for rodents or insects will be placed in such a manner that they could capture bats—glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur.

4. Chemical Measures. Any use of insecticides will be utilized in accordance with the conservation measure associated with "Pesticide Use".

C) Additional General Conservation Measures.

- IMCOM will use the most current National WNS Decontamination Protocols approved by USFWS for planned activities that involve close or direct contact with bats, their

environments, and/or associated materials.

- IMCOM will explore cooperative management efforts with adjacent landowners, if such efforts would complement installation NLEB conservation initiatives and/or support mission implementation.
- IMCOM will explore cooperative NLEB management strategies, solutions, and efforts with other federal, state, and private organizations and landowners in the region.
- IMCOM will seek funding opportunities to conduct USFWS presence/absence surveys on individual installations subject to the availability of funds.
- IMCOM installations will continue to manage their ecosystems to support and enhance military training, testing, & readiness in accordance with their INRMP to retain habitat and biological diversity, and long term sustainability.
- IMCOM & the USFWS will develop a screening criteria check list so individual installations may quickly and categorically apply the above listed measures described in the programmatic process.
- IMCOM will centrally report activities taken by individual installations under this programmatic opinion annually to the USFWS from data gathered through the annual AEDB-EQ installation data call.

2. IMCOM NLEB Programmatic Consultation Screening Criteria

This document is intended to compliment and facilitate the implementation of the IMCOM Programmatic Consultation by allowing individual installations to screen areas or projects for applicable conservation measures for the NLEB. For all projects purposes screened with this criteria ensure you document the location, size, and disposition for annual reporting.

1) Does your area or activity occur within one of the following categories?

- a. Occurs outside the known range of the NLEB (see Section V for details)
- b. Occurs within the known range of the NLEB but does not occur within 0.5 miles of hibernacula or within 0.25 miles of suitable NLEB summer habitat. (see Section V and the Glossary in Section X for details)
- c. Occurs within a highly developed urban area that is <1000' from suitable NLEB habitat. (see Section V for details)
- d. An area with NLEB verified absence through USFWS Protocol survey(s).
- e. An activity that is conducted under a separate site specific consultation with the local USFWS Field Office.
- f. A military training activity such as but not limited to: air operations, water operations, field training operations, live munitions training, demolition, and research, development, testing, and evaluation (RDTE) that does not utilize smokes, obscurants, or gases. (see Section VI-A for details)
- g. Aircraft activities such as but not limited to: fixed wing, rotary wing, drone, etc...(see Section VI-B for details)
- h. Outdoor recreation such as but not limited to: hunting, fishing, trapping, hiking, mountain biking, camping, horseback riding, wildlife watching, and other consumptive/non-consumptive activities. (see Section VI-J for details)

NO

Continue to question 2 and all remaining questions.

YES

No further action is necessary to comply with Endangered Species Act protections for the Northern Long-eared Bat.

2) Does your activity utilize military smoke or obscurants?

NO

Continue to question 3 and all remaining questions.

YES

Implement the following applicable conservation measures (see Section VI-C for details), continue to question 3 and all remaining questions.

- 1. M18 colored smoke grenades will not be used within 50m of forested suitable NLEB during the active season (see PBE Table 2 Below). Or within 50m of known roost trees during the active season if USFWS protocol surveys have been completed.
- 2. Fog oil will not be released within forested suitable NLEB habitat during the active

season (see PBE Table 2 Below).

3. WP will not be released within 200 meters of forested suitable NLEB habitat during the active season (see PBE Table 2 Below). Or within 200m of known roost trees during the active season if USFWS protocol surveys have been completed.

4. Other smoke/obscurants will not be employed during the NLEB active season (see PBE Table 2 Below).

5. No smoke or obscurants will be released within 0.5 miles of known hibernacula outside of the active season as defined in PBE Table 2 Below.

3) Does your activity involve construction?

NO

Continue to question 4 and all remaining questions.

YES

Implement the following applicable conservation measures (see Section VI-D for details), continue to question 4 and all remaining questions.

1. If there is a need to remove a single or small cluster of trees during the active season, the installation will follow procedures listed question 6.

2. Will not occur within forested suitable NLEB habitat during the active season (see PBE Table 2 Below).

3. No known roost trees will be felled, unless there is a human health and safety concern. If there is a need to remove a known roost tree, the installation will follow procedures listed in Section VI.G. to determine if such removal can be done with insignificant or discountable effects on NLEB.

4. Consult with USFWS for projects within 0.25 miles of known roost trees. Buffers may also take into account factors such as the surrounding landscape, habitat connectivity, and distance to other roosts, distance to known foraging areas.

5. Implement a 0.5 mile buffer around “known” hibernacula where additional consultation is required.

6. For structure, sign, utility, & bridge maintenance: if needed during the active season, conduct in manner that does not bother roosting bats in any way (e.g., activity away from roosts inside common rooms in structures, normal cleaning and routine maintenance). If needed outside of the active season, conduct in manner that does not alter roosting potential for bats.

7. Tree removal outside the active season (see PBE Table 2 Below), that is entirely within 100’ of an existing road surface has no acreage limit. This would include roads within cantonment, state, local roads, paved roads, and developed hard packed roads, but does not include trails or other travel corridors in training areas)

8. Tree removal outside the active season (see PBE Table 2 Below), that is >100’ of an existing road surface has a 10 acre per project limit.

9. Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any construction activities for a given project. Flagging will be removed upon completion of the project.

10. Via Scope of Works, Contracts, etc., all personnel responsible for construction activities will be informed about the need to follow design plans, stay within flagging, and minimize

impacts to wildlife and other environmental concerns.

11. Outdoor Lighting Minimization. For all future projects, IMCOM will evaluate the use of outdoor lighting and seek to minimize light pollution by angling lights downward or via other light minimization measures.

12. Demolition. If the building has pre-existing known NLEB colonies, then the environmental contact of the IMCOM installation must be contacted before demolition is to occur. If during the course of demolition, NLEB are discovered, then all work must cease and USFWS must be immediately contacted. If the structure is safe to leave as is, then it will be left until after October 15, or until bats have stopped using the structure. If the structure is unsafe and poses a risk to human health and safety, IMCOM will attempt to exclude the bats immediately. If this is not possible, or NLEB are found to be using the structure during the maternity season when pups are not volant, IMCOM will contact USFWS to discuss the most appropriate next course of action.

13. Water Quality BMPs will be established for each construction site in accordance with the appropriate federal laws and state permits.

4) Does your activity involve Forest Management, not including Prescribed Burning?

NO

Continue to question 5 and all remaining questions.

YES

Implement the following applicable conservation measures (see Section VI-E for details), continue to question 5 and all remaining questions.

1. IMCOM will screen projects that required tree removal for forest management activities the same as identified for construction.
2. If there is a need to remove a single or small cluster of trees during the active season, the installation will follow procedures listed in that section below.
3. Will not occur within forested suitable NLEB habitat during the active season (see PBE Table 2 Below).
4. No known roost trees will be felled, unless there is a human health and safety concern. If there is a need to remove a known roost tree, the installation will follow procedures listed in Section VI.G. to determine if such removal can be done with insignificant or discountable effects on NLEB.
5. Implement a 0.25-mile buffer around known roost trees where additional consultation is required for clearcutting or similar harvest. Overstory roost tree removal is also not authorized within 100 meters of documented maternity roost trees without further consultation with the USFWS. Tree thinning/removal will also take into account factors such as the surrounding landscape, habitat connectivity, and distance to other roosts, distance to known foraging areas.
6. Implement a 0.5 mile buffer around “known” hibernacula where additional consultation is required.
7. Tree removal outside the active season (see PBE Table 2 Below), that is entirely within 100’ of an existing road surface has no acreage limit. This would include roads within cantonment, state, local roads, paved roads, and developed hard packed roads, but does not include trails or other travel corridors in training areas)

8. Clear cutting or similar harvest outside the active season (see PBE Table 2 Below), that is >100' of an existing road surface has a 10 acre per project limit. No acreage limit on selective harvest outside the active season.
9. Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any forest management activities for a given project. Flagging will be removed upon completion of the project.
10. Snag Retention. All snags will be left in silvicultural treatments unless there is a safety concern for the contractor or the military units training in the stands (e.g., maneuver corridors), or unless the treatment is a salvage harvest or clearcut.

5) Does your activity involve Prescribed Burning?

NO

Continue to question 6 and all remaining questions.

YES

Implement the following applicable conservation measures (see Section VI-F for details), continue to question 6 and all remaining questions.

1. Will not be conducted within 0.5 miles from "known hibernacula" when bats are present during the inactive season (see Table 2 for active season).
2. Will not occur within forested suitable NLEB habitat during the active season (see PBE Table 2 Below).
3. Prescribed burns will be conducted under a site specific burn plan per the Installation Integrated Wildland Fire Management Plan
4. Whenever possible, all efforts will be made to have all flames extinguished and smoke generation minimized by sunset to reduce potential direct impacts to foraging bats during the active season (see PBE Table 2 Below)
5. Make use of naturally occurring firebreaks or if necessary, establish wet lines 100m around forested known/presumed occupied NLEB habitat during the active season (see PBE Table 2 Below), to preclude fire from entering, to the maximum extent practicable.

6) Does your activity involve Specific Single, Group, of Hazard Tree Removal?

NO

Continue to question 7 and all remaining questions.

YES

Implement the following applicable conservation measures (see Section VI-G for details), continue to question 7 and all remaining questions.

1. Removal of single, multiple, or cluster of trees during the active season, in areas where there are known roost trees, trees that do not pose a risk to human life or property will be analyzed for signs of bats being present (emergence surveys) prior to removal according to USFWS Indiana bat (and NLEB) summer survey protocols.
2. If known roost tree removal is determined to be necessary, the applicable IMCOM installation will consult with their local USFWS field office.
3. If such tree removal is preferred immediately, the applicable IMCOM installation will

consult with their local USFWS field office.

4. If non-ESA bat species are determined present and immediate removal of the tree(s) is necessary, the tree(s) will be removed in a manner that will minimize impacts on the bats such as first disturbing the tree(s) to cause them to abandon the roost.

5. If there are hazard trees that are considered an imminent threat to human life or loss of property occurring in suitable NLEB habitat and need to be removed during the active season, the IMCOM installation will remove such trees and inform the USFWS field office of the action only if NLEB are present on the IMCOM installation will initiate emergency consultation per the procedures in accordance with 50 CFR 402.05.

7) Does your activity involve Pesticide Use?

NO

Continue to question 8 and all remaining questions.

YES

Implement the following applicable conservation measures (see Section VI-H for details), continue to question 8 and all remaining questions.

1. Only pesticides registered by the EPA and State of use may be applied and only in accordance with their label.
2. Aerial applications will occur outside the active season (see PBE Table 2 Below) and between the hours of sunrise and one hour before sunset. When utilizing helicopters for application they should employ large droplet technology through special nozzles on drop tubes to ensure the herbicide stays on target.
3. Whenever possible, herbicides that have low toxicity to mammals will be utilized with the tow behind power blowers. Herbicides that may be somewhat toxic to mammals will be mixed and applied at a rate that should minimize any potential exposure concerns.
4. Application of pesticides from ground mounted vehicles (i.e., ATVs, tractors) that spray chemicals directly onto the ground and do not result in broad dispersal will be conducted at least 100 ft (30 m) from known roost trees during the active season (see PBE Table 2).
5. Application of pesticides that result in broad dispersal (e.g., tow behind power blowers) will be conducted at least 250 ft (76 m) away from known roost trees during the active season (see PBE Table 2 Below) and will be applied between sunrise and one hour before sunset.
6. Location-specific applications (i.e. hatchet or stem injections of trees, individual application to specific plants) may be used within 50 ft (15 m) of known roosts.
7. Pesticides applied from tow behind power blowers will use appropriate nozzles and drift control additives, and will be applied using low pressure to reduce drift and potential swirling motion from the blower. All efforts will be made to only spray 10 feet from ground level or below.
8. Pesticides will not be applied outdoors when the wind speed exceeds 8 mi/hr for all applications except power mist blowers. Pesticides applied via power mist blower will only be applied with wind speeds <5 mi/hr.
9. If a bat colony is found roosting in a building, then insecticides will be used sparingly and no foggers will be used. This will minimize impacts to roosting northern long-eared bats if

they are found within a building.

8) Does your activity involve Pest Control?

NO

Continue to question 9.

YES

Implement the following applicable conservation measures (see Section VI-I for details), continue to question 9 and all remaining questions.

1. No Lethal Control. No lethal control methods are permitted for bats unless there is a suspected human health risk for exposure to rabies or other disease. If individual bats are in buildings and there is no evidence of maternity use, then all efforts will be made to safely capture and release individual bats. Or, the bats will be excluded by establishing one-way valves over the roost's exit (if feasible).
2. Exclusion will only be done during times of the year when pups are not present or when they are volant (i.e., August - early May). Sealing cracks and crevices in buildings will also be done during the late fall or early spring.
3. No adhesive traps used for rodents or insects will be placed in such a manner that they could capture bats—glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur.
4. Chemical Measures. Any use of insecticides will be utilized in accordance with the conservation measure associated with “Pesticide Use”.

9) If your activity was not identified through the previous screening questions or cannot be completed within the identified conservation measures, contact your local USFWS Field Office for additional guidance or site specific consultation.

Table 2: Active Season Dates for the Northern Long-eared Bat based on Table 1 of the Northern Long-Eared Bat Conference Guidance (USFWS 2014). Individual IMCOM installations should confirm dates with their local USFWS Field Office.

State/Region	Active Season
Alabama	Apr 1-Nov 30
Illinois	Apr 1-Nov 15
Kansas	Apr 1-Nov 1
Kentucky	Apr 1-Nov 15
Massachusetts	Contact FO
Maryland	Contact FO
Michigan	Apr 1-Oct 1
Missouri	Apr 1-Nov 15
New Jersey	Apr 1-Nov 15
New York	Apr 1-Oct 30
Pennsylvania	Contact FO
Virginia	Apr 1-Nov 15
Wisconsin	Apr 1 - Oct 15

3. Mutual Aid Agreements for Fire Suppression Activities

- c1. Easton Township
- c2. Fairmount Township
- c3. Kickapoo Township
- c4. Central Platte Fire District

Fort Leavenworth, Kansas
Endangered Species Management Component Plans
Northern Long-eared Bat



B. Associated and Component Plans

B1. Endangered Species Management Component

Northern Long Eared Bat (*Myotis septentrionalis*)

Section 1.0 Northern Long Eared Bat (*Myotis septentrionalis*) Management Plan

1.1 Introduction

This management plan is based on and is consistent with the Endangered Species Act of 1973 (ESA), the Kansas Endangered Species and Nongame Conservation Act of 1975, and Army Regulations. This plan does not supersede Section 7 consultation requirements with the USFWS or replace the need to obtain special permits from the Kansas Department of Wildlife and Parks and Tourism KDWP&T.

1.2 Species Information

1.2.1 Description. The Northern Long-eared bat (NLEB) is a small myotis bat, as the name implies, with large ears. The dorsal fur is normally medium brown, while the ventral fur is lighter almost yellow. They normally weigh between 0.2 and 0.3 ounces and are 1.3 to 1.5 inches long (Boles et al, 2009).

1.2.2 Habitat/Ecology. The NLEB occurs over a variety of habitats from Florida to southern Canada and from the Atlantic Ocean to Kansas. They could be found anywhere there is forest, even small isolated patches of riparian forest. The roost predominantly in trees under exfoliating bark, in crevices, but mostly in cavities. They are also known to use bat houses, human structures like barns, and caves (Boles et al, 2009).

NLEB migrate and hibernate. Fall migrations begin in August and by mid September most bats are near their hibernacula, which are caves or old mines. Most breeding occurs during this gathering at hibernacula and NLEB have delayed fertilization. Fertilization is delayed until the spring (Boles et al, 2009).

By late April most NLEB have completed their spring migration back to foraging sites within 35 miles of their hibernacula. Here females form maternity colonies to birth and raise pups. Maternity colonies begin to disperse in July after the pups have become volant. Males roost independently or in small groups (Boles et al, 2009).

Foraging is tied to forest interiors but has been observed in narrow riparian corridors and even over tallgrass prairies. When in forest most foraging occurs below the forest canopy but

above the shrub layer in the understory. In all cases they are feeding on flies, moths, beetles, moth larvae, and spiders (Boles et al, 2009).

The USFWS determined that threats to the NLEB are not habitat related. Threats are solely from the impacts of white-nose syndrome a fungal disease impacting all cave-dwelling bats. Therefore there is no critical habitat determination (USFWS 2009).

1.3 Conservation Goals

1.3.1 Protect individual NLEB present on Fort Leavenworth.

1.3.2 Manage forest habitats in order to have uneven stand age. Providing habitat for foraging and standing dead timber for roosting.

1.4 Management Prescriptions and Actions

1.4.1 Protect individual NLEB present on Fort Leavenworth. NLEB mortality on Fort Leavenworth would only be caused by inadvertent impacts from tree removal or from measures being used to rid installation buildings of bats. Impacts caused by tree removal would be mitigated if the guidelines set forth in the Informal Conference & Management Guidelines on the Northern Long-eared Bat (*Myotis septentrionalis*) for Ongoing Operations on Installation Management Command Installations are followed. Measures taken to eliminate or exclude bats from buildings would be done in a way that does not cause mortality and when possible bats will be identified before removal or exclusion takes place.

1.4.1.1 Prescription: Protect NLEB from mortality caused by nuisance animal removal and building maintenance.

Action: Ensure Entomology and Natural Resources are coordinating on issues that relate to building maintenance and treatment of bat concerns.

1.4.1.2 Prescription: Protect NLEB from mortality caused directly or indirectly by tree removal.

Action: Ensure that all divisions of DPW coordinate and follow all tree removal protocols according to guidelines provided by the USFWS and Installation Management Command (U.S. Army Environmental Command, 2015).

1.4.2 Manage forest habitats in order to have uneven stand age.

1.4.2.1 Prescription: Forest habitats should be managed in a way that prevents fragmentation and to the greatest extent practicable maintains large contiguous tracts.

Action: Natural Resources should review projects and assess their impacts to forests and try to avoid and minimize fragmentation and removal of forested habitats.

1.4.2.2 Prescription: Monitor the floodplain forest and prevent the development of a contiguous stand of even aged timber.

Action: If monitoring shows that there are no areas of young tree and shrub growth, younger than 10 years of age, then trees should be mechanically removed to make several 2 to 5 acre clearings. Succession will eventually re-tree these areas.

1.5 Monitoring Plan

1.5.1 Per the programmatic agreement between USFWS and IMCOM bat surveys would be conducted every 3 years (US Army Environmental Command, 2015).

Section 2.0 Literature Cited

Boyles, Justin, John Timpone, and Lynn Robbins. Bats of Missouri. 2009. Indiana State University Center for North American Bat Research and Conservation.

U.S. Army Environmental Command. 2015. Informal Conference & Management Guidelines on the Northern Long-eared Bat (*Myotis septentrionalis*) for Ongoing Operations on Installation Management Command Installations. USAEC San Antonio, TX. 40pp.

USFWS. 2009. U.S. Fish and Wildlife Service Determines Critical Habitat is Not Prudent for Threatened Northern Long-eared Bat. USFWS Midwest Region, Bloomington, MN. 2pp.

Fort Leavenworth, Kansas
Soil Erosion and Sediment Control Plan



B.2. Soil Erosion and Sediment Control Component Plan

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A. Introduction

1. Purpose: Fort Leavenworth is located in eastern Kansas on the banks of the Missouri River, in Leavenworth County. Part of the installation is located in the floodplain and the rest in the uplands. The floodplain soils are all recent alluvial deposits which range in texture from clay to fine sandy loams. The floodplain has little topographic relief and requires overbank flooding from the Missouri River or its tributaries to erode or deposit these soils. The upland soils are comprised of two groups: the first is comprised of loess soils which are highly erodible but also very fertile; the second group is formed by eroded limestone and shale which has a low fertility. The uplands also have relatively significant topographic relief lending to greater erosion than in the floodplain. The cantonment is located in the uplands but has been shaped to be flatter and less erosive than natural uplands.

2. Authority: The highest level of Authority governing erosion and sediment at Fort Leavenworth is the Clean Water Act. Sections 401 and 402 of the act are administered by the state of Kansas. Section 404, if the eroded sediments find their way into Waters of the United States or wetlands, requires a permit administered by the U.S. Army Corps of Engineers.

The Department of Defense also has a Department of Defense Instruction 4715.03 which states that, “DoD Components shall comply with applicable nonpoint source laws, incorporate the best management practices for runoff for the State in which the installation is located to minimize nonpoint sources of water pollution ... , and DoD shall prevent and control soil erosion, and implement soil conservation measures ...”

B. Establishing Control Measures

1. Program Objectives: The program objectives for erosion and sediment control at Fort Leavenworth are to maintain installation natural resources in a way that guarantees continued access to the land and water based assets here. This includes complying with all federal and state regulations that could have use or financial restrictions if violated. It also includes maintaining the environment to avoid impacts from secondary regulations, such as the Endangered Species Act. Which could require enforcement if violations became so egregious and impactful as to threaten the continued existence of an entire species.

2. Site Specific Plans: In order to comply with DoDi, state, and federal regulations any project that disturbs over an acre of ground requires special permitting and a site specific erosion control plan. This plan is usually a Stormwater Pollution Prevention Plan and it should be comprised of the following components, found below.

a. Project Description – briefly describe the nature and purpose of the land disturbing activity and the size of the disturbance. Include all phases of the project allowing impacts to be assessed cumulatively and not piece meal.

b. Project Dates – List the starting dates of the initial disturbance and the completion date, when the area will be adequately stabilized.

c. Existing Site Conditions – Describe the existing topography, vegetation, and drainage.

d. Soils – Describe the soils on site: soil name, mapping unit, erodibility, permeability, depth, texture, and soil structure.

e. Critical Areas – Describe areas that on the development site that have potential to be serious erosion problems such as steep slopes, channels, underground springs, wetlands, and other environmentally sensitive areas.

f. Erosion and Sediment Control Measures – Describe the methods to be used to control erosion and sedimentation on the site.

g. Permanent Stabilization – Describe and include specifications of how the development site will be stabilized after construction is completed.

h. Stormwater Runoff Considerations – Describe the strategy to control stormwater runoff. How will the design prevent increases in peak runoff rates, additional downstream flooding, or channel degradation?

i. Calculations – Show detailed calculations for the design of temporary sediment basins, diversions, channels, etc. Include calculations for pre- and post- development runoff.

j. Inspection and Maintenance – Include a schedule for regular inspections and repairs of erosion and sediment control structures.

k. Spill Prevention and Material Management Practices – Provide a plan of methods to manage materials and spills during construction.

l. Maps and Drawings – these should have title block, scale, legend, a North arrow, limits demarcating clearing and grubbing. There should be existing contour lines, existing vegetation, soils and their boundaries, and existing drainage patterns for existing

conditions plans. The proposed construction plans should have proposed contours, site development features, locations of erosion control practices, location of topsoil stockpile, detailed drawings, construction access, and staging areas all defined.

3. Methods of Erosion Control

- a. Site selection – Selecting the right site for the disturbance activity can have huge influence over how much erosion occurs on a site. Siting that minimizes the degree of slope, avoids highly erodible soils, and minimizes the size of the disturbance are all important for reducing concerns about erosion and sedimentation.
- b. Silt fencing - Is an erosion control measure that is often employed on sites of soil disturbance. Silt fencing mesh allows water to travel through the fencing but stops sediment. This trapped sediment is held on site until the disturbed area can be stabilized. The silt fence prevents sediment from entering storm sewers, creeks and streams, and from leaving the site.
- c. Wattles – Are agricultural straw compressed in synthetic netting. It is an alternative to silt fencing. Water passes through the wattle but sediment is stopped behind the wattle, preventing it from leaving the site.
- d. Hay Bales - Are composed of agricultural straw. Hay Bales are another alternative to silt fencing. They also allow water to pass but not sediment, thus preventing sediment from leaving the disturbance site.
- e. Storm Drain Inlet Protection – This is to prevent sediment from getting into the storm drains. There are two aspects to this type of control. First most storm drains empty into local streams and rivers thus storm drain inlet protection prevents sediment from getting into receiving waters. Secondly, large amounts of sediment can accumulate in storm drain systems and prevent them from working. Preventing this, increases the life of the protected storm drain system. Storm drain inlets can be protected using wattles and hay bales across their inlets.
- f. Sediment Basins - Are earthen berms or a combination of depressions and berms constructed across the slope of a minor water course to form a sediment trap. The basins slow water down thus decreasing its ability to move more sediment off site and they also hold sediment that precipitates out of the slower moving water. This decreases sediment in downstream receiving waters.
- g. Vegetative Buffer Strip – These strips can vary in size depending on soil types and other site conditions. However, vegetative buffer width should be a minimum of 100 feet. It is best to have native vegetation and to have it established next to the area to be protected from sedimentation.

C. Maintaining Control Measures

1. Site Inspections – should be conducted every 14 days or after a rain event that is 0.5 inches or greater. Inspections should also be done after large snow melt events. The inspections should be looking for sediment leaving the site or entering protected drainages. A report of each inspection should be done: listing the inspector, date of inspection, major observations, and corrective actions. These reports should be kept for 3 years.
2. Site Maintenance – All temporary and permanent sediment and erosion control measures will be maintained and repaired by the owner during construction. This maintenance includes the above mentioned site inspections.
3. Site and project completion and closure – upon completion of the project and stabilization of the disturbed area, the permittee and a DPW inspector will inspect the area. Once the project is closed by DPW then the permittee is no longer responsible for erosion or sediment concerns from the site.

B3. Required Plans

- A. Endangered Species Management Component Plan – Northern Long-eared Bat; page 92 or 913 684-8979
- B. Integrated Wildland Fire Management Plan; page 119 or 913 684-8979
- C. Integrated Pest Management Plan; Entomology – page 206 or 913 684-4151
- D. Invasive Species Management Plan; Natural Resources – Page 275 or 913 684-8979
- E. Directorate Of Emergency Services SOP #2.35 Installation Conservation Law Enforcement Operations (2015); page 300 or 913 684-8979

B4. Installation Regulations

CAC 200-3; Natural Resources – 913 684-8979 or X:\EnvirDiv\INRMP\2018 INRMP and Appendices; page 100

B5. Hunting Authority and Policy

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
290 GRANT AVENUE UNIT 1
FORT LEAVENWORTH, KS 66027-1292

FT LEAVENWORTH REGULATION
NO. 200-3

13 June 2017

OUTDOOR RECREATION
Fort Leavenworth
Natural Resources – Land, Forest, and Wildlife Management

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Chapter 1
Introduction

1-1. Purpose. This regulation prescribes the policies, responsibilities, and procedures for outdoor recreation activities on Fort Leavenworth. It is the responsibility of each individual participating in outdoor recreation activities on Fort Leavenworth to read and understand this regulation and to comply with the policies and procedures prescribed herein.

1-2. Applicability. This publication applies to all persons who use the installation's training areas for outdoor recreation.

1-3. Supplementation. Supplementation of this regulation is not authorized.

1-4. Suggested Improvements. The proponent of this regulation is the Directorate of Family and Morale, Welfare and Recreation (DFMWR). Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commander, U.S. Army Combined Arms Center and Fort Leavenworth, ATTN: ATZL-CG, Fort Leavenworth, Kansas 66027- 1254.

1-5. Responsibilities.

a. The Commanding General is responsible for outdoor recreation, wildlife and fisheries management, and the hunting and fishing programs at Fort Leavenworth. He has delegated management authority for these programs to the Garrison Commander. The Commanding General retains the exclusive approval authority for use of normally restricted areas for recreational purposes.

b. The Garrison Commander delegates the authority to plan and supervise the recreational aspects of the outdoor recreation, hunting and fishing programs in accordance with the provisions of AR 215-1 to the Director, Family and Morale, Welfare and Recreation (DFMWR). The DFMWR is authorized by the Garrison Commander to suspend or revoke outdoor recreation permits for violations of the policies and/or procedures prescribed in this Regulation. The DFMWR may be contacted at (913)684- 1666. The DFMWR has further delegated authorities as follows:

(1) The Director, Outdoor Recreation is the appeal authority for confiscated and/or revoked permits.

(2) The Director, Outdoor Recreation, is responsible for coordinating the recreational aspects of the Fort Leavenworth training areas. The Director, Outdoor Recreation, (IMLV-MWR-O) may be contacted at (913)684-1703.

(3) The Director, Outdoor Recreation, administers the hunting and fishing programs on Fort Leavenworth. The Director, Outdoor Recreation annually coordinates with the Kansas Department of Wildlife and Parks (KDWP) to determine the "Regular Firearms Deer Season" for Fort Leavenworth and the creel limits for Smith and Merritt Lakes. All other hunting on Fort Leavenworth will comply with the Kansas hunting seasons established by KDWP.

(4) The Director, Outdoor Recreation is the approving official for all requests by handicapped hunters for special hunting considerations.

(5) The Outdoor Recreation Division of Family and MWR manages the scheduling and use of the Camp Conestoga Girl Scout area and the Camp Miles Boy Scout area. For information on the use of the Boy and Girl Scout areas, call (913) 684- 3395.

(6) The Garrison Commander delegates authority to the Directorate of Plans, Training, Mobilization and Security (DPTMS) to close down hunting areas for real world events and military training.

c. The Garrison Commander delegates the authority to plan, coordinate, and implement fish and wildlife management in accordance with AR 215-1 and the Integrated Natural Resources Management Plan to the Director of Public Works (DPW). The DPW Natural Resource Specialist may be contacted at (913) 684-8979.

d. The Garrison Commander delegates authority to the Directorate of Emergency Services (DES) as the Chief of the Game Wardens for enforcement of hunting and fishing laws and regulations, and for military, federal, state and local police support on Fort Leavenworth. Military Law Enforcement personnel may be contacted at (913)684-2111/3456 (Non-emergency).

e. The Garrison Commander delegates authority to DPTMS to release training areas for outdoor recreational use. The DPTMS will update and post schedules for land use to inform the public of areas that are closed to recreational activities. DPTMS posts scheduling information on the map located at the loading platform on the east side of Building 77. Additionally, DPTMS will notify the Military Police of known activities in the areas that they control. The DPTMS may be contacted at (913)684-0056.

f. All hunters pursuing outdoor recreational activities on Fort Leavenworth Military Reservation will comply with the procedures in this regulation as well as all applicable state and federal laws.

(1) The scheduling of the Boy and Girl Scout Camp is a dual management of scheduling with DFMWR Outdoor Recreation Division and DPTMS. DFMWR schedules for non-military use and DPTMS schedules for military use such as Land Navigation, unit bivouac (s), etc. Phone numbers for DPTMS are (913) 684- 0056/4448.

(2) Prior to beginning an outdoor recreational activity, individuals must first check the schedule published by DPTMS and the map for Locator Cards at the loading platform on the east side of Building 77 to ensure that the area is not being used for military training.

(3) Before beginning the recreational activity, hunters will post their Map Locator Card to the appropriate location on the map located at the loading platform on the east side of Building 77. This is a personnel accountability, safety and force protection effort to enable emergency personnel to locate you if needed.

(4) During the activity, individuals will adhere to the standards set forth in this regulation and wear the appropriate equipment/clothing for the activity. Individual must place their Outdoor Recreation Vehicle Placard on the dashboard of their vehicle so that it is readable from the exterior of the vehicle.

(5) At the end of the recreational activity, hunters must retrieve their Map Locator Card from the map at the loading platform on the east side of Building 77 and, if applicable, complete the Harvest Information Card. This is the final force protection/safety effort to ensure that all persons using the Fort Leavenworth training areas for recreational purposes have safely returned from their activity.

(6) During any State Firearms Deer Season, all individuals regardless of their activity entering training areas open for hunting must wear blaze orange outerwear with a maximum of 100 square inches visible on the front and 100 square inches visible on the back. A blaze orange hat must also be worn.

(7) All individuals involved in consumptive recreational activities will complete a Harvest Information Card at the end of their daily activities. Consumptive practices

include any activity that removes renewable natural resources from the training areas. Hunting, fishing, mushroom picking, and wood gathering are some examples.

1-6. Eligibility.

a. All personnel authorized to be on Fort Leavenworth may fish on Smith or Merritt Lakes in accordance with Kansas fishing regulations, Federal statutes, and this regulation. Fishing on lakes in the training areas or from the banks of the Missouri River on the installation is reserved for the persons described in the next paragraph.

b. Active Duty, National Guard, Reserves, Retired Military, and Department of Defense (DOD) Civilians that work on Fort Leavenworth and their family members that are DOD card holders may participate in approved outdoor recreation activities within the installation's training areas. Persons under the age of 16 must be accompanied (within clear sight and hearing) by an adult whenever involved in an outdoor recreational activity in the training areas.

1-7. Outdoor Recreation Activities. The primary use of the land on Fort Leavenworth is for military training and other military related activities. Outdoor recreation opportunities may become available only after military training requirements are met. There is no guarantee that areas will be available for outdoor recreation activity due to military training, controlled burns, severe weather, flooding etc. All entities either group or individual should check the schedule published by DPTMS to ensure that areas are not in use by another individual or organization. Last minute changes do happen which can cancel or interfere with the desired use.

1-8. Enforcement. Military Law Enforcement personnel are authorized to enforce Federal, State and local game laws as well as Army and installation regulations. They may issue military police reports, U.S. District Court violation notices, and make arrests or apprehensions in accordance with Army Regulations and procedures established by the State of Kansas and the U.S. Fish and Wildlife Service.

1-9. Violations. Violators of Federal and State game and natural resource laws are subject to prosecution before the U.S. Magistrate. Violators subject to the Uniform Code of Military Justice (UCMJ) are also subject to prosecution under that code for violation of this regulation. Actions taken by the magistrate or commanders under the UCMJ will be in addition to the administrative suspension or revocation of outdoor recreation privileges. Administrative suspensions or revocation of outdoor recreation privileges may be appealed to the Director, Outdoor Recreation, at 600 Thomas Ave room 202. Appeals must be in writing and contain reasons for the appeal.

1-10. Conduct While Using Outdoor Recreation Facilities. Every effort is made to provide for quality outdoor recreation experiences on Fort Leavenworth, therefore the following are strictly prohibited and will result in immediate suspension of post permit privileges:

- a. The use or possession of any alcoholic beverage or illegal drugs while using any Fort Leavenworth training area for outdoor recreation while hunting, handling any weapon, operating any motor vehicle, collecting mushrooms, fishing, and/or gathering wood.
- b. The intentional disruption of activities or the intentional interference with any other individual using the outdoor recreation areas.
- c. The intentional interference with the lawful taking of wildlife resources or to drive, harass, or intentionally disturb any wildlife resources for the purpose of disrupting the lawful taking of these resources.
- d. Interfering with scheduled military training and/or military exercise, or not following DPTMS policies or procedures is prohibited.

1-11. Vehicle Control in the Fort Leavenworth Training Areas.

All persons must observe the following rules while using privately owned vehicles (POV) and/or participating in outdoor recreation activities in Fort Leavenworth's training areas.

- a. Vehicles must remain on the improved roadways (either paved or the graveled levee road east of Sherman Army Airfield) during operation. Vehicles must not exit post with unreported game or other harvested natural resources.
- b. POV operation in the training areas is restricted to authorized vehicles only. Driving off-road or on unnamed gravel or bare dirt roads is prohibited. Driving, or attempting to drive into any impact area or off-limit areas for any purpose is strictly prohibited.
- c. POVs will be parked no more than 30 feet away from an authorized improved roadway (either paved or the graveled levee road east of Sherman Army Airfield). When not supporting scheduled military training, all hunter's POVs parked adjacent to the training areas MUST display a valid Outdoor Recreation Vehicle Placard.
- d. The Fort Leavenworth Rod and Gun Club has permission to utilize their ATV to transport and assist disabled hunters in the training areas and for special Family and MWR events.

1-12. Activities NOT REQUIRING an Outdoor Recreation Permit.

a. Family and MWR activities and organizations regularly plan, coordinate and conduct outdoor activities on Fort Leavenworth. As recognized Family and MWR events, participation in the following activities does not require a Fort Leavenworth Outdoor Recreation Permit:

- (1) Organized rides of the Fort Leavenworth Hunt.
- (2) Dog trials sponsored by the Fort Leavenworth Rod and Gun Club.
- (3) Youth Pheasant Hunt sponsored by the Fort Leavenworth Rod and Gun Club.
- (4) Kids Fishing Derby sponsored by the Fort Leavenworth Rod and Gun Club.
- (5) Girl Scout, Cub Scout, or Boy Scout organizations using the Camp Conestoga Girl Scout or Camp Miles Boy Scout areas.

b. Fishing on Smith or Merritt Lakes does not require a Fort Leavenworth Outdoor Recreation Permit. Individuals fishing on Smith or Merritt Lakes must have the appropriate Kansas fishing licenses and or permits and must comply with the daily creel limits posted at the lakes. Prior to departing, patrons should complete a game harvest card to assist with better management of the fisheries.

Chapter 2

Hunting

2-1. General.

a. In accordance with the Army Regulation (AR) 215-1, paragraph 8-25j (5), "Everyone born on or after 1 July 1957 must possess a hunter's safety card. All hunters on Army property must have completed a hunter safety course or the equivalent, required by AR 350-19 prior to issuance of an installation hunting permit." The completion of a State Hunter Education Course fulfills this requirement. All persons hunting on Fort Leavenworth must have a Hunter Education Certificate or Card IAW Kansas Hunting regulations, anyone under 27 years old must carry an approved Hunter Safety Education card while hunting. Hunter Education certificates from other States are acceptable.

b. All hunters on Fort Leavenworth must attend the Installation Hunting Brief prior to hunting on the installation. This is an annual requirement. Individuals attending the brief must show

proof of eligibility to hunt on post and a State approved Hunter Education Certificate or Card. Upon completion of the brief, hunters will be issued a Vehicle Pass, Map Locator Card and a Hunting ID Card. Individuals must have the Hunting ID Card on their persons while hunting on the installation.

c. The Director, Outdoor Recreation annually coordinates with the Kansas Department of Wildlife and Parks (KDWP) to determine the "Regular Firearms Deer Season" for Fort Leavenworth. All other hunting on Fort Leavenworth will comply with the Kansas hunting seasons established by KDWP.

d. All applicable Kansas hunting regulations are in effect on Fort Leavenworth. Where State regulations are more restrictive than the post regulations, State regulations shall supersede.

2-2. Hunting Areas. Hunting on Fort Leavenworth is restricted to designated areas. DPTMS uses color coded calendars, memos or written notices to schedule information for the training areas on or near the map board located at the east loading dock of building 77. Many of the designated recreational/hunting areas are located on or near the designated land navigation course maintained by the DPTMS. Moving, obstructing or altering the land navigation signs or markers is prohibited.

2-3. Off Limits Areas. Federal Bureau of Prison's property is off limits to any and all forms of trespass. Other off limits areas will be annotated on the scheduling map located at the loading platform on the east side of Building 77 as the need arises.

2-4. Licenses and Permits. Hunters on Fort Leavenworth must possess all licenses, permits, tags, and stamps required by Kansas and Federal Law for the game they are hunting. Examples include, but are not limited to, Kansas Hunting License, appropriate game tags or permits, Federal Waterfowl Stamps, Harvest Information Program (HIP) Stamps, etc. For detailed requirements on which tags and stamps are needed for each game animal, obtain a current Kansas Hunting. Fur Harvesting. and Fishing Summary or get the information online at www.kdwp.state.ks.us. For big game hunting (deer and turkey), hunters will use the permits and tags for the units in which Fort Leavenworth is located in accordance with the current Kansas Hunting. Fur Harvesting, and Fishing Summary.

2-5. Hunter Check-in and Check-out. For safety reasons and to provide wildlife management data, all hunters are required to physically sign in and out at the east loading dock of Building 77. Each person will place his Map Locator Card on the training area map at Building 77 and place his Vehicle Placard on the dashboard of his vehicle where it can be seen and read from outside the vehicle. At the completion of the hunting activity, hunters will return to Building 77 and

remove their card from the map and complete a Harvest Card if applicable. During the firearms deer season, hunters will sign in at the Hunter Check station at the Rod and Gun Club.

2-6. Wear of Blaze Orange. During any State Firearms Deer Season, ALL individuals entering training areas open for hunting must wear blaze orange outerwear with a minimum of 100 square inches visible in the front and 100 square inches visible in the back. A blaze orange hat must also be worn. Blaze orange is required for all hunters. The blaze orange must be visible whenever persons are moving. Turkey hunters may remove or cover the blaze orange when stationary, but must don the visible blaze orange when they move again. Archery deer hunters are only required to wear blaze orange during firearms deer seasons.

2-7. Method of Hunt. All firearm deer hunters (rifles, muzzle-loaders, shotguns, and pistols) will hunt from temporary elevated stands. Discharge of a firearm while the hunter is on the ground is prohibited. Firearms will be unloaded while moving to a stand, climbing up, climbing down and exiting the hunting area.

a. Archery deer hunters are not required to hunt from tree stands, but may do so if they desire. Archers may have an arrow nocked while they are moving as long as they are within a hunting area and 100 meters from any improved road or boundary. Shooting across improved roads is prohibited.

b. All other hunting may be conducted from the ground. Small game hunters (including turkey hunters) that are hunting with a shotgun may load their shotgun only when they are within the hunting area and more than 100 meters from any improved road or boundary. Shotguns may be used year round for coyote hunting. Shooting across improved roads is prohibited. No buck shot will be used during rifle season for deer.

c. Fur harvesting is not allowed on the Fort Leavenworth Reservation. Species legally taken as furbearers in Kansas are badger, bobcat, beaver, gray fox, red fox, swift fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel. The one exception is that coyotes may be harvested on Fort Leavenworth.

d. Hunting at night is NOT allowed on the Fort Leavenworth Reservation.

2-8. Disabled Persons.

a. A legally disabled person, who holds an approved special permit from the Secretary of the Kansas, Department of Wildlife and Parks, may hunt from a motor vehicle.

- b. The authorization to hunt from a vehicle DOES NOT permit any person to shoot from any improved road. The Chief of Natural Resources in coordination with PMO will establish authorized parking areas on a case-by-case basis.
- c. Individuals with impairments, which prevent them from hunting, may be accompanied by a non-hunting guest to assist them while engaged in hunting activities.
- d. All other State, Federal laws, regulations, or Fort Leavenworth regulations are enforced. Disabled persons may hunt from a motor vehicle only when in compliance with license and permit requirements, season and bag limits, and related laws and regulations.

2-9. Hunting Stands.

- a. Hunters must show that they have a valid Kansas hunting license, Kansas deer tag, and proof of having attended the Installation Hunting Brief before claiming a tree stand location.
- b. The Fort Leavenworth Hunting Coordinator, with the approval of the Director, Outdoor Recreation, will organize the procedures to determine priorities and policies for stand locations. In accordance with the approved procedures, authorized hunters may choose and mark their locations on the map and in the field starting once the deer stand drawing is completed at the end of August.
- c. Hunters must record their information in the Deer Stand Log book and mark the map with their tree stand number indicating their stand locations. The tree that the hunter will use must be clearly marked with the hunter's name, telephone contact information, date of placement, and tree stand number.
- d. When a tree stand is removed from the woods, the individual must remove the mark on the map and cross out their entry in the Deer Stand Log book.
- e. If individuals wish to move their stand, they must remove the mark from the map, cross out the old entry in the Deer Stand Log book, and record their information in a new entry. They will then mark the map and their trees with the new tree stand numbers.
- f. Each individual hunter is allowed two tree stand locations as long as they are more than 500 meters apart. Stands will be at least 100 meters from any other stand in the firearms area and at least 50 meters apart in any other areas.
- g. The Installation Hunting Coordinator will adjudicate any tree stand location problems.

2-10. Deer Hunting Permits and Tags. Individuals must have a valid Kansas permit or tag for the appropriate Deer Management Unit (DMU) to deer hunt on the Installation. At the time of this publication, Fort Leavenworth is within DMU 10. In the event that Kansas realigns the units, Fort Leavenworth will use the appropriate Kansas DMU tag for the unit in which it is located.

2-11. Means of Take.

a. Generally, equipment must meet the legal standards for hunting in Kansas as defined by the current Kansas Hunting, Fur Harvesting, and Fishing Summary. The Kansas equipment, caliber and gauge requirements are specific for each species of regulated game and each method of harvest (archery or firearm). The Kansas Department of Wildlife and Parks (KDWP) website can be found at the following web address - <http://www.kdwp.state.ks.us/news/kdwp> info - or they may be contacted at:

Kansas Department of Wildlife & Parks Operations Office 512 SE 25th Ave.
Pratt, KS 67124
(620)672-5911

b. Safety concerns require additional limitations on the types of equipment individuals may use when hunting in the small confines of the available hunting areas on Fort Leavenworth. Additional restrictions on the types of equipment and its uses are:

- (1) Firearms that use rim-fire ammunitions (such as .17 HMR, .22 S, L, LR, .22 Magnum, etc.) are prohibited in all the Fort Leavenworth Training areas.
- (2) Firearms will not be discharged any closer than 100 meters from improved roads, occupied buildings, off limits areas, boundaries or another temporary tree stand.
- (3) Rifles, Shotguns and pistols may only be used in Area D during deer firearm season.
- (4) Muzzle-loading firearms may only be used in Areas D and G during muzzle loading and firearm deer seasons.
- (5) Shotguns using slugs only may be used for deer hunting in Areas D and G during deer firearm season. Appropriate archery equipment or shotguns with appropriate shot sizes must be used for small game and turkey in any area open for small game hunting. Steel shot must be used on Fort Leavenworth for waterfowl hunting. Deer hunters using shotguns may not have any shells other than slugs in their possession

while hunting. Waterfowl hunters may not have any lead shot in their possession while hunting.

(6) Archery deer hunters must use bows that have a minimum draw weight of 45 pounds. Longbows, recurve bows, compound bows and crossbows. No bow, crossbow or arrow may have any electronic device attached that controls the flight of the arrow. Devices that may be attached to a bow or arrow shall include lighted pin, dot or holographic sights; illuminated nocks; rangefinders; film or video cameras; and radio- frequency location devices. Arrows used for hunting big game must be equipped with broadhead points that when fully expanded cannot pass through a ring 3/4-inch in diameter. Non-broadhead arrows may be possessed while hunting but may not be used to take big game. Devices capable of dispensing chemicals to take big game animals may not be used.

(7) Crossbows for archery deer season are authorized for all hunters in accordance with the Kansas Hunting, Fur Harvesting, and Fishing Summary. Hunters are required to have the appropriate State permits.

c. Weapons Restrictions by Training areas:

(1) Areas A, B, and C

Archery - deer

Shotgun - small game to include turkeys

(2) Area D

All Firearms (including pistols) and archery - deer Shotgun - small game to include turkeys

(3) Area E

Archery only - deer and turkeys

Shotgun (waterfowl within 20 meters of the river)

(4) Area F

Archery - deer

Shotgun - small game to include turkeys

(5) Area G

Muzzle-loader, shotgun, and archery - deer Shotgun - small game to include turkeys

- (6) Areas A1 and E1
- Archery only
- E1 Special draw "one hunter only"

Chapter 3 Fishing

3-1. General.

- a. No trotlines, limb lines, bank lines, or any type of set lines shall be used in Fort Leavenworth waters, except for the banks of the Missouri River.
- b. The use of scuba, spear guns, electrical shocking devices, toxicants, or explosives for the take of fish or amphibians is prohibited in Fort Leavenworth waters.
- c. The release of minnows or other bait fish into any Fort Leavenworth impoundment is prohibited.
- d. Bait fish may be taken for noncommercial purposes. The taking of bait fish will be permitted in any of the streams of Fort Leavenworth. All other impoundments are off-limits for the collection of bait fish.
- e. Ice fishing is prohibited on all Fort Leavenworth impoundments.
- f. Boats are prohibited from all Fort Leavenworth impoundments. Exceptions may be made for special events when coordinated in advance and written permission is obtained from the Garrison Commander.
- g. Net fishing is for bait fish only. Net fishing is not allowed for game fish.

3-2. Archery Fishing and Trotlines. Archery fishing or use of trotlines on any installation lake is prohibited. Either means of take are legal along the Missouri River except that it is prohibited to discharge a bow within 100 meters of any domestic animal or person who is not accompanying the archer.

3-3. Authorized Areas. The Missouri River and any body of water on the Installation are authorized fishing areas. Do not fish beyond the "NO FISHING" signs on Merritt Lake during daylight hours.

3-4. Night Fishing. Fishermen must maintain a light source for the duration of the night fishing trip. The light source must be bright enough to be seen from a nearby road so that military police may check on persons for safety and security reasons.

3-5. Fishing Permits, Licenses, and Creel Limits.

a. Smith and Merritt Lakes

(1) 2 catfish, any size

(2) 10 bluegill, any size

(3) 1 bass, over 15" length

b. Missouri River - as listed in the current Kansas Hunting, Fur Harvesting, and Fishing Summary.

c. All other Fort Leavenworth waters are catch-and-release only for all species of fish and amphibians.

Chapter 4 Other Consumptive Activities.

4-1. General. Mushroom hunting and wood collection are the only other consumptive activities allowed on the Fort Leavenworth Reservation.

4-2. Participation Policies.

a. Individuals participating in other consumptive activities must first check the schedule published by DPTMS and posted on the map at the loading platform on the east side of Building 77 to ensure that the area is not being used for military training.

b. Individuals may only collect resources for personal consumption. Collection of these resources for the intent of resale or marketing is prohibited.

c. In addition to the other provisions of this regulation, individuals wanting to collect firewood must first contact the Installation Natural Resources Specialist at (913) 684-8979. The Installation Natural Resources Specialist will identify the areas and wood available for collection and provide written permission for the wood collection activity.

d. At the end of the recreational activity, individuals must complete a Harvest Card located at the east loading dock of Building 77. During any Firearms and Muzzleloader Deer Seasons, all individuals entering training areas open for hunting must wear blaze orange outerwear with a minimum of 100 square inches visible on the front and 100 square inches visible on the back. A blaze orange hat must be also worn.

Chapter 5

Non-Consumptive Activities. 5-1. General.

Non-Consumptive activities are those in which the participants do not remove any of the natural or renewable resources from the training areas. Examples include bird watching, dog training, field trials, horseback riding, and mountain biking, cross-country running, picnicking and hiking.

5-2. Participation Policies.

a. Prior to beginning an outdoor recreational activity, individuals must first check the schedule published by DPTMS and posted on the map at the loading platform on the east side of Building 77 to ensure that the area is not being used for military training.

b. During the activity, individuals will adhere to the standards set forth in this regulation and wear the appropriate equipment / clothing for the activity. During any Firearms and Muzzleloader Deer Seasons, all individuals entering training areas open for hunting must wear blaze orange outerwear with a minimum of 100 square inches visible on the front and 100 square inches visible on the back. A blaze orange hat must also be worn September 1 through February 28 for everyone's safety.

COL, AR
Garrison Commander

Appendix A, Privilege Suspension & Revocation Schedule

The following is a list of common violations and administrative actions which may be taken against personnel who violate applicable State and Federal statutes and Fort Leavenworth regulations concerning consumptive recreation activities. The list below is not all-inclusive, and the Garrison Commander may exercise sanctions for other violations or offenses.

1. Violations for which permits of offenders may be suspended for 30 days include:

- a. Failure to obtain a valid Fort Leavenworth Outdoor Recreation Permit as required in this regulation.
- b. Failure to properly display Outdoor Recreation Vehicle Placard or carry Outdoor Recreation Permits.
- c. Failure to follow check-in/out procedures.
- d. Failure to complete the Harvest Information Card.
- e. Failure to return illegal fish to the water immediately.
- f. Littering.
- g. Failure to properly register firearms or archery equipment with the Provost Marshal's office prior to using them during an outdoor recreation activity prior to hunting.
- h. Engaging in outdoor recreational activities in unauthorized areas or in areas that are not open for recreational use (i.e.: the DPTMS schedule shows the area is reserved for military training).
- i. Failure to wear hunting safety garments (blaze orange) as required in this regulation.

2. Violations for which permits of offenders may be suspended for 60 days include:

- a. Exceeding bag limits on fish or game.
- b. Having a minor child (under 16 years of age) hunt unattended by an adult.
- c. Operating a motor vehicle off of improved roads.

3. Violations for which permits of offenders may be suspended for one calendar year include:

- a. Drive hunting deer (using dogs, people, or horses).
- b. Hunting game (except deer) out of season.
- c. Discharging a bow or firearm within 100 meters of an occupied building.
- d. Discharging a firearm from the ground while deer hunting.
- e. Hunting with unauthorized equipment or ammunition.
- f. Loan or illegal transfer of a hunting or fishing permit.

g. Habitual violators (accumulation of 61 days of permit suspensions within a 365 day period).

4. Violations for which permits of offenders may be permanently revoked include:

- a. Shooting or attempting to shoot deer at night.
- b. Shooting or attempting to shoot deer out of season.
- c. Shooting protected birds or mammals.
- d. Discharging a firearm from a vehicle, unless determined to be a disabled hunter granted to authority to hunt from a vehicle.
- e. Hunting while under the influence of intoxicants.

5. All other violations will be evaluated based upon the seriousness of the offense. Privileges will be suspended or revoked as determined by the appropriate authority.

- a. These dates change annually. This appendix will be updated each September or as soon as Kansas posts their firearm season dates.
- b. During the any State Firearms and Muzzle-Loader Deer Season, all individuals regardless of their activity entering training areas open for hunting must wear blaze orange outerwear with a minimum of 100 square inches visible on the front and 100 square inches visible on the back. A blaze orange hat must also be worn.
- c. Firearm Season Dates for 2017 - 2018:

1) All hunting seasons on Fort Leavenworth are the same as those published in the Kansas Hunting Regulations for DMU 10:

- Deer Youth & Disabled (2-10 SEP 17) choice of means of take
- Deer Muzzleloader (11 - 24 SEP 17)
- Deer Pre-rut whitetail antlerless (7-8 Oct 17)(firearm/archery)
- Deer Archery Season (11 SEP- 31 DEC 17)
- Off Post Deer Firearms all DMUs: (29 Nov-10 DEC 17). Exception see special season dates not on Ft Leavenworth!!

- Deer - Ft. Leavenworth Deer Season DMU 10A
- Date: 11/18/2017 - 11/19/2017
- Date: 11/23/2017 - 11/26/2017
- Date: 12/02/2017- 12/03/2017
- Date: 12/09/2017 - 12/10/2017
- Date: 12/16/2017 - 12/17/2017

- January Deer Season - Extended Firearms Whitetail Antlerless Only
- Date: 01/01/2018 - 01/14/2018
- Location: Units 10A

(DMU 10A)

- Deer Extended Season - Extended Archery only Whitetail Antlerless Only
- Date: 01/15/2018 - 01/31/2018
- Location: DMU 10A

d. The following unfilled permits are valid during this season using archery equipment only for antlerless whitetails. A 2017 hunting license is required, unless exempt by Kansas law. Hunter orange clothing is required during all firearm seasons.

- Resident and nonresident Archery Either species/ Either-sex permit
- Nonresident Archery White-tailed Deer permit
- Resident Any-Season White-tailed Deer permit
- Hunt-Own-Land Permit valid for Unit 10A
- Special Hunt-Own-Land permit valid for Unit 10A
- Antlerless White-tailed Deer permit

B6. Fort Leavenworth, Kansas
Integrated Wildland Fire Management Plan



Appendix D Integrated Wildland Fire Management Plan

1. Wildland Fire Management

1.1 Goals of the Fort Leavenworth Integrated Wildland Fire Management Plan (IWFMP)

1.1.1 Safety

In keeping with the 2001 Federal Fire Policy, provide safety for firefighters, military personnel and the public first and foremost. Ensure that all fire management activities implement safe ignition, control and containment practices and technologies; minimizing resource damage, unnecessary suppression and rehabilitation costs. Ensure that installation fires do not exit the installation and impact private property.

1.1.2 Military Mission

Enhance the training opportunities of the Combined Arms Center (CAC) students, 15th Military Police Brigade, and National Guard units that utilize the training ranges through fuels reduction and reducing the time firing and training ranges are impacted by wildfires. Use prescribed fire operations when fuels build up on ranges to minimize potential threats to units in the field. Minimize loss of field training time by using fire suppression as appropriate. Minimize the potential of wildland fire impacting the cantonment or other garrison structures. Efficiently maintain Sherman Army Airfield (SAAF) and adjacent areas free from woody vegetation.

1.1.3 Ecosystem Management

Maintain fire-dependent plant and animal communities through the use of prescribed fire. Provide protection for fire-sensitive components of the natural and cultural landscape as identified in burn plans. Proper fire management benefits the habitat of many game and non-game wildlife species, and reduces invasion of brush and noxious weeds, which damage native grasslands.

1.2 Objectives of the Fort Leavenworth IWFMP

Objectives of this plan are identified to provide program targets. Those targets and associated dates for accomplishment (as applied to individual firefighters and qualifications, subcategory processes, individual firefighting agreements, outcomes of training land and natural resources responses to fire, etc.) are set, held and evaluated internally to this plan. Those metrics are dynamic in character, subject to change and dictated by mission and other factors beyond the control of the executors of this plan. The wildland fire program is in a stage of development and ratification of objective targets.

1.2.1 Program Development

Develop the wildland fire program around standards set forth in Assistant Chief of Staff for Installation Management (ACSIM) Army Wildland Fire Policy Guidance dated 04 Sep 2002, Army Regulation (AR 420-90), the National Wildfire Coordination Group (NWCG) standards and guidelines, the National Fire Protection Association (NFPA) standards, the Federal Wildland Fire Management Policy, and the DOD Fire and Emergency Services Program (DoDI 6055.6).

1.2.2 Firefighter Qualifications and Training

Develop the installation firefighter training and qualification system around the NWCG Wildland and Prescribed Fire Qualification System Guide (PMS 310- 1/NFES 1414). Maintain NWCG qualifications for all firefighters and fire managers and insure all personnel assigned to those positions are trained to a level appropriate for their expected duties.

1.2.3 Safety

Have no deaths or serious injuries related to wildland fire, minimize property losses on- and off-installation, and minimize road closures and the creation of hazardous training environments due to wildland fire or smoke. Implement a program of fuels reduction through prescribed burning.

1.2.4 Wildfire Suppression

Suppress all wildfires at a minimum cost while still considering firefighter, military and public safety, and resources to be protected.

1.2.5 Appropriate Response

Evaluate wildfire response and prescribed fire operations based upon weather conditions, fuel loading, available firebreaks, risk to users in the area, capability of personnel, equipment, and readiness of operations.

1.2.6 No Fire Escapes

Cause no off-installation damage to private property resulting from escaped prescribed burns or wildfires along the installation boundary.

1.2.7 Training Lands Quality

Maintain or improve the quality of the training lands on the installation to allow the 15th Military Police Brigade, National Guard units, and other military units to maintain a high level of combat readiness.

1.2.8 Natural and Cultural Resource Maintenance

Protect and maintain all natural and cultural resources, to the extent feasible, through a program of planning, prevention, prescribed burning and suppression activities. Support the goals and objectives of existing installation management plans.

1.2.9 Agency Cooperation

Coordinate and cooperate where possible and beneficial with other federal, state and local agencies, and directorates within the installation. Timely and appropriate use will be made of Mutual Aid Agreements with cooperating agencies. Mutual Aid Agreements are in place with the City of Leavenworth, Leavenworth County Fire District #1, Tonganoxie City, Tonganoxie Township, Easton Township Fire Department, Fairmount Township Fire Department, and the Kickapoo Township Fire Department. These mutual aid agreements allow each Department or District to assist, upon request, the Fort Leavenworth Fire Department in fighting wildland and structural fires on the installation. The agreement also allows the installation fire department to assist the above mentioned districts and departments.

1.3 Fort Leavenworth Context

1.3.1 Location

Fort Leavenworth is located in Leavenworth County of northeastern Kansas (Exhibit 1-1), approximately 35 miles northwest of Kansas City, Missouri. The installation was established in 1827 to protect the Santa Fe Trail.

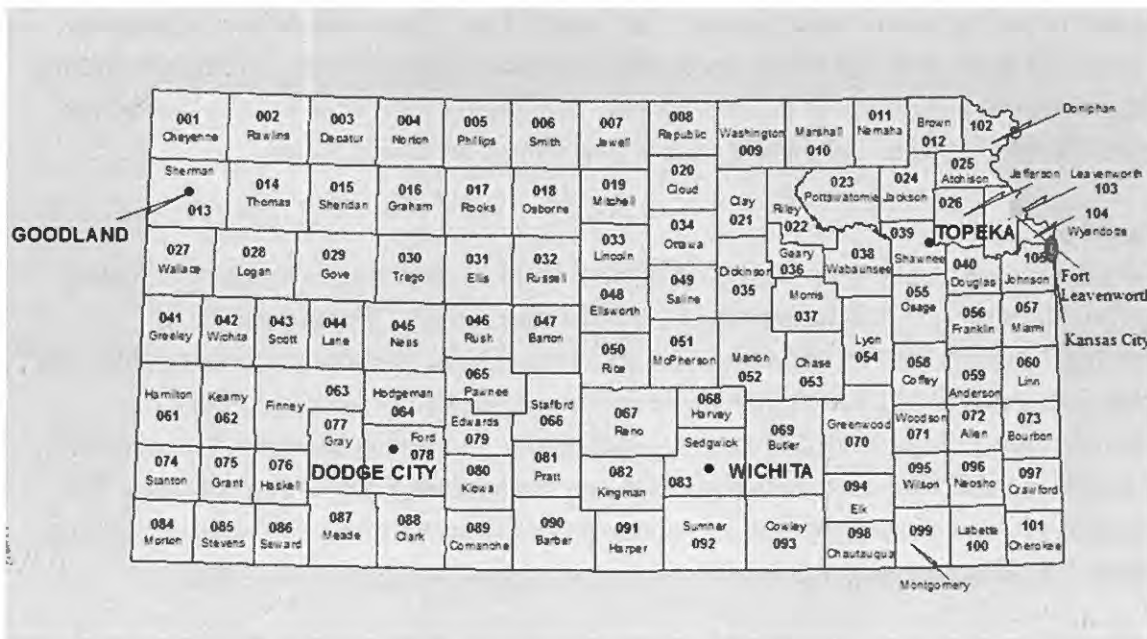


Exhibit 1-1. Location of Fort Leavenworth and Kansas Fire Zones.

1.3.2 Fire Zones

Fort Leavenworth is located in the Kansas zone 103 of the state's fire zone location map maintained by the Kansas Forest Service.

1.3.3 Acreage and Acquisition

Fort Leavenworth is comprised of approximately 5,927 acres of land. For most of the nineteenth and all of the twentieth and twenty first centuries the installation has encompassed these lands.

1.3.4 Installation History

Fort Leavenworth originated as a frontier fort to protect the Oregon and Santa Fe Trails as well as travel and trade along the Missouri River. In 1881 the installation was transformed into a training school for infantry and cavalry. In 1874 construction on the Fort Leavenworth Disciplinary Barracks began. Both of these missions, training and incarceration, are ongoing. Fort Leavenworth has four major habitat types: Oak-Hickory forests on the bluffs of the Missouri River, Cottonwood-Pecan forests in the floodplain of the Missouri River, old fields at the old Disciplinary Barracks Farm, and native prairie along the ridge tops and Sheridan Drive. The existence of prairie indicates that at least sporadic fires burned through the area, otherwise these prairies would have been replaced by forests. Fires most likely occurred every 1 to 3 years in order to preserve the character of the prairies. Fires would have also burned in the forests on the installation but with much less frequency and intensity.

Prescribed fire has been conducted in the past on the SAAF. It was used to maintain the airfield in a grassland environment in order to meet FAA regulations. A prescribed fire escaped and burned some old fields and part of the floodplain forests in the past decade. Otherwise fire has been contained and suppressed on the installation. The flood of 2011 on the Missouri River killed many floodplain trees and these trees are now a large reservoir of fuel.

1.3.5 Neighbors

Leavenworth (current population, 36,000) is adjacent to the installation's southern boundary. Lansing (population 11,713) is just south of City of Leavenworth. The population of Leavenworth County is 79,315. The Missouri River bounds the installation on two sides. The fourth side is comprised of a few farming operations and semi-rural housing. Much of Leavenworth County is comprised of farming operations. Across the Missouri River is Platte County (population 96,096) an urbanizing county on the northern edge of Kansas City. The Missouri land adjacent to the installation is comprised of almost entirely row crop agriculture. See Exhibit 1-2. Fort Leavenworth

1.3.6 Climate

Fort Leavenworth 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.

The average temperature is 55°F. Monthly normal temperatures range from 30°F in January to 80°F in July. Summer temperatures can often reach 100°F while winter temperatures can drop to below zero. Temperatures in the Fort Leavenworth area vary widely and often fluctuate abruptly throughout the year. The average date of the last killing frost of the spring is 11 April and the average date of the first killing frost of the fall is 20 October. There is an average of 180 frost-free days per year (USDA, 1975).

The majority of precipitation (70%) falls within the 6-month period from April through September. The average annual rainfall is 36 inches. Much of this precipitation occurs during severe thunderstorms, when 2 inches or more of rain may fall in one storm. About 19 inches of snowfall occurs annually. The driest year on record was 1864 and 15 inches and the wettest year was 1858 with 59 inches of rainfall.

1.3.7 Topography

Fort Leavenworth lies within the Glaciated Region 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 Leavenworth vary from 760 to 1,080 feet (232 to 329 meters) above mean sea level (MSL). Terrain varies from alluvial bottomlands along the Missouri River on the northeastern portions of the installation, to the steep bluffs in the same areas, through the hilly lands on the rest of the installation.

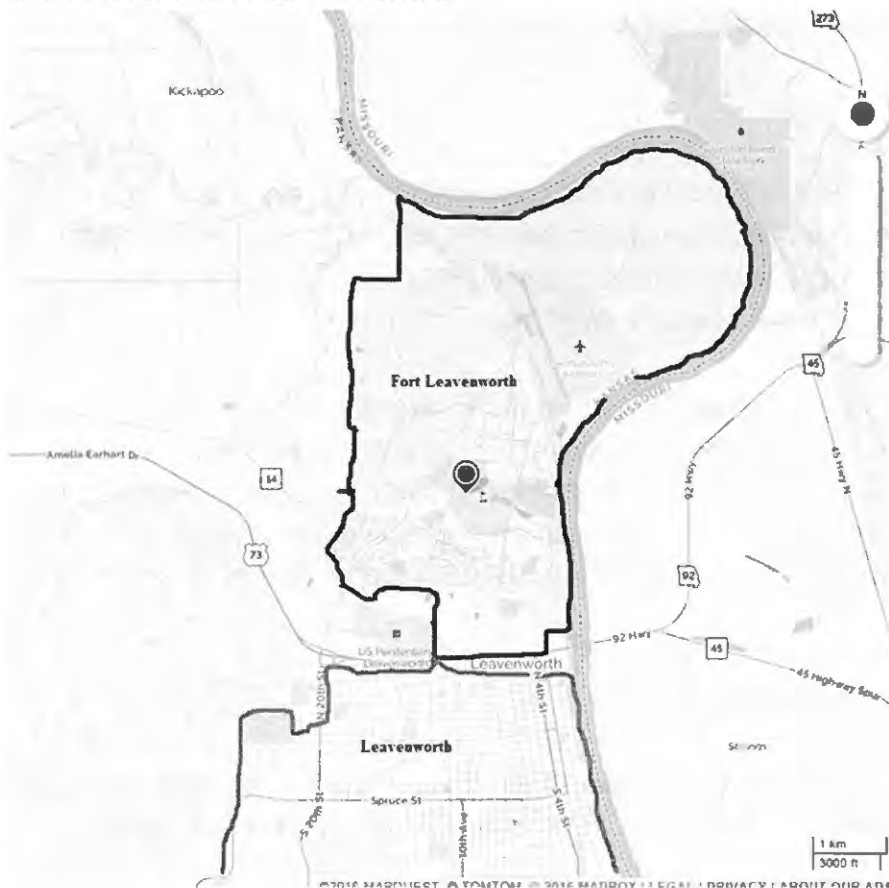


Exhibit 1-2. Fort Leavenworth

1.3.8 Geology

Fort Leavenworth is composed of two distinct landscape features: rolling hills and uplands along the Missouri River and floodplains adjacent to the river. The uplands are comprised of Pennsylvanian limestone and overlain by Pleistocene age loess. The floodplain along the Missouri River is covered by recent alluvium.

The forested bottomlands and uplands may act as a barrier to fire spread during moderate levels of relative humidity, oftentimes allowing wildfires to be caught at those locations. Rock outcroppings in some of these formations act as a deterrent to fire spread during low to moderate fire behavior conditions.

1.3.9 Soils

Fort Leavenworth has three main soil associations. These are the Onawa-Haynie-Eudora association that is prevalent in the floodplain of the Missouri River and contains hydric soil associations. The Gosport-Sogn association is located along a ridge on the western edge of the installation. Lastly, is the Marshall-Sharpsburg association which comprises the majority of the installation and underlies most of the upland areas. Both upland soils are or have been capped by loess soils.

1.4 Wildland Fire Organizational Structure

1.4.1 Internal Stakeholders

- Garrison Commander

The Garrison Commander (GC) defines the roles and responsibilities for wildland fire management on the installation, plans and programs resources, ensures the maintenance of training records, approves any deployment of installation civilian firefighters, and designates the installation Wildland Fire Program Manager (WFPM).

- Directorate of Emergency Services (DES), Fire and Emergency Services (FES)
Fire and Emergency Services is responsible for maintaining in a constant state of readiness personnel and equipment to suppress wildfires. The DES FES Fire Chief or designated senior fire officer (SFO) at the emergency incident is the incident commander and is responsible for the conduct of all FES operations according to the National Incident Management System (as defined in AR 420-1).

- Directorate of Public Works (DPW)

Environmental Division - The DPW Environmental Division is responsible for implementing the conservation aspects of the IWFMP. In addition, the Natural Resources Specialist is the

designated Wildland Fire Program Manager and is responsible for ensuring all aspects of the IWFMP are implemented effectively in a timely manner.

Maintenance Division - The DPW Maintenance Division is responsible for implementing maintenance of roads, ranges, and other infrastructure, including those aspects that help deter wildfire occurrence and/or spread, such as firebreaks.

- Directorate of Plans, Training, Mobilization, and Security (DPTMS)

Range Division - The DPTMS Range Division is responsible for scheduling and range management. DPTMS ensures that trainers are aware of and adhere to wildfire related training restrictions.

Integrated Training Area Management - The ITAM program is housed within Range Division. It monitors and maintains training lands, ensuring that they remain of sufficient quality to support training requirements into the future.

- Directorate of Family, Morale, Welfare, and Recreation (DFMWR)

Recreational opportunities promoted by DFMWR may infrequently be impacted by wildfire prevention requirements or wildfire outbreaks.

- Directorate of Emergency Services, Law Enforcement

Directorate of Emergency Services (DES) Law Enforcement provides law enforcement for Fort Leavenworth and may be involved in investigations of wildfires and assist in traffic control.

1.4.2 External Stakeholders

- U.S. Army Environmental Center (USAEC)

USAEC provides support for conservation programs on Army installations. Some Fort Leavenworth conservation programs may be impacted by fire prevention or suppression measures.

- Assistant Chief of Staff for Installation Management (ACSIM)

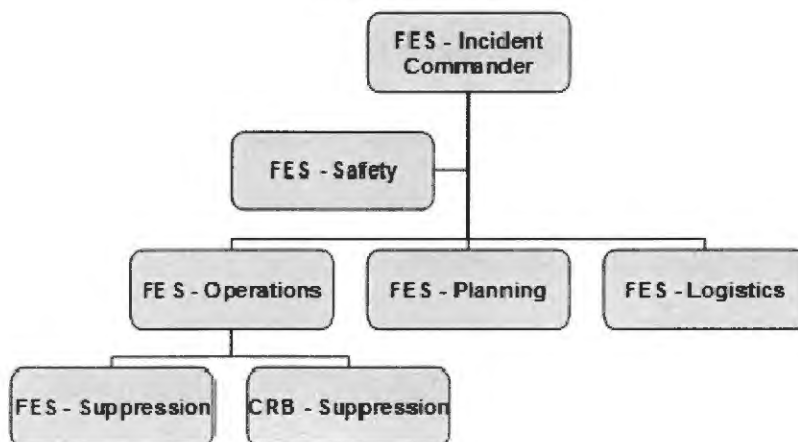
The Assistant Chief of Staff for Installation Management (ACSIM) is responsible for oversight of the program, updating policy, and resolving policy questions through the Facilities and Housing Directorate in coordination with the Environmental Programs Directorate.

The ACSIM, through the HQ Installation Management Agency, Regions and the Headquarters, National Guard Bureau (HQ, NGB) will provide information to installations necessary to perform wildland fire management in accordance with this guidance. The ACSIM and HQ, NGB will assure that wildland fire program reviews are incorporated into Fire and Emergency Services Operational Readiness Inspections and Environmental Compliance Assessment Screenings.

1.4. 3 Organizational Structure:

The Director of Emergency Services (DES) oversees the three Divisions of Fire & Emergency Services, Provost Marshall and Physical Security. The Fire Chief oversees FES. The Fire Chief is the primary interface with Garrison and military commanders regarding fire suppression incident command decisions.

Suppression Organizational Structure



1.4. 4 Wildland Fire Staffing

FES has 50 firefighters. Each firefighter's responsibilities include: hazardous materials, emergency medical, technical rescue, and structural and wildland firefighting responsibilities. Currently the FES has no Table of Distribution and Allowances (TDA) authorizations for personnel identified for wildland firefighting. All wildland fire response activities are covered as additional duties by the structural firefighters.

The DPW, Environmental Division has one employee that is currently qualified to perform wildland fire operations. This employee performs other natural resources management duties as their primary responsibilities.

Military personnel generally do not have adequate training for any control effort beyond immediate and initial response to fires created by them on the site. Therefore, military personnel will only be asked by Range Support Branch (RSB), Directorate of Plans, Training, Mobilization and Security (DPTMS) to extinguish fires they have ignited and are able to control with very limited equipment and no fire PPE.

Historically and currently the installation does not use aviation support to monitor, suppress, or extinguish wildland fires.

1.5 Interagency Mutual Aid Agreements

Fort Leavenworth has mutual aid agreements with neighboring fire departments listed in 1.2.9 Agency Cooperation. Installation firefighters will respond according to FES SOP's. All mutual aid agreements use a standard Army format. A copy of one mutual aid agreement is used as a sample at Appendix 1-A.

No other mutual aid or agency cooperation agreements are needed or planned at this writing.

1.6 Funding Requirements

1.6.1 Annual Cost Fluctuations

The annual cost to operate the wildland fire program is expected to fluctuate widely from year to year. DES, FES and DPW share the cost of the program, with DES and FES paying for their employees and DPW paying for its employees. Turnover of personnel is expected to impact the annual training costs for wildland firefighters. Hand tools, PPE, firefighting vehicles and other safety apparatus procurement and replacement are expected to vary nominally.

1.7 Smoke Management

1.7.1 Smoke Sensitive Areas

Cantonment areas, major highways and installation streets, occupied ranges, and any location where troops are actively training are areas sensitive to direct smoke production. Areas being prescribed burned near sensitive areas are normally ignited when winds will force smoke away from those locations. Determinations of wind conditions are evaluated from weather forecasts each day during the prescribed fire season. When conditions exist that create uncertain wind patterns, small test burns may be ignited to study smoke transport. Wildfires that create serious smoke effects to sensitive areas will be extinguished as soon as practical, with an emphasis being placed on safety for the sensitive zone as well as firefighter safety. \

Because the Kansas City International Airport is located within 20 miles of Fort Leavenworth and the City of Leavenworth abuts the installation, smoke management information and decisions need to be included within any fire management planning action. Specific smoke management

hazards include the airport, as well as Highway 273 to the east and north, and Interstate 29 to the east. A smoke management section will normally be included in each burn plan.

1.7.2 Minimizing Health Effects from Smoke

Many homes border the installation and some neighbors may have smoke related health issues. These health issues may also impact personnel in the Fort Leavenworth cantonment area. To minimize these a pre-burn press release will be provided to the Public Affairs Office (PAO) with the opportunity for this information to be forwarded to the local media prior to seasonal burning (generally late fall and early spring. If burns are going to occur within 1,000 ft. of a installation boundary or cantonment area, a second press release 1 to 5 days in advance will be issued giving specific details concerning the burn.

1.7.3 Reducing Smoke Effects to the Region

Other smoke management hazards can occur well after a burn has ended when nighttime inversion layers form in low areas, facilitating the settling of smoke and accumulations into low lying areas. Bridges over rivers and creeks and areas close to large bodies of water are especially susceptible.

Most fuels on the installation are grass and small diameter woody materials, such as brush. When conditions are high for wildfires and when most prescribed burns are initiated, fuel conditions are such that grasses and forbs are well cured. Under these conditions less combustion is spent on evaporating moisture in vegetation, allowing less smoke production. These low moisture fuels tend to consume quickly minimizing long term smoke impacts. Management techniques to minimize smoke production and to enhance dispersion will be applied, including burning under optimum weather conditions, expanding the burning season if necessary, using low intensity backfires where applicable, burning smaller units within larger units, and expediting mop-up. These techniques are described in the Prescribed Fire Smoke Management Guide; NWCG (NFES No. 1279, PMS – 420-1, 1985) Application of these techniques will minimize potential smoke exposure impacts.

Firing will take place only after a fire weather forecast (such as the Fire Weather Planning Forecast for Zone 103) has been obtained from the National Weather Service. No firing will take place if inversion conditions exist, are predicted or if inclement or foggy conditions exist. Wind patterns impacting the project area and the wind patterns impacting areas surrounding the project area will be monitored for wind shifts that could result in impacts on sensitive areas. Initiation of firing operations will occur when light surface winds exist but not greater than 15 mph. The meteorological information is used to determine if the direction and volume of smoke will impact public health in populated areas, safety on roadways as well as to determine the behavior of the fire.

Test burning small blocks in project areas may be done so weather conditions can be monitored for rapid smoke dispersion. If smoke dispersion is not adequate, no additional area outside the test burn block will be ignited. The time of year, when vegetation is cured, will allow for most fuels to go out during the same day. This should minimize any residual smoke. Any long term fuels that are still smoking may be extinguished to reduce emissions if necessary.

1.7.4 Weather Guidelines for Initiating Prescribed Fires

	Minimum	Maximum
Surface wind speed	2 mph	15 mph
20 ft. wind speed	5 mph	20 mph
Air Temperature	35° F	90° F
Relative Humidity	20%	65%
Dispersion	Moderately Good	Excellent
Transport wind	9 mph	----
Atmospheric		
Mixing Height 3,000 ft	----	----

1.7.5 Smoke Precautions

If the burn is to take place within 1,000 ft of a paved roadway off of the installation, the Leavenworth Police, Kansas Highway Patrol, local Sheriff's office or other traffic authority shall be notified before burning begins. If burning is to take place within 1 mile of an airport, the proper airport authority shall be notified before burning begins.

1.7.6 Air Quality Reporting and Permits

Fort Leavenworth annually reports dust, chemical, and smoke air quality values to the Kansas Department of Health and Environment (KDHE). Air quality from smoke is reported as number of acres that were burned in the last year. No restrictions have been placed on the installation for smoke or acres burned.

Significant amounts of forest and tree slash from construction demolition are generated each year on the installation. Large numbers of dying and declining ash trees are also being removed from the installation. Most of these trees are either not merchantable or the lead time available before construction activities begin is so limited that a timber sale and harvest is not possible. Slash generated by these activities is hauled to two large depositories one on the bluff overlooking the floodplain on Landfill 09 and the other outside the levee in the floodplain northeast of the cantonment. The installation may use prescribe fire to burn these piles under controlled conditions. Annual slash burns are practiced to reduce the volume of woody material in these depositories. Since the impacted footprints of the slash piles have been expanding each year, these prescribed fires are planned to occur on a more frequent basis, possibly two to three times annually.

1.8 Safety and Emergency Operations

1.8.1 Public Safety

Public safety during wildland fire operations is a top priority for the installation. Special consideration for the public and installation personnel is addressed by restricting access to training areas that are being prescribed burned and to evacuate training areas as much as possible that are being impacted by wildfire. Smoke is also a danger to drivers driving into smoke-filled travel lanes. Special precautions are taken when smoke has the potential to impact roadways along or within the installation. A more detailed discussion on controlling the effects of smoke is located in Section 1.7.1; Smoke Sensitive Areas.

1.8.2 Firefighter Safety

Safety of firefighters is a central priority for all aspects of wildland firefighting. NWCG training and task book competency evaluations are developed around safety of firefighters. Risk assessments for firefighter equipment and operations are made to identify methods and means to improve safety for firefighters. Installation planning, coordination, SOPs and checklists ensure that, when followed, firefighter safety is greatly enhanced. Equipment checks and routine maintenance also promote safety of firefighters.

Federal agencies have long recognized foundational situations and conditions associated with the fire environment as contributing to increased hazards to firefighters. Firefighters need to recognize those hazards and take precautions to maintain firefighter safety. Three commonly recognized tools are used to assist firefighters to maintain situational awareness and react accordingly to maintain safety. Those tools are the Ten Standard Fire Orders, the Eighteen Watch Out Situations and the LCES Checklist. These tools are provided in the Incident Response Pocket Guide (IRPG) (PMS #461 or NFES #1077) and the NWCG Fireline Handbook (Handbook) (PMS 410-1 or NFES 0065), both of which are additional tools that provide a much more detailed reference for firefighter safety and operations.

1.8.3 Firefighting Safety Standard Operating Procedures (SOP) and Requirements

The following policies, standards, SOPs, and guidance documents govern the safety and operations of Fort Leavenworth FES and/or DPW, ENVIRONMENTAL firefighters and are located in the appendices:

1. Wildland Fire Suppression Standard Operating Guidelines (FES) at Appendix 1-G;
2. FES Training, Qualifications, and Physical Fitness Standards (FES) at Appendix 1-E;
3. Radio Communications SOP at Appendix 2-A;
4. Wildland Fire SOP (DPW, ENVIRONMENTAL) at Appendix 2-B;
5. Prescribed Burning Operations SOP (DPW, ENVIRONMENTAL) at Appendix 1-L.

1.8.4 Firefighter Safety Risk Assessment

As part of the effort to maintain high standards of firefighter safety, risk assessments are performed for evaluation of hazard level and methods to reduce the risk to acceptable levels. This evaluation is performed according to the Risk Management Field Manual, No. 100-14, Headquarters Department of the Army, Washington, D.C. and the Fort Leavenworth Risk Management Worksheet, FR Form 108. Through this process hazards, control measures, implementation controls, and supervision and evaluations are identified to reduce risk. Control measures are incorporated into the operations and equipment used by installation firefighters.

1.8.5 Munitions and Military Training

Some of the live-fire range facilities are hazardous only during use due to ballistics dangers. These ranges are considered hazardous past the normal use area, during live-fire operations. Access to down range portions of the live-fire ranges to conduct fire fighting operations is prohibited while live-fire is taking place. The responding IC must ensure that these ranges are in a cease-fire condition before sending fire suppression forces into the area.

Rarely do prescribed burning or wildfires occur near the Ammunition Supply Point (ASP). Careful coordination and early communication with ASP personnel allow ammunition bunkers to be prepared for such operations without risk to the facility. All fire operations near the ASP follow the Army Prescribed Burning of Earth-covered Magazine Vegetation Policy Memorandum, 3 Aug 05, located at Appendix 1-C.

1.8.6 Effects to Safety from Severe Weather Conditions

Fort Leavenworth experiences interactions of continental weather patterns that may cause dramatic changes in daily weather conditions. Weather predictions and current weather condition information is collected prior to and periodically throughout daily fire operations. Generally, predicted winds greater than 15 mph are a cutoff for performing prescribed fire operations. High wind wildfire control may restrict firefighting operations to indirect attack only for firefighter safety. When frontal boundaries and other wind shifts are predicted, careful planning is required during wildfires to ensure that firefighters will not be caught in the path of head fires. Thunderstorms create the risk of lightning strikes for firefighters. Fire operations are generally not performed when thunderstorm activity is likely or approaching the installation.

1.9 Risk Assessment and Decision Analysis

1.9.1 Wildland Fire Hazard Assessment

Fort Leavenworth uses a wildland fire hazard - matrix risk analysis model to identify conditions that may cause extreme fire situations to the installation resources and personnel. This model assigns values to conditions but also looks at risk reduction factors to determine under what grouping of conditions the fire can be readily controlled. This model is used in planning

prescribed fire operations and can be used to evaluate the complexity of control of wildfires. A copy of this model is found in Appendix 1-D.

1.9.2 Field Risk Assessment

Assessments of fire risk during planning processes are important in determining preparations for both future prescribed fire operations and readiness for wildfire control. On-the-spot field assessments must always be performed prior to and throughout the control period of both prescribed and wildfire control operations. Conditions and fire behavior can change throughout operational period. The IC of each operation is ultimately responsible to maintain and communicate situational awareness to the fire control crews. However, all firefighters on a fire are also responsible to maintain situational awareness for their own protection and to communicate those conditions to the IC.

Field assessments evaluate not only fuels, weather, and impacted resources but also the presence of non-authorized people in the control area. Prescribed fires or backfires under wildfire conditions cannot be initiated until a search is completed for non-authorized people or equipment on the site. Once a reasonable search is completed, planned fire operations are executed according to the plan.

1.10 The Fort Leavenworth Wildland Fire Environment

Wildland fires have the potential to occur in almost any month particularly when historic periodic drought cycles occur. However, most wildfires of large size occur from October through April due to the large expanse of desiccated grass from late fall killing-frost events. Arson fires could be set but the vast majority of wildfires are more likely to be started in conjunction with military training or outdoor recreational pursuits. The Chief of FES has the authority to set bans on the use of pyrotechnical devices (pyro-bans).

1.11 Fuel Models and Factors

1.11.1 Fuel Models

Nearly fifteen percent of the installation has vegetative cover that is composed of native tallgrass or cool season grasses. Fire behavior model 3 more closely estimates the fire behavior of vegetation on the installation. This includes species associations of native tallgrass, disturbed and planted cool season grasses, mixed grass and brush/shrub, and savanna associations of scattered trees and predominately tallgrass species. Approximately 60% of the installation has woodland cover with forb understories. Within these woodland/forest areas a fire behavior model 9 most closely estimates the fire behavior.

1.11.2 Wildland Fuel Factors

The primary fuel of concern in managing fires on the installation is the fine grassy fuels. This fuel type provides the main carrier of fire through the installation and transfer source to ignite heavier woody fuels along the bluffs, in the hills, and on the floodplain. Since grasses are the principal fuel that must be evaluated for fire control, woodland fuels will not be considered in the evaluation of fuel factors.

Estimates of fuel production is dependent on numerous factors such as precipitation, soil type, available soil moisture, grassland species composition, effects of military training impacts to vegetation and haying or mowing. An average estimate of hay production on native grasslands in our area is two tons per acre per year. (USDA - Natural Resources Conservation Service, Web Soil Survey, Range Production Ratings, September 2007.)

Installation training areas may be impacted by periodic prescribed burning, and wildfires. However, training areas may build up fuel loads over successive years and increase fire intensity and behavior. On average, a training area is impacted by prescribed burning or wildfires every three to five years. Variability of fuel load reduction events for some training areas is more than ten years. Another variable that reduces fire behavior effects is winter compression of grassy fuels. Snow and other sources can weigh down grasses allowing them to mulch the soil and increase soil and fuel moisture levels from that of vertically arranged fuels. Matted grass cover during late winter and spring reduces rate of spread and overall fire behavior compared to vertically arranged fuels.

1.11.3 Fuel Load Estimates

Fuel load estimates will be based on records of the number of seasons since the area last burned multiplied by an estimated fuel production of two tons per year. Areas that are predominately hayed will have an estimated decrement of fuel for those years hayed. Other more detailed and accurate estimates could be used to evaluate fuel loading but this simple evaluation will give a relative understanding of potential fire behavior with minimal labor requirements.

1.12 Natural and Cultural Resource Goals

1.12.1 Vegetation Response from Fire for Wildlife

Fort Leavenworth is located within the glaciated region section of the Central Lowlands physiographic province. Management of the primary vegetation, native warm season grasses and associated forbs require periodic fire to maintain vigor and health of those species. Maintaining the prairie ecosystem is an important component to natural resource management at Fort Leavenworth. The prairie ecosystem on the installation is comprised of tallgrass prairie which is a rare ecosystem. Controlling the fuel loads on the prairie will prevent grassland fires from spreading to the forested areas, that are important for maintaining military training land

sustainability at Fort Leavenworth. Prescribed fire of native grasslands is planned on a frequency that will provide improved health for those species. Generally these areas will be burned on a frequency of 1 out of every 5 years depending on other resource needs and limitations. Other resource values that are factored into frequency decisions for resources are such issues as habitat for threatened or endangered species.

Habitat needs for wildlife are also evaluated in determining seasons when fire is used. Generally fires occurring in late summer increase forbs as a percentage of total plant coverage within grasslands. Some wildlife species obtain a higher food value from areas that have more forbs. Therefore, fire will at times be used during late summer and fall to increase vegetation values for wildlife.

Fires during certain periods of the season will reduce the amount and size of brushy or woody species in the ecosystem. Fires used in late summer and early fall are generally planned to control these brushy species.

Certain species of concern such as the Henslow's sparrow (*Ammodramus henslowii*) require native tallgrass tracts that are in the second through fourth year since being burned to provide optimum nesting, protection and forage needs. Generally native grasslands that are periodically burned at appropriate seasons will exhibit invigorated growth of grass and forbs causing better soil holding protection and reduce sedimentation into streams improving water quality.

1.12.2 Vegetation Response Goals for Protection

Prescribed burning and establishment of firebreaks can provide linear or rectangular areas with minimal past years' vegetation. These areas of reduced fuels act as barriers that reduce the spread of wildfire to protected natural resources. Typically those areas might include high value forest stands, certain habitat needs for selected wildlife species, shielding eagle nesting sites, areas designated to maintain heavier concealment properties for military training, cultural resources in need of protection, and other site specific protection needs.

1.12.3 Noxious and Invasive Weed Management with Fire

Sericea lespedeza (*Lespedeza cuneata*) is a State of Kansas designated noxious weed. Fire is used to assist in the treatments to control this fire-adapted woody forb. Specifically fire scarifies the seed resting in the top portions of the soil. Generally those areas that are planned to receive herbicide treatment to control living sericea plants will be prescribed burned to encourage germination of sericea, reducing the amount of viable seed in the soil and increasing the number of plants killed in the herbicide treatments. Wildfire during summer months can also be used to control this plant. Sericea will die back to its root collar and resprout during the summer months when burned. The tender new growth is very susceptible to herbicide applications which will readily translocate the chemical throughout its roots and give good control.

Musk thistle (*Carduus nutans*) and field bindweed (*Convolvulus arvensis*) are both susceptible to control during the late spring burning period by prescribed burning. Areas that receive higher burning frequencies and lower soil disturbing activities show good control over these noxious weeds over time. Fire can also consume the canopies of vegetation that over-top noxious weeds, which would otherwise provide protective cover from herbicide sprays. Thus consuming these canopies prior to treatments will improve overall control of targeted noxious weeds.

Johnson Grass (*Sorghum halapense*) is an aggressive invasive weed that is very flammable. It can quickly build up a high fuel load. Fire is not effective in controlling it because it has a similar life cycle to that of all the native prairie species. Prescribed fire mixed with herbicide treatments could be effective and prescribed fire does keep the fuel load down.

1.12.4 Slash Pile Burns

Fire is used to consume slash piles of trees that have been harvested or removed from construction sites. Prior to burning slash piles, the Environmental Division from the KDHE, is consulted about air permit requirements. Slash pile fires can require more than one day to entirely burn out and may require some mixing of the pile to achieve complete fuel consumption.

1.12.5 Cultural Resources Protection and Support of Surveys

Few above-ground cultural resources exist on the installation that can be damaged by fire. In most cases these above ground artifacts are located in the cantonment that is protected from fire. Some artifacts are located in the woodland areas where fire is less intense or many times produces slow smoldering fires that are extinguished on contact with the artifact. Most of these artifacts are not flammable or combustible.

The greatest effect of fire on the cultural resource program is actually a benefit. Fire removes natural fuels such as grass and brush, which normally conceal ground surface artifacts.

Consumption of these fuels greatly assists in on the ground cultural surveys. Shovel testing along with ground surface inspections in recently burned areas allows for quicker review by archeologists to determine possible cultural significance of the site.

1.12.6 Vegetation Control for Military Training

Vegetation concerns for military training is primarily for control of wildfires and fire prevention during training exercises. When incendiary devices are used in military training, especially during winter months, wildfire can be a common result. As the Range Coordinator identifies plans for such high fire risk training, prescribed burning requests are submitted for these locations. Prescribed burns are executed when devegetated soil surfaces are not expected to create Environmental degradation. Concealment by native vegetation is usually not a limiting factor for military training. Most trees and some shrubs remain after prescribed fires to maintain sufficient long-term concealment properties after spring growth initiates.

1.13 Mission Considerations

1.13.1 Implementation Impacts to Military Training of the IWFMP

Negative impacts to military training from the IWFMP are considered minimal due to the manner in which the plan will be implemented. Military training is prioritized higher than the use of a training area for either wildfire suppression or prescribed burning operations. FES must request access to a training area from Range Coordinator to perform wildland fire operations. FES responds with wildfire control after requests from units that indicate that training is impaired from the continued spread of a wildfire. For any prescribed burning that is planned by FES, final approval must be obtained the day of the fire, allowing units the opportunity to acquire training sites even on short notice.

Numerous positive effects are expected from the implementation of the IWFMP. Execution of the plan will ensure that both ecosystem and natural resources long-term sustainability goals will be met, thus maintaining the facility for optimum military training. Prescribed burning will reduce fuel loads and inhibit the spread of woody vegetation into the grasslands. This decreases the threat of wildfires to training soldiers and equipment and more extreme fire behavior during weather conditions of high fire danger. It also reduces the threat of wildfire exiting the installation and damaging neighboring private property. Stopping the spread of woody vegetation maintains the grassland setting for differing habitats in which to train. These and other non-stated positive effects will maintain Fort Leavenworth as a high quality training facility for the Army.

1.13.2 Military Mission Impacts to the Fire Management Program

Wildfires on the installation can be started by military training activities. Wildfires from incendiary devices, tracer rounds and even the exhaust of tracked and wheeled vehicles can occur on the installation. Reporting protocol of wildfires identifies that the unit will call the Range Coordinator about the fire. Units are not equipped to fight anything but the smallest fire. Once the Range Coordinator is notified of the wildfire, they communicate the information to FES.

Military training is prioritized above all other installation activities. Since wildland fire activities are a lower priority than active training, wildfires may have more negative effects due to larger expanses of training lands getting burned. When planned prescribed burning areas are closed through much of the burning season, it becomes more likely that the annual prescribed burn plan will not be accomplished.

1.14 Monitoring Requirements

1.14.1 Fire Effects to the Environment

Monitoring of Environmental conditions of training lands is a critical aspect of maintaining sustainability of the ecosystem and the facilities for military use. A key component of the usability of the training lands deals with soil conditions such as surface irregularities, compaction, fertility, movement and sedimentation. Fires can indirectly impact these properties by the seasonal timing of the fire, the heat intensity, and level of fuels consumption. Negative effects can be directly attributed to high intensity rainfall events with heavy surface runoff as well as heavy equipment usage after the loss of vegetative cover.

Secondary components of soil condition that may be more direct deal with loss of decomposing organic matter, soil microbes, effect to the vegetative seed bank, and wholesale loss of some perennial plants. Effects to these components add to possible effects from the indirect effects listed above.

Forest vegetation normally receives limited negative effects from low to moderate intensity prescribed fires. As fire intensity increases and relative humidity decreases, negative effects to forest vegetation also increases. Indirect effects can also occur to timber through secondary agents such as insect and disease infestations from high intensity fires. Certain forest stands that are primarily oak species have a greater capacity to withstand fire events and may increase seedling reproduction from some fire events.

Native tallgrass prairie vegetation requires periodic fire to maintain health and vigor as well as control some invasive and noxious weeds. Woody brush species are set back by higher intensity fires during certain seasons such as late summer and early fall and help control their encroachment.

Most prescribed and wildfire events have limited effect on Environmental conditions since they occur under lower intensity conditions. Prescribed fires are not initiated when climatic conditions are extreme and would create fires that will damage resources. Occasionally wildfires are ignited under extreme weather conditions and may cause damage to training lands. Rehabilitation may occur but only on a case by case evaluation.

1.14.2 Environmental Monitoring

Periodic visual reviews of training areas are performed by DPW, ENVIRONMENTAL personnel to obtain general condition information. Detailed survey data is not collected through these training area visits but do give a general impression of conditions. Those reviews will continue as future wildfire and prescribed fire events occur. More on such reviews can be obtained through the Integrated Natural Resources Management Plan (INRMP).

1.14.3 Monitoring of Fire Programs

Daily self assessments through Personal Protective Equipment (PPE) and other equipment checklists allow firefighters and ICs to evaluate readiness. An After Action Review briefing is taken at the end of each prescribed burn to evaluate the execution of the plan and results of the operations. Weaknesses and strengths are identified during the briefing and suggestions taken to improve future prescribed fire operations.

In the event of a prescribed fire escape and escalation to a large wildfire event that requires a FES wildfire response, an After Action Investigation may be performed to determine the reasons for losing control. During the investigation prescribed burn plans, operational procedures and conformance to SOPs and NWCG training standards may be reviewed to identify internal failures that must be corrected. Methods of dealing with nonconformance with proper procedures will be determined by the Chief of FES.

1.15 Public Relations and Notifications

1.15.1 Public Relations Responsibilities

Because Fort Leavenworth is an Army installation, public relations are handled primarily by the Public Affairs Office (PAO). Because wildland fire personnel are in the field, opportunities to interact with the general public, installation residents, military and civilian personnel, and even the media could arise.

In cases involving the media, all contact will be directed to the PAO. Wildland fire personnel may not speak to the media in an official capacity unless approval is gained from PAO in advance. If approached by media during non-duty hours while in the field, personnel should contact the Fort Leavenworth Emergency Operations Center by phone (684-4448) or via the FES Dispatcher by radio and ask for PAO support.

1.15.2 Notification of Wildland Fire Information

Prior to the burn seasons, articles will be submitted to PAO for publication in the Lamp. Those articles will explain when, where and why prescribed burning will be conducted, measures that can be taken to minimize adverse impacts of the fire and smoke, and how to remain safe during the burn.

Avenues for informing various groups of people potentially impacted by prescribed burns or wildfires in a more immediate manner than the newspaper include:

- Notices sent on the installation's computer network notification system (civilian employees and military personnel, in offices)
- PAO issued announcements provided to local radio and television stations (general public, military and civilian personnel)

- Giant Voice communication system (civilian employees and military personnel)

1.15.3 Firefighter Public Contact

Wildland fire personnel who have occasion to interact with the general public, installation residents, or military personnel will do so in a manner that, first and foremost, ensures the safety of those persons and all fire personnel. Unauthorized persons found to be in prescribed burn or wildfire areas will be respectfully, but firmly, directed to leave the area by a safe route. Members of the general public, adjacent landowners, recreationists, military and civilian personnel who come to the area of fires or burns out of curiosity will be respectfully asked to leave the area by a safe route. In both cases the IC or Crew Boss will be notified of their presence when they are discovered. The IC/Crew Boss will determine if any operations need to be halted for the safety of the visitor/intruder or fire personnel, and address the visitor/intruder as needed. If they refuse to leave, the IC/Crew Boss will request a Conservation Officer/Law Enforcement Officer to remove them.

1.16 Wildland Urban Interface

1.16.1 Wildland Urban Interface Description

The wildland urban interface is the vegetative edge where wildland vegetation and fuels intermix with humans and their development. Fort Leavenworth wildland urban interface may be found along the entire perimeter. Housing areas abut up against forested tracts of land and some of the cantonment also abuts forest. Much of this forested area is relatively small and would pose little fire danger. The housing and cantonment on the northwest side of the installation are adjacent to large tracts of forest. Forest fire is unlikely in these areas but if conditions did exist and a fire were started the adjacent properties would be hard to defend.

1.16.2 Defensible Space

Defensible space is an area between a developed area and an oncoming wildfire where wildland fuels are modified to reduce the threat of wildfire to the structures or facilities and people at that location. Defensible space provides firefighters an opportunity to effectively protect urban development through reduced combustion due to lack of fuels, reduced heat gain from radiation and through distancing fuels from structures, and providing a working space for firefighters. Backfires and suppression treatments may be used on defensible spaces to assist in combating a wildfire.

Key factors that determine the effectiveness of a defensible space include slope, surrounding vegetation types, amount of fuel loading, type of facilities being protected, local weather factors, and aspect. All dead and dying vegetation should be removed from this defensible space. Grass and vegetation in this area should be periodically mowed to keep fuel loads low. Ladder fuels

should be removed in the defensible space to keep fire at the ground level, resulting in lower fire intensity.

In undeveloped areas firebreaks can be created along property lines and strategic areas. Firebreaks are areas that the vegetation has been either completely removed or greatly minimized to stop or slow the spread of the fire. Fort Leavenworth firebreaks are disked areas by Roads and Grounds and DPW. Frequently, firebreaks are created on the installation and used to initiate backfire operations for prescribed burning or to eliminate fuels between an approaching wildfire and the location chosen to stop the fire's advancement.

1.16.3 Fort Leavenworth Fuel Modification Tools

Herbicide treatments are a commonly used means to control vegetation in wildland urban interface areas. Bareground weed control could be performed by coordinating the efforts of the installation's pest control contract in housing, installation management's entomology shop, and natural resources. These bare ground treatments could also be used around gravel pads and the edges of motor pools, under propane tanks, and around powerline poles.

Firebreak construction is performed as part of trail and road maintenance in the unimproved areas of the installation. Most of these trails are from a few feet wide to more than twenty. Mowed and disked fire breaks can also be used in grassland settings as well as mowed reduction lines. Additional lines may be established with hand tools or by burning a "black line" around an area.

1.16.4 Public Awareness and Wildland Fire Prevention

FES is responsible to provide public awareness information to installation residents and users regarding wildland urban interface issues. Most maintenance of these areas is performed either by Michael's Military Housing, LLC, the family housing partner, or by Government crews outside of housing areas. However, residents and dependents housed in these areas could ignite wildfires due to lack of awareness of the danger. Public awareness efforts are used to educate residents of the installation on the need for caution when crossing into the wildland side of the interface.

1.17 Training and Qualifications and Physical Fitness Standards

1.17.1 NWCG Based Training and Qualifications

Fort Leavenworth uses the NWCG standards, found in PMS 310-1 Wildland Fire Qualification System Guide, for training and certification as the foundation to the qualification of wildland firefighters. FES and DPW, ENVIRONMENTAL have varying progression of requirements for each organization's firefighters based upon the varying tasks and needs for the organizations.

All FES personnel involved in wildland fire suppression and wildland prescribed burns will be trained in accordance with FES wildland firefighting Physical and Training Requirements. All DPW, Environmental personnel involved in wildland fire suppression and wildland prescribed burns will be trained in accordance with the above mentioned FES requirements. These formal training, physical and competency qualifications are identified in Appendix 1-E and 1-F.

1.17.2 Firefighter Qualification Recordkeeping

FES and DPW Environmental has the responsibility of administering and maintaining records for each of its wildland firefighter's training and task book completions. Copies of all wildland certifications will be maintained by the organization and the individual firefighter.

The NWCG is comprised of the Department of Agriculture (US Forest Service), Department of the Interior (Bureau of Land Management, Bureau of Indian Affairs, US Fish and Wildlife Service, and National Park Service), and the Association of State Foresters. This group is a resource for technical, training, and safety information for government agencies active in wildfire suppression and prescribed fires. Because of prescribed fire management needs, FES and DPW, Environmental personnel participating in fire operations should follow applicable NWCG guidelines as recommended by the Department of the Army (2002).

1.17.4 Physical Fitness Standards

FES and DPW firefighters are required to pass an annual National Fire Protection Association (NFPA) 1582, Standard on Comprehensive Occupational Medical Program physical for structural firefighting and hazardous materials response. No (FES) firefighters on the installation are assigned as wildland firefighters, they are primarily structural firefighters and therefore will not test on the WCG Work Capacity Test (WCT), the arduous pack test requirement. That test is not a requirement for structural firefighters performing occasional wildland firefighting operations. DPW, ENVIRONMENTAL wildland firefighters are not allowed time during work hours for physical training.

1.18 Environmental Review

The Environmental review requirement for prescribed burning on Fort Leavenworth is covered under the Environmental assessment for the Fort Leavenworth INRMP and addressed annually by a Record of Environmental Consideration.

2. Wildland Fire

2.1 Suppression and Prevention

2.1.1 Suppression Responsibilities

FES is responsible for wildfire suppression and prevention management, planning and response. FES directly receives reports on wildfires on the installation both through emergency and non-emergency dialed telephone calls and through radio communication with other installation land and training activity managers. FES is able to provide 24-hour emergency response on the installation. FES maintains 24-hour work shifts of firefighters to ensure continuous emergency service delivery. DPW, Environmental provides limited assistance as requested by FES for wildfire suppression.

2.1.2 Prevention Responsibilities

FES has the responsibility for fire prevention. FES provides information and updates to Range Coordinator that is used in briefings to units using the training areas and firing ranges for prevention of wildfires.

2.1.3 Firefighting Equipment

FES has the following firefighting equipment:

1. Brush Patrol, Firefighting (Type VI Engine), Quantity of 1
2. Water Tender, Firefighting (Tanker) Type 1, Quantity of 1
3. Engine, Fire (Pumper) Type 1, Quantity of 3

2.2 Wildfire Detection and Response Procedures

2.2.1 Wildfire Detection Procedures

Nearly all wildfire detection occurs from emergency response calls. Sufficient military and garrison civilian activities occur within the training areas that fires are easily detected by those performing military training, maintenance operations, or contract services. No aerial detection support or fire lookouts are used for detection purposes. Most wildfire emergency calls have the training area identified as to location with some responses giving UTM grid coordinates for even closer location identification.

Information that is reported or obtained from emergency response wildfire calls includes:

- Location and size of fire.
- Any exposures, troops, equipment, boundary etc.
- Direction of fire travel.
- Has firing ceased.

- If firing has not ceased, Range Coordinator shall be contacted and a request to cease fire will be made.
- If the Rangeland fire index is very high, extreme or a Red Flag Warning has been issued, a second alarm response will automatically be dispatched.

2.2.2 Wildfire Dispatch Procedures

Response procedures can be found in Appendix 1-H.

FIRECTRL radio frequency will be used as the communication frequency while responding to wildfires.

The Wildland Fire and Radio Communications SOP describes additional wildfire detection, response and communication procedures and are located at Appendix 2-A. Additional DPW, ENVIRONMENTAL specific procedures for wildland fire are identified in the DPW, ENVIRONMENTAL Wildfire Operations SOP and found at Appendix 2-B.

2.3 Extended Attack

Since the major fuel type is fine grass fuels on the installation, fire spread is fast and duration is relatively short. Relative humidity dramatically increases during most evenings making fires much easier to contain. Based on limited records and recollection of long-term firefighters, no wildfire or prescribed burn has extended beyond the initial operational period (i.e. beyond 2359 hours on the day the incident begins) in the last 25 or more years.

2.4. Wildfire Records and Reports

Wildfires are recorded through the National Fire Incident Reporting System by FES. Any larger wildfires, greater than 300 acres in size or greater than 100 acres in size in forest cover types are also reported to the National Fire Incident Reporting System through the KFS. This information is reported on an ICS-209 Form. Long-term records of wildfires do not exist at Fort Leavenworth but wildfires greater than ten acres in size are now being collected as GIS data layers starting in FY07.

3. Prescribed Fire Management

3.1 Prescribed Fire Planning

3.1.1 Seasonal Prescribed Fire Plan Development

Prescribed fires are planned and developed based upon site reviews of vegetation conditions, historical fire frequency data, and vegetation surveys and inventories. An extensive check and review of planned and suggested prescribed burns occurs through the appointed officer as well as considerations provided from the Range Coordinator and FES. Prescribed fire requests are

submitted to the Fire Chief. The request allows the requestor to identify the location and needed result of the prescribed fire.

The Natural Resources Specialist develops a preliminary prescribed fire plan in both January and July each year which addresses vegetation management goals needed for site specific ecosystem, vegetation and wildlife management needs. The site specific needs follow along with the general ecosystem needs identified in the INRMP. The plan may include areas identified or informally recognized as areas that should not burn to maintain vegetative cover and specific habitat conditions for wildlife needs. These locations will normally receive direct attack operations during wildfires to minimize the area affected by the fire.

The preliminary prescribed fire plan reflects the ideal management needs to have long-term sustainability of natural resources and the military training facility values. The preliminary prescribed fire plan is then reviewed in consideration of other prescribed fire requests, modified to integrate with all approved requests for prescribed fire, reviewed by FES for suppression and prevention issues, and finalized as that season's prescribed fire plan. The prescribed fire plan is published to effected installation activities including CAC, GAR CMD, DES, DPTMS, DPW, DFMWR and others as needed.

3.1.2 Burn Plans

All prescribed fires that have a higher complexity; a site specific burn plan will be developed. The burn plan will identify the proposed fire type and action that will be used to obtain the needed results. Identification of weather and fuel conditions is considered in the burn plan to create a predicted fire environment that will meet the objectives of the approved request.

Information identified in the plan includes:

- Estimated acres
- Proposed burn season
- Fuel type and level
- Manpower to perform the operation
- Weather conditions and sampling
- Needed firebreak construction
- Expected fire behavior
- Plan for ignition, control, and operations
- Preparer and approvals

An example of a burn plan is located at Appendix B5.

The majority of prescribed burns on Fort Leavenworth are a low complexity burns. All low complexity burns will fall under a programmatic burn plan. The programmatic burn plan will

allow flexibility to the Burn Boss to accomplish the burn in a safe manner. This programmatic burn plan will be drafted in FY17.

3.1.3 Allowable Weather Conditions for Prescribe Burn Operations

Prescribed fires are performed when the combination of weather conditions will allow that operation to be performed safely and meet the objectives of the prescribed burn request. The combination of individual weather conditions that may be safe is also dependent on season of the year and fuel moisture levels. In other words, a prescribed fire may be performed safely in lower relative humidity's and higher winds during the growing season since grassy fuels may be green and growing and thus less combustible than could be expected to be safe in the winter when all grassy fuels are desiccated and subject to easy ignition. Generally, the variation of weather conditions allowed for prescribed burning is identified in section 1.6.4.

3.2 Common Prescribed Burn Goals

3.2.1 Fuel Reduction Goals

Fuel loading describes the amount and type of natural and manmade burnable material that exists on wildland fire environments. These burnable materials are principally composed of grass and woody vegetation that has grown on the site over a period of time. Fire fuels such as grasses and forbs tend to ignite and burn very rapidly causing intense fire combustion. Fine fuels are the predominant fuel type desired to be prescribe burned on the installation. Heavier woody fuel types are typically found in uplands and the floodplain. Fine fuels create fire intensities that are hazardous to military, civilian and public users of the training lands.

Fuels reduction is necessary to protect personnel and equipment during military training, training lands maintenance operations, and for other management activities. Fuels reduction will primarily be concerned with the combustion and removal of horizontal and vertical fuels on the training lands.

Fuels quantity reduction and fire frequency may be identified in response to the type and frequency of military training. It may also be identified based on the need for protection of adjacent cultural or natural resources; such as forest stands. Edge areas of the training lands may also be identified for fuels reduction fires when off-installation property conditions could be damaged by high intensity fires due to high levels of fine fuel loading.

Response time to effected property will be considered in the frequency determination for fuel loading reduction. Adjacent areas to the installation that have high value property and an increased risk of property loss will receive more frequent fuel loading reduction operations than lower risk areas.

3.2.2 Natural and Cultural Resources Management Goals

Invigoration of native tallgrass vegetation is an ecosystem management tool that meets long-term sustainability goals for the installation. Noxious and invasive weed management efforts are enhanced by the timely use of prescribed burns. Prescribed burns can enhance oak regeneration efforts within some oak timber stands. Archeological surveys are more effectively performed when prescribed burns are used to burn off grassy cover, allowing a visual inspection of the ground and easier access for shovel test sampling.

3.2.3 Firefighter Safety and Improved Wildfire Control Capabilities

Creation of burned areas allows easier control of wildfires that may be ignited in adjacent training areas. Prescribed burns assist in catching and controlling wildfires by creating a patchwork of training areas where fire intensities are lowered, allowing for direct attack on the fire.

3.3 Prescribed Fire Personnel Qualifications and Coordination Procedures

3.3.1 Minimum Qualifications for Prescribed Fire Firefighters

Fort Leavenworth adheres to the qualifications standard set forth in NWCG PMS 310-1 Wildland Fire Qualification System Guide. All personnel performing prescribed fire operations must be at least at the FFT2 level which is the lowest level of the NWCG qualification for wildland firefighters.

3.3.2 Coordination Checklists

Prescribed fire ICs will use the Incident Command Prescribed Fire Checklist to meet all coordination criteria to execute the burn safely. A copy of the Incident Command Prescribed Fire Checklist is located at Appendix 2-B.

3.4 Fuels Reduction

3.4.1 Fuel Loading

Fuel loading describes the amount and type of natural and manmade burnable material that exists on wildland fire environments. These burnable materials are principally composed of grass and woody vegetation that has grown on the site over a period of time. Fine fuels such as grasses and forbs tend to ignite and burn very rapidly causing intense fire combustion. Fine fuels are the predominant fuel type on the installation. Heavier woody fuel types are typically found in uplands and in the floodplain of the Missouri River. Fine fuels create fire intensities that are hazardous to military, civilian and public users of the training lands.

3.4.2 Fuel Reduction

Fuels reduction is necessary to protect personnel and equipment during military training, training lands maintenance operations, and for other management activities. Fuels reduction will primarily be concerned with the combustion and removal of horizontal and vertical fuels on the training lands.

Fuels quantity reduction and fire frequency may be identified in response to the type and frequency of military training. It may also be identified based on the need for protection of adjacent natural or cultural resources, such as forest stand. Edge areas of the training lands may also be identified for fuels reduction fires when off-installation property conditions could be damaged by high intensity fires due to high levels of fine fuel loading.

3.4.3 Fuel Reduction Based Upon Risk

Response time to effected property will be considered in the frequency determination for fuel loading reduction. Adjacent areas to the installation that have high value property and an increased risk of property loss will receive more frequent fuel loading reduction operations than lower risk areas.

3.5 Firebreak Construction

3.5.1 Multi-use Trail Firebreaks

Under most conditions, excluding drought, extremely low relative humidity and high winds, the multi-use trails that criss cross the training lands act as fire breaks for fires that burn the understory and leaf litter. These trails are especially effective in the upland forests of the installation.

3.5.2 Vehicular Trail Firebreaks

Vehicular trails in training lands are for training vehicles and authorized use vehicles, no private vehicles are allowed in the training lands. The roads also act as firebreaks and except in extreme conditions, mentioned above, provide effective fire control under most conditions. Roads are large enough to also provide firebreaks for the more flashy grassland areas. The levee around Sherman Airfield can act as a firebreak.

3.5.3 Temporary Firebreaks

Large blocks of fuels, targeted for prescribed fire, can be broken down into smaller units using temporary firebreaks. Depending on the vegetation and fuels these temporary firebreaks can be created by raking, mowing, leaf blower, disking, or creating a burned area with drip torch and water supply. The smaller burn units have less smoke production and can be burned in a manner to provide additional fire protection.

3.6 Prescribed Fire Records, Reports and Monitoring

3.6.1 Prescribed Fire Records and Reports

A system of records is generated during prescribed burn preparations, coordination and operations which also provide records for evaluation of short and long-term outcomes. In addition, the IC Checklist is an extensive review of all preparations and contacts for each day and for all prescribed burns. Included as a part of the IC's Checklist review is the Go/No-Go Checklist used as an overview to determine if all aspects and considerations are completed prior to the ignition of the prescribed fire. Weather forecasts obtained from the National Weather Service are obtained and maintained as records until the end of each fire season.

After a prescribed fire is completed, the Natural Resources Specialist collects data on the fire size and prepares GIS map coverage. Prescribed fire accomplished burn maps are generated for all fires greater than 10 acres in size. This information is maintained as records to assist in determining future burns as well as long-term trend data to be used for vegetation changes over extended periods (decades).

Pre-season prescribed burn maps are also maintained as a record. They are used for comparisons between planned and accomplished burns and identify reasons for variations.

3.6.2 Monitoring

Minimal monitoring of prescribed burn effects and accomplishments has occurred in the past other than cursory review and assumptions of response and benefits. With the maintenance of GIS data layers that locate annual prescribed burns and wildfires there maybe the potential to monitor long-term effects and benefits from fire if site specific grass and forb vegetation data layers can be developed.

c5. Easton Township



DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT LEAVENWORTH
290 GRANT AVENUE UNIT 1
FORT LEAVENWORTH, KANSAS 66027-1282

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY GARRISON, FORT LEAVENWORTH
AND
EASTON TOWNSHIP FIRE DEPARTMENT, KANSAS

SUBJECT: Mutual Aid Agreement

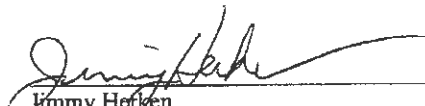
1. **THIS AGREEMENT MADE AND ENTERED INTO THIS 7th DAY OF November, BETWEEN The Sectary of the Army acting according to the authority of section 1856A, Title 42, United States Code and Easton Township Fire Department, Kansas is to secure for each the benefits of mutual aid in fire prevention, the protection of life and property from fire, and firefighting to include emergency services, including basic medical support, hazardous material containment, and special rescue events involving vehicular and water mishaps, and trench, building and confined space extractions.**
2. It is agreed that:
 - a. On request to a representative of Fort Leavenworth Fire & Emergency Services by a representative of **Easton Township Fire Department**; firefighting equipment and personnel of the Fort Leavenworth Fire & Emergency Services will be dispatched when available to any point within the area for which **Easton Township Fire Department** normally provides fire protection as designated by the representative of **Easton Township Fire Department**.
 - b. On request to a representative of **Easton Township Fire Department** by a representative of the Fort Leavenworth Fire & Emergency Services, firefighting and personnel of **Easton Township Fire Department** will be dispatched when available to any point within the firefighting jurisdiction of the Fort Leavenworth Fire & Emergency Services.
 - c. The rendering of assistance under the terms of this agreement shall not be mandatory, but the party receiving the request for assistance should immediately inform the requesting department if, for any reason, assistance cannot be rendered.
 - d. Any dispatch of equipment and personnel pursuant to this agreement is subject to the following conditions:
 - (1) Any request for aid under this agreement will specify the location to which the equipment and personnel are to be dispatched; however, the amount and type of equipment and number of personnel to furnish will be determined by a representative of the responding organization.

SUBJECT: Mutual Aid Agreement

- (2) The responding organization will report to the officer in charge of the requesting organization at the location to which the equipment is dispatched, and will be subject to the orders of the official.
 - (3) A responding organization will be released by the requesting organization when the services of the responding organization are no longer required, or when the responding organization is needed within the areas for which it normally provides fire protection.
 - (4) If the crash of an aircraft owned or operated by the United States or military aircraft of any foreign nation occurs within the area for which **Easton Township Fire Department** normally provides fire protection, the Chief of Fort Leavenworth Fire & Emergency Services or his representative may assume full command on arrival at the scene of the crash.
- e. Each party hereby waives all claims against every other party for compensation for any loss damage, injury or death occurring as a consequence of the performance of this agreement except those claims authorized under 15 U.S.C. 2210.
 - f. The chief fire officers and personnel of the fire departments of both parties to this agreement are invited and encouraged, on a reciprocal basis, to frequently visit each other's activities for guided familiarization tours consistent with local security requirements and, as feasible, to jointly conduct prefire planning inspections and drills.
 - g. The technical heads of the fire departments of the parties to this agreement are authorized and directed to meet and draft any detailed plans and procedures of operation necessary to effectively implement this agreement. Such plans and procedures of operations shall become effective upon ratification by the signatory parties.
 - h. All equipment used by **Easton Township Fire Department** in carrying out this agreement will be owned by **Easton Township Fire Department**; and all personnel acting for **Easton Township Fire Department** under this agreement will be an employee or volunteer member of **Easton Township Fire Department**.

SUBJECT: Mutual Aid Agreement

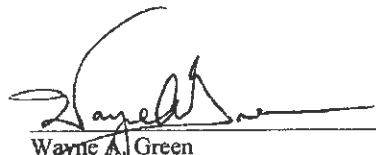
3. This agreement shall become effective upon the date hereof and remain in full force and effect until canceled by mutual agreement of the parties hereto or by written notice by one party to the other party, giving thirty (30) days notice of said cancellation.



Jimmy Hayden
Fire Chief
Easton Township Fire Department, KS

10-3-2011

(Date)



Wayne A. Green
Colonel, United States Army
Garrison Commander

11-7-11

(Date)

c6. Fairmount Township



DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT LEAVENWORTH
290 GRANT AVENUE UNIT 1
FORT LEAVENWORTH, KANSAS 68627-1292

**MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY GARRISON, FORT LEAVENWORTH
AND
FAIRMOUNT TOWNSHIP FIRE DEPARTMENT, KANSAS**

SUBJECT: Mutual Aid Agreement


1. **THIS AGREEMENT MADE AND ENTERED INTO THIS ____ DAY OF _____, BETWEEN The Secretary of the Army acting according to the authority of section 1856A, Title 42, United States Code and Fairmount Township Fire Department, Kansas is to secure for each the benefits of mutual aid in fire prevention, the protection of life and property from fire, and firefighting to include emergency services, including basic medical support, hazardous material containment, and special rescue events involving vehicular and water mishaps, and trench, building and confined space extractions.**
2. **It is agreed that:**
 - a. **On request to a representative of Fort Leavenworth Fire & Emergency Services by a representative of Fairmount Township Fire Department; firefighting equipment and personnel of the Fort Leavenworth Fire & Emergency Services will be dispatched when available to any point within the area for which Fairmount Township Fire Department normally provides fire protection as designated by the representative of Fairmount Township Fire Department.**
 - b. **On request to a representative of Fairmount Township Fire Department by a representative of the Fort Leavenworth Fire & Emergency Services, firefighting and personnel of Fairmount Township Fire Department will be dispatched when available to any point within the firefighting jurisdiction of the Fort Leavenworth Fire & Emergency Services.**
 - c. **The rendering of assistance under the terms of this agreement shall not be mandatory, but the party receiving the request for assistance should immediately inform the requesting department if, for any reason, assistance cannot be rendered.**
 - d. **Any dispatch of equipment and personnel pursuant to this agreement is subject to the following conditions:**
 - (1) **Any request for aid under this agreement will specify the location to which the equipment and personnel are to be dispatched; however, the amount and type of equipment and number of personnel to furnish will be determined by a representative of the responding organization.**

SUBJECT: Mutual Aid Agreement

- (2) The responding organization will report to the officer in charge of the requesting organization at the location to which the equipment is dispatched, and will be subject to the orders of the official.
 - (3) A responding organization will be released by the requesting organization when the services of the responding organization are no longer required, or when the responding organization is needed within the areas for which it normally provides fire protection.
 - (4) If the crash of an aircraft owned or operated by the United States or military aircraft of any foreign nation occurs within the area for which Fairmount Township Fire Department normally provides fire protection, the Chief of Fort Leavenworth Fire & Emergency Services or his representative may assume full command on arrival at the scene of the crash.
- e. Each party hereby waives all claims against every other party for compensation for any loss damage, injury or death occurring as a consequence of the performance of this agreement except those claims authorized under 15 U.S.C. 2210.
 - f. The chief fire officers and personnel of the fire departments of both parties to this agreement are invited and encouraged, on a reciprocal basis, to frequently visit each other's activities for guided familiarization tours consistent with local security requirements and, as feasible, to jointly conduct prefire planning inspections and drills.
 - g. The technical heads of the fire departments of the parties to this agreement are authorized and directed to meet and draft any detailed plans and procedures of operation necessary to effectively implement this agreement. Such plans and procedures of operations shall become effective upon ratification by the signatory parties.
 - h. All equipment used by Fairmount Township Fire Department in carrying out this agreement will be owned by Fairmount Township Fire Department; and all personnel acting for Fairmount Township Fire Department under this agreement will be an employee of volunteer member of Fairmount Township Fire Department.

SUBJECT: Mutual Aid Agreement

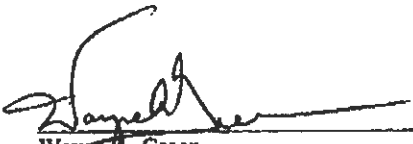
3. This agreement shall become effective upon the date hereof and remain in full force and effect until canceled by mutual agreement of the parties hereto or by written notice by one party to the other party, giving thirty (30) days notice of said cancellation.



Jeff Thies
Fire Chief
Fairmount Township Fire Department, KS

10-6-11

(Date)



Wayne J. Green
Colonel, United States Army
Garrison Commander

3-12-12

(Date)

c7. Kickapoo Township



DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT LEAVENWORTH
290 GRANT AVENUE UNIT 1
FORT LEAVENWORTH, KANSAS 64627-1292

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY GARRISON, FORT LEAVENWORTH
AND
THE KICKAPOO TOWNSHIP, COUNTY OF LEAVENWORTH, KANSAS

SUBJECT: Mutual Aid Agreement

1. THIS AGREEMENT MADE AND ENTERED INTO THIS 1st DAY OF March, 1911, BETWEEN The Secretary of the Army acting according to the authority of section 1856a, Title 42, United States Code and The Kickapoo Township Fire Department is to secure for each the benefits of mutual aid in fire prevention, the protection of life and property from fire, and firefighting to include emergency services, including basic medical support, basic and advanced life support, hazardous material containment, and special rescue events involving vehicular and water mishaps, and trench, building and confined space extractions

2. It is agreed that:

a. On request to a representative of the Fort Leavenworth Fire & Emergency Services by a representative of the Kickapoo Township, Kansas; firefighting equipment and personnel of the Fort Leavenworth Fire & Emergency Services will be dispatched when available to any point within the area for which the Kickapoo Township Fire Department normally provides fire protection as designated by the representative of the Kickapoo Township Fire Department.

b. On request to a representative of the Kickapoo Township by a representative of the Fort Leavenworth Fire & Emergency Services, firefighting equipment and personnel of the Kickapoo Township Fire Department will be dispatched when available to any point within the firefighting jurisdiction of the Fort Leavenworth Fire & Emergency Services.

c. The rendering of assistance under the terms of this agreement shall not be mandatory, but the party receiving the request for assistance should immediately inform the requesting department if, for any reason, assistance cannot be rendered.

d. Any dispatch of equipment and personnel pursuant to this agreement is subject to the following conditions:

(1) Any request for aid under this agreement will specify the location to which the equipment and personnel are to be dispatched, however, the amount and type of equipment and number of personnel to be furnished will be determined by a representative of the responding organization.

(2) The responding organization will report to the officer in charge of the requesting organization at the location to which the equipment is dispatched, and will be subject to the orders of the official

(3) A responding organization will be released by the requesting organization when the services of the responding organization are no longer required, or when the responding organization is needed within the areas for which it normally provides fire protection.

(4) If the crash of an aircraft owned or operated by the United States or military aircraft of any foreign nation occurs within the area for which the **Kickapoo Township Fire Department** normally provides fire protection, the Chief of the Fort Leavenworth Fire & Emergency Services or his representative may assume full command on arrival at the scene of the crash.

e. Each party hereby waives all claims against every other party for compensation for any loss, damage, injury or death occurring as a consequence of the performance of this agreement except those claims authorized under 15 U.S.C 2210.

f. The chief fire officers and personnel of the fire departments of both parties to this agreement are invited and encouraged, on a reciprocal basis, to frequently visit each other's activities for guided familiarization tours consistent with local security requirements and, as feasible, to jointly conduct prefire planning inspections and drills.

g. The technical heads of the fire departments of the parties to this agreement are authorized and directed to meet and draft any detailed plans and procedures of operation necessary to effectively implement this agreement. Such plans and procedures of operations shall become effective upon ratification by the signatory parties.

h. All equipment used by the **Kickapoo Township Fire Department** in carrying out this agreement will be owned by the **Kickapoo Township Fire Department**; and all personnel acting for the **Kickapoo Township Fire Department** under this agreement will be an employee of volunteer member of the **Kickapoo Township Fire Department**.

3. This agreement shall become effective upon the date hereof and remain in full force and effect until canceled by mutual agreement of the parties hereto or by written notice by one party to the other party, giving thirty (30) days notice of said cancellation.

FOR THE KICKAPOO TOWNSHIP
FIRE DEPARTMENT



Butch Bollin
Fire Chief
Kickapoo Township Fire Department

10-10-2011

(Date)

FOR THE SECRETARY OF THE ARMY



Wayne A. Green
Colonel United States Army
Garrison Commander

11-7-11

(Date)

B7. Sherman Army Airfield WASH Plan

SECURITY INSTRUCTION/RECORD OF CHANGES/ANNUAL REVIEW/INITIAL SIGNATURE

1. The long title of the plan is Army Garrison Fort Leavenworth Sherman Army Airfield Operations Manual. The short title is Sherman AAF Operations Manual.
2. This document is UNCLASSIFIED. Handle in accordance with Department of Defense Directives.
3. This document does not contain information compromising the national defense of the United States.

RECORD OF CHANGES

Change Number	Date of Change	Date Entered	Posted By

RECORD OF ANNUAL REVIEW

Reviewed By	Date Reviewed	Remarks

ANDREW T. SHOFFNER
Garrison Commander
// SIGNED 19OCT2015//

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ACRONYMS AND ABBREVIATIONS

AAF	Army Airfield
AFM	Air Force Manual
AFPAM	Air Force Pamphlet
ASPM	Airfield Safety Program Manager
ASO	Aviation Safety Officer
AGL	Above Ground Level
AHAS	Avian Hazard Advisory System
AHP	Army Heliport
AOA	Airport Operations Area
AOB	Airfield Operations Board
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
AWOS	Automated Weather Observing System
BAM	Bird Avoidance Model
WWWG	Wash Working Group
WASH	Wildlife Aircraft Strike Hazard
BWC	Bird Watch Condition
CAPA	Corrective and Preventive Action
CCTV	Closed Circuit Television
COE	Corps of Engineers, US Army
DES	Directorate of Emergency Services
DOD	Department of Defense
DPTM	Directorate of Plans, Training, and Mobilization
DPW	Directorate of Public Works
DSN	Defense Switch Network
FAA	Federal Aviation Administration
FAAO	Federal Aviation Administration Order
FBO	Fixed Base Operator
FOD	Foreign Object Damage
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
IMCOM	Installation Management Command
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
KIAS	Knots Indicated Airspeed
NEPA	National Environmental Policy Act
NOTAM	Notice to Airmen
MOA	Military Operations Area
MSL	Mean Sea Level

OPR	Office of Primary Responsibility
PA	Public Affairs
SAS	Safety Automated System
SAAF	Sherman Army Airfield
SOF	Supervisor of Flying
USDA	United States Department of Agriculture
USFWS	United States Fish & Wildlife Service
WASH	Wildlife Aircraft Strike Hazard
WDDT	Wildlife Detection and Dispersal Team
WHA	Wildlife Hazard Assessment
WHWG	Wildlife Hazard Working Group
WHMP	Wildlife Hazard Management Plans

SECTION 1. INTRODUCTION

1-1. PURPOSE.

IMCOM OPORD 12-259 provided a draft WASH Plan during June 2012 for IMCOM airfields. The objective of this plan is to minimize the risk to personnel and aircraft posed by a wildlife strike at Sherman Army Airfield (SAAF), Fort Leavenworth. A single solution does not exist to reduce the potential for a strike. Success of the operation requires continuous communication and teamwork. Proper wildlife management will enhance safe airfield operations. The Installation Natural Resources Management Plan (INRMP) is the guiding conservation and natural resource document for Fort Leavenworth and it provides an essential framework for such processes in coordination with the U.S. Fish and Wildlife Service (USF&WS) and the Kansas Division of Wildlife, Parks, and Tourism (KDWPT). Where necessary, the control measures described in this plan must be executed in accordance with the approved INRMP and may require a permit or further consultation with the USF&WS and KDWPT. Minimizing strike risk is a continuous goal-oriented process based on wildlife management principles. This plan, as part of the Airfield Safety and Accident Prevention Program, is based on current knowledge of resident, migratory bird and mammal species near the airfield. The elements of this plan are designed to:

- a. Establish a Wildlife Hazard Working Group (WHWG) and designate responsibilities to its members.
- b. Establish procedures for reporting hazardous wildlife activity and altering or discontinuing flying operations. Reporting should be a collective effort between all air and ground personnel operating in the airfield environment.
- c. Establish procedures to identify hazardous situations and to aid supervisors and aircrews in disseminating information, issuing alerts, and altering or discontinuing flying operations when required.
- d. Establish active/passive techniques to disperse wildlife from the airfield/heliport and decrease airfield/heliport attractiveness to wildlife.
- e. Establish procedures to identify, provide information, and eliminate or reduce environmental conditions that attract wildlife to the airfield/heliport.
- f. Identify organizations with authority to initiate or terminate Bird Watch Conditions (BWC).

1-2. BACKGROUND.

Bird strikes have occurred almost since the beginning of powered flight. Calbraith Rodgers, the first man to fly across the U.S., was also the first to die because of a bird-aircraft collision. On April 3, 1912, Rodgers' Wright Pusher struck a gull, causing the aircraft to crash into the surf at Long Beach, California. Rodgers was pinned under the wreckage and drowned. Data clearly shows birds are not the only group of wildlife that can pose a threat to aviation safety at Fort Leavenworth. Mammals can pose a serious threat due to size or by attracting avian predators. Invertebrate species can pose an indirect threat by attracting other species of wildlife that pose a direct threat.

a. No airfield/heliport or aircraft type is immune from the hazards of wildlife-aircraft strikes. Both birds and mammals have been involved in damaging aircraft strikes. This plan concentrates on Fort Leavenworth Sherman Army Airfield wildlife hazards and their management. Wildlife poses a serious hazard to Army aviation. A flock of birds suddenly rising up from a runway or surrounding area may collide with an aircraft, resulting in damage to the aircraft or in an extreme case, causing the aircraft to crash with injuries or fatalities.

b. There were approximately 112,000 wildlife strikes to civil aircraft in the United States from 1990 through December 2011, or about one for every 10,000 flights. Since 1960, more than 25 large aircraft were destroyed by bird strikes. In 23 of these incidents, the strike occurred below 400 feet. From 1990-2010, most bird strikes occurred between July and October during the daytime. Most mammal strikes occurred between August and November during the night. Bird strike damage to Department of Defense aircraft costs the military an estimated \$75 million annually. The Air Force and Navy report some 3,000-bird strikes each year, in addition to the 2,300 civilian wildlife strikes reported by the FAA. Since 1990, numerous military personnel fatalities are the result of bird strikes and at least 107 military aircraft have been destroyed. Reducing the wildlife strike hazard at SAAF is a cooperative program involving multiple Fort Leavenworth organizations and the surrounding community.

c. From 1990-2005, 370 (0.6 percent) of the 64,734 strikes reported involved civilian helicopters. Of the 370, sixty-eight percent reported damage, including eighteen percent reporting substantial damage. Seventy-seven percent of the damaging strikes to civilian helicopters occurred during the en-route phase of flight compared to two-percent of reported strikes by fixed-wing aircraft occurring during the en-route phase.

d. The civil and military aviation communities widely recognize that the threat to human health and safety from aircraft collisions with wildlife strikes is increasing. Globally, aircraft wildlife strikes have killed more than 194 people and destroyed over 163 aircraft since 1988.

e. It is impossible to avoid all wildlife strikes. Actions can be taken to minimize the potential of a strike. First, by examining leading indicators that are correlated with mishap risk potential (e.g., wildlife populations, near misses, engine damage and reported strikes); unsafe

situations can be identified and avoided. Second, passive, and active wildlife management techniques can be implemented to affect the presence of wildlife in and around the airfield.

f. Wildlife poses a serious hazard to Fort Leavenworth aviators due to the presence of resident and migratory bird species and other wildlife. Preventing wildlife aircraft strikes are the primary focus on this plan. Numerous factors contribute to the probability and severity of a wildlife strike. These factors include flight traffic patterns, seasonal and daily movements of birds, species involved, and wildlife attractants within and adjacent to the airfield. The goal of the SAAF WASH Plan is to resolve the human/wildlife conflict.

1-3. CONDITIONS OF EXECUTION.

This plan is based on hazards posed by both resident and seasonal wildlife populations. Elements of this plan must be implemented on a continuous basis, while others will only require implementation in the event of increased wildlife activity. Increased wildlife activity is usually associated with the arrival of migratory species of birds and the formation of post-breeding and wintering flocks.

1-4. WILDLIFE HAZARD ASSESSMENT (WHA).

A WHA is a report that evaluates the potential risk caused by species-specific wildlife populations within and adjacent to the airfield associated with their supporting habitat variables. Assessing then controlling an airfield/heliport's attractiveness to wildlife is fundamental to successful wildlife control. It is more important than wildlife population management for controlling the overall risk. If an airfield/heliport provides easily accessible resources to wildlife—food, water, shelter, or breeding sites—the wildlife will return despite any strategies used to discourage them. The control program will fail unless the airfield/heliport is made as unattractive to wildlife as possible. Assessment of wildlife species attracted to the airfield must also be included in a WHA because attractiveness of the airfield to wildlife is species-specific phenomena. It is necessary to have a comprehensive understanding of a particular animal's biology and its relationship to specific environmental characteristics before initiating a wildlife control program.

a. Several ad hoc wildlife hazard assessments have been conducted at SAAF. These assessments were of limited scope and generally conducted in response to a specific hazard presented by wildlife at the airfield, or a request for a non-specific survey. Although these surveys were not comprehensive, significant changes to improve airfield safety have been developed from them.

b. In 2009-2010, a comprehensive WHA was conducted (Carragher, K.A., Clawges, R.M., Bunn, R.L., Pigage, H.K., and J. C. Pigage. 2012. *Effects of grassland alteration from mowing and fire on bird activity at a Kansas Airfield*. Human-Wildlife Interactions 6(2):

Fall 2012). The study evaluated the risk to aviators posed by birds under three types of grassland management: mowed, burned, and no management (control). The survey included an evaluation of food, water, shelter, and breeding sites at the airfield.

(1) Results showed that the mean number of birds was greatest in all seasons in the mowed and burned plots compared to the unmanaged control.

(2) Results showed that the managed plots contained greater numbers of hazardous birds. The mowed and burned plots ranked higher within hazardous bird groups developed from military bird-strike records. Bird abundance in both the breeding season and winter were greatest on the mowed and burned plots compared to the unmanaged control plot.

(3) Evaluation of food, water, and sheltering and breeding sites revealed many areas on the airfield requiring management attention.

(4) Small mammal trapping conducted concurrently on the same plots with the avian hazard surveys; found that small mammal abundance was statistically greater on the untreated control plot than on the mowed and burned treatment plots.

c. The results of these surveys and recommended hazard controls are incorporated into this plan. Many actions can be taken to decrease wildlife hazards at SAAF. Recommend actions for improving safety detailed in this plan are based on the species involved, their attraction to the airfield, and habitat characteristics on and around the airfield.

d. Surveys for dead birds and mammals on and adjacent to runways should be conducted periodically.

1-5. REFERENCES.

- | | | |
|-----|----------------|-----------------------------|
| (1) | AR 95-2 | Airspace, |
| (2) | AR 385-10 | Airfields/Heliports, Flight |
| (3) | AR 200-1 | The Army Safety Program |
| (4) | DA Pam 385-40 | Environmental Protection |
| (5) | DA Pam 385-90 | Army Accident |
| (6) | UFC 3-260-01 | Army Aviation Accident |
| (7) | AC 150/5200-36 | Airfield and Heliport |
| | | Qualifications for Wildlife |
| | | Biologist Conducting |
| | | Wildlife Hazard |
| | | Assessments and Training |

(8)	AC 150/5200 33B	FAA Advisory Circulars Hazard Wildlife Attractants
(9)	AFP 91-212	WASH Management
(10)	DoDI 4715.03	Natural Resources
(11)	DoDI 4150.07	DoD Pest Management
(12)	Exec Order 13514	Federal Leadership in Environmental, Energy, and
(13)	FM 5-19	Composite Risk

SECTION 2. ORGANIZATIONAL TASKS AND RESPONSIBILITIES

The installation is responsible for ensuring that airfield/heliport vegetation, fencing, and drainage are managed to minimize wildlife attractants. An excellent cooperative relationship must exist between all installation agencies to ensure the proper environment exists around army airfields/heliports. The Army is making efforts to conduct wildlife management techniques modeled after United States Air Force (USAF), United States Navy (USN), and Federal Aviation Administration (FAA) standards.

2-1. GARRISON COMMANDER (GC) will:

- a. Chair the Wildlife Hazard Working Group (WHWG) meetings.
- b. Approve recommendations of the WHWG.
- c. Appoint the Wildlife Detection and Dispersal Team (WDDT).

2-2. AIRFIELD DIVISION CHIEF/MANAGER will:

- a. Declare a Bird Watch Condition (BWC) based on BWC criteria IAW this plan and recommendations from Base Operations/Flight Dispatch or Air Traffic Control (ATC). Note: If the Airfield Division/Manager is absent, the designated representatives will declare an appropriate BWC.
- b. Ensure wildlife hazard warnings on the airfield are disseminated IAW this plan.
- c. Provide guidance to airfield/heliport personnel on the reporting of BWC and wildlife strikes to aircraft.
- d. Issue specific guidance to Base Operations/Flight Dispatch personnel on procedures to be followed under each BWC.

- e. Make operational changes to avoid areas and times of known hazardous wildlife concentrations, mission permitting.
- f. Determines when and where WDDT members will respond.
- g. Coordinate with DPW-Environmental on actions to modify habitat and trap/remove wildlife.
- h. Coordinate with CLEO's for lethal taking of wildlife with rim fire or center fire weapons pursuant to WASH activities.
- i. Coordinate with DPW-Pest management for lethal taking of wildlife with pesticides or other than rim fire or center fire weapons.

2-3. AIRFIELD OPERATIONS MANAGER will:

- a. Acquire and maintain dispersal and depredation equipment IAW AR 190-11. See Appendix F for a description of some dispersal and depredation equipment.
- b. Ensure members of the WDDT are trained on all dispersal and depredation equipment.

2-4. AIRFIELD SAFETY PROGRAM MANAGER (ASPM) will:

- a. Monitor compliance with the WASH Plan.
- b. Assemble and disseminate wildlife data to WWWG and aviation units to include information on how each unit may obtain predictive wildlife hazard information using the USAF Bird Activity Model (BAM), see Appendix E.
- c. Monitor wildlife activity and strike statistics and advises the WWWG chairperson when additional meetings are deemed necessary.
- d. Establish a WASH hazard education program to include videos, posters, and information on local wildlife hazards and reporting procedures.
- e. Coordinate with aircrew's ASO (Aviation Safety Officers) and maintenance personnel for collecting of non-fleshy remains after strikes.

f. Establish and maintain a continuity folder with trend data and other pertinent wildlife data and information to assure continuity of knowledge with personnel turnover.

g. Create a WASH Bulletin Board in the Base Operations Flight Planning Room and develops an airfield wildlife activity map tailored to local wildlife hazards. Post, disseminate and update map, as appropriate. At a minimum, map will be reviewed annually and include the date of publication/review.

h. If required by flying organizations/activity, post a current prediction of wildlife activity hazards IAW USAF BAM on the WASH Bulletin Board in the Base Operations Flight Planning Room.

2-5. BASE OPERATIONS/FLIGHT DISPATCH/ALERT SERVICES will:

a. During daily airfield/heliport inspections and checks, observe, report and disperse wildlife on or near the airfield/heliport.

b. Based on observation or reports of wildlife activity, declare/recommend a BWC Condition to the Airfield Manager or designated representative.

c. Post the current BWC on the WASH/ bulletin board in the flight planning room for aircrews and transient personnel to see. Note: A NOTAM (Notice to Airmen) will be posted if the BWC warrants one.

d. Report wildlife strike incidents to Airfield Manager and Airfield Safety Program Manager.

e. Maintain wildlife dispersal equipment and wildlife identification books IAW AR 190-11.

f. Recover wildlife remains after a strike for pick-up and identification by DPW (Director of Public Works)-Environmental (Fish & Wildlife) personnel.

g. Receive a report of a wildlife aircraft strike mishap from the pilot and enter the data online at the FAA Wildlife Strike Database <http://www.faa.gov/go/wildlife>, or using a mobile device at <http://www.faa.gov/mobile>.

h. Maintain daily records of wildlife activity and harassment (responses of birds/wildlife to control activities, and number of birds/wildlife shot/dispersed).

SECTION 3. RESPONSIBLE PARTIES OUTSIDE of AIRFIELD MANAGEMENT

3-1. DIRECTORATE OF PUBLIC WORKS, OPERATIONS/MAINTENANCE DIVISION:

- a. Advises WWG of all planned physical modifications to the airfield and surrounding environment.
- b. Corrects or coordinates the correction of all physical conditions, identified by the WWG, which increases WASH potential.
- c. Maintains physical conditions based on the recommendations of the WWG.
- d. Implement vertebrate pest management programs, including wildlife aircraft strike hazard reduction programs, to prevent vertebrate pest interference with operations, destruction of real property, and adverse impacts on health and morale. (Per 4150.07, Section E4.7.13.1)

3-2. DIRECTORATE OF PUBLIC WORKS, ENVIRONMENTAL DIVISION will.

- a. Advise Airfield /Manager or WWG on wildlife biology and behavior, habitat requirements or modifications, or management schemes to make informed decisions and minimize aircraft-wildlife strikes.
- b. Advise or assist WDDT on harassment of legally protected wildlife and all lethal taking of wildlife pursuant to WASH activities.
- c. Acquire or coordinate with CLEO to acquire all necessary state/federal permits for harassment/depredation of nuisance wildlife, and provides permits to the airfield/heliport airfield manager.
- d. Advise on wildlife management in furtherance of the execution of the Installation Natural Resources Management Plan.
- e. Identify wildlife remains after a strike and send remains to the Feather Laboratory, Smithsonian Institute, Division of Birds for confirmation.

3-3. PUBLIC AFFAIRS OFFICE will:

Participate as required and upon request will provide a public information program designed to inform garrison personnel, dependents, and the public on the hazards and cost of uncontrolled wildlife activity, including feral animals, and the measures being taken to minimize them.

3-4. AIRCREWS will:

- a. Consider and incorporate the wildlife hazards into the mission planning and briefing process. This would include applicable bird advisories and hazard information, available through Internet sources, Automated Terminal Information System (ATIS), or as disseminated locally. Internet sources include predictive bird hazard information using the USAF BAM. See Appendix E for more information about BAM.
- b. Aircrews are essential to detecting wildlife hazards on the airfield/heliport and in the local flying area. When aircrews sight birds/wildlife, they should notify other aircrews and the controlling agency.

3-5. FLYING ORGANIZATION will:

- a. Ensure each flying organization on the airfield assign a WASH POC and an alternate to represent the organization during the Garrison WWG and to retrieve/disseminate WASH information when needed.
- b. At a minimum, annually brief aircrews to promptly report all wildlife strikes and hazardous conditions per this directive.
- c. Obtain and post current wildlife activity data from Airfield Management and ensure it is readily available for briefing aircrews. Each unit will post the wildlife condition on a status board and inform all aircrews of any change in status.
- d. Ensure current wildlife activity data is available and briefed for each planned phase of flight.
- e. Ensure that an adequate supply of WASH report forms and wildlife activity maps are readily available for aircrews.
- f. Brief aircrews on seasonal wildlife hazards. Videos, movies, articles, and other information will be used, as appropriate, to maintain awareness.

3-6. DPTM - TRAINING SUPPORT CENTER (TSC) will:

- a. Provide photographic services to document wildlife strikes and related activities as requires.
- b. Provide graphic support to publicize wildlife hazards.

3-7. DES – CONSERVATION LAW ENFORCEMENT will:

- a. Conduct lethal control with firearms or other methods if necessary.
- b. Ensure all ammo or pellets used for lethal control are lead free to reduce secondary poisoning.
- c. Coordinate all lethal control activities with Airfield Operations.

SECTION 4. WASH OPERATIONS

4-1. GENERAL.

The WASH program management is an ongoing process, which includes both information dissemination and active/passive wildlife control techniques and tactics.

4-2. AUTHORITY.

The Airfield Manager or his designative representative(s) has the authority to declare a bird watch condition during normal flight operations. These personnel can declare conditions based on ground observations, pilot reports, radar observations, etc.

4-3. BIRD WATCH WARNING SYSTEM.

The Bird Watch Warning System is one of the most critical WASH procedures as it is an immediate exchange of information between ground agencies and aircrews concerning the existence and location of wildlife that pose a hazard to flight safety.

- a. BIRD WATCH CONDITIONS (BWC): The following BWC's will be used at SAAF to warn aircrew and support personnel of the current wildlife threat to operations. These codes are identical to those used by the USAF. Wildlife locations should be given with the condition code. The Airfield Manager or designated representative(s) will make the final determination for declaring BWCs and increasing/decreasing BWC's.

(1) BWC SEVERE. Generally defined as a heavy concentration of birds and wildlife on or immediately adjacent to the active runway or other specific locations that present an immediate hazard to flying operations. Aircrews must thoroughly evaluate mission need before operating in areas under condition SEVERE. **WARNING: Landing or departing in condition SEVERE may result in aircraft damage from a bird/wildlife strike.** SEVERE may also be declared when birds/wildlife of any size or quantity present an immediate hazard.

(2) BWC MODERATE. Wildlife activity near the active runway or other specific locations representing increased potential for strikes. BWC moderate requires increased vigilance by all agencies and supervisors, and caution by aircrews.

(3) BWC LOW. Wildlife activity on and around the airfield representing low potential for strikes. Note: **The Tower or the airfield manager's designated representative may lower the BWC for the primary runway while keeping the higher BWC for the other area.**

4-4. BWC REPORTING.

Declaration of a BWC will be made by the Airfield Manager or designated representative(s) based on the following:

- a. Visual observation of wildlife activity on or near the airfield/heliport by any airfield personnel.
- b. Information relayed by ATC radar, airborne and taxiing aircraft.
- c. Observations relayed to the Tower.
- d. Observed NEXRAD Radar movements.

4-5. BWC NOTIFICATIONS BY MAINTENANCE PERSONNEL, SWEEPERS, GRASS MOWERS, AND OTHERS.

If a wildlife hazard exists, other personnel may notify Base Operations/Flight Dispatch personnel, as applicable. This notification can be made on a radio net or by telephone. All reports will be verified by either Tower or Base Operations/Flight Dispatch personnel and, if needed, the appropriate BWC will be declared. Reports should include:

- a. Identity of caller (agency for ground personnel, call sign for aircrews).
- b. Location.
- c. Altitude.
- d. Time of sighting.
- e. Approximate number of wildlife.
- f. Type of wildlife (if known).
- g. Behavior of wildlife (soaring, flying to or from a location, etc).

4-6. BIRD HAZARD COMMUNICATION.

Disseminating BWC is critical to WASH effectiveness. Air Traffic Control Tower will disseminate BWC by the following means:

- a. Include BWC on ATIS Broadcasts.
- b. Notify inbound/departing aircraft of BWC if aircraft has received ATIS and BWC has changes.
- c. Provide additional wildlife advisories.
- d. Airfield Management or the Control Tower will direct the WDDT to the location where the wildlife is posing a problem.
- e. Pass BWC to Base Operations/Flight Dispatch if notified by some other entity.
- f. For rapidly changing BWC, place a statement on ATIS advising aircrew to contact Base Operations/Flight Dispatch, Air Traffic Control Tower, or Approach Control for the latest BWC.
- g. Under Bird Watch Condition SEVERE, ATC Tower will ensure that the pilot understands the condition and is provided the option to delay, divert, or continue the proposed operation into the hazardous area.

4-7. DOWNGRADING BWC.

Once a BWC has been declared MODERATE or SEVERE, once the hazard no longer exist or has been lowered, the BWC shall be downgraded commensurate with updated information. The Airfield Manager or designated representative(s) will make the final determination on BWC's.

SECTION 5. WASH WORKING GROUP

5-1. GENERAL.

The WASH Working Group (WWWG) is organized to implement and monitor the WASH Program.

a. Authority. The GC is the WWWG Chairman, responsible for the WASH Program and is the approval authority for all WWWG recommendations. The WASH Plan is a part of the Airfield Safety and Accident Prevention Program, and as such, the ASPM shall act as the WWWG Recorder and monitor the effectiveness of the plan.

(1) At minimum, the WWWG will consist of the following personnel:

- Chairman: GC
- Directorate of Plans, Training, Mobilization and Security
- Airfield Division Chief/Manager
- Recorder: Airfield Safety Program Manager (ASPM)
- Airfield Operations Manager
- Base Operations representative
- Air Traffic Control (ATC) representative
- Public Works, representative
- Conservation Law Enforcement representative
- Air Force Weather representative
- Flying organization Aviation Safety representatives
- Aircraft Maintenance (as applicable)

(2) WWWG meetings will be scheduled semi-annually, or more frequently as required. Meeting minutes will be recorded, maintained, and distributed by the ASPM.

5-2. WWWG FUNCTION.

- a. Execute and update the WASH Program.
- b. Monitor compliance with the WASH Plan.

- c. Collect, compile, and review trend data on all wildlife strikes, Bird Watch Condition (BWC) changes, and wildlife dispersal activities on or near the airfield/heliport.
- d. Identify and recommend actions to reduce the wildlife hazards.
- e. Recommend changes in operational procedures and airfield/heliport environment.
- f. Prepare informational programs and safety briefings for aircrews.
- g. Recommend modifications to the program to improve effectiveness.

5-3. WILDLIFE DETECTION AND DISPERSAL TEAM (WDDT).

a. The WDDT is selected by the GC and includes personnel authorized to employ non-lethal control techniques and lethal control measures when necessary and in accordance with federal and state depredation permits. The WDDT will be comprised of the following:

- (1) Pest manager (including approved contractor)
- (2) Conservation Law Enforcement Officer
- (3) Wildlife Biologist
- (4) Airfield personnel

b. All members of WDDT will have documented training on the following (Initial and recurring (every year) training):

- (1) Species identification
- (2) Wildlife active/passive control techniques
- (3) Weapon and WASH Equipment Safety (All weapons/equipment used)
- (4) BWC identification, reporting and downgrading
- (5) Safe handling and disposal of wildlife

c. The WDDT will be activated when wildlife on the airfield/heliport create hazardous conditions. WDDT personnel must have immediate access to binoculars and wildlife dispersal equipment.

SECTION 6. WILDLIFE DETECTION DISPERSAL TEAM PROCEDURES

WDDT will actively patrol SAAF on an as-needed basis and use appropriate active deterrence methods. See Appendix F for WASH dispersal/depredation equipment and methods available.

6-1. GENERAL DISPERSAL GUIDELINES.

- a. Prior to initiation of dispersal actions, the WDDT team leader will coordinate the location and methods with the Airfield Management and the Control Tower and ensure the appropriate Bird Watch Condition has been declared prior to dispersal activities on the active runway.
- b. Vehicle horns and sirens can be used to initially harass birds/wildlife. Bird species response to this method will vary. Normally, once the birds are airborne or wildlife is running from the sound of the horn/distress tapes, the use of pyrotechnics will move the birds/wildlife a further/safer distance from the airfield. Combinations of these methods should be varied periodically to prevent habituation.
- c. Pyrotechnics can be used in conjunction with distress tapes. These consist of screamers, whistle bangers, and cracker shells.
- d. If portable propane sound cannons are used on the airfield, they should be relocated periodically to prevent habituation.
- e. All non-lethal deterrents must be attempted first before lethal methods can be employed. However, if the methods above do not work or the wildlife become accustomed to the hazing, it shall become necessary to remove wildlife via lethal methods to reinforce the dispersal methods. Lethal taking of wildlife will be carried out by WDDT members authorized to do so, and will occur only after coordination with DPW-Environmental (Fish & Wildlife) or DES Conservation Officers. DPW-Environmental (Fish & Wildlife) or DES Conservation Officers will collect all wildlife for identification, disposal, and reporting requirements.
- f. When the target flock or problem birds are dispersed, Base Operations/Flight Dispatch shall be notified so the BWC can be lowered.

6-2. USE OF WEAPONS.

- a. GC is the approval authority for weapons used and may include the following:

- (1) 12-Gauge Shotgun
- (2) Noise Crackers for the Shotgun
- (3) Very Pistols with sleeves for Shell Crackers
- (4) 15 mm launchers
- (5) Propane Cannons with Gas Bottles

b. Each individual shall only use the weapons if they have been trained on and are authorized to do so by the GC. Lethal control by center fire or rim fired ammo must be done by DES personnel IAW AR 190-14.

c. These weapons shall only be used for their intended purpose on SAAF as part of the WASH program. The weapons shall not be used for any other purpose or at any other location without the approval of the GC or designated representative.

d. Personnel authorized to use the weapons will be designated in writing.

e. The weapons and all ammunition shall be stored in a command directed designated area IAW AR 190-11.

6-3. PROCEDURES FOR THE USE OF PYROTECHNICS.

a. Ensure there are no fire restrictions in effect prior to utilizing pyrotechnics to prevent potential wildfire ignition.

b. Contact ATC Tower to receive clearance and coordinate location prior to discharging pyrotechnics. If aircraft operations are imminent, ensure the BWC is raised prior to initiating dispersal operations.

c. Inform ASPM prior to discharging pyrotechnics on the flight line.

d. Use ear and eye protection, and gloves.

e. If applicable, play the distress call 20-30 seconds to get the birds to respond by taking flight or becoming alert. The birds may gather around the vehicle playing the distress tape.

f. **DO NOT LOAD THE GUN IN THE VEHICLE OR FIRE GUN WHILE IN VEHICLE.** Step outside the vehicle, cock the gun, load the cap, and then load the explosive in the barrel of the gun.

g. Point the gun at 45 degrees or higher into the air, preferably toward the flock of birds. Face AWAY from the gun and pull the trigger.

6-4. PROCEDURES FOR THE USE OF SHOTGUN/CAPA LONG RANGE EXPLODER LAUNCHER ARE AS FOLLOWS.

- a. The shotgun and Launcher may only be used by those individuals who have been trained by installation Directorate of Emergency Services (DES) personnel and authorized by the Garrison Commander or designated representative.
- b. The weapons shall only be fired during daylight hours.
- c. The weapons can only be transported when empty and with the safety on.
- d. The weapons shall not be loaded or fired in, or from any vehicle.
- e. Prior to shooting any weapon, the ATC Tower will be notified.
- f. Pre-established firing fans are the only areas and direction the shotgun may be fired. See Appendix B for restrictions on firing.
- g. No person may shoot the shotgun if there are any obstacles, fence, equipment, or other facilities 25 yards left or right, or within 200 yards of the intended firing line.
- h. All shots will be recorded and shotgun shell casings and wads, and long-range explosive cartridges, shall be collected and disposed of properly.
- i. A log will be kept with the weapons, detailing the number and location of shots fired.
- j. Hearing protection shall always be used when shooting weapons.
- k. Any mishap involving the weapons or the ammunition shall be reported immediately.

SECTION 7. WILDLIFE STRIKE REPORTING

7-1. REPORTING OF WILDLIFE AIRCRAFT STRIKES.

- a. The pilot should inform the SAAF control tower of any wildlife strike and, if airborne, land to assess the damage. If the strike occurs on the ground, the pilot should stop the aircraft to assess the damage. Note: Report known or suspected strikes even if no wildlife remains are found on the aircraft. Base Operations personnel may be able to retrieve the wildlife on the airfield/heliport.

b. After assessing the aircraft for damage, preserve ALL wildlife remains (including feather, hair, tissue, and/or blood) and notify Base Operations/Flight Dispatch, who will collect the remains and notify DPW-Environmental (Natural Resources).

c. Report the strike by filling out FAA Form 5200-7, Bird/Wildlife Strike Report (Appendix I) which is available at Base Operations/Flight Dispatch. After filling out the form give it to the ASPM (Airfield Safety Program Manager) and Base Operations/Flight Dispatch Specialist who will enter the data online at the following online site:
<https://crcapps2.crc.army.mil/atf/index.asp>.

Airfield Division will keep strike reports on file for five years.

d. If an aircraft is damaged, the Unit Aviation Safety Officer will be informed and an accident investigation will be performed IAW DA Pam 385-40.

SECTION 8. DESCRIPTION OF AIRFIELD

a. Airfield/Heliport Turf. The airfield vegetation is a blend of many plant species including clovers, sedges, giant ragweed, thistles, brome, eastern gama grass, and others and is mowed on an as-needed basis May through October. If not controlled, the entire airfield will become a monoculture of Johnson grass as it already covers a large portion of both the northern and southern ends of the airfield.

The present complex of diverse plant species is highly favorable for the black cotton rat which also supports many predator species such as snakes, coyotes, and large birds of prey which tend to use the perimeter fence for perches. Recommend that the vegetation be converted to alfalfa which can be cut regularly for hay and which will reduce the diversity of plant species and combined with regular mowing and haying will thereby reduce the available habitat for animals.

Small and large trees are located outside the security fence, which provide loafing and hunting perches for raptors, corvids, flycatchers, and flocks of birds, as does the security fence itself.

b. Drainage. Generally speaking the area around the airfield drains very well and does not hold standing water long enough to attract wildlife. The exception would be when the river floods the airfield, but then it is shut down anyway and the biggest problem is the fish that are stranded and that eventually die.

The south end of the airfield does have a depression that is used to drain the well field area and it sometimes has waterfowl on it. Presently, airfield and security personnel shoot the ducks and geese which seems to control the problem well enough. It is not possible to fill in the area to dry it up. This area drains through a culvert under the levee.

c. Security Fencing. Coyotes likely dig under the security fence and deer occasionally either go over the fence or through open gates. Large birds of prey sometimes sit on the fence and use it as a perch to observe cotton rats and other prey.

Deer and other mammals must be excluded from entering the airfield via gates in the perimeter fence. Excluding deer from the airfield is a priority management action. Perimeter gates are sometimes left open. Gates must remain closed to prevent deer, coyotes, and other mammals from entering the airfield. When the main gate is unsecured providing an entry point for mammals; however, it is on the parking lot where it is unlikely that deer will enter through the gate.

d. Trees and Landscaping. Turf areas around the buildings should be mowed frequently to reduce formation of seed heads. Attractiveness of landscape plants to wildlife should be considered in all future decisions involving landscaping. The airfield manager should consult with DPW-Environmental (Fish & Wildlife) during the planning process for any future landscaping.

e. Perch, Nest Sites, and Mammal Breeding Sites. Aircraft hangars provide nesting and roosting sites for several species. The species generally associated with hangars are House Finch, European Starling, and Rock Pigeon. Cavities providing nest sites inside and outside of hangars should be sealed with foam or made inaccessible with bird spikes. Birds should be excluded from horizontal beams along walls and near ceilings of hangars by installing exclusion devices such as bird spikes. Hanging vertical plastic strips from the top of hangar doors can reduce the number of birds entering hangars. The strips should be hung high enough above the ground so as not to interfere with moving aircraft in and out of hangars. The perimeter fence itself is one continuous bird perch and it is virtually impossible to prevent birds from perching on the fence.

It is important to properly mount small storage sheds in such a way that prevents small rodents like rabbits and cotton rats from breeding under the sheds. Both of these attract avian and mammalian predators.

f. Waste Management. Dumpsters and other waste disposal units can sometimes be left open, attracting birds and raccoons. Due to the size and direct and indirect threats posed by species attracted to dumpsters, enforcement of a rule to secure dumpsters at all times is a priority management action.

8-2. AIRFIELD PHYSICAL DESCRIPTION.

Name of airfield: Sherman Army Airfield

Name of Army installation: Fort Leavenworth

Name of runways: 16/34

Location: Leavenworth County, Kansas

Airfield/heliport size: 256 acres

Airfield/heliport Elevation: 771' MSL

General topography: SAAF is located in the forested flood plain of the Missouri River and is relatively flat, but has a significant forested bluff immediately to the west on the Kansas side and a similar bluff and state forest one mile to the east on the Missouri side of the river.

Significant terrain features: Grass, shrubs, and cottonwood riparian woodlands border the airfield. A small arms firing range is located west of the airfield. The environs south of the airfield are primarily developed land on the uplands (Main post) and the Missouri River on the northwest and southeast.

Water areas: The Missouri River surrounds the airfield on three sides, which attracts waterfowl during fall migration. Iatam Power Plant, located about 2 miles northwest of the airfield, attracts tens of thousands of waterfowl during fall and spring migration. Smith and Merritt Lake attract small numbers of waterfowl year-round with an increase in the migratory season.

Developed areas: The airfield consists of hangars, pavement, runways, taxiways parking areas, and other support buildings. The municipalities of Leavenworth and Lansing are located within 5 miles of the airfield on the south boundary of the installation.

Vegetative types: Approximately 250 acres of a diverse assortment of grasses, sedges, and forbs are contained within the perimeter fence. The area is mowed on an as-needed basis, but the diversity of plant species means that there is also diversity in growth rate and height. It is recommended to convert the area inside the fence to a monoculture of alfalfa which can be regularly hayed to reduce maintenance costs and diversity of plant species.

Landfill locations: There are no active landfills on Fort Leavenworth. All previously used landfills are capped.

Sewage ponds: There are no sewage ponds or dewatering basins within 5 miles of the airfield.

Golf course: Trails West Golf Course is located on Fort Leavenworth 1 mile south of the airfield. The golf course attracts Canada Geese, primarily during fall and winter.

Other wildlife attractions: Iatan Power plants (2), approximately 2 air miles north of SAAF, consist of more than 2,000 acres of floodplain on which several large lakes are located and that are used as cooling basins for the power plants. The open water attracts nearly 200,000 waterfowl throughout the winter and they attract more than 100 eagles and other large birds of prey. Many of the waterfowl, mostly several species of geese, use the Missouri River that surrounds SAAF on three sides, as a gathering location behind the numerous jetties where the water is still and deep. These groups of waterfowl attract eagles which use the large floodplain trees around Fort Leavenworth as roosts to hunt the waterfowl throughout the winter. Several dozen eagles can be seen daily along the river stretching from beyond the Leavenworth river bridge to the south and above Weston to the north. Eagles are present on the river from about October to May while the majority of the waterfowl are present at the Iatan plant. The Iatan power plants' cooling basins are by far the most significant one-source waterfowl attraction in the vicinity, although there are numerous smaller lakes, ponds, agricultural fields, golf courses and other food sources and resting areas in the immediate area. The Missouri River floodplain itself is also a major migration flyway that is used by more than 200 bird species including large flocks of geese and other large waterfowl such as white pelicans.

SECTION 9. RECORD KEEPING

- a. Depredation of any birds or animals shall be recorded. Dead birds/wildlife shall be bagged and labeled with the date and location. DPW-Environmental (Natural Resources) will be notified to pick up the remains.
- b. Base Operations/Flight Dispatch will maintain a daily activity log to include wildlife sightings and WDDT activities to include filling out the Shotgun Log/CAPA as required. These logs will document all wildlife dispersal operations to include species, location, methods, and number of birds dispersed.
- c. Airfield Safety Program Manager will summarize quarterly the data collected by the WWWG, FOD, and Safety Council meetings.

Appendix A. Explanation of Terms in WASH Plan

a. **ACTIVE BIRD DISPERSAL.**

Harassment techniques employed to disperse birds or mammals from airfield/heliport and surrounding areas. Methods may include chase, pyrotechnics, bioacoustics, and depredation.

b. **WASH.**

Wildlife Aircraft Strike Hazard. General term to describe wildlife hazards and wildlife hazard prevention programs.

c. **Wildlife Hazard Working Group (WHWG).**

Local committee concerned with the control of wildlife hazards to aviation. Executes and makes recommendations to the WASH Program.

d. **BIRD WATCH CONDITION (BWC).**

A bird hazard alert condition used to warn aircrew of bird activity.

e. **BWC LOW.**

A Bird Watch Condition, which indicates sparse bird activity on the airfield/heliport and a low probability of hazard.

f. **BWC MODERATE.**

A BWC, which indicates that moderate concentrations of birds are in a location that represent a probable hazard to flight operations.

g. **BWC SEVERE.**

A BWC indicating heavy concentrations of birds on or immediately adjacent to the runway which presents an immediate hazard to flight operations; or any concentration of birds that presents a danger to aircraft.

h. **BIOACOUSTICS.**

Recorded tapes of bird distress and predator call used by WDDT to disperse birds off runways and airfield/heliport areas.

i. **BIRD BALLS.**

A floating cover to exclude birds from ponds. Less expensive to install and maintain than netting.

j. **WILDLIFE STRIKE.**

Any contact between wildlife and an aircraft, whether or not damage occurred.

k. DEPREDATION.

Technique used to remove problem wildlife permanently from the airfield/heliport and hangars when other scare tactics are ineffective. Depredation permits are required for most species.

l. FALCONRY.

Active dispersal of problem birds using trained falcons.

m. MODELS/DECOYS.

Various static devices used to disperse birds from airfield/heliport areas. Many include scarecrows, decoys, Mylar tape, and eyespots. Eyespots and scary eyes are not effective bird deterrents.

n. PROPANE CANNONS.

Stationary non-projectile sound producing device used to disperse birds from airfield/heliport areas.

o. PYROTECHNICS.

Noise producing devices fired from pistol or shotgun. Used by the WDDT to scare wildlife away from runways and airfield/heliport areas. Pyrotechnics are Class 1.4 explosives.

p. WILDLIFE DETECTION AND DISPERSAL TEAM (WDDT).

A roving airfield/heliport patrol, which reports BWCs (BWC), disperses problem wildlife via chase, pyrotechnic, bioacoustics, depredation and other methods.

Appendix B. Wildlife Management Techniques and Recommendations.

a. TECHNIQUES AND RECOMMENDATIONS.

Airfield Operations and Base Operations/Flight Dispatch personnel or the agency responsible for performing airfield inspections/checks should primarily accomplish bird control and dispersal. However, a variety of dispersal and control measures should also be available to other personnel (DPW, DES, Security, deployed Duty Officers, etc.) to use on an as-needed basis. These measures should be readily available at any time when birds or other wildlife threatens airfield/heliport operations. Pyrotechnic equipment should be properly stored in Base Operations for immediate access.

b. ACTIVE HARASSMENT.

Each airfield should have enough harassment tools to effectively control and harass wildlife on the airfield. Active harassment requires adequate tools (pyrotechnics, bioacoustics, and propane cannons) to effectively deter birds from the airfield.

In most situations, the combination of human presence and pyrotechnic will be enough to prevent birds from landing and feeding. These two methods should form the foundation of the bird harassment program. To prevent habituation, judicious and varied use of several different types of harassment tools is preferred. A combination of frightening devices should be available for use whenever birds are present on the airfield/heliport or in surrounding areas. Primary among those are pyrotechnic devices that can be fired from 15mm “starter” pistols, standard 12-gauge shotguns, or modified flare pistols. Pyrotechnics are listed in the Air Force Table of Allowances; no such Army equivalent exists for airfield use, though explosive procurement and storage requirements for other such materials can be followed. Airfield bird control devices may also be ordered through local purchase mechanisms, however prior coordination with munitions experts and safety personnel must be accomplished. Such devices project pyrotechnics many meters over flocks of birds that present hazards. Skillful use of the devices can disperse birds from the field in desired directions. They produce a variety of loud sounds and explosions, bright flashes of light, and/or trailing smoke. Training for safely using the devices and coordination with airborne aircraft through direct communications is imperative to avoid scaring birds into active flight paths. Pyrotechnic devices can be extremely effective in dispersing waterfowl, gulls, crows, shorebirds, starlings, and flocks of blackbirds. Gulls, starlings, crows, and blackbirds may also be dispersed using a combination of pyrotechnics and bioacoustics. Use of the techniques to deter flocking birds may require persistent application over several days.

Bioacoustics is the recorded distress and alarm calls of species to be dispersed. Ensure species-specific calls are used. They are projected over a speaker system that may be mounted on the roof or through the window of a vehicle. Birds will sometimes disperse upon

hearing species-specific calls, but may come to investigate the source of the sound and can then be encouraged to leave using pyrotechnic devices. These active harassment techniques should be used on the airfield/heliport and in all hazardous surrounding areas.

Additional harassment techniques such as networks of remotely triggered gas cannons, radio-controlled model aircraft, or others can be considered as effective supplements to other dispersal techniques. Creativity and intensity of such programs will make the overall effort much more successful and delay habituation to the combination of techniques.

c. RODENT CONTROL.

The most abundant rodents in the sods of SAAF are *Peromyscus maniculatus* and *Dipodomys ordii*. Rodents attract a variety of raptors such as Red-tailed Hawk and American kestrel that feed on them. Rodents may also damage wiring and undermine the integrity of pavement. Removal by trapping or poisoning in accordance with federal/state law may be conducted by DOD or State Pest Management Control personnel or under contract with USDA, Wildlife Services or other state approved contractor; however, there are literally far too many rodents to be trapped on more than 250 acres and they return as fast as they are trapped or poisoned. Converting the vegetation to a monoculture of alfalfa with regular haying will help reduce the amount of rodents and deter predators. Snakes should be allowed to thrive to also control the rodents.

d. INVERTEBRATE CONTROL.

Various invertebrates including insects and earthworms may attract a wide variety of birds including blackbirds, starlings, crows, gulls, and raptors. Insecticides can be applied on a limited basis as necessary and in compliance with state and federal law.

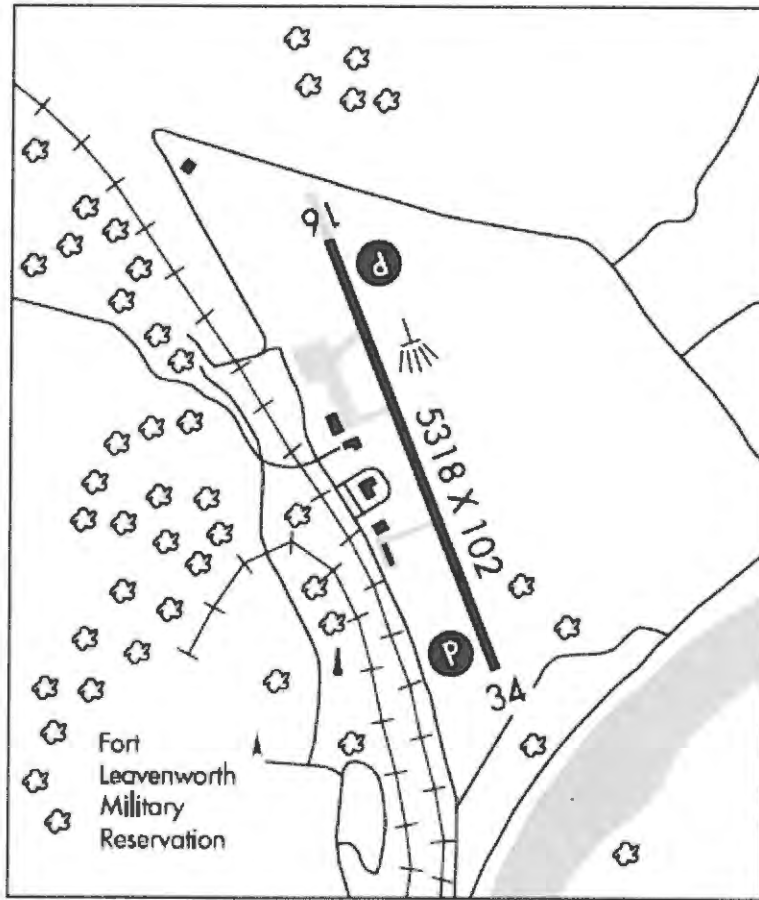
e. WATERFOWL CONTROL ON PONDS AND SURROUNDING PROPERTIES.

There are a variety of waterfowl species that may pose very significant and potential hazards to aircraft operating from IMCOM SAAF and surrounding areas. Canada Geese, particularly resident populations, may be most significant hazard to aviation noted at some airfields/heliports. These birds are attracted to open-water ponds and associated managed turf. Geese and other waterfowl congregate on frozen lakes and fallow fields in winter. Hunting at these sites increases risk of a strike. Some of these hazards are not possible to control as birds may merely be migrating through the region during spring and fall, or exhibiting local movement patterns between features near the installation. However, at this time, local non-migratory resident Canada Geese could pose a significant hazard at SAAF, but resident geese are not abundant near the airfield at any season. Nesting of geese must be discouraged everywhere on Fort Leavenworth. Hazing with pyrotechnic devices of resident geese has been successfully deployed on Fort Leavenworth.

f. DEPREDATION.

Removal of nuisance birds and other wildlife may be conducted with appropriate federal and state permits by federal, state, or contracted personnel. Depredation, except in the case of Domestic pigeons, European Starlings, House Sparrows, and coyotes, is a last resort measure that may reinforce other habitat management or active control efforts and is recommended when a severe hazard persists for several days. Such an effort must be carefully controlled and conducted in full compliance with conditions of state and federal permits. Dead wildlife must be removed and disposed of in a sanitary trash receptacle or taken to a preapproved disposal area in accordance with established Fort Leavenworth policy. Carcasses will not be left or placed near the operating surfaces, as they may attract scavengers and increase the hazard.

Appendix C. SAAF AIRPORT DIAGRAM



Appendix D. Local Wildlife Species Hazards and Recommended Controls

a. GENERAL.

The following is a summary of wildlife within SAAF airfield environment or downrange on Fort Leavenworth. Included with each is a brief description of control recommendations. Also included are wildlife species presenting hazards to aviation through northeastern Kansas or high altitude landing sites west of Fort Leavenworth. It is essential to know which wildlife species or airfield attractants are present before control techniques can be effectively applied. As such, all WDDT personnel must be trained in wildlife identification. Depredation (lethal harassment) of migratory birds (as defined by the Migratory Bird Treaty Act) requires a permit from the Regional U.S. Fish & Wildlife Service Regional Bird Permit Office.

b. HAWKS AND EAGLES.

There are no known active eagle nests on Fort Leavenworth. Because of their large size, hawks and eagles are a significant hazard to aircraft. Buteos (large soaring hawks) and eagles can occur on any day of the year on and off the airfield. The abundance of buteos and eagles increases in winter and migration, and both occur in the same habitats. During migration, hawks soar to high altitudes in thermals, and then glide losing altitude. Most migrating buteos seen around Fort Leavenworth are solitary or in small groups. Kettles, or large groups of soaring migrating hawks, are rare but are occasionally seen in this region.

The Bald Eagle, and Golden Eagle, which are the largest raptors in Kansas, feed on injured waterfowl in our area primarily in the winter and can be found perching in large trees along the river or soaring above the tree tops harassing the waterfowl to sort out the injured from the healthy by causing them to rise up off their resting sites behind the river jetties. Consultation with the USFWS is needed to deal with specific issues related to the Bald and Golden Eagle Protection Act (BGEPA) or Migratory Bird Treaty Act (MBTA). Harassing and other actions involving eagles can be a violation of the Eagle Protection Act and any actions proposed for hazing Golden or Bald Eagles may require a take permit. The INRMP is the guiding conservation and natural resources document for Fort Leavenworth, Kansas.

c. FALCONS.

Falcons are small to large bodied hawks occurring on Fort Leavenworth throughout the year. Management practices, primarily grass height, that increase the abundance of Horned Larks or swallows at the airfield, should be avoided.

The American kestrel is a resident species, likely nests near the airfield. The kestrel is a cavity nester, and potential nesting sites should be plugged with foam or blocked with bird spikes. Kestrels are sometimes seen in hangars at SAAF. The tendency of kestrel to

kite while hunting may increase the probability of a strike, but the species is not a highly ranked species for causing damage to aircraft.

d. ACCIPITERS.

Accipiters are medium to large bodied bird-eating hawks occurring in forested and woodland habitats on Fort Leavenworth. They are uncommon and the probability of a strike is low except during spring and fall migration. Accipiters are sometimes seen inside hangars and other buildings at SAAF. Accipiters and other bird species can be deterred from entering hangars by hanging plastic strips in front of hangar doors. The probability of an accipiter strike is a low, but the associated risk is high. BAM and AHAS should be consulted during spring and fall migration.

e. HARRIERS.

The Northern Harrier is a medium-sized hawk that is sometimes seen inside the airfield perimeter fence. Because this species hunts near the ground, it could be a hazard to fixed-wing aircraft performing touch-and-go landings. Harriers discovered inside the perimeter fence should be harassed with a vehicle and pyrotechnics.

f. OSPREY.

The Osprey is a large hawk that is not present on Fort Leavenworth.

g. VULTURES.

Turkey Vultures are a significant hazard because of their size, slow gliding flight, and high altitude soaring flight in thermals. Vultures are the number one ranked hazard species groups for damage caused to U.S. Air Force aircraft, 1985-1998. Vultures are present in the region April-October, and significant numbers migrate through eastern Kansas, August-September. Migrants are often associated in flocks, termed kettles, or in widely spaced small groups, or solitary. Migration often occurs at low altitudes, but can reach much greater heights when soaring in thermals and gliding with altitude loss. Turkey Vultures are common over Fort Leavenworth and in the fall at altitudes below 500 feet AGL during daylight hours. The tendency of vultures to congregate in front of advancing storm fronts in fall increases the probability of a strike in these conditions. BAM and AHAS should be consulted during spring and fall migration.

h. OWLS.

The Great Horned Owl is a large nocturnal and predatory bird, which may be present near the airfield throughout the year. Rabbits are an important prey species, which are frequently abundant at the airfield, especially near buildings. Rabbits should be excluded from breeding sites or removed by trapping. Contact DPW-Environmental (Fish & Wildlife) for strategies for managing rabbits at the airfield. Because the Great Horned Owl hunts from a perch,

perches must be removed. Owl perches can be identified by the presence of pellets beneath them. This species will nest on ledges inside and outside of buildings, and in large trees near buildings with human activity. Owls and other bird species can be deterred from entering hangars by hanging plastic strips in front of hangar doors.

i. WATERFOWL.

This group of birds presents significant hazards to aircraft and includes ducks, geese, and swans. These species occur at different abundances and distribution throughout the year, and distinctions between summer, winter, and migrating populations must be understood to predict the probability of a strike. Because of their large size and flocking behavior, they present serious hazards to aircraft operating on and off the installation. The probability of a bird strike varies depending upon the season, time of day, and land use. Geese and ducks are ranked near the top of hazard species groups for damage caused to U.S. Air Force aircraft, 1985-1998.

Breeding Season/Spring and Early Summer. The number of ducks and geese in the region is low during the summer compared to migration and winter. During summer, geese seen in the region are referred to as resident geese and are significantly larger than northern migratory geese that winter in eastern Kansas. Geese feeding in airfield areas should be harassed from the airfield by vehicle and pyrotechnics whenever detected and until the geese stop returning.

Winter. Except for the golf course, and other grassy areas, resident geese are not abundant on Fort Leavenworth. Regionally, ducks and geese are found on any reservoir, but at relatively lower numbers than during migration. In winter, ducks are most active at dusk and dawn, flying at low altitudes (treetop to 200') to and from feeding sites. In winter, reservoirs (frozen and open) and agricultural fields in northeast Kansas support northern geese numbering in the tens of thousands. Waterfowl hunting and other disturbances at these reservoirs can put thousands of geese into the air, creating dangerous flying conditions. Preflight briefings for off-post missions must include warnings of wintering geese areas. Waterfowl hunting at Fort Leavenworth may increase the probability of a waterfowl-aircraft strike due to the rising of the geese, but eagles hunting daily along the river, which virtually surrounds the airfield, also cause the waterfowl to rise.

Migration. Duck and goose abundance increase dramatically throughout the region, mid-October-November, and March-April. Geese and ducks generally fly at higher altitudes when migrating and are often very abundant regionally in front of and with advancing cold fronts in November. Lakes at Fort Leavenworth support relatively few migrating waterfowl, with concentrations generally numbering fewer than 300 birds. Occasionally, dense fog can ground thousands of geese. This phenomenon occurs often in the floodplain near the airfield,

creating extremely hazardous flying conditions for low flying aircraft. Waterfowl numbering as many as 200,000 are present at the Iatan power plants during migration; the cooling ponds near the power plants in the floodplain are located two miles north of the SAAF. Mission planning during migration should include AHAS and BAM data.

j. WATER AND WADING/LONG-LEGGED BIRDS.

This group includes loons, grebes, pelicans, cormorants, and other wading or long-legged birds. The birds in this group pose significant hazards to aircraft because of their size and flocking behavior.

Hérons. In summer, the Great Blue Heron, a very large bird, presents a significant risk to aviators. Herons travel to and from nesting colonies which can be found on Fort Leavenworth in the floodplain forest. Heron flight is slow and solitary birds fly during daylight hours at treetop level to 200 feet AGL. Herons discovered on the airfield should be harassed with vehicles and pyrotechnics.

Pelicans. Near Fort Leavenworth, the greatest numbers of white pelicans are found during migration along the Missouri River Flyway in spring and fall migration. Pelicans are seen flying over Fort Leavenworth during migration every year. Because of its large size, flocking behavior, and slow flight, the pelican is a significant hazard to aviators. Pelicans can be encountered at low to high altitudes when migrating birds are soaring in thermals.

Gulls. Gulls pose a significant risk to aircraft due to their size and flocking behavior. The probability of a strike varies throughout the year and is highest in migration and winter. Gulls very rarely occur on Fort Leavenworth and are primarily a regional threat, although they do migrate along the Missouri River Flyway.

k. SHOREBIRDS.

Shorebirds present a hazard to aircraft because of their flocking behavior; however, they are not normally found on Fort Leavenworth and are not considered to be a threat to aviation at this location except if they are encountered during migration.

l. SWALLOWS.

Swallows are aerial foraging birds and common at Fort Leavenworth in summer. Swallows are small birds that present a hazard to aircraft when encountered in flocks. Cliff swallows nest under bridges and on cliffs near water. They are present mid-April through September. Cliff Swallow colonies at the airfield are generally composed of fewer than 20 pairs.

Cliff Swallows fledge within 35-40 days of egg laying and then congregate in multi-aged flocks with the adults. These flocks, generally numbering fewer than 50 birds, may stay in the area for two weeks before migrating. Flocks of post-breeding cliff swallows are sometimes seen sitting on gravel roads in late July or early August. This behavior would pose a significant bird strike hazard if they congregated on runways late July-August. Persistent vehicle harassment and pyrotechnics will disperse post-breeding flocks from runways.

Near Fort Leavenworth, Cliff Swallow colonies are often found beneath bridges. Low-level flights over bridges and power lines near bridges, particularly June-July, should be avoided.

n. PIGEONS AND DOVES.

The Rock Pigeon, Mourning Dove, and Eurasian Collared-Dove may be present at the airfield, but only the Rock Pigeon is usually present throughout the year. These species present a relatively high hazard to aircraft.

The Rock Pigeon is associated with structures on the airfield and short grass feeding sites. Pigeons can be dispersed from aircraft movement areas by harassing with a vehicle and pyrotechnics. Rock Pigeon nesting and roosting sites within hangars and motor pools must be removed using exclusion methods, primarily by removing nesting sites by installing bird spikes. Rock Pigeons can nest any month of the year, but most nesting occurs in spring and summer.

The Mourning Dove is not a common species near the airfield.

p. BLACKBIRDS, STARLINGS, and GRACKLES.

Three species of blackbirds nest at the airfield, but because of their small size and absence from runways, they are not likely to pose a significant bird strike hazard during the breeding season. Communal roosts are not known to occur near the airfield. These species are rarely present in winter regionally. Foraging flocks in fall are not likely to occur on the ground at the airfield, but if discovered they can be dispersed by vehicle and pyrotechnic harassment.

Wet areas on Fort Leavenworth can support small breeding populations of Red-winged Blackbirds. The probability of a strike involving a Red-winged Blackbird during the breeding season is low due to their tendency to stay within wetland nesting sites. This species forms flocks that winter on Fort Leavenworth. Flocks discovered at the airfield should be harassed with pyrotechnics.

The starling is a permanent resident at the airfield and nests in building cavities. Beginning in May, adult and fledged starlings form small flocks that increase in size through the

summer and fall, which could pose a significant bird strike hazard. Nesting and roosting sites within hangars and motor pools should be removed using exclusion methods, primarily by filling potential nest cavities with foam. Foraging flocks discovered on the airfield should be dispersed by vehicle and pyrotechnic harassment. Starlings generally forage on lawns and mowed grasslands.

q. CORVIDS.

Crows are sometimes seen at the airfield. Because crows usually nest in mature pines in the urban environment, pines should not be planted at the airfield. Crows and ravens can be harassed from the airfield with vehicles and pyrotechnics.

r. OTHER BIRD SPECIES.

This is a taxonomically diverse group of birds that are generally associated with structures and landscaped areas at the airfield. Included here are flycatchers, robins, finches, and small migratory birds.

The Western Kingbird nests on large trees, but they are small and do not form flocks in summer or migration. Because of their small size and tendency not to form flocks, they are not likely to be a significant bird strike hazard. Because they hawk insects from a perch, which includes tall weeds, bare areas supporting weeds should be reseeded. They can be dispersed from the runway using pyrotechnics, forcing them to forage in other areas.

The American Robin nests in trees near the airfield. Although not likely to occur, flocks discovered inside the perimeter fence should be dispersed in aircraft operating areas using vehicle and pyrotechnic harassment.

The House Finch is not a common nesting species at the airfield due to a lack of landscaped evergreen trees. Nesting and roosting sites inside hangars and motor pools should be removed using exclusion methods including bird spikes and foam. This species commonly forages on the ground and is attracted to weedy forbs associated with bare areas within airfield sod. Bare soil and disturbed areas within the airfield should be eliminated by reseeded. These sites support weedy plant species that provide a seed source for this and other small seed eating species, such as goldfinches and sparrows.

The House Sparrow is a resident of the airfield and is sometimes reported inside hangars. House Sparrows should be excluded from building by eliminating nesting and roost sites with foam and bird spikes. This species is not ranked in the hazard index for damage caused to U.S. Air Force aircraft.

s. MAMMALS.

Of the species that could be involved in an aircraft strike, deer or other large ungulates pose the greatest hazard.

Because deer can enter the airfield through the unsecured main entrance to the airfield, the airfield should be surveyed daily for the presence of this species prior to beginning daily operations. Airfield gates must remain closed to exclude ungulates.

Other mammalian species recorded within the airfield posing a wildlife strike risk are coyote, fox, raccoon, skunk, and rabbit. Airfield personnel sometimes report coyotes on the runway. Coyotes should be harassed from the airfield using a combination of vehicles and pyrotechnics or removed by shooting. Holes dug under the horizontal barrier of the perimeter fence, by coyotes, should be patched using asphalt or concrete. Coyotes can be discouraged from entering the airfield by controlling rabbits and by keeping exterior gates closed.

The presence of bats at the airfield may present a hazard to night operations, but the status of these species is unknown.

Appendix E. USAF Low-Level Bird Avoidance Model (BAM).

- a. The BAM is a predictive model using Geographic Information System (GIS) technology as a key tool for analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and fabricated geospatial data. The value for each cell (or pixel) of the model is equivalent to the sum of the mean bird mass (in ounces), for all bird species present during a particular daily time period, for 1 of 26 two-week periods in a year. The BAM is internet accessible at the following web site <http://www.usahas.com/bam/>
- b. The bird species data set was derived from discrete geographic information for observations of 60 key WASH bird species, over a 30-year period. The species data was acquired from several key datasets, including the Audubon Societies' Christmas Bird Count (CBC), the US Biologic Survey's Breeding Bird Survey (BBS), bird refuge arrival, and departure data for the conterminous U.S., and many additional data specific to a particular bird species.
- c. The risk levels describe three predicted risk classes - Low, Moderate, and Severe, which are based upon the bird mass in ounces per square kilometer. In other words, the risk levels represent the amount of birds (bird mass) in a kilometer squared spatial area. The "Moderate Zone" indicates a risk ratio that is 57-708 times the risk of the "Low Zone", while the "Severe Zone" indicates a risk ratio that is 2,503-38,647 times the risk of the "Low Zone".
- d. The model uses the best available data for historical modeling of bird migratory patterns to provide the user with an effective decision making tool. Because birds are dynamic creatures whose migratory behavior is initiated by weather events in any given year, the model cannot be said to predict the exact movement of bird species through space and time beyond the biweekly timeframe. Spatial zones indicating a severe risk according to the model should not be ignored and should be avoided. It is recommended that pilots not fly within the "Severe Zone" unless it is absolutely mission essential.

Appendix F. Active WASH Dispersal/Depredation Methods and Equipment

a. GENERAL.

There are a variety of methods for dispersing birds using static, pyrotechnic, bioacoustics, and depredation equipment. Any or all of these may be used at IMCOM AAF to control birds. The WDDT must be trained in the use of Bird Dispersal Equipment used at IMCOM Army airfields/heliports annually. Due to the Army not having a list of WASH equipment, use AF Template (AFPAM) 91-212, Attachment 5, to obtain a list of WASH equipment normally used by the DOD.

b. STATIC DETERRENT DEVICES.

Static deterrents include, but are not limited to propane cannons, scarecrows, silhouettes, and effigies. They are often very effective in bird deterrence. Static devices are designed to augment the activities of the bird dispersal teams. At no time should static deterrents be considered a replacement for dispersal teams. Static devices are very labor intensive and should be moved 50-100 feet from their existing locations at least once daily. This activity will inhibit the decline in their deterrent effect that can occur as wildlife begins to become accustomed to the device.

c. PROPANE CANNONS.

These devices produce loud explosions at regular, pre-set intervals. They can be useful in combination with other methods. The WDDT will position and operate propane cannons based on the active runway, bird locations, and air traffic density. Change the locations daily/weekly to avoid habituation by the birds. At a minimum, one cannon each should be placed at the approach end, midfield and departure end.

d. BIOACOUSTICS.

Bioacoustics are audio taped distress or predator calls of actual birds. Special care must be taken to play the tape in short intervals to prevent habituation by the birds. Play the tape 20-30 seconds, and then pause briefly. Repeat as required. Birds should respond by taking flight or becoming alert. These calls are effective for waterfowl, gulls, songbirds, and shorebirds. Pyrotechnics should be used in conjunction with bioacoustics to enhance effectiveness dispersal. Bioacoustics should be the first option employed to control airfield/heliport bird habitation.

e. PYROTECHNICS.

Pyrotechnics are effective for dispersing most bird species from the airfield. Vehicles, without pyrotechnics, should be used to haze deer and coyotes through corner gates on the eastern side of the airfield. Pyrotechnics are fired from modified pistols and 12 gauge shotguns. Pyrotechnics may include a variety of devices similar to commercial fireworks,

including bangers, whistlers, and screamers. Screamers and bangers are smaller diameter projectiles, which are fired from commercially available .22 caliber starter or blank pistols. These small but very loud firecrackers are shot from the pistol/shotgun into flocks or near individual animals to frighten them away when they are discharged. Judicious and varied use of several different kinds of pyrotechnics is important, to prevent acclimation.

f. LETHAL CONTROL (DEPREDATION).

Occasional depredation of birds reinforces the other methods. Shooting one or two from a flock, then following with a volley of pyrotechnics is generally a very effective strategy for deterrence. Domestic pigeons, European Starlings, and House Sparrows may be removed without permit. All migratory birds (as defined by the Migratory Bird Treaty Act) require a permit prior to removal. DPW-Environmental (Fish & Wildlife) personnel will advise the WDDT before any lethal control methods are conducted. DPW-Environmental (Fish & Wildlife) will collect all depredated wildlife (whether a permit was required or not) for identification, disposal, and reporting requirements.

Appendix G. Passive WASH control methods

a. MANAGING GRASS HEIGHT.

Grass height management standards are 6 inches to 12 inches as required by AR 95-2 and IMCOM Pamphlet 385-90-1."

b. CONTROLLING BROAD-LEAFED WEEDS.

Keep broad-leafed weeds to a minimum on the airfield/heliport. Apply herbicides as necessary for control. Broad-leafed weeds attract a variety of birds and wildlife, may produce seeds or berries, and may limit grass growth. Broad-leafed weeds can be controlled through an effective haying program.

c. PLANTING BARE OR ERODABLE AREAS.

Eliminate bare areas on the airfield/heliport. Where re-vegetation has not worked or cannot work, soil cementing may be the answer. Soil cementing is the process of adding materials to the existing soil. Once the soil is hardened, it becomes like concrete; however, water runoff is accelerated.

Grass mixtures/blends should be chosen to require little or no supplemental fertilization or irrigation, avoid using invasive species, and minimize the use of pesticides. IAW 4715.03, restore and rehabilitate altered or degraded landscapes and associated habitats to promote native ecosystems and land sustainability when such action is practicable and does not conflict with the military mission or capabilities consistent with EO13514. Seed mixtures should not contain millet or any other large seed producing grass.

d. FERTILIZING.

Fertilize as needed to stimulate growth and promote a uniform cover. Rate and frequency of application may vary from that of other semi-improved areas and should be based on a soil test.

e. REMOVING HABITAT DIVERSITY.

Single trees or snags on an airfield/heliport may provide perches for hawks, owls, or other bird species. Biodiversity practices should not be implemented on airfields/heliports.

f. LEVELING OF AIRFIELD/HELIPORT.

Level or fill high or low spots to reduce attractiveness to birds and prevent standing water.

g. REMOVING ANIMAL CARCASSES FROM THE AIRFIELD/HELIPORT.

This is to avoid attracting scavengers that may feed on them. Forward all remains from aircraft strikes, depredation activities, or found dead to DPW-Environmental (Fish & Wildlife) for identification and collection.

h. REMOVING DEAD VEGETATION.

As soon as possible, remove dead vegetation such as brush piles, grass clippings, etc., and the cover it affords.

i. PEST CONTROL.

Invertebrates and rodents are food sources for many birds and mammals. Periodically survey and reduce these pests when required. Pesticides and traps can sometimes reduce pest populations to acceptable levels. Only pesticides approved for use on Fort Leavenworth will be used. Only licensed and certified pest control professionals shall apply pesticides. DPW-Operations manage all pesticide application made on Fort Leavenworth.

j. MAINTAINING DRAINAGE DITCHES.

Fresh water is one of the most important airfield/heliport wildlife attractants. Standing water creates a source of drinking water and a breeding place for insects, amphibians and other food sources for birds. Regularly inspect ditches to keep them clear. Improve drainage as necessary to inhibit even temporary ponds or puddles. When able, cover ditches with netting/plastic fencing. Working in and around wetlands (e.g. ditches and creeks) must be done in coordination with DPW-Environmental (Wetlands).

k. ELIMINATE ROOSTING SITES.

Control roosts by vegetation management of roost sites where possible. Prune or cut down trees to reduce the number of perches if necessary.

l. BIRD PROOF BUILDINGS AND HANGARS.

Often, bird proofing of buildings and hangars is required to exclude pigeons, sparrows, and swallows. Excluding birds from a structure they currently utilize will often displace them to an adjacent structure. Lethal control of birds in buildings must be done in accordance with state and federal permits. Denying access by screening windows, closing doors, and blocking entry holes is most effective.

m. PELLET GUNS.

This weapon is a short-term bird eradication solution only. Proper safety equipment and skilled personnel are required.

n. NETTING.

Netting provides a defense against birds using structures inside of hangars. However, the nets are expensive, require frequent maintenance, and trap protected species of birds. Due to these factors, permanent exclusion using bird spikes and foam are better alternatives to exclude birds from using cavities and ledges. Plastic strips, hung in front of hangar doors to a height above ground that allows aircraft to be moved in and out, will deter many bird species from entering the hangar.

o. TRAPPING AND REMOVAL.

Use a large cage with food and water to trap birds. Release birds away from buildings or depredate if permitted by law. Permits and release of trapped birds will be coordinated through DPW-Environmental (Fish & Wildlife).

p. DESIGN FEATURES.

If designing a new hangar, consider locating supports on the exterior. Buildings should be designed without roof overhangs.

q. SHARP PROJECTIONS (BIRD SPIKES).

Use in limited areas such as ledges and overhangs, or small places where birds cannot be allowed.

r. PERIMETER FENCE AND GATES.

Maintain perimeter fence and gates around the boundaries of AAFs/AHPs to exclude large mammals (e.g., deer).

s. VERICAL AND HORIZONTAL BARRIERS.

Attach to perimeter fence to exclude coyotes, and other burrowing mammals.

Appendix I. FAA Form 5200-7, Bird/Other Wildlife Strike Report

See Attached Form.



U.S. Department of Transportation
Federal Aviation Administration

BIRD / OTHER WILDLIFE STRIKE REPORT

1. Name of Operator		2. Aircraft Make/Model		3. Engine Make/Model																																															
4. Aircraft Registration		5. Date of Incident ____/____/____ Month Day Year		6. Local Time of Incident <input type="checkbox"/> Dawn <input type="checkbox"/> Dusk <input type="checkbox"/> Day <input type="checkbox"/> Night <input type="checkbox"/> AM <input type="checkbox"/> PM HR MIN																																															
7. Airport Name		8. Runway Used		9. Location if En Route (Nearest Town/Reference & State)																																															
10. Height (AGL)		11. Speed (IAS)																																																	
12. Phase of Flight <input type="checkbox"/> A. Parked <input type="checkbox"/> B. Taxi <input type="checkbox"/> C. Take-off Run <input type="checkbox"/> D. Climb <input type="checkbox"/> E. En Route <input type="checkbox"/> F. Descent <input type="checkbox"/> G. Approach <input type="checkbox"/> H. Landing Roll		13. Part(s) of Aircraft Struck or Damaged																																																	
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14. Effect on Flight <input type="checkbox"/> None <input type="checkbox"/> Aborted Take-Off <input type="checkbox"/> Precautionary Landing <input type="checkbox"/> Engines Shut Down <input type="checkbox"/> Other: (Specify)		15. Sky Condition <input type="checkbox"/> No Cloud <input type="checkbox"/> Some Cloud <input type="checkbox"/> Overcast		16. Precipitation <input type="checkbox"/> Fog <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> None																																															
17. Bird/Other Wildlife Species		18. Number of birds seen and/or struck		19. Size of Bird(s) <input type="checkbox"/> Small <input type="checkbox"/> Medium <input type="checkbox"/> Large																																															
		Number of Birds	Seen			Struck																																													
		1	<input type="checkbox"/>	<input type="checkbox"/>																																															
		2-10	<input type="checkbox"/>	<input type="checkbox"/>																																															
		11-100	<input type="checkbox"/>	<input type="checkbox"/>																																															
		more than 100	<input type="checkbox"/>	<input type="checkbox"/>																																															
20. Pilot Warned of Birds <input type="checkbox"/> Yes <input type="checkbox"/> No																																																			
21. Remarks (Describe damage, injuries and other pertinent information)																																																			
DAMAGE / COST INFORMATION																																																			
22. Aircraft time out of service: _____ hours		23. Estimated cost of repairs or replacement (U.S. \$): \$		24. Estimated other Cost (U.S. \$) (e.g. loss of revenue, fuel, hotels): \$																																															
Reported by (Optional)			Title		Date																																														
<p>Paperwork Reduction Act Statement: The information collected on this form is necessary to allow the Federal Aviation Administration to assess the magnitude and severity of the wildlife-aircraft strike problem in the U.S. The information is used in determining the best management practices for reducing the hazard to aviation safety caused by wildlife-aircraft strikes. We estimate that it will take approximately 6 minutes to complete the form. The information collected is voluntary. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number associated with this collection is 2120-0045. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ABA-20</p>																																																			

**Directions for FAA Form 5200-7
Bird/Other Wildlife Strike Report**

1. Name of Operator - This can be an airline (abbreviations okay - UAL, AAL, etc.), business (Coca Cola), government agency (Police Dept., FAA) or if a private pilot, his/her name.
2. Aircraft Make/Model - Abbreviations are okay, but to include the model (e.g. B737-200).
3. Engine Make/Model - Abbreviations are allowed (e.g., PW 4060, GECT7, LYC 580).
4. Aircraft Registration - This means the N# (for USA registered aircraft).
5. Date of Incident - Give the local date, not the ZULU or GMT date.
6. Local Time of Incident - Check the appropriate light conditions and fill in the hour and minute local time and check AM or PM or use the 24 clock and skip AM/PM.
7. Airport Name - Use the airport name or 3 letter code if a US airport. If a foreign airport, use the full name or 3 letter code and location (city/country).
8. Runway used - Self explanatory.
9. Location if En Route - Put the name of the nearest city and state.
10. Height AGL - Put the feet above ground level at the time of the strike (if you don't know, use MSL and indicate this). For take-off run and landing roll, it must be 0.
11. Speed (IAS) - Speed at which the aircraft was traveling when the strike occurred.
12. Phase of Flight - Phase of flight during which the strike occurred. Take-off run and landing roll should both be 0 AGL.
13. Part(s) of Aircraft Struck or Damaged - Check which parts were struck and damaged. If a part was damaged but not struck indicate this with a check on the damaged column only and indicate in comments (#21) why this happened (e.g., the landing gear might be damaged by deer strike, causing the aircraft to flip over and damage parts not struck by deer).
14. Effect on Flight - You can check more than one and if you check (Other', please explain in Comments (#21).
15. Sky condition - Check the one that applies.
16. Precipitation - You may check more than one.
17. Bird/Other Wildlife Species - Try to be accurate. If you don't know, put unknown and some description. Collect feathers or remains for identification for damaging strikes.
18. Number of birds seen and/or struck - check the box in the Seen column with the correct number if you saw the birds/other wildlife before the strike and check the box in the Struck column to show how many were hit. The exact number, can be written next to the box.
19. Size of Bird(s) - Check what you think is the correct size (e.g. sparrow = small, gull = medium and geese = large).
20. Pilot Warned of Birds - Check the correct box (even if it was an ATIS warning or NOTAM).
21. Remarks - Be as specific as you can. Include information about the extent of the damage, injuries, anything you think would be helpful to know. (e.g., number of birds ingested).
22. Aircraft time out of service - Record how many hours the aircraft was out of service.
23. Estimated cost of repairs or replacement - This may not be known immediately, but the data can be sent at a later date or put down a contact name and number for this data.
24. Estimated other cost - Include loss of revenue, fuel, hotels, etc. (see directions for #23).
25. Reported by - Although this is optional, it is helpful if questions arise about the information on the form (a phone number could also be included).
26. Title - This can be Pilot, Tower, Airport Operations, Airline Operations, Flight Safety, etc.
27. Date - Date the form was filled out.

U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave. S.W.
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**B8. INTEGRATED PEST MANAGEMENT PLAN
FOR**

FORT LEAVENWORTH

2016

INTEGRATED PEST MANAGEMENT PLAN
FOR
FORT LEAVENWORTH, KANSAS

Prepared by: Mr. John Yunker _____
Installation Pest Management Coordinator
Directorate of Logistics/Public Works

Reviewed by: Mr. Kyle Fratzel _____
Secondary Installation Pest Management Coordinator
Directorate of Logistics/Public Works

Reviewed by: Mr. Harold W. Waugh _____
Director of Public Works

Reviewed by: Capt. Daniel Tulloss _____
Veterinary Medicine

Reviewed by: Mr. Dale Cleland _____
Chief, Environmental Office

Reviewed by: Major Ossenbacher Looney _____
Chief, Preventive Medicine Service
Munson Army Health Center

Approved by: Col. Thomas Shoffner _____
Garrison Commander
(Designate)

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A. INTRODUCTION

1. Purpose: This pest management plan is a framework through which pest management is defined and accomplished on the installation. The plan identifies elements of the program to include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal. This plan is to be used as a tool to reduce reliance on pesticides, to enhance environmental protection, and to maximize the use of integrated pest management techniques. The contents of this, integrated pest management plan (IPMP) applies to all activities and individuals working, residing or otherwise doing business at Fort Leavenworth, KS.

2. Authority:

a. Section 136 et seq. of title 7, United State Code, *Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)* as amended.

b. DoD Directive 4150.7, DoD Pest Management Program, 10 May, 1997.

c. AR 200-1, Pest Management, 13 Dec. 2007.

3. Program Objectives: This plan provides guidance for operating and maintaining an effective pest management program. Principles of integrated pest management are stressed in the plan. Integrated Pest Management consists of the judicious use of both chemical and non-chemical control techniques to achieve effective pest control with minimal environmental contamination. Adherence to the plan will ensure effective, economical, and environmentally acceptable pest control, and will maintain compliance with pertinent laws and regulations. This IPMP for Ft Leavenworth describes the resources necessary for surveillance and control of target pests including any administrative, safety or environmental requirements.

4. Impact. Without an IPM program for Ft Leavenworth, pests can interfere with the military mission, lower morale, damage real property, increase maintenance costs, and potentially expose installation personnel to disease.

5. Installation Description and Mission: Fort Leavenworth is an irregular-rectangle-shaped installation of 5,636 acres which occupies an area of Leavenworth County in the northeast quarter of Kansas (See Appendix J, Maps). Fort Leavenworth is bordered by the Missouri River on the east and north; on the west by wooded acreage, farmland of Leavenworth County, Highway 7-73 and 159th street; and the city of Leavenworth on the south.

The installation lies in two distinct geographical areas. The Upland Region, which includes the Cantonment Area, is gently to moderately hilly. The Bottomland Region is a practically level floodplain with minor local irregularities in the surface.

As home of the Army’s Command and General Staff College, and the United States Disciplinary Barracks, Ft. Leavenworth fills a dual role in the army community; first as housing for the officers attending the CGSC and their families, and second, as a prison community.

The mission of the Combined Arms Center (CAC) at Fort Leavenworth is to educate officers in various tactical, command and battle leadership functions. CAC also has responsibility for writing the doctrine for war-fighting at the division and corps levels. In addition, CAC is responsible for providing vigorous training exercises for commanders and staffs, from brigade through corps levels, in the exercise of battle command.

Fort Leavenworth also houses the United States Disciplinary Barracks (USDB), which incarcerates armed services personnel convicted of serious offenses, and provides inmates with correctional treatment.

6. LAND USE AND LAYOUT OF FACILITIES: The majority of present installation activities, including most base improvements and facilities, occur in the central portion of Fort Leavenworth. Outlying buildings include the Envision store, and USDB to the north; Sherman Army Air Field buildings to the northeast; the boy and girl scout areas, MARS radio station, and an old NIKE site (recreation vehicle parking) to the west; student housing to the southwest; and NCO housing to the south.

7. Inventory of Land Use: There are three categories of grounds on Fort Leavenworth: Improved, Semi-improved, and Unimproved grounds. There are no commercial forest stands on Fort Leavenworth.

- a. Improved Grounds:** Include acreage on which intensive maintenance activities are planned and performed annually as fixed requirements. These activities include mowing, irrigation, drainage, planting for landscape effect, and other intensive practices. Pest management is necessary to maintain the vegetation of improved areas such as the golf course; lawns, parade fields and other maintained grassy areas; and trees and shrubs present on Improved grounds. Mosquito treatment is also performed in the main Cantonment area (as well as some Semi Improved grounds).

There are 1,398 acres of developed land classified as Improved grounds, and requiring annual maintenance. A summary of improved land acreage is found in Table 1.

Table 1. Improved Land Acres Requiring Annual Maintenance

<u>Description</u>	<u>Acres</u>
Lawns	1,131
Athletic Fields	42
Golf Courses	151
Parade Field	6
Playgrounds and Parks	22
Other	8
*Cemetery	38

*Maintained by Veterans Administration, Leavenworth, Kansas.

b. Semi-improved grounds: Include areas on which maintenance is performed, but to a lesser extent than improved grounds. Activities on this category of grounds normally include soil sterilization, weed and brush control, drainage maintenance, and mowing for fire protection. Periodic maintenance is necessary on 257 of the 1,100 acres of semi-improved land at Ft. Leavenworth. Included in this category are 208 acres of airfield and heliports.

c. Unimproved Grounds: Unimproved grounds include forestland, areas under buildings and surfaced areas, and all other acreage not classified in the two previous categories. Activities on unimproved grounds do not occur on a regular basis and are generally unpredictable, depending upon mission activities and changing conditions due to flood, fire, insects and other variables. The 3,138 acres of unimproved land at Fort Leavenworth requires little or no maintenance. The bulk of the land surface is pavement, building structures, ammunition storage, railroad, ponds, and woodlands.

B. RESPONSIBILITIES. The Ft Leavenworth pest management coordinator oversees the program. Pest prevention, through good sanitation practices, is the responsibility of all individuals that occupy or maintain buildings or open spaces on the installation. Pest management personnel follow the Integrated Pest Management (IPM) Outlines in Appendix A. Before any pesticides are applied, non-chemical control efforts will be used to the maximum extent possible. Except for AAFES Burger King, Bank, Armed Forces Insurance, Credit Union, Masonic Lodge, four schools, and RCI Housing, all pest management work is performed in-house by two DoD certified pesticide applicators. A DoD certified, MWR employee, also conducts Pest control at Ft Leavenworth golf course.

1. Garrison Commander or His/Her Representative.

- a. Designate a Pest Management Coordinator for all pest management activities.
- b. Approve and support the pest management plan.
- c. Ensure that all pest management operations are conducted safely and have minimal impact on the environment.

2. Preventive Medicine Service - Munson Army Health Center:

- a. Conduct surveillance of pests which could adversely affect the health and welfare of the installation military and civilian personnel. This includes surveying for arthropods in food service and childcare facilities, and surveying mosquito populations using light traps, ovitraps, and larva dip.
- b. Coordinate with local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.

c. Monitor pesticide sales at the Self-Service-Supply-Center, the Commissary, and the Post Exchange.

d. Evaluate the health aspects of the pest management program.

3. Veterinary Service, Munson Army Health Center:

a. Conduct surveillance for insects and vertebrate pests that destroy food stored in installation facilities.

b. Provide advice to pet owners concerning pests that may adversely affect their animals; and the proper use of collars, sprays, powders, and other pest control agents.

4. Installation Pest Management Coordinator.

a. Prepare, monitor, and update the installation pest management plan.

b. Develop and monitor the installation pest management annual work plan.

c. Coordinate with activities conducting pest surveillance or controlling pests to ensure all applicable information is recorded and reported as required by this plan and AR 200-1. Monitor the sale and distribution of pesticides on the installation.

d. Function as a point of contact between those individuals who store and apply pesticides (e.g., public works, golf course, pest control contractors, tenant activities, agricultural lessees) and activities or individuals who document or deal with pesticide use in their programs (e.g., Environmental Office, Safety Office, Fire Department, Industrial Hygienist).

e. Oversee the technical aspects of the self-help program with respect to pest control items and training of family housing residents. **RCI**

f. Monitor certification and continuing pest management training for pesticide applicators on the installation.

g. Coordinate and monitor contracts dealing with pesticide application and keep a copy of each contract on file. Ensures that firms and their employees performing contract pest management work on Ft Leavenworth comply with all certification, licensing, and registration requirements of the State of KS.

h. Ensures that the technical portions of contracts involving pest management reflect IPM methodology and are reviewed and approved by a DoD pest management consultant before solicitation. Submits all pest management contracts to AEC for review and approval.

i. Coordinate with the Munson Army Health Center Preventive Medicine on pest surveillance, pest identification, and pest control related issues.

j. Coordinate with local, State and Federal agencies, as necessary, to conduct the installation's pest management program.

k. Provide answers to questions concerning pest management from the Installation Commander, the Major Command, and Department of the Army (DA).

l. Maintain adequate records of pest management operations including pesticides applied by the contractors and golf course personnel.

5. Building Occupants.

a. Apply good sanitary practices to prevent pest infestations.

b. Use all nonchemical pest control techniques available to the fullest extent before requesting further assistance from pest control personnel.

c. Cooperate fully with DIS pest control shop in scheduling pest management operations, to include preparing the areas to be treated.

d. Obtain, through the Pest Management Coordinator, approval before using any contract pest control services.

6. Pest Management Contractors.

a. The contractor Business must be licensed by the Kansas Department of Agriculture in all categories of commercial pest control. All contracts must go through the IPMC.

b. The contractor must comply with integrated pest management techniques required by the Ft Leavenworth Integrated Pest Management Plan, AR 200-1, and all other requirements of the contract.

c. Operate in a manner that minimizes risk of contamination to the environment and personnel.

d. Provide electronic DD 1532-1(or equivalent) records of pest surveillance and control efforts to the installation Pest Management Coordinator on monthly basis.

e. Ensure that the COR and IPMC are kept informed of changes in pest management requirements.

f. Maintain records and report pesticide use for all activities supported by the contract.

j. Provide a list of pesticides, labels, and Material Safety Data Sheets (MSDS) for each pesticide to the COR/IPMC for approval prior to use.

C. INTEGRATED PEST MANAGEMENT (IPM).

1. **Legal Mandate.** Federal Agencies are mandated by Public Law to use Integrated Pest Management (IPM). IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. The Army is committed to IPM at its facilities and installations as the best approach to control pests and reduce pesticide reliance and resistance.

2. **IPM Operations.** Although IPM emphasizes the use of nonchemical strategies, chemical control may be an option used in conjunction with other methods. The IPM Outlines (Appendix A) describe methods for detecting, monitoring, and controlling specific pests. Appendix B of this plan is an annual pesticide use proposal (PUP) that lists all the pesticides intended to be used by the installation pest management personnel, golf course, and contractors during the upcoming calendar year. It is included in the annual update of this IPMP and must include pesticide names, active ingredients and percentages, EPA registration numbers, label signal words, target pests, and intended sites. Department of Defense (DoD) policy mandates that the AEC professional pest management personnel review and approve all pesticides applied to DoD installations.

D. PRIORITY OF PEST MANAGEMENT WORK. See Appendices A [Integrated Pest Management (IPM) Outlines] and B (Pesticide Use Proposal) for more details on control of those pests listed below and the pesticides that are used on Ft Leavenworth.

1. Disease Vectors and Medically Important Arthropods:

a. **Mosquitoes:** Mosquitoes are the primary disease vectors on Fort Leavenworth. Mosquito breeding takes place on the installation in one large and many small areas: the marsh areas of the bottomlands, outside the airfield dike, and the main post areas in artificial containers and temporary pools of water. Several viruses may be transmitted by species found on Fort Leavenworth. A listing of mosquito species that occur, their habits, breeding sites, and the diseases they are capable of transmitting may be found in the USACHPPM report, located at the entomology building. Adult mosquitoes require fogging for control on the main post and outlying areas. In addition, residual insecticides are applied to vegetative mosquito resting areas. Insecticide and bacterial control are used for larvae.

b. **Brown Recluse Spiders (*Loxosceles reclusa*)** are sometimes found in undisturbed places in warehouses, family housing storage areas, in and around other buildings, and rodent bait boxes. Although these spiders are poisonous, few bites are reported by the Preventive Medicine personnel.

c. **Bees and Wasps:** Bees (Yellow Jackets and Solitary) and Wasps are found throughout the installation. The stings are painful and cause allergic reactions in some people. The Solitary bees have become an increasing problem in recent years. Honey

Bees are of significant agricultural and economic value and the protection of colonies found will remain a high priority.

2. Real Property Pests (Structural/wood destroying pests):

a. Termites: Subterranean termites cause damage to wooden buildings other structures, and stored items on the installation. Annual surveys of structures and treatment when termites are found have kept damage to a minimum.

b. Stored Product Pests: Food stored in the commissary and commissary warehouse, the AAFES shopette, and food storage in food service facilities may become infested by stored product pests. Occasional complaints are received from family housing occupants, but insect infestations usually originate in the home. Cleanup and insecticide treatments are used to eliminate small problem areas, where as aluminum phosphide is used to fumigate pallets of infested subsistence.

3. Ornamental Plant and Turf Pests: Trees and shrubs of Fort Leavenworth can be infested by various insect pests, resulting in damage or destruction of the plants. Pests in this category, such as bagworms, have been a recurring problem.

4. Weeds and Other Undesirable Vegetation: Weeds along fence lines, on road shoulders, paved or graveled surfaces (including runways), etc. require control using appropriate herbicides. Some control of unwanted vegetation is done mechanically (mowing, weed eaters, machete, grading, etc.).

5. Animal Pests:

a. Rodents: Mice occasionally invade buildings. Although mice make up a substantial portion of the pest management workload, most of this time is spent on surveys. Moles, found on improved lawns and golf course areas, also take a substantial amount of time.

b. Snakes: Osage Copperhead and Timber Rattlesnakes are occasionally found on the installation. Although rarely encountered, these snakes are capable of causing illness or death. A variety of nonpoisonous snakes are also found on the installation. Although non-venomous, their bites may be painful. Non-venomous snakes from unwanted areas are captured alive and relocated to other areas on post.

c. Skunks, Raccoons, and Opossums: These pests require live trapping and relocating to woodland areas. These animals have become more numerous, in housing and main post areas over the past few years. In the event that a trapped animal is suspected to have rabies, it is instead taken to Veterinary Service. Often, the "wild" animals on the post are quite friendly to humans. Periodic notices are issued in the Post Newspaper warning parents to keep children away from any wild animals. Since there is the potential for rabies infection, when trapping wild animals, Preventive Medicine should be consulted as to whether or not rabies vaccinations are warranted for those who perform this service.

d. Bats: Occasionally single bats enter family housing units and office areas through open doors and windows. At times a colony of 20 to 40 bats is discovered in the attics of these buildings. DPW pest controllers use nets to remove the bats, then seal entry points for exclusion. The Gray bat (*Myotis grisescens*) is listed as an endangered species whose range includes Kansas. Nothing will be done to disturb this species.

e. Stray Dogs and Cats: Stray animals can affect the health and safety of personnel, pets, and wildlife populations on a military installation. Uncontrolled stray animals pose a threat to the longer they remain uncontrolled and allowing a stray to roam freely can be detrimental to the strays health and welfare. Stray animal control in the main post area is accomplished by the Military Police. See Integrated Pest Management Outline No. 7 for additional information.

6. Household and Nuisance Pests: Crawling insects (ants, cockroaches, crickets, beetles, etc.) and spiders may require control in billets, family housing, food service facilities, warehouses, offices, and other administrative buildings. Cockroaches make up the majority of work in this category. The remainder of these pests constitutes minor problems on the installation. Proper sanitation and housekeeping will do much to discourage these problems.

7. Pests of Natural Resources: The Emerald Ash Borer has become an issue in recent years on Fort Leavenworth, chemical treatments will be performed on trees that can be saved. Fort Leavenworth has a noxious weed program for control of Thistle (Musk and Canadian), Hemp, and Johnson Grass. The invasive species is *Sericea lespedeza*, with two new species that may be added to the list in the future (Tall Fescue and Common Reed).

8. Golf Course Pests: Golf course greens, fairways, tees, and roughs are subject to pests such as crabgrass, broadleaf weeds, cutworms, white grubs, and Pythium. White grubs and cutworms are treated upon inspection and discovery, from April to May or July (cutworms). Broadleaf weed treatment is performed every spring and fall. Goosegrass and crabgrass treatments are done in the fall on fairways and roughs, and early April on the greens and tees, with a second application six weeks later. Treatment for Pythium is done in July. Golf course personnel are responsible for controlling all tree and turf pests on the golf course, as well as performing grounds maintenance activities. Some of these grounds maintenance activities, such as mowing, are part of the Installation Pest Management Outlines for various golf course pests.

9. Pest Management at the Child Developmental Center (CDC): The Fort Leavenworth CDC's are Grant Avenue CDC which is located in building 62, at 120 Dickman Ave. The Osage CDC which is located in building I098 at 130 Dickman Ave. The Santa Fe CDC is located in building 2400 at 190 Hancock Ave. An IPM program is in effect for the CDC. The CDC staff, Preventive Medicine personnel, and the DPW Pest Control established a successful IPM program through coordination and effective communication see Appendix F-1 for further information.

10. Quarantine and Regulated Pests. There are no Fort Leavenworth requirements for plant or animal quarantine. AR 200-1, Pest Management, requires all command levels to cooperate with Federal agencies responsible for quarantine of agricultural and public health significance. It is possible for Gypsy Moths can be introduced to the installation through shipments of incoming household goods and other cargo. Fort Leavenworth should consult with the USDA to inspect incoming cargo for this pest.

11. Noxious / Invasive Plants: Numerous weeds of importance are found throughout Fort Leavenworth including but not limited to Johnson Grass, several species of Thistle, Teasel, and others. Noxious and invasive weeds should be controlled as soon as possible when identified to reduce their spread. See Outline 3 for additional information.

12. Invasive Animals and Insects. The Emerald Ash Borer is one insect in particular that has an impact on numerous trees on Fort Leavenworth. Identification of damaged and distressed trees if of great importance to their survival. Several aquatic species are found in the waters of The Missouri River along Fort Leavenworth and should be taken into consideration to reduce any possibilities of them inhabiting the waters within Fort Leavenworth. Species of note are the Asian Carp and to some extent Zebra Mussels.

E. HEALTH AND SAFETY.

1. Medical Surveillance of Pest Management Personnel. All Entomology and golf course pesticide applicators are included in a medical surveillance program. An initial, pre-employment physical examination is conducted to establish that the individual is physically capable of wearing a respirator (if required) and to establish a baseline red blood cell (RBC) cholinesterase level. This physical examination also includes liver and kidney function tests, a complete blood count and a respiratory evaluation. A physical examination of the same scope as the initial examination is conducted annually.

2. Hazard Communication. Installation pest management personnel are given hazard communication training, to include hazardous materials in his workplace. Following initial hazard communication classes, additional training is given to new employees or when new hazardous materials are introduced into the workplace. Material Safety Data Sheets for all pesticides and other toxic substances used in the pest management program can be found in the pest controller's office, Building 227. Copies of MSDS's are kept on each pest control vehicle for pesticides used that day.

3. Personal Protective Equipment. Approved masks, respirators, chemical resistant gloves and boots, and protective clothing (as specified by applicable laws, regulations and/or the pesticide label) are provided to the Government pesticide applicators. These items are used as required during the mixing and application of pesticides. Pesticide-contaminated protective clothing is not laundered at home. The clothing is laundered in the pest control shop. Severely contaminated clothing is not laundered, but is considered a pesticide-related waste is submitted to Environmental Office for disposal.

4. Fire Protection. The Usual hazards presented by fire are compounded in the case of a pesticide fire by the danger of pesticide poisoning and contamination. The Pest Management Coordinator will conduct pre fire coordination with appropriate fire department and other emergency officials. This coordination will be formalized in the installation pre fire plan. The pre fire plan will be updated annually, or when changes occur (e.g. pesticides are stored, etc.). A copy of this plan with annual updates will be maintained by the Pest Management Coordinator. Copies will also be provided to the local fire department and other emergency services. Pre fire planning will include consideration of the pesticide inventory, Storage Area floor plan, evacuation routes, and water runoff control, map of surrounding area, emergency telephone numbers, medical assistance, salvage/hazard assessment, and provisions for safety briefings of appropriate personnel. A detailed discussion of pre fire planning can be found in paragraph 2 of AFPMB TIM No. 16 (reference 3g). Building 227 contains the majority of pesticides stored at Fort Leavenworth. Minor amounts of pesticide are also stored at the Golf Maintenance Building, the Commissary, and the Post Exchange. Building 227 has 977 square feet of pesticide storage area. The probability of a fire at this site is low. The Fort Leavenworth Fire Chief will determine which fire control efforts to employ depending on the size and type of fire at the time a fire call is reported.

5. Pest Control Vehicles. Pesticides shall be transported only in the lockable storage compartments of the assigned vehicles. Pesticides will not be transported in the cab at any time. The use of the assigned vehicle for other than pest management purposes is not permitted. Transportation of pesticides (from supply and to the job site) will be accomplished using the vehicle assigned to the pest controllers, with utility beds having external lockable storage compartments. Care should be taken to secure pesticides to prevent damage to the containers and spillage of the pesticide. At no time will pesticides be left unsecured in the vehicle when unattended. A portable eye lavage and spill kit will be carried in the pest control vehicle when in use. All vehicles will have a label affixed stating "CONTAMINATED WITH PESTICIDES".

6. Protection of the Public. Precautions are taken during pesticide application to protect the public, on and off the installation. Whenever pesticides are applied outdoors, care is taken to make sure that any spray drift is kept away from individuals, including the applicator. At no time are personnel permitted in a treatment area during pesticide application unless they have met the medical monitoring standards and are appropriately protected. Notification of pesticide application (mosquito and broadleaf weeds) in and around housing areas is published in the daily bulletin and the post newspaper.

F. ENVIRONMENTAL CONSIDERATIONS.

1. Sensitive Areas. Certain areas on Fort Leavenworth are regarded as "sensitive," and are approached with extra caution and consideration in regards to pesticide application. Sensitive areas include any wetlands or water bodies, lands that drain directly into water bodies, schools and playgrounds, the childcare center, and the Missouri River. Sensitive areas listed on pesticide labels are considered before pest control operations are conducted. No pesticides are applied directly to wetlands or water areas (e.g., lakes or ponds) unless use in such sites is specifically approved on the label and the proposed application are approved by the Environmental Office. This last statement particularly applies to pesticides applied on or near open water.

2. Endangered/Protected Species and Critical Habitats. The American Bald Eagle regularly uses the wetland timber during the winter. The large trees along the river are used as perches for various reasons by the eagles. Similar timber on a large reservoir near the installation is presently being used as a nesting site for Bald Eagles. The only regular chemical pest control operations performed on the bottomlands are broadleaf weed and mosquito treatments on and adjacent to the dike. Only in years when mosquito problems are especially heavy is fogging performed within the bottomlands. Treatment can occur from April through October. No pest management operations are conducted that are likely to have a negative impact on endangered or protected species or their habitats without prior approval from the AEC Pest Management Consultant.

3. Environmental Documentation. The Integrated Natural Resource Management Plan for Fort Leavenworth is on file at the DOL/PW Environmental Department. An Environmental Assessment (EA) is prepared by the Environmental Department for each new Pest Management Plan, describing the pest control activities and their anticipated impact on the environment.

4. Pesticide Spills and Remediation. Pesticide spill cleanup kits are maintained in the pesticide storage area of Bldg. 227, on each pest control vehicle, and at the Golf Course. All pesticide spills are reported to the Fire Department and the Pest Management Coordinator.

5. Prohibited Activities.

a. A pesticide will not be used in any manner that is inconsistent with its label.

b. No pesticide will be used whose registration has been suspended or canceled by the EPA or the State of Kansas.

c. Pesticide misuse, which includes use inconsistent with the label, is a violation of Federal Law. In accordance with DoD policy (see DoD 4150.7-P), Fort Leavenworth personnel will record and report any instances of pesticide misuse and falsification of records by contractors to the State of Kansas. Furthermore, Fort Leavenworth personnel will cooperate with the State and the U.S. EPA in any subsequent investigation or actions.

d. Herbicides will not be used to control weeds at the Child Development Center in areas where children play.

G. PROGRAM ADMINISTRATION.

1. PLAN MAINTENANCE. The Ft Leavenworth Installation Pest Management Coordinator (IPMC) maintains this IPMP. While pen and ink changes are made to this plan throughout the fiscal year, this plan is reviewed annually and updated to reflect all changes made in the pest management program during each fiscal year. There is no longer a requirement for the rewriting the plan and resubmitting to AEC for review. The plan will be submitted for review when major changes are made in the plan. Please send comments or suggested changes to:

Pest Management Coordinator:	Mr. John Yunker
Mailing Address:	Directorate of Logistics/Public Works, Entomology Section ATTN: John Yunker, ATZL-GCD,,820 McClellan Ave., Ft Leavenworth, KS 66027-1360
Office Location:	Bldg 227 / 701 West Warehouse Rd.
Office Phone Number:	913-684-4151
FAX Number:	
Email Address:	<u>john.t.yunker.civ@mail.mil</u>

2. Contracts / Quality Assurance:

a. There are contracts for pest control work in schools, Bank, Credit Union, Armed Forces Insurance building, AAFES facilities, and RCI housing. Pest control in government facilities is accomplished by DoD certified pest controllers. There are projects on post that require termite pretreatment. This is accomplished by a contract through the Corps of Engineers, or others in control of the project. A DoD certified pest controller serves as a Quality assurance inspector.

b. Monthly or periodic spraying will be eliminated and only deemed necessary after surveying and monitoring pest population levels require treatment be performed. By EO the military will decrease its usage of toxic chemicals and pollutants by 50 percent. Use of integrated pest management techniques will be encouraged in all contracts. Pest problems threatening the health, safety, or welfare of installation personnel shall receive priority.

c. All contracts dealing with pest management will be sent to the AEC Pest Management Consultant prior to submission for bids or completion of purchase orders. For those contracts that are renewed annually, AEC will be notified of the upcoming renewal date and advised if any changes in the contract specifications have changed. Exception to this policy will be the need for emergency pest control services. In this case, the AEC Pest Management Consultant will be contacted at (210) 295-2299 for further guidance.

d. Contractors who conduct pest control on Ft Leavenworth must:

- (1) Show proof of liability insurance.
- (2) Have State commercial certification and licensing in the category or categories of work to be performed.

(3) Use only EPA approved and State registered pesticides.

(4) Furnish Ft Leavenworth IPMC with legible copies of specimen labels and the MSDS of all pesticides proposed for use.

(5) Furnish Ft Leavenworth personnel with information required for pest management record keeping.

e. A copy of each contract dealing with pest control will be forwarded to the Pest Management Coordinator.

f. All contractors providing pest management services will adhere to the following:

(1) Application of pesticides will be in accordance with label directions.

(2) The contractor must comply with all Federal, State, and local regulations.

(3) Pesticides must be mixed, stored, and disposed of in accordance with Federal, State, and local regulations, and the provisions of this plan.

(4) The contractor will bring all pesticides and application equipment onto the installation each day services are provided. No pesticides or pesticide application equipment can be stored or maintained on the installation.

3. Reports and Records. All contractors provide pesticide use information to the Pest Management Coordinator. Pest management operations are recorded on the Pest Management Maintenance Record (DD Form 1532-1) or other comparable record for the building or site where the work was performed. Pounds of pesticide active ingredient are provided to AEC on an annual basis.

4. Training and Certification. Contractors performing pest management services on Ft Leavenworth will be certified by the State of Kansas in the appropriate categories for which work is performed. A copy of each contractor's certification can be found in Appendix D. The Pest Management Coordinator is planning to attend the DA Quality Assurance Evaluator course.

5. Job Orders: The DIS pest controllers perform pest surveillance and control under six standing operating orders (SOOs). Family housing units are serviced on service orders turned in by the occupant to the RCI contractor. Vacant housing quarters are surveyed and serviced as needed. The RCI contractor notifies the companies that provide pest control services. There are no pesticide storage and mixing facilities for the contractors on the installation.

6. Pesticide Security. All vehicles entering the installation are checked and validated by security personnel. Only vehicles belonging to the contractors stated above are allowed to carry pesticides onto the installation. If pest control is scheduled from companies other than those listed in this plan, then the Pest Management Coordinator will contact the security office and identify the name of the company and the date that services have been scheduled.

7. Interservice Support Agreements (ISSAs): There are currently 20 ongoing ISSAs for pest control services. These agreements consist of a variety of services to include: insects, weeds, rodents, vertebrate animals, etc. The ISSAs are renewable on a three-year cycle.

8. Outleases: At this time there are no out lease land at Fort Leavenworth, Kansas. The USDB farm has been deactivated, and this land may be outleased in the future.

9. (RCI) Military Housing Self-Help: Pest Control items are available to family housing residents through the self-help store, operated by RCI, located in Bldg. 269. The Self-Help store is open from 08:30 to 17:00 hours, Monday through Friday and from 08:00 to 12:00 on Saturdays. Self-Help items include:

- a. Combat or Maxforce bait stations - for cockroach control.
- b. Glue traps - for cockroach and mouse control.
- c. Ant Bait Stations – for control of multiple types of ants.
- d. Snap traps - for mouse control.
- e. Fly swatters - for flying insect control.
- f. Insecticide, Pyrethrum (Wasp Freeze, Wasp Stopper) - for wasp and bee control.

NOTE: Same items are stocked at the pest control shop for building occupant self-help.

10. Coordination - DoD, Other Federal, State and Local. The AEC Pest Management Consultant provides technical review of the pest management plan, and gives special attention to any pesticide application that uses restricted use pesticides or uses any pesticide that may significantly contaminate surface or ground water.

H. SALE AND DISTRIBUTION OF PESTICIDES IN AAFES AND COMMISSARY.

1. AAFES. Pesticides sold in the Post Exchange, Building 700, are registered by the EPA for general use; restricted use products are not sold. Pesticide products are grouped into several separate categories: products applied to pets for ectoparasite control, repellents, household, and lawn and garden products. Additional guidelines on pesticides in exchanges can be found in paragraph 10-4h, AR 40-5.

2. Commissary. Pesticides sold in the Commissary, Building 691, are packaged as ready-to-use products such as aerosol cans and baits. Additional guidelines on pesticides in commissaries can be found in paragraph 10-4h, AR 40-5.

3. Veterinary Clinic. Products containing pesticides are sold to Veterinary Clinic customers for their own use. These products are registered by EPA and are labeled for application to animals.

I. Resources (Current and Proposed):

1. Staffing: The following personnel are involved with Pest Management on Fort Leavenworth. The associated training and data sheets are found in Appendix D. All personnel are DOD certified.

- a. One WG-10 IPMC/ Pest Controller in the Pest Control Shop.
- b. One WG-09 Ornamental & Turf/Right of Way Pest Controller.
- c. Golf Course Superintendent.

2. Funding: The Pest Control Shop is funded through the Installation budget; golf is funded through a Non-Appropriated Fund (NAF).

3. Materials: All materials, buildings, equipment, and pesticides are acquired either through government supply channels or local purchase. The inventory of pesticides provided in Appendix B lists the pesticides on hand at Fort Leavenworth. An inventory of pesticide application equipment used is provided in Appendix H. These inventories will be updated as changes occur. As a minimum, an updated inventory will be included in the plan's annual update. Binders containing pesticide specimen labels and Material Safety Data Sheets for pesticides used on Fort Leavenworth are available in the Pest Control Shop, building 227. Copies of MSDSs of pesticides used on Fort Leavenworth are sent to the Fire Department, Post Surgeon, Post Safety and the Industrial Hygiene Office. Procedures detailing the proper use and handling of pesticides, including storage, are detailed in Appendix E.

4. Facilities (mixing and storage): Pesticides are stored in building 227, which contains four separate areas: office, herbicide storage, insecticide storage, and mixing area/bait and trap storage. The west side of the building has a climb-proof chain link fence in which vehicles and large spray equipment is stored. Also in the fenced area is the bulk filling/wash down area. The plan for the pest control shop is found in appendix G. Pesticides are mixed within building 227. The mixing room, herbicide, and insecticide storage rooms have a chemical resistant floor with four-inch curbing. The mixing sink, eyewash, deluge shower, floor drains, and bulk mixing area drains are connected to a carbolator system. Bulk filling water supply is equipped with a backflow prevention device. Appendix E, Pest Management Operations, describes the requirements for storing and handling pesticides. Pesticide Spill Kits are maintained in the pesticide storage/mixing area and in each of the two service vehicles.

5. Records and Reports: Adequate records of all pest management operations performed by engineering personnel, out leased land, golf course, self-help and contractors will be maintained on the installation. Daily pesticide application and surveillance records will be maintained by the DIS Pest Control shop using DD form 1532-1 (Pest Management Maintenance Record). These forms, if properly maintained, provide a permanent historical record of pest management operations for each building, structure or outdoor site on the installation. Monthly Pest Management Reports (DD form 1532) are used to report all pest management operations on the installation. These reports are prepared by the Fort Leavenworth Pest Management Coordinator and are used to calculate Pounds of active ingredient used during the FY for the annual Measures of Merit, and Data Call. This information is then sent to the Army Environmental Command

within 15 days after the end of the report period. The DPW pest control shop maintains a running inventory of stored pesticides at all times. A quarterly inventory is taken with copies sent to the fire department, Post Safety, and Industrial Hygienist.

J. PEST MANAGEMENT REFERENCES.

1. The Federal Insecticide, Fungicide and Rodenticide Act (thru PL 100-460, 100-464 to 100-526, and 100-532).

2. Title 29, Code of Federal Regulations, 2003 (or current) revision, Section 1910, Occupational Safety and Health Standards

3. DODI 4150.07, DoD Pest Management Program, 29 May 2008.

4. AR 200-1, Pest Management, 13 December 2007.

APPENDIX A

INTEGRATED PEST MANAGEMENT OUTLINES

- 1. Broadleaf Weeds**
- 2. Undesirable Vegetation**
- 3. Pests Found in and around Buildings**
- 4. Mice**
- 5. Birds**
- 6. Other Vertebrate Pests**
- 7. Stray Dogs and Cats**
- 8. Ornamental Pests**
- 8. Mosquitoes**
- 9. Fungus on Golf Course Greens**

INTEGRATED PEST MANAGEMENT OUTLINE NO. 1

PEST: Broadleaf Weeds.

SITE: Improved lawns and Golf Course fairways.

1. Purpose: To control broadleaf weeds and crabgrass to prevent damage to improved turf.

2. Surveillance.

a. Conducted by: Certified pest controller.

b. Methods: Visual observation.

c. Frequency: Ongoing through the growing season (May through September).

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Mechanical removal of undesirable broadleaf weeds. This method is appropriate where a limited number of plants are found, but is not recommended when broadleaf weeds are numerous.

(b) Conducted by: Gardeners and grounds maintenance personnel.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: None.

(b) Conducted by:

b. Chemical.

(1) Basis for Treatment: Presence of broadleaf weeds in turf.

(2) Method and Location: Hand or power sprayer. Chemical is applied to unwanted vegetation in accordance with label directions. WeednFeed is applied as a granular application to lawn areas.

(3) Conducted by: Certified pest controller.

(4) **Pesticide.** See table below.

Pesticide	EPA Reg No.	Site
As listed on current FY, approved pesticide use proposal.		

(5) **Control Standard:** Vegetation is killed within 30 days following treatment.

4. Precautions for Sensitive Areas: Avoid direct application to any body of water. Avoid drift that could damage desirable plants; do not spray if wind speed is in excess of five miles per hour.

5. Prohibited Practices: Herbicides will not be used to control weeds at the Child Development Center in areas where children play.

6. Environmental Concerns: None.

7. Remarks: None.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 2

PEST: Undesirable Vegetation.

SITE: Fence lines, building perimeters, storage yards, secured sites, and road shoulders.

1. Purpose: To control unwanted vegetation to minimize damage to property, reduce fire hazards, and enhance security.

2. Surveillance.

a. Conducted by: Certified pest controller.

b. Methods: Visual observation.

c. Frequency: Ongoing though the growing season (May through September).

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Mowing and string trimmers.

(b) Conducted by: Maintenance personnel.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: None.

(b) Conducted by:

b. Chemical.

(1) Basis for Treatment: Presence of vegetation at sites listed above.

(2) Method and Location: Hand or power sprayer. Chemical is applied to unwanted vegetation in accordance with label directions.

(3) Conducted by: Certified pest controllers.

(4) Pesticide. See table below.

Pesticide	EPA Reg No.	Site
As listed on current FY, approved Pesticide Use Proposal		

(5) Control Standard: Vegetation is killed within two weeks following treatment.

4. Precautions for Sensitive Areas: Avoid contact with foliage or green stems of desirable plants and trees. Avoid direct application to any body of water. Avoid drift that could damage desirable plants; do not spray if wind speed is in excess of five miles per hour.

5. Prohibited Practices: Herbicides will not be used to control weeds at the Child Development Center in areas where children play.

6. Environmental Concerns: None.

7. Remarks: None.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 3

PEST: Weed Invasive Species

SPECIES DESCRIBED:

Teasel (*Dipsacus sylvestris* and *D. laciniatus*).
Bush Honeysuckle (*Lonicera tartarica* and other *Lonicera* spp.)
Autumn Olive (*Elaeagnus umbellata*).
Fescue (*Festuca arundinacea*).
Sericea lespedeza (*Lespedeza sericea*).
Johnson Grass (*Sorghum Halepense*).
Crown Vetch (*Coronilla varia*).
Garlic Mustard (*Alliaria petiolata*).
Poison Ivy (*Toxicodendron radicans*).
Locust Trees (*Robina pseudoacacia* and *Gleditsia triacanthos*).

SITE: Disturbed Ground around post and along post roadways.

1. **Purpose:** To control the spread of ionvasives both on and off post and comply with E.O. 13112 and K.S.A. 2-1314..
2. **Surveillance.**
 - a. **Conducted by:** Natural Resource Specialist, maintenance personnel, and certified pest controller.
 - b. **Methods:** Visual observation of plants.
 - c. **Frequency:** Daily during travel around post.
3. **Pest Management Techniques.**
 - a. **Nonchemical.**
 - (1) **Type:** Mechanical and Physical.
 - (a) **Method and Location:** Mechanical or Chemical Control
 - (b) **Conducted by:** Natural Resource Specialist, maintenance personnel (mechanical control only), and certified pest controller.
 - (2) **Type:** Biological.
 - (a) **Method and Location:** None.
 - (b) **Conducted by:**
 - (3) **Type:** Cultural.
 - (a) **Method and Location:** Wash and clean items like mowers and shoes that have been in infested areas. Prescribed fire in the late spring for certain species.

(b) Conducted by: All post occupants can wash and clean items that have come into contact with invasives. Post Fire Department and Natural Resources staff can use prescribed fire.

b. Chemical.

(1) Basis for Treatment: Found during surveillance.

(2) Method and Location: Selectively treating vegetative parts of the plant with Glyphosate, Triclopyr, or 2,4-D in most circumstances.

(3) Conducted by: Certified applicator.

(4) Pesticide: Glyphosate, Triclopyr, or 2,4-D.

(5) Control Standard: Decreased rate of spread or reduced infestation area.

4. Precautions for Sensitive Areas: Be selective so as not to destroy native vegetation.

5. Prohibited Practices: Keep out of reach of non-target animals.

6. Environmental Concerns: None.

7. Remarks: Herbicides are necessary for long term reduction of many invasive infestations.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 4

PEST: Pests Found in and around Buildings.

SITE: Offices, break areas, warehouses, and administrative areas.

1. Purpose: To control household pests (cockroaches, spiders, ants, other crawling insects, flies, bees, and wasps) in areas where food is stored and served or other areas where pests interfere with the mission.

2. Surveillance.

a. Conducted by: Occupants and certified pest controller.

b. Methods: Complaints, visual observation, and sticky traps.

c. Frequency: On-going during normal installation activities. The certified pest controller will evaluate the problem during a service call.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Sticky traps are placed in kitchens and bathrooms when minor infestations of cockroaches occur. Cockroach harborage is eliminated by caulking (or filling with other materials) minor cracks, crevices, holes in walls and floors, or other areas where the structure has provided small openings that could be used by cockroaches. Screens are used to prevent entry by flying insects.

(b) Conducted by: Maintenance personnel.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: Spilled food is cleaned up and stored food items are placed in closed containers. Good housekeeping is used to eliminate trash, disused boxes, old equipment, and other materials that provide harborage for crawling pests. Areas in and around buildings where these pests interfere with the mission are kept clean to minimize infestations.

(b) Conducted by: Building occupants.

b. Chemical.

(1) Basis for Treatment: Infestations of cockroaches, ants, spiders, other crawling pests, flies, gnats, or mosquitoes are found in buildings.

(2) Method and Location: Aerosol application of pesticide directly to flying insects (other than bees and wasps). Crack and crevice or spot treatment of pesticides where crawling pests have been seen. Granular application for ants in outside areas.

(3) Conducted by: Building occupants (self-help) and certified pest controllers.

(4) Pesticides: See table below.

Pesticide	EPA Reg No.	Site
As listed on current FY, approved Pesticide Use Proposal.		

(5) Control Standard: No pests are found 30 days after use.

4. Precautions for Sensitive Areas: None.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks: None.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 5

PEST: Mice.

SITE: All buildings.

1. Purpose: To control mice in warehouses, offices, and other buildings.

2. Surveillance.

a. Conducted by: Building occupants, maintenance personnel, and certified pest controller.

b. Methods: Visual observation for mouse damage and droppings.

c. Frequency: Daily by building occupants. As required by certified pest controller.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Openings to the buildings that are greater than 1/4-inch are eliminated. Particular attention is given to doors that do not close and areas on the outside of the buildings where pipes and other utilities enter the building. Sticky glue boards and snap traps are often used to capture mice when an infestation is found in offices.

(b) Conducted by: The certified pest controller places glue boards and snap traps for minor infestations; extensive infestations are rarely encountered. Maintenance personnel make building modifications to exclude rodents.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: Good sanitation is practiced to reduce food and water for mice. Spilled food is cleaned up and not left exposed overnight and break areas are kept clean at all times. Bags, boxes, pallets, and other potential harborage are removed from areas where rodents could hide. Food is kept in closed containers.

(b) Conducted by: Building occupants.

b. Chemical.

(1) Basis for Treatment: Mice or evidence of mice found during surveillance.

(2) Method and Location: Bait stations located in buildings with rodent infestations.

(3) Conducted by: Certified pest controller.

(4) Pesticide: As Listed on current FY, Approved Pesticide Use Proposal.

(5) Control Standard: No product or building damage from mice. Significant reduction in the number of mouse droppings should be seen around bait stations within 30 days following bait placement.

4. Precautions for Sensitive Areas: None.

5. Prohibited Practices: Keep out of reach of non-target animals. Place baits in tamper-proof containers.

6. Environmental Concerns: None.

7. Remarks: Pesticides are considered the last option in controlling mice. As long as entry points into buildings exist, then trapping or baiting may be the only alternative for control.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 6

PEST: Birds.

SITE: To control birds in and around mission essential buildings and structures.

1. Purpose: To control birds where their presence interferes with the mission. This includes swallows, pigeons, and geese.

2. Surveillance.

- a. Conducted by:** Certified pest controller.
- b. Methods:** Visual observation.
- c. Frequency:** Weekly, usually in the spring through fall.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Modification of buildings to exclude birds. This includes netting and bristle wire. Batting strips and monofilament line have been used to render soffit vents, eaves, and other potential nesting sites less attractive to birds, and bird houses have been constructed to encourage nesting in designated areas.

(b) Conducted by: Maintenance personnel.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: Keep building windows and doors closed when not in use. Discourage bird feeding of pigeons.

(b) Conducted by: Facility occupants.

b. Chemical.

(1) Basis for Treatment: Geese disturbing lawns and making mess on sidewalks.

(2) Method and Location: Goose repellent applied in high visibility areas, around walkways, and recreational areas.

(3) Conducted by: Certified pest controller

(4) Pesticides: As listed on current FY, Approved Pesticide Use Proposal.

(5) Control Standard: Geese relocated to more desirable location.

4. **Precautions for Sensitive Areas:** None.
5. **Prohibited Practices:** None.
6. **Environmental Concerns:** None.
7. **Remarks:** To discourage nuisance birds nest-building on structures, nests containing no eggs or nestlings may be destroyed without a permit, but only after inspection by the Pest Management Coordinator or a designated certified pest controller.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 7

PEST: Other Vertebrate Pests.

SITE: Outside locations.

I. Purpose: To control squirrels, ground squirrels, and various other wild animals, such as skunks, raccoons, opossums, ground hogs, muskrats, moles, bats, and snakes may occasionally interfere with post operations; fox and beavers may become nuisances at the Fort Leavenworth Golf Course.

2. Surveillance.

- a. Conducted by:** Certified pest controller.
- b. Methods:** Visual observation for the presence of unwanted animals mentioned above.
- c. Frequency:** Weekly by the certified pest controller.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Live-trapping and relocation may be attempted where possible and safe. Licensed recreational trappers may be used to control nuisance animals when designated by the pest control shop. Stray cats and stray dogs and stray horses are the responsibility of the military police.

(b) Conducted by:

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: None.

(b) Conducted by:

b. Chemical.

(1) Basis for Treatment: Signs of tunneling.

(2) Method and Location: Baiting mole runs.

(3) Conducted by: Building occupants, Grounds personnel, or Pest control personnel.

(5) Pesticides: As listed on current FY, Approved Pesticide Use Proposal.

(6) Control Standard: No signs of activity after 7 days.

- 4. Precautions for Sensitive Areas:** Do not use in areas with domestic animals.
- 5. Prohibited Practices:** None.
- 6. Environmental Concerns:** None.
- 7. Remarks:** None.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 8

PEST: Stray Pets, Cats, and Dogs

SITE: Outside locations.

- 1. Purpose:** To control stray and feral pets that may occasionally interfere with post operations.
- 2. Surveillance.**
 - a. Conducted by:** Building occupants, local pet facility
 - b. Methods:** Visual observation for the presence of unwanted animals mentioned above.
 - c. Frequency:** As needed.
- 3. Pest Management Techniques.**
 - a. Type:** Nonchemical.
 - (1) Type: Mechanical and Physical.**
 - (a) Method and Location:** Live catch traps, Nets, Catch Poles. Post wide.
 - (b) Conducted by:** Stray cats and stray dogs are the responsibility of the Military Police.
 - b. Type:** Biological.
 - (a) Method and Location:** None.
 - (b) Conducted by:** None.
 - (3) Type:** Cultural.
 - (a) Method and Location:** Educate building occupants about leaving food or other objects out that would attract animals and the potential health impact from stray animals.
 - (b) Conducted by:** Local pet facility, Building Managers, Military Police
 - b. Type:** Chemical.
 - (1) Basis for Treatment:** None
 - (2) Method and Location:** None
 - (3) Conducted by:** None.
 - (7) Pesticides:** None.
 - (5) Control Standard:** None
 - 4. Precautions for Sensitive Areas:** Live Traps, Nets, Catch Poles.

5. Prohibited Practices: No poison shall be used for stray or feral animal control.

6. Environmental Concerns: None.

7. Remarks: Control method that best reduces stress and possibility of injury should be used first. Once animals are removed and traps empty for several days with no catches, any entry points under buildings are to be properly sealed. A work order may be entered for exclusion work to be done.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 9

PEST: Ornamental Pests.

SITE: Wherever desirable plantings are found on the installation.

1. Purpose: To control scale insects, aphids, spruce bark beetles, and other pests of trees and ornamental plants. Control will only be performed when large numbers of pests are present and significant damage will occur. Chemical control operations shall be based solely on need, and all efforts are made to avoid environmental problems caused by the overuse of pesticides. Spider mites and clover mites are a persistent nuisance pest in plantings around family quarters and troop barracks in early summer, and are controlled on an as-needed basis.

2. Surveillance.

- a. **Conducted by:** Certified pest controller.
- b. **Methods:** Visual observations.
- c. **Frequency:** On-going throughout the year.

3. Pest Management Techniques.

a. Nonchemical.

(1) **Type: Mechanical and Physical.**

(a) **Method and Location:** None.

(b) **Conducted by:**

(2) **Type: Biological.**

(a) **Method and Location:** None.

(b) **Conducted by:**

(3) **Type: Cultural.**

(a) **Method and Location:** None.

(b) **Conducted by:**

b. Chemical.

(1) **Basis for Treatment:** Pests are found in numbers necessary to produce damage.

(2) **Method and Location:** Hand or power sprayer.

(3) **Conducted by:** Certified pest controller.

(4) **Pesticides:** See table below.

Pesticide	EPA Reg No.	Site
As listed on current FY, Approved Pesticide Use Proposal.		

- . (5) **Control Standard:** Pests are killed within one week following treatment.
- 4. **Precautions for Sensitive Areas:** None.
- 5. **Prohibited Practices:** None.
- 6. **Environmental Concerns:** None.
- 7. **Remarks:** None.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 10

PEST: Mosquitoes.

SITE: Standing water for mosquito larvae and outdoor areas for mosquito adults.

1. Purpose: To prevent mosquitoes from transmitting diseases (e.g., West Nile Virus) or interfering with outdoor missions or recreational activities.

2. Surveillance.

a. Conducted by: Certified pest controller for larvae and Preventive Medicine personnel for adult mosquitoes.

b. Methods: Visual observation for larvae. CO2 traps and complaints for adult mosquitoes.

c. Frequency: During the mosquito season (May-September).

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: Drain or fill standing water. Place screens on windows and keep windows and doors closed when not in use.

(b) Conducted by: Maintenance personnel eliminate standing water. Building occupants maintain screens and keep doors and windows closed.

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: None.

(b) Conducted by:

b. Chemical.

(1) Basis for Treatment: Presence of larvae in standing water. Presence of adult mosquitoes in outdoor areas.

(2) Method and Location: Hand or power sprayer for larvicides. ULV fogging for adult mosquitoes.

(3) Conducted by: Certified pest controller.

(3) Pesticides: As listed on current FY, Approved Pesticide Use Proposal.

(5) Control Standard: Mosquitoes are killed within 30 days following larval treatment and one day following ULV fogging.

4. Precautions for Sensitive Areas: Notification of installation personnel as to day and time of ULV fogging.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks.

INTEGRATED PEST MANAGEMENT OUTLINE NO. 11

PEST: Fungi on Golf Course Greens.

SITE: Golf Course greens.

1. Purpose: To control fungi that damage grass on the greens.

2. Surveillance.

- a. **Conducted by:** Certified pest controller.
- b. **Methods:** Visual observation.
- c. **Frequency:** Weekly, usually in the late winter and spring.

3. Pest Management Techniques.

a. Nonchemical.

(1) Type: Mechanical and Physical.

(a) Method and Location: None.

(b) Conducted by:

(2) Type: Biological.

(a) Method and Location: None.

(b) Conducted by:

(3) Type: Cultural.

(a) Method and Location: None.

(b) Conducted by:

b. Chemical.

(1) Basis for Treatment: Fungus found on the greens.

(2) Method and Location: Hand or power sprayer.

(3) Conducted by: Certified pest controller.

(4) Pesticides: See table below.

Pesticide	EPA Reg No.	Site
As listed on current FY, Approved Pesticide Use Proposal.		

(5) Control Standard: Fungus is killed within 30 days following treatment.

4. Precautions for Sensitive Areas: None.

5. Prohibited Practices: None.

6. Environmental Concerns: None.

7. Remarks: None.

APPENDIX B

PESTICIDE USE PROPOSAL (PUP) FOR FT LEAVENWORTH

FY16 PESTICIDE USE PROPOSAL

Installation Name: Fort Leavenworth, KS		EPA Registration No.		Active Ingredients
IPM/C Name/Email: John Yunker / jphn1.yunker.civ@mail.mil		EPA Registration No.		Active Ingredients
IPM/C Reviewer: William B. Miller, Ph.D. 210-485-899, william_b.miller@civ@mail.mil		EPA Registration No.		Active Ingredients
Full Pesticide Trade Name	EPA Registration No.			
Demand CS	100-1066			Lambda-Cyhalothrin
Fusada	100-1084			Fluzifop
Demon Max	100-1218			Cypermethrin
Tree-age	100-1306-74578			Emamectin Benzoate
Rebound	100-1315			Chlorfalonil
Dacool	100-1364			Chlorfalonil
Advoion Cockroach Gel/Bait	100-1484			Indoxacarb
Advoion Cockroach Bait Arena	100-1488			Indoxacarb
Advoion Ant Gel	100-1498			Indoxacarb
Advoion Insecticide	100-1501			Imidacloprid
Premio 5 PS	100-475			Promethin, Sodium chlorate, Sulfazine, Sodium metaborate
Eliminator	10086-13-88962			Diquat dibromide
Aqua Brom	10086-82-83982			Bromacil
Barden	1021-1767			Prenthlen, N-Octyl bicycloheximide dicarbamate
3 Way	10404-43			2,4-D, MCP-P, Dicamba
Eliminator-D	10404-44			2,4-D, MCP-P, Dicamba
Dimension	10404-46			2,4-D, MCP-P, Dicamba
Taprod	12485-101			Dinopry
Cortrac Pacis	12485-76			Brometran
Cortrac Box	12485-79			Bromadiolone
Dirac Box	12485-80			Bromadiolone
Contact Plus	12485-86			Diphenone
Fast Box	12485-89			Bromadiolone
Fast Trac All Weather Box	12485-95			Brodifacoum
Contact van Lumback	12485-133			Bromethalin
Shredder 2,4-D LV4	1381-102			Bromadiolone
Mon Bait	1475-74			2,4-D
Moh Flakes	1475-75			Naphthalene
Amne 400	2217-2			2,4-D
Trimec Lawn Weed Killer	2217-538-3985			2,4-D, MCP-P, Dicamba
Bermaxic ALF	2217-996			Bentazide
Emberx	2217-769			Melliodate
Aimovic	2217-776			Dialugic
Speed Zone	2217-833			2,4-D, Dicamba, MCP-P, Carfentrazone-ethyl
Trimec Crabgrass plus Lawn Weed Killer Conc	2217-896			2,4-D, Quinclac, Dicamba
Zyan	2217-837			Dronofluran
Weedstop AM40	228-145			2,4-D
Eliminate	228-313-10404			MCP-A, Dicamba, Triclopyr
Eliminate-Lo	228-408-10404			2,4-D, MCP-P, Dicamba
Momentum	228-447-10404			2,4-D, Triclopyr, Fluoroxyp methyl
0.2% Mallet Plus	228-600-32682			Indoxacarb
Regimer RGR	228-835-10404			Trimecapic-ethyl
Phantom	241-392			Hydroperone
Control PS	2724-351			Chlorfalonil
Pncor IGR	2724-352			Hydroperone
Axa-D	2724-376			s-Metoprene
Control PS	2724-469			s-Metoprene
Genito Aerial	2724-484			Hydroperone
				Hydroperone

Pecor 2000 Plus	2724-490	Phenothrin, N-Octyl bicycloheptene dicarboximide, S-Methoprene, Piperonyl butoxide, Permethrin		
Dragnet SFR	279-3062		Permethrin	
Cynoff	279-3070		Cypermethrin	
Talstar PL Granular	279-3168		Bifenthrin	
Talstar P	279-3206		Bifenthrin	
Damias	279-3295		Sulfentrazone	
Crabgrass Control	32802-86		Proflamnia	
Game-up	34704-1005		Trinexapac-ethyl	
Hyvar XL	352-346		Bromsil	
Krovax I DF	352-505		Bromsil, Dauron	
Oust	352-601		Sulfometuron methyl	
Dupont Advion Cockroach Gel Bait	352-652		Indoxacarb	
Perspective	352-846		Chloraniluron, Aminocyclopyrachlor	
Sterfab	397-13	Phenothrin, Alkyl dimethyl benzyl ammonium chloride, Didecyl dimethyl ammonium chloride, Isopropanol		
Sevin Lawn Insect Granules	432-1212-71004		Carbaryl	
Madroce Roach Station	432-1251		Hydramethylnon	
Madroce Roach Gel	432-1254		Hydramethylnon	
Maxforce Insect Granular	432-1255		Hydramethylnon	
Maxforce Granular Fly Bait	432-1375		(Z)-9-Tricosene, Imidacloprid	
Maxforce Fly Spot Bait	432-1455		(Z)-9-Tricosene, Imidacloprid	
Madroce Ant	432-1256		Fipronil	
Maxforce FC	432-1259		Fipronil	
Maxforce Ant Gel	432-1264		Fipronil	
Tempo WP	432-1304		Beta-Cyfluthrin	
Merit SC	432-1328		Imidacloprid	
Premise Pre-Construction Insecticide	432-1331		Imidacloprid	
Premise 75	432-1332		Imidacloprid	
I Maxx Pro	432-1332-73748		Imidacloprid	
Award w/ Merit 0.2	432-1349-57131		Imidacloprid	
Tempo SC Ultra	432-1363		Beta-Cyfluthrin	
Premise Foam	432-1391		Imidacloprid	
Tempo SC	432-1483		Imidacloprid	
Reserve	432-1486		Trifluorazole	
Suspend SC	432-763		Deltamethrin	
Delta Dust	432-772		Deltamethrin	
Deltagard	432-836		Deltamethrin	
Signature Aluminum Tris	432-890		Aluminum Tris	
Drione Dust	432-892		Pyrethrins, Piperonyl Butoxide	
F-6 Flying Insects	478-93-5741		Tetramethrin, D-Phenothrin	
Off Deep Woods Insect Repellent	4822-167		DEET	
PT 565 Plus XLO2	499-290		Pyrethrin, MGK 264, Piperonyl butoxide	
Avart	499-294		Abamectin	
Cy-Kick	499-304		Cyfluthrin	
PT 565 Plus XLO2	499-310		Pyrethrins, Piperonyl Butoxide, d-trans Allethrin, N-octyl	
Wasp Freeze	499-362		d-trans Allethrin, D-Phenothrin	
Advance	499-370		Abamectin	
Tri Die	499-385		Piperonyl butoxide, Pyrethrins, Silicon Dioxide	
1300 Orthane TR	499-421		Acephate	
Tri Die Bulk	499-429		Piperonyl butoxide, Pyrethrins, Silicon Dioxide	
P.I. Contact Insecticide	499-444		Pyrethrins	
ULD BP 300	499-450		Pyrethrin, MGK 264, Piperonyl butoxide	
ULD BP 100	499-452		Pyrethrin, MGK 264, Piperonyl butoxide	
Cy Kick	499-470		Cyfluthrin	
Advance Ant Gel 388B	499-492		Sodium Tetraborate Decahydrate	
Advance Dual Choice 380A	499-496		Abamectin	

Proflin	499-487		DJ Insectene	
Advance Termite Bait Cartridge II	499-500		Dibutencuron	
Advance Reach Gel	499-507		Dinofenuron	
Admiral Earth Duster	499-509		Silicon dioxide	
Monor earth Granular	499-515		Boric Acid	
Alpine Foam	499-526		Dinotoluron	
Alpine Duster Insecticide	499-527		Dinofenuron, Sulfone Dioxide	
Termitor Foam	499-525		Fipronil	
Insect Repellent	50404 & 56188		DEET	
Aquallaster	524-343		Glyphosate	
Prosectur	524-535-10404		Glyphosate	
Roundup QuikPro	524-535		Glyphosate	
Roundup Power Max	524-549		Glyphosate	
Roundup Pro Max	524-570		Glyphosate	
Blen VT	53983-118		Bifenox	
Blatt VGR	53983-60		Pyriproxyfen	
Orthene PCO pellets	5481-8973		Acaphos	
Copper Sulfate	58576-1		Copper sulfate	
Insect Repellent	59007-1		DEET	
Snake-A-Way	59630-1		Naphthalene, Sulfur	
Bait-A-Way	59630-2		Naphthalene	
Sporewell	60093-28-10404		Proflinone	
Propagary	60083-27		Propoxazone	
Echo 720	60083-7		Chlorantranil	
Mancure	60083-1-10404		Chlorantranil	
Maquito Dunks	6218-47		BT	
Soap Shot	62718-175		Trifluralin, Boobaben	
Paritiner	62718-178		Triflupyr	
Tordan RTU	62718-931		Picloram 2,4-D	
Roceto	62718-324		Glyphosate	
Drensan	62718-445		Dimicryl	
Turton Ester Ultra	62718-586-7401		Hydramethylnon	
Combat	64240-2		Triproxy	
Combat	64240-33		Fipronil	
Niban	64408-2		Orthoboric Acid	
Exciter	655-788		Pyrethrin, Permethrin/Butoxide	
Tebuconazole	66222-117		Tabacconazole	
Glyphosate Plus	66222-176		Glyphosate	
T/1 2.5G	66222-224		Trifluralin, Boobaben	
Propoxazone 14.3	66222-411		Propoxazone	
Propoxazone	66222-417-73220		Propoxazone	
Prodantra 65 WDG	66222-489		Prodantra	
Quail Pro	66222-895-83220		Prodantra	
Fredrod Pro	70308-266		Bifenthrin	
Hawk-I	70506-267		imidacloprid	
Knight-Hawk	70506-268		Permethrin	
Fast Strike Rodenticide	7173-268		D-Methidathion	
Chlorantranil	72161-24-73220		Chlorantranil	
Kaput	72500-2		Wiperin	
Nilva	73079-2		Orthoboric Acid	
Nilva Perimeter Bait	73079-4		Boric Acid	
Twist Gird CocoonKash Gel	73079-10		imidacloprid	
Twosona	73676-17-10404		prodantra, thiofluanth-methyl	
Termitor 80WG	7988-309		Fipronil	
Termitor 8G	7989-210		Fipronil	

APPENDIX C

POINTS OF CONTACT AT FORT LEAVENWORTH

Fort Leavenworth, Kansas	DSN: 552-XXXX Commercial: (913) 684-XXXX
Fire	911
Chief, Fire Protection Division	Ext: 4168
Emergency Ambulance	911
Military Police Emergency	911
M.P. Desk Sergeant	Ext: 2111/3456
HAZMAT/ Spill Response Team	911 / Ext: 4172
Director of Logistics/Public Works Building 85	Mr. Harold W. Waugh Ext: 5646
Chief, Operations Maintenance Division Building 238	Mr. Jerry Clark Ext: 2116
Pest Management Coordinator Entomology Services, Building 227	Mr. John Yunker Ext: 4151
Environmental Officer Building 80	Mr. Dale Cleland Ext: 8977
Chief, Safety Division Building 198	Mr. David Green Ext: 1743/3274
Occupational Health Nurse Building 343	Ms. Leonore Hutchison Ext: 6546
OIC Environmental Health Building 343	Cpt. Ehren Linderman Ext: 6532
Industrial Hygienist Building 695-E3	Ms. Brenda Brewer Ext: 6533
Veterinary Food Inspection Commissary VET Office	NCOIC Ext: 6519 Ext: 3103
Director, IMCOM-WEST Rock Island, IL	Ms. Margie Moffitt (309) 782-5040
Pest Management Consultant U.S. Army Environmental Command	Dr. Bill Miller (210) 466-1767

Leavenworth County Extension Agent	(913) 250-2300
Kansas Department of Wildlife and Parks (Pratt, Ks.)	(316) 672-5911
Leavenworth area Conservation Officer	(913) 845-3392
Leavenworth County Public Health Dept.	(913) 250-2000
Poison Control Center	(913) 588-7378 (Local)
Overland Park, Kansas	1-800-222-1222 (National)
National Response Center	
(To report toxic chemical and oil spills)	1-800-424-8802
National Pesticide Telecommunications Network	1-800-858-7378

APPENDIX D

PEST CONTROL CERTIFICATES OF TRAINING/COMPETENCY

APPENDIX E

PEST MANAGEMENT OPERATIONS

Appendix F

Child Developmental Center Guidelines and Standard Operating Procedure (SOP)

Pest Control in Child Development Center

As per AR 200-5 pest management operations in Child Development Centers (CDCs) shall be regulated per AR 608-10. According to AR 608-10, all infestations of insects and rodents in CDCs will be controlled according to the installation's pest management plan. The use of non-chemical means for pest control is strongly encouraged in areas accessible to children. All pest control operations will be inspected and approved by the installation health consultant or safety officer and care must be given to avoid treatment when children are in the facility. Herbicides also may not be used in children's outdoor play areas.

Fort Leavenworth Pest Control Guidelines for CDC:

1. Monitoring, inspection, exclusion, and sanitation shall be used as a first line of action for pests.
2. Insect baits shall be placed on the interior of the CDC in areas inaccessible to children.
3. Chemical pesticides in the CDC shall be used as a last resort. If pesticides must be used, application shall occur only when children are not present in the facility.
4. The use of chemical herbicides for weed control is prohibited.

Monitoring, Inspection, Exclusion, and Sanitation:

Monitoring, inspection, exclusion, and sanitation shall be used as the primary line of action for pest control in the CDC. This may include daily inspection and proper sanitation in food preparation and storage areas and proper sanitation in restrooms, changing areas, and laundry. Regular inspection and maintenance of the CDC facility structure is also a vital part of preventing pest infestations.

The use of monitoring traps, such as glue traps, shall be used in the event that an infestation is suspected. These traps shall be placed in areas inaccessible to children whenever possible.

Use of Baits (Insecticide or Rodent):

Baits, such as those used for the treatment and prevention of infestations of ants and/or roaches, may be used in the CDC provided the bait is placed in areas inaccessible to children.

At no time shall rodent baits be used in the CDC as these baits are toxic to mammals and pose a serious health risk should they accidentally be ingested by a child. The use of snap traps for rodents in the CDC is also prohibited as these traps may cause harm to a child. In lieu of these restrictions, glue traps shall be used for treatment of rodents in the CDC.

These traps shall be inspected on a daily basis and traps which are full shall be disposed of in a proper manner so as to prevent the spread of disease.

Use of Pesticides:

The use of chemical pesticides shall only be done at the CDC as a last resort. Pesticide applications shall occur only when children are not present at the facility.

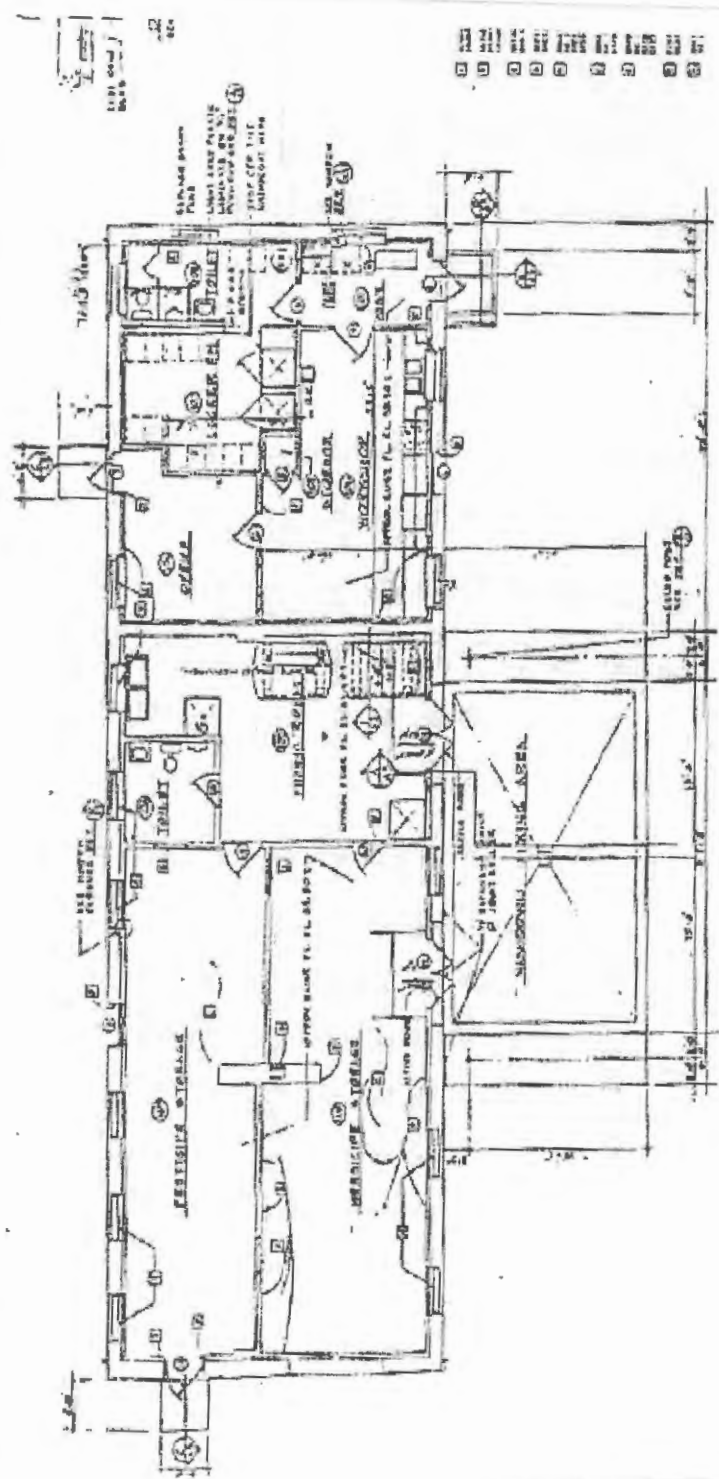
Use of Herbicides:

The use of chemical herbicides in the children's play areas at the CDC is prohibited. Only non-chemical methods of weed control shall be used.

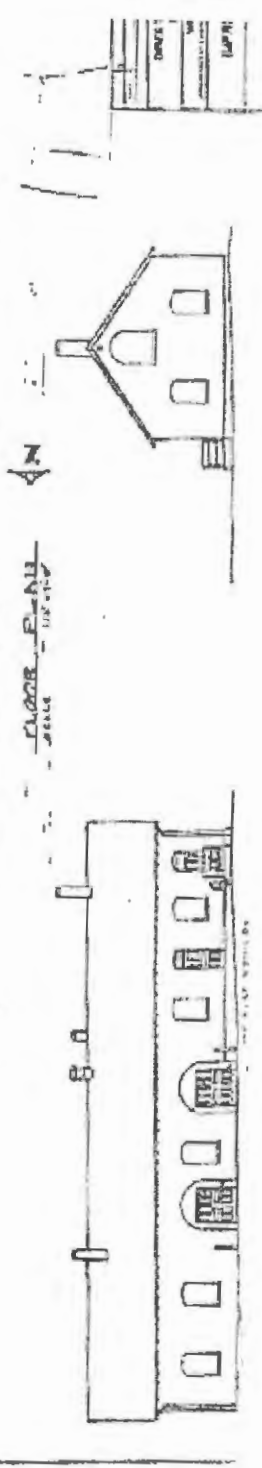
Appendix G

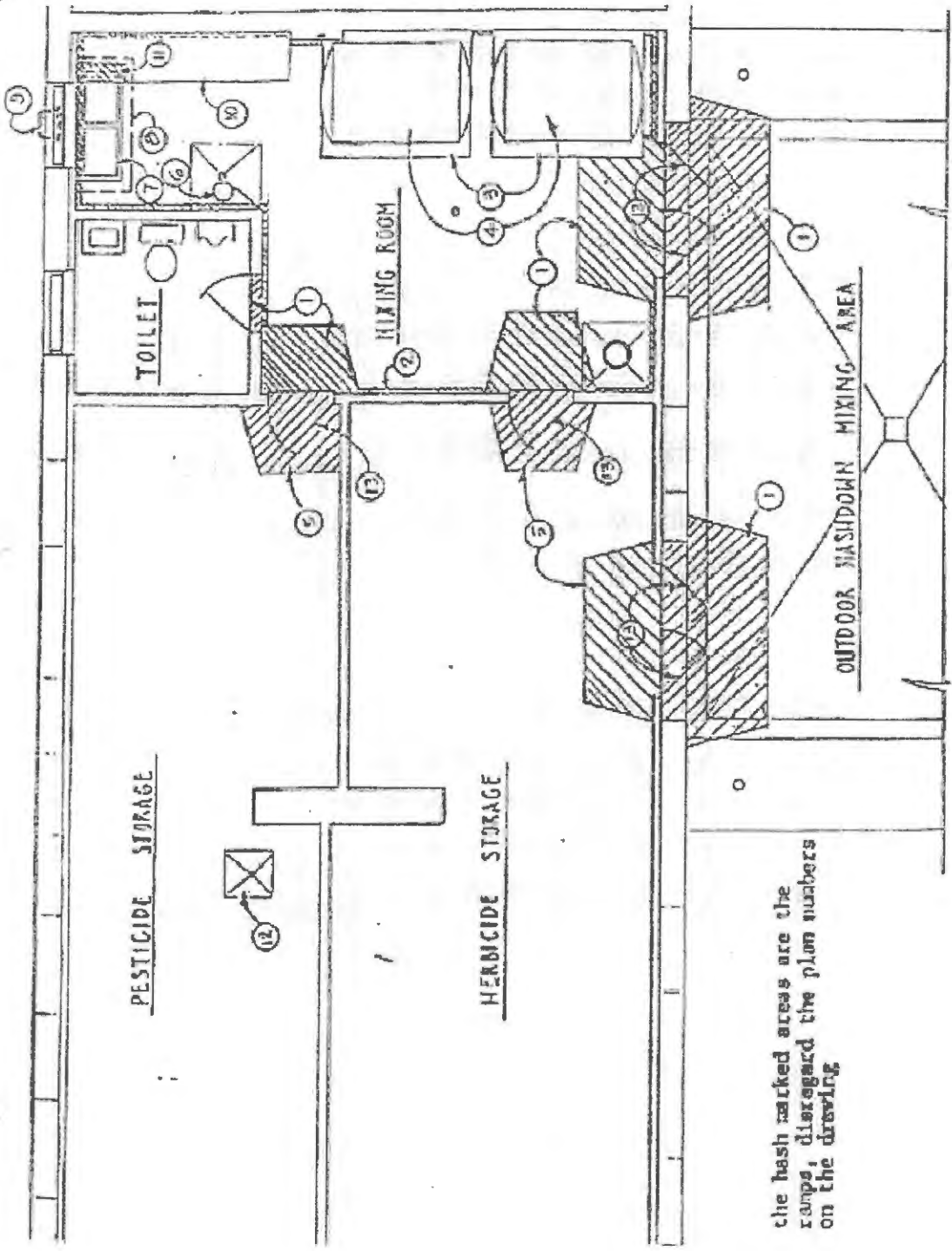
Floor Plans

Floor Plans include Entomology Shop and Golf Course Maintenance

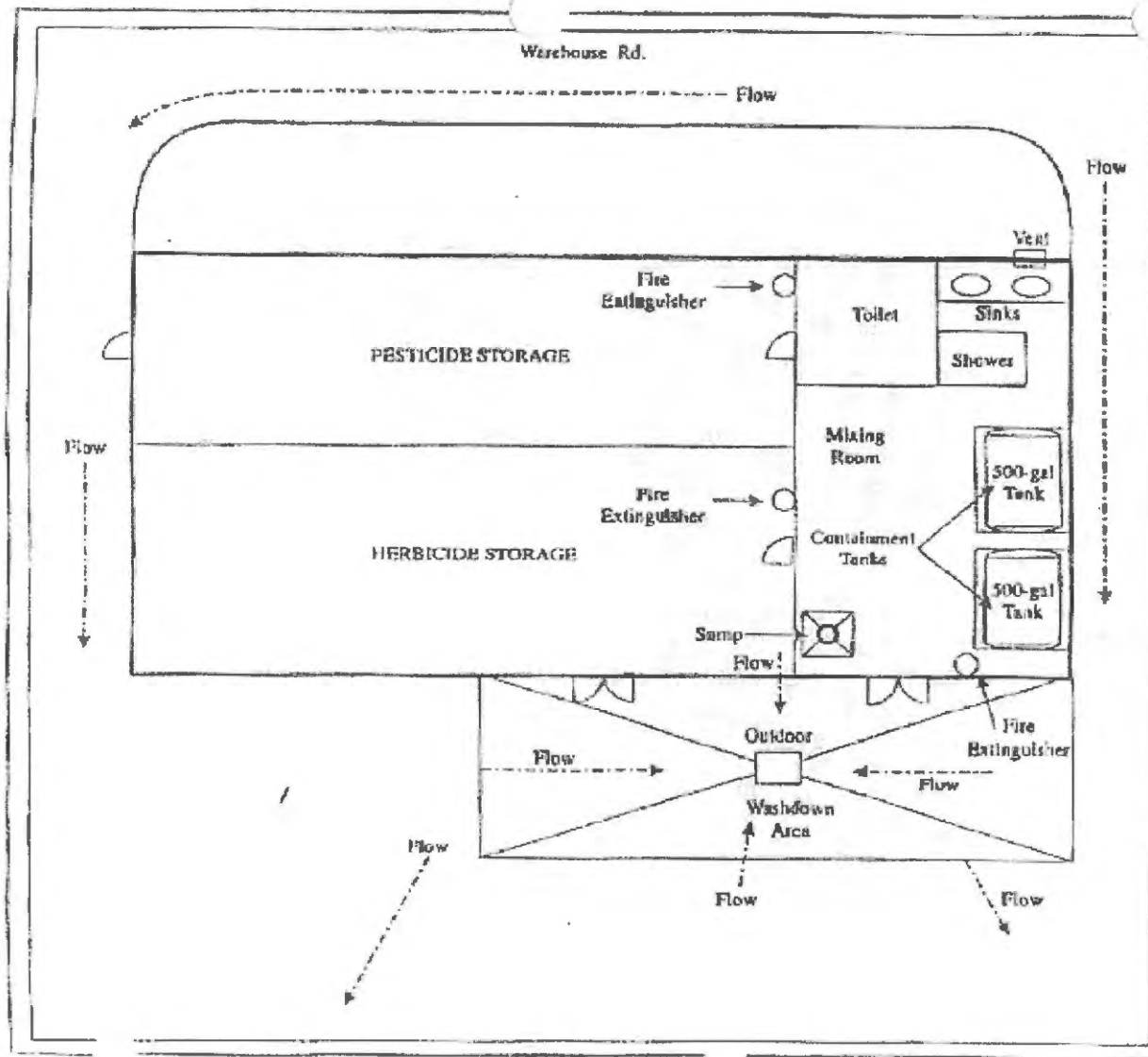


1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24





the hash marked areas are the ramps, disregard the plum numbers on the drawing



SPCC



Combined A
Part Letter

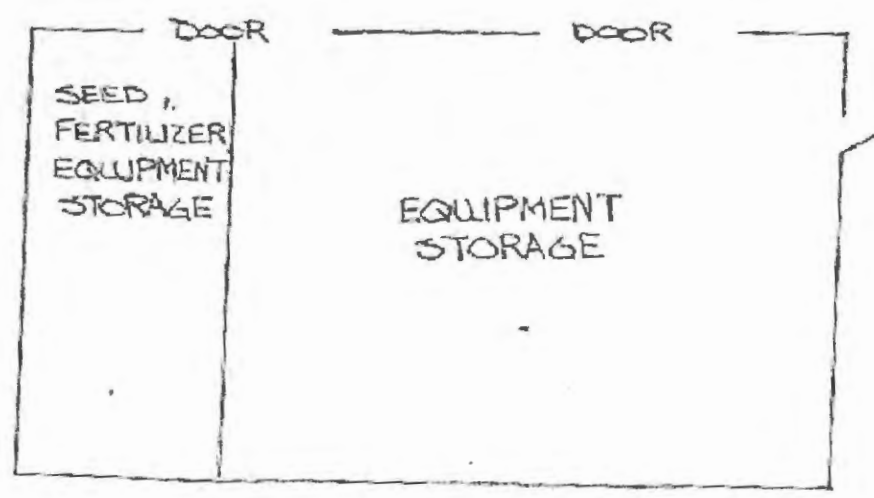
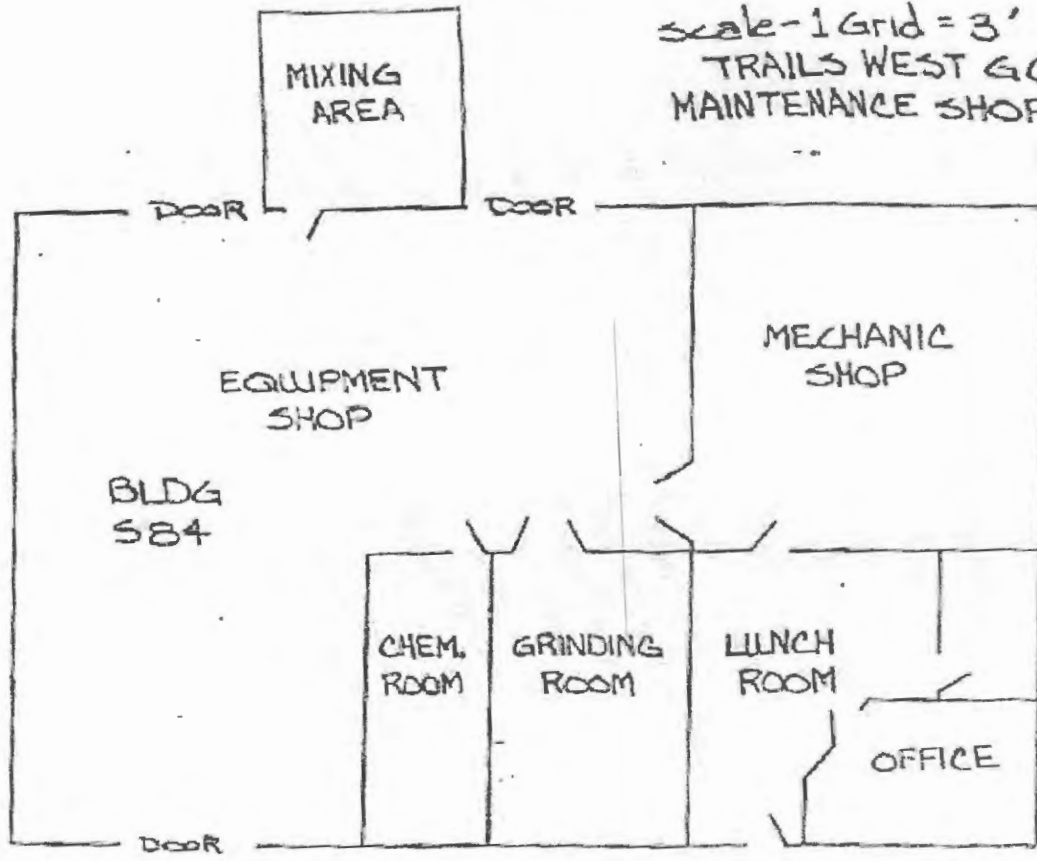


NOT TO

Figure D1
Entomology
Buildr

Golf Course Storage

scale - 1 Grid = 3'
TRAILS WEST GC
MAINTENANCE SHOP



Appendix H

Equipment

Equipment use varies dependent on application needed. Main equipment is as follows:

<u>ID#</u>	<u>Type</u>	<u>Make/Model</u>	<u>Year</u>	<u>Size</u>
G-044	Truck	Chevy 2500	2012	
G-374	Truck	Ford F-350	2010	
F-310	Sprayer			100 gal
FE-311	Sprayer	Kings		50 gal
FE-312	Sprayer	Schaben Industries		200 gal
FE-142	Fogger	Curtis Dyna Fog/4 Maxi-Pro		15 gal
FE-147	Sprayer	Spraying Devices Inc		300 gal
G-56	Mower	Grasshopper		
FE-321	Tractor	John Deere / 4052R		
FE-150	Tractor	John Deere / 750		

Appendix I

Euthanasia of Wildlife

Subject: Fort Leavenworth Wildlife Euthanasia and Disposal Standard Operating Procedures (SOP)

1. Purpose. To emphasize the importance of and publish guidance on the ethical euthanasia and carcass disposal of wildlife.

2. References.

- a. AR 40-905 4-1(2). Measures for preventing injury and disease.
- b. AVMA Guidelines for the Euthanasia of Animals: 2013 Edition
<https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>
- c. ICWDM Euthanasia by Carbon Dioxide
<http://icwdm.org/wildlife/euthanasia/Carbondioxide.aspx>

3. Scope. Certified Entomologists, DPW Engineering equipment operator leader, and DPW Roads and Grounds Supervisor who traps wildlife on post and must euthanize and dispose of animals, will learn and be able to apply the procedures in this SOP.

4. General. Many animals cause damage and financial loss to the installation. These animals must be removed and dispatched properly when applicable to ensure the health and wellbeing of the buildings and individuals on post.

5. Procedure. Euthanasia is often referred to as a good death and is defined as a way that minimizes or eliminates pain and distress and offers a humane termination of an animal's life. (Ref. b. AVMA section I3)

1. Euthanasia by Gunshot (pellet rifle only)

Ensure the MP office (913) 684-3537 in advance of this process!

- a. After an animal is caught it will be taken to a secure location away from regular foot traffic. The land fill area above Kinder Range is to be used for this purpose. The gate will be locked after entering the area to keep out unwanted spectators.
- b. The shot will be placed in the head slightly above the eyes in the center of the skull to euthanize the animal as humanely as possible.
- c. Once death is confirmed the carcass should be properly disposed of to do this the following methods are authorized:
 - a. Disposing of the carcass in an incinerator when available.
 - b. Proper burial involves burying the carcass at least 2 feet below the surface to keep other animals from possible disease transmission. At this time Lye can be applied (if available) to the animal prior to filling in the hole.

If an animal is thought to be sick or diseased the post vet should be contacted to identify the need for further testing prior to dispatching the animal.

Fort Leavenworth Veterinarian 684-6510

Subject: Fort Leavenworth Wildlife Euthanasia and Disposal Standard Operating Procedures (SOP)

2. Euthanasia by physical means
 - c. When authorized the use of a firearm or air rifle can be used as a human way of euthanasia.
 - d. Proper use of a firearm is paramount and only qualified individuals should be allowed to perform euthanasia.
 - e. The use of a firearm is to cause destruction of the brain tissue to suppress neurological functions.
 - f. Proper shot placement is key to a quick death and should be placed at a slight downward angle through the forehead.
 - g. Death must be confirmed.

3. To confirm death:

- a. The animal should be flaccid and limp with no muscle tone present
- b. If a stethoscope is available the heart should have stopped beating.
- c. Pupils should not respond when touched
- d. Respiration should stop. Observe the animal for at least 45 seconds to ensure there is no shallow breathing.

6. Conibear style traps are also an allowed method used during trapping. The trap is to be set so that it is unlikely for non-target animals to gain entry into the trap. Recommended sets are tree sets in which a box is mounted on a tree with bait at the bottom. The animal enters from the top and trips the trap resulting in a quick and painless death due to cervical dislocation.

7. PROPONENT. The proponent of this SOP is the Directorate of Public Works, Environmental Division at 684-8977

Appendix J

Annual Plan Update Form (PUF)

FY 16 Plan Update Form (PUF) Submission Date 29 Oct 2015

1. INSTALLATION: The following information describes your installation

Installation Name	State/Country	IMCOM Region
Fort Leavenworth	KS	Southwest

List information for all installations when more than one installation is included in the IPMP. If more room is needed, submit additional copies of this form as necessary.

2. INTEGRATED PEST MANAGEMENT PLAN (IPMP)

a. IPMP Status:

Date the Integrated Pest Management Plan (IPMP) was approved (signed) by the Garrison Commander/Manager (Para 5-4a, AR 200-1).	Nov 2011
Date Plan was reviewed and approved by an AEC DoD-certified Pest Management Consultant (PMC).	Nov 2011
IPMP is required to be updated 5 years from date of signature (approval) by the Garrison Commander/Manager.	Nov 2016

b. Plan maintenance: Attach a copy of any changes to the IPMP that have not been submitted to or coordinated with AEC IPM Consultant. Major plan revisions require re-submittal of the entire updated plan.

c. Pesticide Use Proposal (PUP): Attach a copy of the PUP for the upcoming FY.

3. STAFFING: This section identifies the Installation Pest Management Coordinator (IPMC) and Pest Management Quality Assurance Evaluators (PM QAEs) as well as all Certified Applicators (DoD-Certified or Contract State-Certified).

Title	Name	E-Mail Address	Telephone Number	Accreditation Certificate Number
IPMC	Kyle Fratzel	kyle.a.fratzel.civ@mail.mil	(913)684-7741	A-027-12-1214
PM QAE				
PM QAE				
PM QAE				

Please provide the following information about the pesticide applicators (either in-house or contracted.)

NOTE: Also include any U.S. Army employees who are in training for certification.

Name	Organization	DoD/State Cert. Number	Category/Subcategory Number(s) or Letter(s)
Kyle Fratzel	DPW	DoD A-027-12-1214	2,3,5,6,7,8
Richard Philpot	DPW	DoD A-088-09-0315	2,3,5,6,7,8
Mike Boaz	DFMWR	Sate KS 5755	3A, 3B
Robert Bolin	CAC	DoD A-098-11-0514	2,3,5,6,7,8
Nicholas Garcia	CAC	DoD A-229-15	2,3,5,6,7,8
Harold Myers	Advance Pest Control	19161	7A, 7E
Joshua Pierce	ChemTech	State KS 13802	7A, 7E

Kevin Jensen	PLC Lrwn	State KS 6376	3A, 3B

4. **ON-SITE HELP?** Please identify what on-site assistance AEC IPM Consultants can provide your installation. Be specific, describe the purposes and objectives for the on-site visit to include issues/problems require resolution, impacts to the mission, health concerns, environmental issues, etc. and desired outcome from the visit.

5. **Pesticide General Permitting-National Pollutant Discharge Elimination System (NPDES) permitting:**

a. **What is the name and contact information of your installation's NPDES Permit Holder?**

Name	E-mail	Telephone Number

b. **Do you require or anticipate requiring a discharge permit for your installation's pest management program?**

YES	NO	<input checked="" type="checkbox"/>
-----	----	-------------------------------------

6. **Is an Aerial Application of Pesticides planned or anticipated during the upcoming FY? If yes, please explain.**

No

Appendix K

Maps

Appendix L

Measures of Merit

B9. Fort Leavenworth Invasive Species Management Plan

10 May 2018



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Introduction

Invasive species include any species that are not native to a given ecosystem, and whose introduction causes or is likely to cause economic or environmental harm and/or harm to human health (Executive Order [EO] 13112 on Invasive Species, February 1999). Once established, invasive species outcompete and displace the native species, disrupt ecological processes, and significantly degrade entire communities. Common native species can be crowded out by invasive species and endangered species can be extirpated from their habitats. Most invasives possess attributes that contribute to their ability to replace native species. These attributes include: rapid growth, regeneration from seed and/or vegetative propagation, early maturation, prolific reproduction, and allelopathy, aggressive behavior, and predation. Invasives with origins far from the site of their introduction may also lack natural predators, allowing them to spread aggressively. Invasive plant species may create a monoculture, replacing all other species in an area and preventing the establishment of beneficial native species. Even though invasive plant species are sometimes deliberately introduced, an abundance of invasive plants in an area increase the areas homogeneity and reduce its value for wildlife. Invasive plants can be detrimental to agriculture also by competing with desired species for the same resources. Because of their ability to alter natural ecosystems and reduce native species, invasive species are recognized as a leading threat to natural ecosystems and biodiversity, as well as a leading cause of species becoming threatened and endangered. Controlling invasives is a primary natural resources management issue on military installations because of the potential impacts invasive species have on military training and readiness and the degradation they can cause to the natural environment.

Natural resources management at Fort Leavenworth is accomplished by the Natural Resources Branch, of the Environmental Division, and the Directorate of Public Works. This management is guided by the Integrated Natural Resources Management Plan (INRMP) for Fort Leavenworth. Fort Leavenworth is located adjacent to the City of Leavenworth in Leavenworth County, Kansas (Figure 1). A natural areas inventory of Fort Leavenworth conducted in 2003 (Freeman, 2003) provided a list of 27 invasive plant species known to occur on the fort. Observations of the locations of invasive species made by roads and grounds staff, entomology, and the natural resources branch is adequate to provide more invasive species work than the fort has funding.

This report summarizes the results from 2003 inventory, anecdotal reports from the past 15 years, as well as the institutional knowledge of staff at the fort. The summary will be an assessment of the improved, semi-improved and unimproved grounds at the fort, which covers approximately 5,634 acres. The report includes priority treatment areas, priority species, and suggested control methods, using an integrated pest management (IPM) approach and emphasizing the semi-improved and unimproved areas of the fort.

The summation of invasives information concludes there are at least 29 invasive plant species, and 5 animal species on the fort in 2018 (see Appendix A for list of these plants and animals). Of these 11 invasive plant species and 1 animal species appear to threaten the native plant and animal communities on the fort. This report includes a discussion of each species and control measures, Appendix A is a list of the invasive species known from post, Appendix B is the Kansas Noxious Weed List.

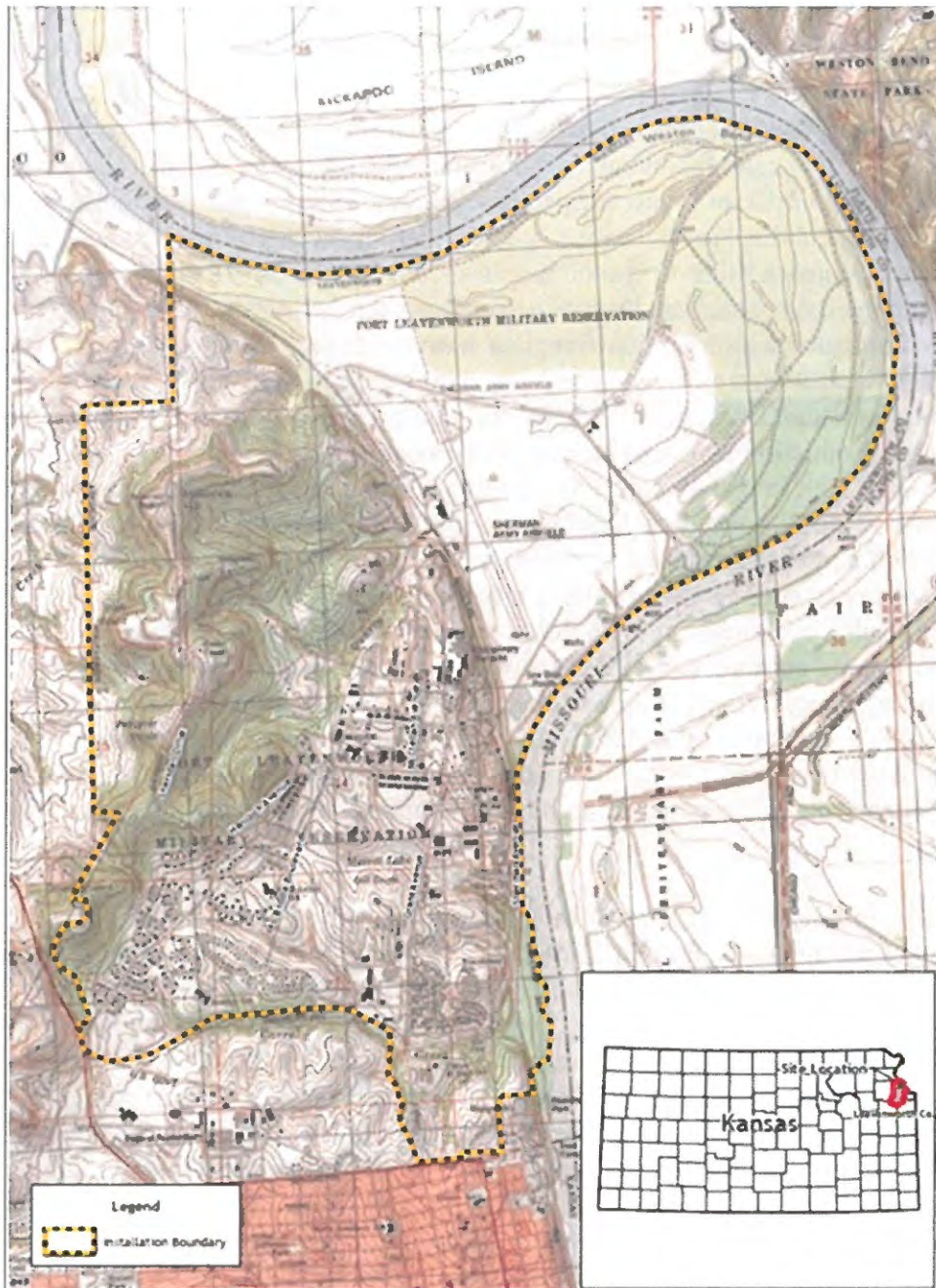


Figure 1. Fort Leavenworth

Location Description

The Post

Fort Leavenworth is home to the Command General Staff College (CGSC), the United States Army Combined Arms Center (CAC), and the United States Disciplinary Barracks (USDB). The continuing mission of the CAC and CGSC is to develop and train confident, competent leaders who in turn will train their units to win on the battlefield. These trained leaders will also

integrate verified doctrine, new organization, and new equipment into the Total Army as well as the effort of the Army's combat and combat support schools and centers. The continuing mission of the USDB is to provide correctional supervision for military prisoners.

The Fort also supports the Sherman Army Airfield which serves the army for landing dignitaries and prisoner transfers. The airfield is also shared with the city of Leavenworth under a joint use agreement. The entire airfield is located in the floodplain of the Missouri River but is protected by a local levee.

All of these facilities are located in Leavenworth County, Kansas and adjacent to the northern boundary of the city of Leavenworth. The north and east boundary of the fort is bounded by the Missouri River. According to the Kansas State Wildlife Action Plan (SWAP), Fort Leavenworth is located in the Tallgrass Prairie Conservation Region and the Missouri River Ecological Focus Area. The eastern deciduous forest, located along the Missouri River Bluffs, of which the Fort has 1,000 acres of this habitat, is also called out in the SWAP. There are 1,400 acres of floodplain forest with no levee protection that is part of the Missouri River Ecological Focus area. An additional 450 acres of land in varying successional states are also unprotected in the floodplain providing rare river-floodplain connectivity. There is a 630 acre protected area that encompasses Sherman Army Airfield, protected by a local levee. Another 200 acres of grassland comprised of introduced pasture grasses and remnant tallgrass prairie can be found in the uplands of post. An additional 600 acres, both unimproved and semi-improved lands, can be found scattered across the Fort. These acres are a mix of trees and grass. Lastly, 1,611 acres comprise the cantonment area.

The Environment

A summary of the local environment at Fort Leavenworth will help provide context for what invasive species are found there and their proposed management. Since Fort Leavenworth is on the Missouri – Kansas border, both states were consulted for environmental descriptions of the area.

Physiography

The fort is in the Tallgrass Prairie Conservation Region and the Missouri River Ecological Focus Area. As would be expected these two different areas have two different topographical distinctions: floodplain and upland. Floodplains on the fort are relatively flat and elevations range from 760 feet at the Missouri River to 780 feet MSL at the base of the bluffs. The uplands range from 780 feet to 1080 feet MSL.

Climate

Fort Leavenworth has a continental climate characterized by cold winters, hot summers and moderate to low rain fall. Low temperatures December thru March, average about 30 degrees F in January with 0 degrees or less being common. Summers are as hot as the winters are cold. The average highs in July are 79.8 degrees with temperatures over 100 occur. The growing season is April 11 thru October 20. Annual average precipitation is 36 inches with most falling

during the growing season. The winter months are driest, but average snowfall is 18.9 inches. Snowfalls of 10 inches or more are not uncommon.

Prevailing winds at the fort are from the south, followed by north by northwest. Winter wind velocities are highest and the average surface wind velocity is 7.5 miles per hour but can exceed 71 miles per hour with passing frontal systems. A significant number of tornadoes occur in the area, primarily between April and August with the most occurring between May and June.

Soils

Soils on the fort are composed of alluvium and loess. The alluvium consists of unconsolidated stratified sand to silty clays. The uplands are comprised of two soil types: loess soils that are highly erodible and fertile; and eroded limestone and shale which has a low fertility. The uplands have some dramatic relief lending to greater erosion than in the floodplain. While the cantonment is located in the uplands, it has been shaped to eliminate some of its erosivity. The floodplain soils are comprised of Onawa Silty Clay Loams and Haynie Silt Loam. These soils are hydric soils. The predominant soils in the uplands are silt loams and clay loams, two examples are Marshall Silt Loam and Knox complex.

The management recommendations for invasive species control presented here are not impacted by soil type on the fort.

Vegetation Communities

The EPA level IV ecoregions for Kansas, from Chapman et al, 2001, has Fort Leavenworth located in the Osage Cuestas, Kansas Loess Hills, and the Missouri Alluvial Plain. The Osage Cuestas are gently rolling hills that in the east, such as Fort Leavenworth, are typified by a mix of oak-hickory forest and tallgrass prairie. The Kansas Loess Hills on the fort are typified by tallgrass prairie and oak-hickory forest. The Missouri Alluvial Plain in other areas of NE Kansas has been almost entirely converted to cropland but on the fort it is comprised of hard and soft wood riparian forest.

Methods

The list of invasive species present on Fort Leavenworth comes from several sources. The locations of these species have been derived from the same sources. These sources are the invasive species survey from Freeman et al, 2003, and then personal knowledge of the current post Natural Resource Specialist, Entomologist, and Engineering Equipment Operating Leader. The species were considered noxious if listed on the Kansas Department of Agriculture's Noxious Weed List (Appendix B), 12 species.

Invasive species are pervasive throughout the fort. They are less problematic in the cantonment and housing because of routine maintenance. The semi- and un-improved grounds have more invasives because of less maintenance activities.

Invasive Plant Species

Although 29 species of non-natives occur on Fort Leavenworth, some pose a greater threat to biodiversity than others, and not all are problematic and warrant control. Therefore, assessing the extent of potential and actual damage caused by the presence of invasive species and prioritizing management activities are important steps to ensure the greatest environmental benefit and the success of the invasive species control program.

The primary considerations for prioritizing actions are: 1) the potential impact of invasive species to the military mission; 2) the severity of threat to natural ecosystems and rare, threatened, and endangered species; and 3) the feasibility of control with limited resources. High priority species are those which the fort actively targets for control due to potential impacts to the post and / or having a high feasibility for control. Medium priority species are only sporadically targeted by the fort or only in limited areas, such as high quality natural areas or in the cantonment, and control measures are expected to have a major impact locally but a low feasibility of large scale control. Low priority species are seldom targeted for control and there is little feasibility of having a local or larger impact on controlling the species.

A number of the invasive plants discussed in this report are not currently listed as noxious weeds in Kansas but are considered invasive by various organizations. The following sections discuss each invasive species and its current status on the fort along with general management recommendations. For a complete species list, refer to Appendix A.

Tree of Heaven



Tree of Heaven (*Ailanthus altissima*) is a medium sized tree originally from China and Indonesia. It can cause a rash in some people after contact. It escaped planting in urban areas and reproduces easily with large numbers of seeds. It is hard to eradicate and resprouts readily after being cut.

Tree of heaven wood is brittle and it has little wildlife value. It has allowed the ailanthus webworm to expand its range though as it can eat the tree of heaven.

The Tree of heaven is sporadically located around post. Most of its known locations are in the floodplain where it should be targeted. Due to its limited distribution it could be targeted and removed the post. Early detection and response could limit its spread and keep the current infestation local.

Common Garlic Mustard



Common garlic mustard (*Alliaria petiolate*) is a small plant brought from Europe as an herb. It escaped cultivation and spread. Garlic mustard invades shaded areas and easily occupies floodplain and upland forests.

There are over 1,000 acres of garlic mustard on Fort Leavenworth. The understory of the floodplain forest has an abundance of garlic mustard. The garlic mustard is found in the upland forest of the fort too though.

Garlic mustard is a low priority on the fort. There is probably no eradicating garlic mustard from the fort. Encouraging native vegetation and using some chemical treatment can prevent its dominance of entire native habitats though. A targeted approach to the highest quality areas on post should be treated.

Japanese Barberry



The Japanese Barberry (*Berberis thunbergii*) is an invasive exotic shrub. It can be multi-stemmed with stems arising from rhizomes. High seed production and rhizomatous reproduction make this species hard to control.

The distribution on Fort Leavenworth is very spotty. Japanese barberry can be found in the understory of any of the forested acres on post but at low densities.

Japanese barberry is a low priority at Fort Leavenworth. The low densities and its widespread distribution make it uneconomical to target for eradication. While eradicating other species any Japanese barberry should also be treated. Chemical controls for it are similar to most other exotic species on post.

Musk Thistle



Musk Thistle (*Carduus nutans*) are invaders from Eurasia. They are thorny and produce a lot of seeds that are dispersed by birds and wind.

The distribution is sporadic around Fort Leavenworth. It is found mostly in disturbed areas and occasionally invading grassland areas.

It is a high priority species because it is targeted by both natural resources and be entomology. However, the off base population almost insures continued infestation on post. Musk thistle also looks a lot like beneficial native thistles. Native thistles have white undersides and invasives have green undersides. This species is on the Leavenworth County noxious weed list.

Bull thistle



Bull Thistle (*Cirsium vulgare*) is a European invader. It is thorny and produces large volumes of seed. The seed is dispersed by wind and birds.

Distribution on post is spotty. It is found mostly in disturbed areas and occasionally in grassland areas.

Both natural resources and entomology target this species for removal. The large reservoir of off post plants and its dispersal mechanisms make it

unlikely that it will be eradicated. This thistle also resembles native thistles. The native thistles have white undersides on their leaves, while the invasives are green on tops and bottoms. This species is on the Leavenworth County noxious weed list.

Field Bindweed



Field bindweed (*Convolvulus arvensis*) is an Eurasian invader and an agricultural pest. It reproduces with seeds and by rhizomes.

The on post distribution is spotty. While field bindweed is hard to eliminate it is often overlooked because of its spotty distribution. It commonly grows in urban areas, in the cracks of sidewalks and on the shoulders of roads.

It can be controlled by mechanical control: hand pulling or with glyphosate. It is a low priority species. Monitoring and control actions if it is

detected making inroads into natural habitats is an acceptable option on post. This species is on the Leavenworth County noxious weed list.

Common and Cutleaf Teasel



Common teasel (*Dipsacus fullonum*) and cutleaf teasel (*Dipsacus laciniatus*) are two species of biennial flowering plants that will be discussed together as they frequently are found growing in mixed stands and are managed using the same methods. Teasel currently covers approximately 50 acres of areas F, E, E1, and D. The infestations are being controlled with mechanical and chemical controls. No biological control agents are approved for common teasel. Chemical control has been treating both the flowering plants and the basal rosettes with glyphosate and 24-D. Mechanical controls have been digging rosettes and mowing before the plants set seed.

Teasel is a high priority species due to its limited distribution. Early detection and rapid response can help reduce its spread and eradicate it from the post.

Autumn Olive



Autumn olive (*Elaeagnus umbellata*) is a small tree native to Asia that is relatively uncommon on the fort, mostly growing along forest edges and hedgerows. This plant grows rapidly and aggressively, out competing native shrubs and trees. Its berries are readily distributed by birds and small animals, quickly expanding its infestation area. Additionally, as a nitrogen fixing plant, it can adversely impact the nitrogen cycle of some native plant communities.

Autumn olive is sparsely distributed and only exists in a few discrete locations at the fort. There are no biological controls currently available for this species. If the plant is small, mechanical removal is possible if care is taken to ensure roots are removed. A combination of mechanical and chemical treatment, such as cut stump or basal bark treatment is the most effective control.

Autumn olive is a high priority species at the fort due to the limited distribution and its potential for greater impact if left untreated. Early detection and rapid response to this species will reduce spread and limit impact.

Winged Burning Bush



Winged Burning Bush (*Euonymus alata*) is a deciduous shrub native to China, Japan and Korea. It is spread by birds and other animals eating the fruit and dispersing the seed.

This shrub can tolerate shade so invades forested areas and riparian corridors. It can grow in dense thickets and shades out other plants.

Winged Burning Bush produces a large number of seeds. It also can reproduce vegetatively. Mechanical controls can include hand pulling and digging. Chemical controls would include cutting

and treating the stems with picloram or glyphosate.

This is a low priority on post. There are few known locations on post. There are several other similar shrubs that are more problematic.

Winter Creeper



Winter creeper (*Euonymus fortunei*) is a perennial woody vine that can be found as a groundcover or climbing up trees, fences, walls etc. It is native to China and is still widely planted as a hearty ground cover. It is highly adaptable to soil and light conditions, growing rapidly to create impenetrable mats that exclude all other plants. Shrubs and small trees can be smothered by the aggressive climbing winter creeper.

Winter creeper was only found sporadically in edge and forested habitats. A concerted effort could possibly remove this invasive from the post. Cut stump treatment is the most effective for mature plants in large infestations.

Fescue



Fescue (*Festuca arundinacea*) is a perennial grass. Tall fescue is the most common fescue on the post. It is introduced from Europe and has been planted all over post as a pasture forage, for erosion control, and as turf.

Tall fescue crowds out prairie plants and decreases grassland diversity. It has some allelopathic properties that allow fescue to outcompete other grasses and forbs. It also has an endophyte that can cause sickness and miscarriage in grazing animals.

This grass is a low priority on post since it is desirable in some post settings. It can be controlled with properly timed prescribed burns and with glyphosate. Fescue removal is only undertaken on post in areas of persisting native vegetation.

Panicled Golden Rain Tree



Panicled golden rain tree (*Koelreuteria paniculata*) is a native of eastern Asia, China, and Korea. It is a prolific seed producer thus giving it the propensity to be invasive. The yellow summer flowers and the green in the summer and bronze in the fall seed pods make it a desirable ornamental tree.

Panicled golden rain trees are located sporadically around the post. They are a low priority because of their limited distribution. However, where they occur in the floodplain forest and in the upland forest they should be a higher priority and be removed from these areas. Early detection and rapid response to this species will reduce its spread and limit its impact on the fort.

Mechanical control is the most effective control measure, given the trees limited distribution and that some of the trees are located in areas not readily accessible by vehicle. Cutting the trees and treating the stump with picloram or glyphosate is the best control measure on the fort.

Serecia lespedeza



Serecia lespedeza (*lespedeza cuneate*) originally from eastern Asia and China and was spread around the U.S. as erosion control, a forage plant, and as wildlife cover. It is a prolific seed producer and thrives on disturbed sites with bare soil. It quickly outcompetes native vegetation.

On post distribution is currently limited to areas close to the National Guard bed down and then some areas over off of Sherman by Bradley elementary.

Serecia should be a high priority because its limited distribution could allow for it to be eradicated from post. A concerted effort of chemical control could completely suppress it. Mechanical control, digging and hand pulling is possible but not really practical. Chemical treatment would entail using glyphosate and triclopyr during the spring and summer. Early detection and rapid response to this species will reduce its spread and limit its impact. This species is on the Leavenworth County noxious weed list.

Border Privet and European Privet



Border Privet European Privet (*Ligustrum obtusifolium*) and (*Ligustrum vulgare*), respectively are originally from eurasia. They are shrubs that were originally planted as hedges but have no escaped cultivation. They reproduce by seed and birds and small mammals eat the fruit and disperse the seed.

Once they escape cultivation they can form dense thickets. This shades out native plants and decreases diversity on sites they impact.

On post distribution is very similar to the bush honeysuckles. Mostly riparian corridors and some invasion into upland forests.

Privets have been a low priority because of the ubiquitous distribution that it has. Some small areas have been targeted realizing they will need constant maintenance. The privets can be controlled by



mechanical means and stump treatment with picloram or glyphosate application to the cut stumps. They can also be killed by direct application of glyphosate to their green leaves.

Japanese Honeysuckle

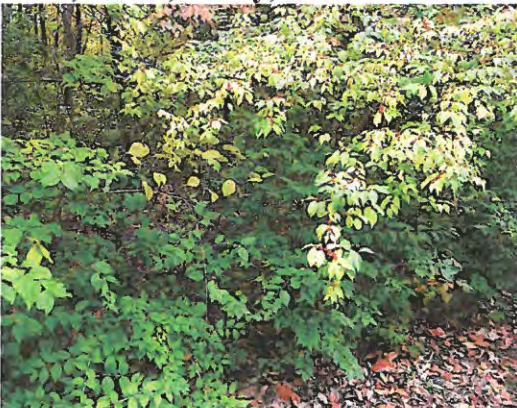


Japanese honeysuckle (*Lonicera japonica*) originally from eastern Asia and Japan, is a small woody vine. It can climb up into trees as well as cover ground layer vegetation. Reproduction is by seeds and vegetatively.

On post distribution is currently sporadic.

Japanese honeysuckle should be a high priority because its limited distribution could allow for its eradication from post. It can be controlled with properly timed controlled burns and glyphosate can also be applied directly to its green leaves. Early detection and rapid response to this species will reduce its spread and limit its impact.

Bush, Amur, Pretty, and Tartarian Honeysuckle



Bush Honeysuckles are comprised of several types. Most likely they are Amur, Pretty, and Tartarian Honeysuckle, (*Lonicera maackii*), (*Lonicera xbella*), and (*Lonicera tartarica*), respectively. They are woody shrubs that reproduce by seeds. Originally from Eurasia, they have spread throughout the upper Midwest. The seeds are spread by birds and small mammals.

Fort Leavenworth has the greatest concentration of bush honeysuckles along its riparian corridors. Especially the streams in the cantonment. These

honeysuckles can be found sporadically in other woodlands.

Mechanical and chemical controls can be effective. Cutting and treating the stumps with picloram or glyphosate can be effective. Spraying the leafed out foliage with glyphosate is also effective. Bush honeysuckle is a low priority on the post because of the volume of infestation.

Purple Loosestrife



Purple loosestrife (*Lythrum salicaria*) is an herbaceous perennial plant that grows in wetlands, along streams, and other wet places. It is a European native that was commonly planted in gardens due to its showy pink flowers. When this plant invades wetlands and waterways, it spreads rapidly, choking waterways and crowding out native plants that are used by wildlife. Currently, purple loosestrife is found in a few locations at the fort. This species can be controlled when infestations are small by hand pulling. Removing the entirety of the root system is very important, as purple loosestrife sprouts new stems from the roots readily.

Purple loosestrife is a high priority species at the fort due to the limited distribution and its potential for significant impact to the wetlands and native plants and animals, if left untreated. Early detection and rapid response to this species will reduce spread and limit impact.

Osage-orange



The Osage orange- (*Machura pomifera*) is a small tree that has been used in hedge rows in the past but has spread to many other areas. They reproduce by seed and root sprouts.

On the fort osage orange trees can be found in old fields, in hedge rows and sporadically in forested areas.

Mechanical and chemical controls are used to remove these trees. Chain sawing and dozing have been used to clear these trees. Stump treatments of picloram or glyphosate are successful in controlling it. This is a low priority species at the fort due to its low density and slow spread.

White and Yellow Sweet Clover



White (*Melilotus albus*) and Yellow Sweet Clover (*Melilotus officianulis*) are both from Eurasia and have spread quickly across the U.S. They spread by seed and have been spread while being planted as a forage crop, for honey production, and other agricultural purposes.

Here on post the sweet clovers are sporadically distributed, usually along roadways. Occasionally there is an infestation in a disturbed area.

Due to its limited distribution it has a low priority on post. However it should have a high priority since it could be eradicated.



Mechanical and chemical controls can be effective mowing before seed set and spraying with glyphosate or 2,4-D also work to eliminate it.

Reed Canary Grass



Reed canary grass (*Phalaris arundinaceae*) is a European perennial wetland grass that grows in dense rhizomatous clumps. These dense clumps can constrict waterways and reduce suitable cover and forage for wildlife.

Reed canary grass is located in most of the wet areas on the fort, whether wetlands or streams. Biological controls and mechanical removal methods are not effective for this plant. Annual late spring or late fall burning can help eradicate this species if paired with establishment of native plants. Herbicide treatment can also be very effective in treating this plant.

Reed canary grass is a low priority on post due to its ubiquitous distribution. Reed canary grass does not grow well in shade so the establishment of tree cover can shade it out. Glyphosate readily kills reed's canary grass but the large seedbank requires annual spraying for years.

Black Locust



Black Locust (*Robinia pseudoacacia*) is a native to the Appalachians and Ozark mountains of the United States but not to the plains. They were planted in the plains to prevent erosion during the dust bowl and became invasive. The trees are probably allelopathic and thus prevent competition.

On the fort black locust can be found growing in old fields as well as some ornamental plantings. Mechanical and chemical removal methods work the best. Cutting the trees with saws and then treating the cut stump with picloram and glyphosate is probably the most common method of removal. Prescribed fire and removal by bull dozer can also be used.

Total eradication is a low priority, since the tree is planted in some ornamental areas. However, removal of the black locust from horse pastures and old fields is desired and still practical.

Jetbead

Jetbead (*Rhodotypos scandens*) is an eastern Asian shrub that grows in the forest understory. It can outcompete and shade out native shrubs and tree seedlings. Thus limiting plant diversity in the understory.

Jetbead can be found, sporadically, in the understory of the flood plain forests and in the riparian corridor of several small streams on post. Mechanical and chemical controls would be the most effective to use against Jetbead. It can be cut and the stump treated with picloram or glyphosate. Glyphosate can also be sprayed directly on it green and leafed out leaves.

The removal of jetbead from post is a low priority as it is not a widely distributed invasive. Its seeds can be dispersed by birds and it produces root suckers but it has failed to compete with other shrubby invasives on the fort.

Multiflora Rose



Multiflora Rose (*Rosa multiflora*) is a rose bush introduced from Japan and Korea. It was initially used for erosion control and as wildlife habitat. It was also used as a living fence for livestock. All of these uses make it somewhat ubiquitous in the Midwest.

Multiflora Rose can be found across all habitats on Fort Leavenworth but not over abundant in any. This is good since it's thorns make areas infested with it almost impenetrable. Mechanical and chemical controls can

be used to suppress it. Repeated prescribed fire can weaken the plant. Glyphosate applied to the cut stems and to the green leaves can all kill the plant.

The eradication of multiflora rose is a low priority on post due to its broad distribution but slow spread rate. Birds and small mammals spread its seed. This species is on the Leavenworth County noxious weed list.

Crown Vetch



Crown vetch (*Securigera varia*) is an herbaceous legume native to the Mediterranean that was introduced, and is still used in some areas, for erosion control. This plant can tolerate a variety of conditions and can be found in a variety of habitats from open fields to gravel bars. It can spread rapidly via rhizome and seed creating dense stands that over shade native vegetation.

Crown vetch can be found sparsely and infrequently around the post. It is most commonly found along roadways and the largest infestation is off of Sabalu Road north of Building 1155. Except in the area of heavy infestation, hand pulling is feasible. Other methods of control would be prescribed burning or repeated mowing and chemical treatment with foliar application of herbicide during the active growing season.

Crown vetch is a high priority at the fort due to its limited distribution. Early detection and rapid response to this plant can help reduce the potential for larger problems at the fort in the future.

Johnson Grass



Johnson Grass (*Sorghastrum halepense*) is an invasive grass from the middle east. It was originally introduced in the U.S. as a forage. It spreads by both seeds and rhizomatous roots.

Johnson Grass can be found in any disturbed habitat on the post. It is most common in the levee protected part of the Missouri River floodplain. Chemical control is the only thing that is practical. Glyphosate is effective but since Johnson Grass is a warm season C4 grass, it's lifecycle makes treatment difficult without killing off the

native vegetation that was to be protected.

In the floodplain Johnson Grass control is a low priority. Flooding on the Missouri River will constantly reinfest the area with seed and rhizomatous roots. In certain old field areas though, control of Johnson Grass should be a higher priority. Control is still possible in areas with a limited infestation. Early detection and rapid response to this plant can help reduce the potential for larger problems at the fort in the future. This species is on the Leavenworth County noxious weed list.

Poison Ivy



Poison Ivy (*Toxicodendron radicans*), unlike most of the above plants is a native. However, it can grow abundantly in disturbed areas. The oils that it produces cause allergic reactions in many people making any growth of this plant a bane. Multiple growth forms: vine, shrub, and tree make it hard for some to identify and allow it to grow in multiple areas.

Poison Ivy grows abundantly around post and it grows in both the undeveloped lands and in the landscaped areas of post. Many times it grows in heavily mowed areas by sprouting close to tree trunks and by vining up trees thus avoiding mowers and weed eaters. Mechanical and chemical control is possible. Mechanical controls are harder to effect because of the allergenic oils. Triclopyr, glyphosate, and 2,4-D can all be used for control of poison ivy but the oils makes it difficult for the chemicals to get to the leaf surface.

On post poison ivy is wide spread and in the developed areas of post its control is a high priority. In the undeveloped areas its control is a low priority. Poison Ivy vines are selected singly, in the cantonment, for eradication.

Invasive Animal Species

Seven species of non-native animals occur on Fort Leavenworth, most of these species have been integrated with the local native species for many generations, over a hundred years, and are ubiquitous across the Midwest. Some of these species have even been intentionally introduced for outdoor recreational uses.

Considerations for prioritizing control actions for invasive animals are the same as that for plants: 1) the potential impact of invasive animals on the military mission; 2) the severity of threat to the natural ecosystems and rare, threatened, and endangered species; and 3) the

feasibility of control of the invasive animals. High priority species are those which the fort is



actively targeting for control efforts due to potential impacts to the post and / or having a high feasibility of control. Medium priority species are only sporadically targeted by the fort or only in limited areas, such as high quality natural areas or in the cantonment, and control measures are expected to have a major impact locally but a low feasibility of large scale control. Low priority species are seldom targeted for control and there is little feasibility of having a local or larger impact on controlling the species.

The following section discusses each invasive species and its current status on the fort along with general management recommendations or lack there or. For a complete species list, refer to Appendix A.

Emerald Ash Borer

Emerald Ash Borer (EAB) (*Agrilus planipennis*), is a small beetle originally from Asia. Thirty-two states currently have confirmed reports of EAB but there is still currently a federal effort to contain the spread and all states with known EAB populations are in quarantine.



On post the EAB has proceeded to kill the majority of the ash trees in the cantonment and in unimproved areas. Some ash trees that are isolated individuals in the floodplain seem to have escaped infestation so far. Control measures in the cantonment have included trapping some EAB, treating a small number of ash trees (mostly in the historic district) with the chemical Emamectin Benzoate, and removing infested ash trees.

On post the EAB is a medium priority. A few select trees have been chosen to save with insecticide but the expense has limited its use. In order to slow the spread of the EAB, once trees are infected they are cut down and disposed of on post. Over 300 ash trees existed on post, the majority of them have been removed since 2015.

Common Carp

Common Carp (*Cyprinus carpio*) are introductions from Eurasia. They were introduced as a food source and also as a sport recreational species. They are omnivorous occur in most water bodies of Kansas.

The common carp is common in the Missouri River and thus can be found in all streams on the fort. They can also be found in most if not all of the fort's ponds.

Fort Leavenworth considers the common carp a low priority and makes no attempts at eradication. Individual fishermen may still remove the fish when given the opportunity but there is not concerted effort of control.

Silver and Bighead Carp



Silver and Bighead Carp (*Hypophthalmichthys molitrix* and *nobilis*, respectively) are recent introductions from China. They were imported to control plankton in aquaculture ponds but by the 1980's had escaped and were established in the wild.

Both of these carp species spread up the Missouri River and into streams on post. Currently they are restricted on post to the Missouri River, its floodplain, and the confluence of post streams.

Silver Carp on bottom and Bighead on top.

These species are a low priority species on post

as they have no known impacts on the military mission and most likely limited impacts to the natural environment on the fort. Also there is no known effective method of control. Some individual fishermen remove them when possible.

Mosquito Fish



Mosquito fish (*Gambusia affinis*) are not native to Kansas, they were introduced from their native range south and east of Kansas in the 1940's. They have spread from intentional introductions where they are thought to control mosquitoes, through aquarium dumping, and then natural dispersal. They are known to eat the eggs of other fish and amphibian species.

A fish inventory of the streams of Fort Leavenworth in October 2017, found mosquito fish in all of the posts drainages. They are also found from the Missouri River. In addition to their ubiquitous distribution on post, they are also found all over Kansas and Missouri. Their tolerance for low water quality and fecundity make them a hard invasive to control.

The mosquito fish is a low priority for the fort. Control efforts have not been successful in other parts of the country and probably would not be here either. There are no real known irreversible impacts to having mosquito fish on post.

Ring-necked Pheasant



Ring-necked Pheasant (*Phasianus colchicus*) were introduced from Asia as game birds in the United States. The introductions have been successful in some areas but not others. Fort Leavenworth has a pheasant population comprised of mostly pen raised captive released birds. This occurs as they are released by the Rod and Gun Club for special hunts. There has been no recent confirmation of wild raised birds.

This is not even a low priority species. There is no intent to eradicate this species from the post. Annual, if not more, frequent introductions will continue as the species is used for sport and as part of the Department of Family, Morale, Welfare, and Recreations Outdoor Recreation Program.

Chukar



Chukar (*Alectoris chukar*) were introduced from Eurasia as game birds in the United States. The introductions have been successful in some areas but not others. Fort Leavenworth has a chukar population comprised of pen raised captive released birds. This occurs as they are released by the Rod and Gun Club for special hunts. There has been no reports of wild raised birds.

This is not even a low priority species. There is no intent to eradicate this species from the post. Annual, if not more, frequent introductions will continue as the species is used for sport and as part of the Department of Family, Morale, Welfare, and Recreations Outdoor Recreation Program.

Appendices A - List of Invasive Species

Plants:

Tree of Heaven	- <i>Ailanthus altissima</i>
Common Garlic Mustard	- <i>Alliaria petiolate</i>
Japanese Barberry	- <i>Berberis thunbergii</i>
Musk Thistle	- <i>Carduus nutans</i>
Bull Thistle	- <i>Cirsium vulgare</i>
Field Bindweed	- <i>Convolvulus arvensis</i>
Cut-leaf Teasel	- <i>Dipsacus laciniatus</i>
Autumn Olive	- <i>Elaeagnus umbellata</i>
Winged Burning Bush	- <i>Euonymus alata</i>
Winter Creeper	- <i>Euonymus fortune</i>
Fescue	- <i>Festuca arundinacea</i>
Panicled golden rain tree	- <i>Koelreuteria paniculata</i>
Serecia lespedeza	- <i>Lespedeza cuneate</i>
Border Privet	- <i>Ligustrum obtusifolium</i>
European Privet	- <i>Ligustrum vulgare</i>
Japanese Honeysuckle	- <i>Lonicera japonica</i>
Amur Honeysuckle	- <i>Lonicera maackii</i>
Pretty Honeysuckle	- <i>Lonicera xbella</i>
Purple Loosestrife	- <i>Lythrum salicaria</i>
Osage-orange	- <i>Machura pomifera</i>
White Sweet Clover	- <i>Melilotus albus</i>
Yellow Sweet Clover	- <i>Melilotus officianulis</i>
Reed Canary Grass	- <i>Phalaris arundinacea</i>
Black Locust	- <i>Robinia pseudoacacia</i>
Jetbead	- <i>Rhodotypos scandens</i>
Multiflora Rose	- <i>Rosa multiflora</i>
Crown Vetch	- <i>Securigera varia</i>
Johnson Grass	- <i>Sorghum halepense</i>
Poison Ivy	- <i>Toxicodendron radicans</i>

Animals:

Emerald Ash Borer	- <i>Agrilus planipennis</i>
Common Carp	- <i>Cyprinus carpio</i>
Silver Carp	- <i>Hypophthalmichthys molitrix</i>
Bighead Carp	- <i>Hypophthalmichthys nobilis</i>
Mosquito Fish	- <i>Gambusia affinis</i>
Ring-necked Pheasant	- <i>Phasianus colchicus</i>
Chukar	- <i>Alectoris chukar</i>

Appendix B Kansas Noxious Weed List

Bur Ragweed	(<i>Ambrosia grayii</i>)
Canada Thistle	(<i>Cirsium arvense</i>)
Field Bindweed	(<i>Convolvulus arvensis</i>)
Hoary Cress	(<i>Cardaria draba</i>)
Johnsongrass	(<i>Sorghum halepence</i>)
Kudzu	(<i>Pueraria lobate</i>)
Leafy Spurge	(<i>Euphorbia esula</i>)
Musk Thistle	(<i>Carduus nutans</i>)
Pignut	(<i>Hoffmannseggia densiflora</i>)
Quackgrass	(<i>Agropyron repens</i>)
Russian Knapweed	(<i>Centaurea repens</i>)
Sericea Lespedeza	(<i>Lespedeza cuneate</i>)

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**B10. DIRECTORATE OF EMERGENCY SERVICES
SOP # 2.35
Installation Conservation Law Enforcement Operations**

1. PURPOSE: To outline policies and procedures for the Conservation Law Enforcement Officers assigned to the Directorate of Emergency Services Law Enforcement Division, Fort Leavenworth, Kansas. For the purpose of this document, The Conservation Officer, civilian Game Wardens and MP's assigned to the position will be collectively referred to as "CLEOs".

2. APPLICABILITY: This Standard Operating Procedure (SOP) applies to all Department of the Army Civilian employees and members of the United States Armed Forces who are stationed, assigned, attached or under the command of the Directorate of Emergency Services or 500th Military Police Detachment, Fort Leavenworth, KS. Violations of this SOP may result in administrative action or action under the Uniform Code of Military Justice (UCMJ).

3. REFERENCES:

- a. The Sikes Act
- b. DODD 4700.4, Natural Resource Management Program
- c. CFR, Title 32, National Defense
- d. CAC & FT LVN REG 200-3, National Resources- Land , Forest and Wildlife Management.
- e. AR 200-1 Environmental Protection and Enhancement.
- f. AR 190-45 Law Enforcement Reporting.
- g. AR 190-14 Carrying of Firearms and Use of Force for Law Enforcement and Security Duties.
- h. Fort Leavenworth Integrated Natural Resource Management Plan, INRMP
- i. Fort Leavenworth Integrated Cultural Resource Management Plan, ICRMP
- j. Drane vs The State of Mississippi

k. The Magnuson-Stevens Act

4. GENERAL: The mission of the Fort Leavenworth CLEO is to ensure the sustainment of Military land for readiness training by the enforcement of applicable Federal, State, and Installation laws and regulations regarding natural and cultural resources. CLEOs will conduct a range of complex law enforcement activities to enforce natural and cultural resource laws such as: investigating fish and game crimes, patrolling perimeter areas not accessible by "road patrols", surveillance of sensitive sites, and ensuring compliance through enforcement of the Clean Air Act, the Clean Water Act, Lacey Act, ARPA, NAGPRA, ESA, and the MBTA. CLEOs may also be involved in conducting seizure of wildlife or archeological contraband, equipment and vehicles, securing and serving warrants making apprehensions and testifying in Federal and State courts. CLEOs will follow the Department of the Army policy on criminal investigation activities including the utilization objectives. The operational procedures of the CLEO will be directed toward the following objectives.

- a. Support the military mission by providing routine checks for natural and cultural resources
- b. Assure installation compliance with the Sikes Act requirements.
- c. Protect Soldiers, hunters, anglers, and other outdoor enthusiasts from the dangers involved in illegal activities.
- d. Enhance the professionalism quality and effectiveness of conservation law enforcement.
- e. Provide quality of life opportunities for Soldiers by helping to provide a safe, quality area for outdoor pursuits.
- f. Work to resolve conflicts between wildlife and people.
- g. Educate those encountered about the importance of natural and cultural resource conservation and regulation compliance.

5. RESPONSIBILITIES: Fort Leavenworth CLEOs patrol over 8,320 acres of publicly accessible land to check for compliance with natural, cultural, environmental and force protection laws and regulations. CLEOs investigate violations of natural and cultural resource laws and apprehend and/or cite subjects responsible for the violations. Responsibilities are listed as:

a. Patrol the installation's 8,320 + acres to check for compliance with natural and cultural resource laws and regulations.

- (1) Conduct regular checks of the Hopewell Indian sites, the Nez Perce Indian Grave sites, the Fort Sully site, and the Quarry Creek site.
- (2) Ensure all persons accessing the Area D hunting area are not illegally harassing/taking Endangered or Threatened Species (Northern Long Eared Bat and Pallid Sturgeon) IAW the Endangered Species Act.
- (3) Inspect off-cantonement areas for signs of HAZMAT or illegal dumping.
- (4) Monitor persons fishing in Smith and Fuller Lake and do licensing and limit checks on a routine basis.

b. Ensure Physical Security measures are in place and are preventing unauthorized entry to the installation.

- (1) Unauthorized entry to post will result in being charged with Criminal Trespassing.
- (2) Circumstances depending, this could also result in a bar from the installation.
- (3) CLEOs will use the ATV equipment, along with watercraft (when available), to ensure that the installation is not being infiltrated by personnel avoiding the Physical Security Measures in place.

c. Respond to incidents that occur in the areas out of reach of "road patrols" based on the CLEO's knowledge of the area and expertise in unconventional equipment.

- (1) Use of the ATVs for land based emergency response in wooded areas of the installation.
- (2) Use of available watercraft for emergency response to areas closer in proximity to the Missouri River.

6. TRAINING: The effectiveness and professionalism of conservation law enforcement is directly related to its training program. Effective program development and sustained effectiveness relies upon initial hiring standards and subsequent "in service" and refresher training.

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- a. Each officer assigned as a CLEO will be trained as a law enforcement officer.
- b. Additionally, great efforts must be made to include all personnel in the section to receive the 40 hour block of US Army CLEO Training. If scheduling or manpower is preventing this, every effort must be made to ensure that each CLEO is trained "in house" to the standard.
- c. Each officer will comply with AR 190-56 with regard to qualifying with their assigned weapons.
- d. Each officer assigned will receive, at a minimum, CLS and First Aid Training
- e. Each officer will be trained in the use of four wheel drive vehicles, ATVs, watercraft and electric winches prior to their use.

7. UNIFORMS: It is important that CLEOs wear uniforms that are consistent with IMCOM guidance and provide functionality, along with a presence of authority. Uniform requirements for Soldiers may be modified for specific missions as approved by the CLEO Supervisor. The uniform will be of the same configuration for both male and female officers.

- a. Shirts will be either long sleeve button-up, short sleeved button up, or 5-11 style polo and will be tan in color. Ft Leavenworth Conservation Officer patches will be sewn on to the sleeves in accordance with regulation of their placement. A badge (MP Badge for MPs and DACP Badge for DACPs) and name plate will be worn while on duty.
- b. Long Trousers, dark green in color, will be worn by the CLEO.
- c. Head gear is optional by the CLEO and may consist of a ball cap, dark green in color as approved by the Provost Sergeant.
- d. Tan desert boots will be worn with the CLEO uniform.

8. EQUIPMENT: Equipment supplied to each officer will consist of the following:

- a. Four wheel drive vehicles equipped with radio communications
- b. All Terrain Vehicles (ATV)
- c. Electric winches
- d. Binoculars and spotting scopes
- e. Digital cameras

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- f. GPS/PLUGGER
- g. Duty belt/vest consistent with requirements in AR 190-56
- h. Maps
- i. An M9, M4 and/or shotgun
- j. Access to water craft

9. AREA PATROL: CLEO patrols are often one person patrols. Each patrol must contact the desk and inform the the desk seargeant/clerk that they are active or in service prior to going on patrol. Each patrol must then make contact with dispatch every hour, at a minimum, to assure dispatch of the patrol's safety. CLEO vehicles will travel on either improved roads or established trails whenever possible.

a. IAW "Drane vs The State of Mississippi" (1986) Probable Cause will not be required for the purpose of conservation compliance checks on the installation. This pertains to the performance of inspections of game limits and weapons where a person has "reasonable belief" that game or fish was being collected. In compliance with the law, these checks will be conducted on a scheduled or routine basis, not at random.

b. IAW the Magnuson-Stevens Act, when conducting safety or game compliance checks in the water, it is unlawful to refuse Officer boarding onto a vessel. All vessels will be checked for Coast Guard safety standards, proper licensing, proper fish and game limits, and proper fish and game take methods when conducting safety/compliance checks.

c. All waterborne patrols require at the minimum, two personnel: a driver and a boarding/checking officer. Preferably this would be three (a driver, boarding officer, and an overwatch) but due to personnel and manpower restrictions, this would not be feasible. CLEOs should NEVER conduct waterborne operations as one unit patrol.

d. Cultural resource checks should be conducted monthly and thouroughly inspected annually to spot signs naturally occurring degradation. "Standard Photos" should be taken during this annual inspection as a means to compare and have visual evidence of what the site should look like. If signs of damage are apparent, an investigation will be initiated. The sites, 222 in total, are broken into five different area checks. It is pertinent to not make trails or conduct these checks routinely, so as outside attention is not being attracted for site presevation and integrity.

10. FISHING: When patrolling Fort Leavenworth rivers, streams, lakes or ponds, the following procedures will be followed:

- a. Check individual for license (state), creel limits and fish lengths. The individual's identification card will be checked to verify the license's ownership.
- b. Ensure that the area is open for fishing
- c. Ensure that Fort Leavenworth & CAC Regulation 190-5 and any other regulations are complied with by individual.

11. HUNTING: When checking hunters on Fort Leavenworth's land, the following procedures will be followed:

- a. DO NOT ENTER THE HUNTING AREA DURING ACTIVE HUNTING except for exceptional or emergency reasons. Personnel will be checked either upon entering or departing the hunting area in most situations.
- b. ALL CHECK POINTS OR DECOY MISSIONS will be coordinated with the CLEO Supervisor and the Desk Sergeant
- c. Request the following Items from each individual(s) that are checked for compliance with Hunting Regulations:
 - (1) State Hunting License.
 - (2) Big Game Permits (if applicable).
 - (3) Hunter Education/Safety Cards
 - (4) Firearms Registration.
 - (5) Area Assignment Cards
 - (6) Identification Cards and Any Other Required Documents
 - (7) Any Other Required Documentation Pertinent to the Activity
- d. Check for unauthorized weapons, ammunition, and game.
- e. Ensure the area is open for hunting.
- f. Check for unlawful take of game or other wildlife
- g. Ensure that the individual(s) are in compliance with Fort Leavenworth & CAC Reg 190-5 with regards to weapons, blaze orange requirements and all other aspects.

12. PROCESSING ALL VIOLATORS: Violators will be processed as follows:

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- a. Initiate PM Form 151, CVB, or 1408, whichever is appropriate at the scene. The Subject may have fishing or hunting privileges revoked on the instillation immediately according to Fort Leavenworth & CAC Reg 200-3. If this applies, the subject will be informed of this status. A letter prepared by Operations Cell and signed by the Provost Marshal stating the time the subject may not hunt or fish
- b. A DA 4137 will be completed listing all game/fish equipment confiscated by the officer. Confiscation should occur when evidence essential to the character of the charge is needed.
- c. Game or fish will be preserved or disposed of at the officers discretion and may be awarded to a Leavenworth County Agency in order to support necessary shelters. Evidence will be preserved in accordance with AR 195-5 when applicable. If fish/game is deceased, it will be released to the wild for predatory consumption once the processing of the evidence is complete
- d. Dependent children will be released to parents or legal guardians. All other violators will be released at the scene or apprehended and released from the PMO based on the officers discretion.
- e. Theft of cultural resources or natural resources (other than game, fish, or protected species) will go as follows:
 - (1) First offense is 1408 citing applicable law.
 - (2) Second offense is a CVB with a Mandatory Court Appearance.
 - (3) Third offense is apprehension, a CVB with a Mandatory Court Appearance, and an installation bar.

13. SEARCH AND RESCUE: Search and rescue missions will be controlled by the Fort Leavenworth Fire Department and assistance from the CLEO may be requested. In the event assistance is requested all instructions will be received from the incident commander.

- a. Patrols will obtain as much information as possible from witnesses or other victims to obtain a start point.
- b. Game Wardens will assist patrols, military troops, and the Fire Department in beginning a ground search with available assets, Assistance from outside agencies may be coordinated with Provost Marshall.
- c. A request for assistance from aircraft will be coordinated by the Provost Marshall.

14. VETERINARY SERVICES: Veterinary Services will be utilized when applicable as per AR 40-905.

- a. Coordination will be made through the Military Police Desk when requesting veterinary services by installation and civilian services.

15. PROPONENT. Des Provost Marshal Office/Law Enforcement Division is the proponent for this SOP.

///ORIGINAL SIGNED///

ELIOTT L. BRADLEY
Director, Emergency Services

Game Warden Swing Checklist

1200-2000

- ___1) Vehicle and Equipment Check
- ___2) ATV Check
- ___3) Cultural/Archeological Site Check (Report Changes/Discrepancies Observed Below)
 - A)
 - B)
 - C)
 - F)
 - G)
- ___4) Fishing check at Smith/Fuller Lakes (Additional Info if Needed)
 - A)
 - B)
- ___5) Hunting Check-In Board (2 Hours/1500-1630)
- ___6) Spot Check for Remaining Hunters (Additional Info if Needed)
 - A)
 - A1)
 - B)
 - C)
 - D)
 - E)
 - E1)
 - F)
- ___7) Debrief/Casework