INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

2021–2025

Land Management Office
Engineering and Public Works Directorate

DE PLAN 05

MCALESTER ARMY AMMUNITION PLANT - MCALESTER, OKLAHOMA

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

McAlester Army Ammunition Plant
McAlester, OK

Endorsement

This Integrated Natural Resources Management Plan (INRMP) meets the requirements of the Sikes Act (16 USC 670a *et seq.*), as amended.

Approving Officials:

Brian D Lott — 6/17/21

BRIAN D. LOTT
Commander's Representative
Commanding
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McAlester, OK

(Date)

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INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

McAlester Army Ammunition Plant
McAlester, OK

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PREFACE

Integrated management plans for natural and cultural resources provide resource managers with the "how to" and the justification to carry out Department of Defense's conservation goals. Integrated Natural Resource Management Plans support the military mission by providing for sustained use of its land, sea, and air space; protecting valuable natural and cultural resources for future generations; meeting all legal requirements; and promoting compatible multiple uses of those resources.

Ms. Sherri Goodman
Former Deputy Under Secretary of Defense (Environmental Security)

McAlester Army Ammunition Plant, Oklahoma... the Department of Defense's largest explosive storage facility.

Producing and storing the ammunition troops need to win on battlefields around the globe and conserving natural resources . . . McAlester Army Ammunition Plant is proving that the two missions are compatible and even complement each other.

McAlester Army Ammunition Plant produces and stores ammunition that soldiers and other members of the United States Armed Forces require to be trained in skills needed to protect the American way of life. The mission of McAlester Army Ammunition Plant has changed little over the decades, and products provided by McAlester Army Ammunition Plant are first rate today, just as they have been over 60 years.

This Integrated Natural Resources Management Plan is McAlester Army Ammunition Plant's plan of action for the conservation of natural resources entrusted to the U.S. Army. The plan is for a 5-year period, but the philosophy behind it is for a much longer period of time. McAlester Army Ammunition Plant will conserve its biological diversity and make sound decisions regarding the use of natural resources to support both the military mission and needs of the region and the nation, as indicated in MCAAP's Strategic Plan, *Over the Horizon*. The Strategic Plan outlines how MCAAP will achieve its military mission over the next 5 years, and identifies natural resources management as integral to accomplishing that mission now and in the future.

Lands on McAlester Army Ammunition Plant have been used to serve this nation's defense for more than 60 years. As the Installation enters the 21st Century, this legacy is not taken lightly by those who use McAlester Army Ammunition Plant today. This Integrated Natural Resources Management Plan is dedicated to the next generation of soldiers, their families, and other Americans who will use these lands and their natural resources.

EXECUTIVE REPORT

> *As we enter the dawn of a new century, the men and women who wear America's uniform stand proud to serve an important role in the continuing efforts to keep our skies clear, our oceans blue, and our precious soils clean. There is no greater gift we can give our children.* (General John M. Shalikashvili, U.S. Army, Former Chairman, Joint Chiefs of Staff)

Purpose

This Integrated Natural Resources Management Plan (INRMP) guides implementation of the natural resources program on McAlester Army Ammunition Plant, Oklahoma (MCAAP) from 2021 through 2025. The program conserves MCAAP's land and natural resources and helps ensure compliance with environmental laws and regulations. The INRMP also helps ensure the maintenance of quality lands to accomplish MCAAP's critical military mission on a sustained basis.

Environmental Compliance

General

Preparation and implementation of this INRMP are required by the Sikes Act (Title 16 of the United States Code [U.S.C.] section 670 *et seq*.), Department of Defense Instruction 4715.03 (*Natural Resources Conservation Program*), Army Regulation (AR) 200-1 (*Environmental Protection and Enhancement*), and Army Memorandum (21 March 1997), *Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and Integrated Natural Resources Management Plan (INRMP)*. This INRMP was prepared using Army Memorandum (25 May 2006) *Guidance for Implementation of the Sikes Act Improvement Act.*

This INRMP helps MCAAP comply with other federal and state laws, most notably laws associated with environmental documentation, wetlands, endangered species, and wildlife management in general. Compliance requirements at least partially affecting implementation of the INRMP are listed in section 1.5, *Compliance Requirements* and Appendix B. This plan describes how MCAAP will implement provisions of AR 200-1 and local regulations, principally MCAAP regulations 420-5 (*Hunting Regulation*) and 420-7 (*Fishing Regulation*).

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires disclosure of environmental impacts created by proposed major federal actions. AR 200-1 and the Council on Environmental Quality *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (NEPA) (Title 40 of the *Code of Federal Regulations* Parts 1500–1508) recommend an Environmental Assessment (EA) be completed for natural resources management plans. AR 200-1 outlines NEPA compliance requirements of proposed Army actions. This document incorporates this requirement by integrating into this single document the installation's INRMP and the associated NEPA analysis—in this case, a record of environmental consideration—for implementing the INRMP.

Sikes Act Improvement Act

The Sikes Act, as amended according to the Sikes Act Improvement Act of 1997, states, *The Secretary of Defense shall carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation under the jurisdiction of the Secretary. Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program to provide for the conservation and rehabilitation of natural resources on military installations; the sustainable multipurpose*

use of resources, which shall include hunting, fishing, trapping, and non-consumptive uses; and subject to safety requirements and military security, public access to military installations to facilitate the use.

The Sikes Act [16 USC 670 a(b)(1)] requires that INRMPs include:

- fish and wildlife management, land management, forest management, and wildlife-oriented recreation;
- fish and wildlife habitat enhancement or modifications;
- wetland protection, enhancement, and restoration where necessary for support of fish, wildlife, or plants;
- integration of, and consistency among, the various activities conducted under the INRMP;
- establishment of specific natural resources management goals and objectives and time frames for proposed actions;
- sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources;
- public access to the military installation that is necessary or appropriate for sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources, subject to requirements necessary to ensure safety and military security;
- enforcement of applicable natural resource laws;
- no net loss in the capability of military installation lands to support the military mission of the installation;
- regular review of this INRMP and its effects, not less often than every five years;
- provisions for spending hunting and fishing permit fees exclusively for the protection, conservation, and management of fish and wildlife, including habitat improvement, and related activities in accordance with the INRMP;
- exemption from procurement of services under Office of Management and Budget Circular A-76 and any of its successor circulars; and
- priority for contracts involving implementation of this INRMP to state and federal agencies having responsibility for conservation of fish and wildlife.

This INRMP includes these items if they are applicable to natural resources management and land use at MCAAP.

Endangered Species Act

This INRMP has the signatory approval of the U.S. Fish and Wildlife Service (USFWS). This signature approval includes agreement that the INRMP complies with the Endangered Species Act. Review of the INRMP is informal consultation with regard to the Endangered Species Act.

Within the spirit and intent of the Sikes Act Amendments of 1997 and the Endangered Species Act, this INRMP serves to provide *adequate management or protection*, a term that originated in the definition of occupied habitat from Section 3 of the Endangered Species Act. If *adequate management or protection* is already in place, then additional special management (*i.e.*, critical habitat designation) is not required when lands are found to contain physical and biological features essential to the conservation of the species. *Adequate management or protection* is provided by a legally operative plan that addresses the maintenance and improvement of primary constituent elements important to the species and manages for the long-term conservation of the species. This reasoning leads to the conclusion made by the USFWS that, where applicable, federal critical habitat designation is not warranted if the INRMP includes certain criteria, which are summarized in section 4.8.1.1.1, *Critical Habitat*.

Scope

The INRMP will provide the basis and criteria for protecting and enhancing natural resources using landscape and ecosystem perspectives, consistent with the military mission. The INRMP applies to organizations internal and external to MCAAP that are involved with or interested in the management or use of MCAAP natural resources and lands. This application includes directorates, reserve component units, private groups, and individuals. This INRMP is a component of the MCAAP Master Plan.

Relationship to the Military Mission

This INRMP supports the military mission by protecting and enhancing lands upon which the mission is critically dependent. The INRMP also describes recreational opportunities associated with natural resources to the local and regional community.

The INRMP expands on goals set forth in *Over the Horizon*, MCAAP's Strategic Plan, by explaining how maintaining MCAAP's lands, flora, and fauna is critical to accomplishing the installation's military mission. It describes impacts the military mission has on MCAAP's natural resources and how those impacts can be mitigated, and contains management measures to help ensure the installation complies with the requirements of environmental laws and regulations.

Partnerships

This INRMP cannot be implemented by MCAAP alone. MCAAP has forged partnerships with various agencies to manage its natural resources. Major partners in the implementation of this INRMP are the Oklahoma Department of Wildlife Conservation (ODWC) and the USFWS. Other partners in this effort include other federal and state agencies, universities, contractors, and other nongovernmental organizations.

INRMP Implementation Summary

This INRMP is designed to provide direct input into the Environmental Program Requirements (EPR) budget process. The INRMP (chapters 4, 5, and 7) describes specific projects with justifications, timelines, and budgets. Each project with its goals and objectives and timelines are listed in Appendix A. Section 7.5, *Implementation Funding Options* lists each project by funding source and provides project-specific EPR numbers and funding classes (if an environmental project) and estimated costs to implement during fiscal years 2021-2025.

Costs and Benefits

- **Costs:** This INRMP will cost about $1,775,000 for FY 21 - FY 25 to implement. Funding will be primarily from revenues generated from the sale of hunting and fishing permits, operations and maintenance funds, environmental funds, and agricultural funds.
- **Military Mission Benefits:** Implementation of this INRMP will improve the quality of land and conditions for the production and storage of munitions at MCAAP. It will improve the ability for long range planning at MCAAP.
- **Environmental Benefits:** The INRMP provides the basis for the conservation and protection of natural resources. It will help reduce vegetation loss and soil erosion. It will reduce the potential for environmental pollution. It will provide biodiversity conservation. Plan implementation will increase overall knowledge of the operation of MCAAP ecosystems through surveys and research.
- **Other Benefits:** Both community relations and MCAAP's environmental image, internal and external to Defense, will be enhanced. Quality of life for the MCAAP community and its neighbors will be improved. INRMP implementation will decrease long term environmental costs and reduce personal and installation liabilities from environmental noncompliance.

INRMP Organization

This INRMP is organized in distinct categories.

- Section 1 describes general relationships between natural resources management and the overall MCAAP mission. It lists compliance requirements, describes the natural resources management philosophy as a whole, describes regional programs, and provides a summary of the NEPA process and alternatives used to develop the EA portion of this INRMP.
- Section 2 identifies responsible parties and their roles in implementation of this INRMP.
- Section 3 describes the affected environment (physical, biological, and human) at MCAAP, including a description of the military mission and land management units.
- Section 4 describes natural resources programs within the responsibility of the Environmental Office at MCAAP, using specific project descriptions.
- Section 5 describes programs directly related to natural resources, using specific project descriptions, some of which are under the responsibility of other MCAAP organizations.
- Section 6 identifies unresolved issues.
- Section 7 provides means used for implementing this INRMP, including organization, personnel, external assistance, data analysis, project summary, funding, and command support.
- Section 8 provides a conclusion to the EA.
- **References** documents all sources referenced in this INRMP.
- **Agencies and Persons Consulted** identifies local, state, and federal agencies and individuals consulted by the preparers of this INRMP for their expertise.
- **Plan Preparers** identifies individuals, with their qualifications, who prepared this document.
- The **Distribution List** identifies all agencies, organizations, and individuals to whom copies of this INRMP were sent.
- The **Acronyms** section lists all acronyms used and their meaning.
- **Appendices** contain information or data relevant to natural resources management on MCAAP.

For those who are primarily interested in natural resources projects planned for 2021-2025, they are described in sections 4, 5, and 7; summarized for budget purposes in sections 7.5, *Implementation Funding Options*, and 7.6, *INRMP Implementation Costs*, and summarized by project with abbreviated goals and objectives in Appendix A.

Monitoring INRMP Implementation

The INRMP will be evaluated through monitoring programs, including the Environmental Compliance Assessment System (every 3 years), the Environmental Quality Report, and reviews by the Joint Munitions Command and other interested parties. The list of INRMP goals and objectives in Appendix A can provide a basis for evaluating plan implementation.

NEPA Findings and Conclusions

Implementing this INRMP would have either no significant adverse effects or beneficial effects on the natural and human environments at MCAAP. The affected environment would not be significantly affected by proceeding with implementing the goals and objectives of the INRMP. No significant cumulative effects would be expected. Therefore, the preparation of an environmental impact statement is not required, and the preparation and publication of a finding of no significant impact is appropriate.

Summary

The INRMP outlines steps required to meet Department of Defense, U.S. Army, and MCAAP legal and moral obligations to provide for the stewardship of the natural resources on MCAAP, while enabling the accomplishment of the military mission. The INRMP has been developed through cooperation with

appropriate regulatory agencies. As a public document, it will support and perpetuate the military mission while fostering stewardship and goodwill for MCAAP, the U.S. Army, and the Department of Defense. This INRMP will not resolve all existing and/or future environmental issues. It does, however, provide the guiding strategy, personnel, and means to minimize and work toward resolution of such issues.

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CONTENTS

SECTION 1.0
POLICY, COMPLIANCE, AND NEPA INTEGRATION

Army natural resources are the essential elements of ecosystems that provide realistic, sustainable assets for military missions. These same ecosystems contribute toward regional biodiversity and provide habitat for endangered, threatened, proposed, sensitive, and native plants and animals. The Army is required by law to manage natural resources. The Sikes Act direction is to "provide for the conservation and rehabilitation of natural resources on military installations." (Army Memorandum [2000], *Army Forest Resources Conservation*)

Army Environmental Vision Statement

The Army will be a national leader in environmental and natural resource stewardship for present and future generations as an integral part of our mission (AEPI 1992).

The Army's commitment to natural resources management is reflected in the *U.S. Army Environmental Strategy into the 21st Century*, which focuses on responsibly managing Army lands to ensure long-term natural resources productivity so the Army can achieve its mission. This commitment is further emphasized in Army Regulation (AR) 200-1, *Environmental Protection and Enhancement* (as updated in 2007); and Army Memorandum (21 March 1997), *Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and Integrated Natural Resources Management Plan (INRMP)*, which require that Integrated Natural Resources Management Plans (INRMPs) be developed and maintained for all Army installations, as well as establish policy, procedures, and responsibilities for Army lands and their natural resources.

1.1 MCAAP Mission Statement

The primary mission of the McAlester Army Ammunition Plant (MCAAP) is to produce and renovate conventional ammunition and ammunition-related components and to perform industrial manufacturing, engineering, and product assurance in support of conventional ammunition and related items. MCAAP also is responsible for receiving, storing, and issuing ammunition, explosives, and other expendable ordnance items for the Department of Defense (DoD). Assigned functions include work in the special weapons department, explosives ordnance disposal services, shipment of personal property, calibration laboratory operation, communications, and disposal of excess properties under an agreement with the Defense Logistics Agency (DLA).

The Savanna Army Depot Activity in Savanna, Illinois, was closed under Base Realignment and Closure in 1995 and the mission of the Defense Ammunition Center (USADAC) was relocated to MCAAP. The mission of USADAC is to perform design and safety testing of containers used for ground and shipboard transportation of ammunition. Functions performed by USADAC include munitions training, logistics engineering, explosive safety, demilitarization research and development, technical assistance, and career management.

1.2 Environmental Policy

MCAAP's commitment to the environment is stated in this excerpt from the Commander's Policy on the Environment (Command Policy No. 31).

1. We are committed to protecting our environment and conserving our natural resource heritage both for ourselves and for future generations.

2. The accomplishment of environmental objectives is integral to the decision making process. Through commitment to continual improvement and prevention of pollution, MCAAP will strive to minimize adverse environmental and health impacts while maximizing readiness and strategic preparedness.

3. Compliance with Federal, State, and local applicable laws and regulations is a standard and an inherent responsibility to ensure public trust. We will restore lands and waters damaged through our past activities to the maximum extent possible with available resources.

4. Everyone entering the MCAAP Installation, including, military, civilians, tenants and contractors will adhere to MCAAP's Environmental Management System to support this commitment in protecting our environment.

1.3 Natural Resources Mission, Goals, and Objectives

MCAAP Natural Resources Mission

Provide professional management and stewardship of natural resources at McAlester Army Ammunition Plant to achieve optimum, sustainable use of training lands; promote biodiversity and ecosystem functionality; provide opportunities for multiple compatible uses of natural resources; and comply with environmental laws.

This section provides general MCAAP natural resources goals and objectives that can be used to attain them. These objectives—and the more specific ones presented in sections 4, 5, and 7 (as summarized in Appendix A)—serve as a checklist for monitoring the success of the INRMP. Some objectives apply to more than one goal, but have been included under only the most fitting one.

Goal 1. Provide quality natural resources as a critical asset upon which to accomplish the military mission of MCAAP.

Objective 1. Ensure no net loss in the capability of MCAAP lands to support existing and projected military operations.

Objective 2. Maintain quality lands through monitoring and damage minimization, mitigation, and rehabilitation.

Objective 3. Manage training resources to ensure that the optimum training carrying capacity of sites is not exceeded to guarantee the long-term use of the resource.

Goal 2. Comply with laws and regulations that pertain to management of MCAAP’s natural resources.

Objective 1. Manage natural resources within the spirit and letter of environmental laws, particularly the Sikes Act, upon which this INRMP is predicated.

Objective 2. Protect, rehabilitate, and manage sensitive species and wetlands.

Objective 3. Follow procedures in the National Environmental Policy Act (NEPA) to make informed decisions that include natural resources considerations and mitigation.

Objective 4. Ensure that MCAAP’s natural resources program is consistent with the protection of cultural and historic resources.

Objective 5. Implement this INRMP within the framework of Army policies and regulations.

Objective 6. Protect and manage threatened and endangered species and critical habitat in accordance with the Endangered Species Act (ESA); NEPA; AR 200-1; DoD Instruction (DoDI) 4715.03, *Environmental Conservation Program*; U.S. Fish and Wildlife Service (USFWS) regulations and agreements; and other applicable laws or guidance from higher headquarters.

Goal 3. Manage natural resources on MCAAP to ensure good stewardship of public lands entrusted to the care of the Army.

Objective 1. Use adaptive ecosystem management strategies to protect, conserve, and enhance native fauna and flora with an emphasis on priority species and biodiversity enhancement.

Objective 2. Monitor and manage soils, water, vegetation, and wildlife on MCAAP with consideration for all biological communities and human values associated with these resources.

Objective 3. Provide human-valued products of renewable natural resources when such products can be produced in a sustainable fashion without significant negative impacts on the military mission or other natural resources.

Objective 4. Provide professional enforcement of natural resources-related laws.

Objective 5. Involve the surrounding community in the MCAAP natural resources program.

Objective 6. Ensure that the MCAAP natural resources program is coordinated with other agencies and conservation organizations with similar interests.

Objective 7. Closely scrutinize new missions to determine their compatibility with the natural resources of MCAAP.

Goal 4. Improve the quality of life of the MCAAP community and general public through high-quality natural resources-based recreational opportunities.

Objective 1. Provide high-quality opportunities for hunting and fishing and other consumptive recreational activities within biological and recreational carrying capacities of the resources.

Objective 2. Provide opportunities for nonconsumptive outdoor recreation (e.g. picnicking, camping, nature study).

Objective 3. Provide opportunities for conservation education.

The ability to achieve these goals, including direct support of the military mission, depends directly on the health and condition of natural resources at MCAAP. Properly functioning ecological conditions at the installation provide the vegetation, soil, and water resources needed for realistic military training. These same conditions provide opportunities for outdoor recreation that are important assets to both military and civilian communities associated with MCAAP.

1.4 Support of Installation Goals

Implementing this INRMP will support the mission of MCAAP as set forth in *Over the Horizon*, MCAAP's Strategic Plan, specifically strategic goals 3.4 (minimizing environmental impacts) and 5.1 (environmental compliance), and indirectly support many other

Strategic Plan goals. The natural resources staff at MCAAP is committed to supporting the military mission, providing stewardship of resources entrusted to the Army, enhancing the quality of life of MCAAP and surrounding communities, and being a valued member of the overall MCAAP team. Implementing this INRMP will demonstrate those commitments and MCAAP's recognition of the role that a well-managed natural resources management program can play in meeting the goals set forth in the Strategic Plan in "preparing today for the challenges of tomorrow."

1.5 Compliance Requirements

The INRMP is the primary mechanism for compliance with natural resources laws and regulations. Federal, state, and local laws and regulations could apply to proposed management actions in this plan.

Appendix B lists the most significant federal and state laws and regulations and other regulatory instruments that govern implementation of this INRMP.

1.5.1 The Sikes Act (16 United States Code 670 et seq.)

Under the Natural Resource Management on Military Lands Act of 1960, commonly known as the "Sikes Act,"

> The Secretary of Defense shall carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States under the jurisdiction of the Secretary. Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program to provide for the conservation and rehabilitation of natural resources on military installations; the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and non-consumptive uses; and subject to safety requirements and military security, public access to military installations to facilitate the use.

Under the Sikes Act Improvement Act (SAIA) of 1997 (Title 16 of the *United States Code* [U.S.C.] section 670a-670(o)), to the extent appropriate and applicable, this INRMP provides for the following:

- Fish and wildlife management, land management, forest management, and fish- and wildlife-oriented recreation.
- Fish and wildlife habitat enhancement or modifications.
- Wetland protection, enhancement, and restoration, where necessary for support of fish, wildlife, or plants.
- Integration of, and consistency among, the various activities conducted under the plan.
- Establishment of specific natural resource management goals and objectives and time frames for proposed actions.
- Sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources.
- Public access to the military installation that is necessary or appropriate for the use described above, subject to requirements necessary to ensure safety, military security, and fulfillment of the military mission.
- Enforcement of applicable natural resource laws (including regulations).

- No net loss in the capability of military installation lands to support the military mission of the installation.
- Such other activities as the Secretary of the military department determines appropriate.

1.5.1.1 Sikes Act Policy Memorandum, October 10, 2002

DoD memorandum (10 October 2002), *Implementation of Sikes Act Improvement Act: Updated Guidance*, defines requirements and expectations associated with the USFWS and state natural resources agency coordination, DoD reporting, implementation and funding, and other miscellaneous requirements, including no net loss to military lands and cooperative agreements.

Supplemental guidance—DoD memorandum (1 November 2004), *Supplemental Guidance for Implementation of the Sikes Act Improvement Act: Additional Guidance Concerning INRMP Reviews*—was issued in relation to the October 2002 memorandum. It provides additional guidance concerning the scope of INRMP reviews, public comments on INRMP reviews, and ESA consultation on INRMPs. Specifically, the guidance indicates that DoD policy is that, although INRMPs must be reviewed regularly, but not less often than every 5 years, not all INRMPs will require revision upon those reviews and that INRMPs should be reviewed annually by the installation and other parties to the INRMP. With respect to public review of INRMPs, the guidance states that it is DoD policy that no legal obligation exists to invite the public either to review or to comment on a mutually agreed upon decision to continue implementing an existing INRMP without revision. Finally, regarding USFWS consultation, the guidance states that it is DoD policy that most INRMPs will incorporate by reference the results of previous ESA consultations, and as a consequence neither a separate biological assessment nor a separate formal consultation should be necessary concerning most INRMPs or INRMP revisions. Informal consultation with the USFWS during the INRMP revision process is, nonetheless, encouraged.

These guidance memorandums were further revised by DoD memorandum (17 May 2005), *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance Concerning Leased Lands*. The 2005 memorandum clarifies that an INRMP must address resource management on all the lands for which an installation has real property accountability, including lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right-of-way, or any other form of permission.

1.5.1.2 INRMP Comprehensive Strategic Action Plan, August 6, 2004

This *Comprehensive Plan for Using Integrated Natural Resource Management Plans at Active Military Installations and Ranges to Sustain Readiness* describes a set of activities related to implementing INRMPs that will ensure DoD's ability to properly manage the valuable natural resources entrusted to its care and sustain the readiness of its force.

1.5.1.3 Sikes Act Tripartite Memorandum of Understanding, January 2006

This memorandum of understanding established a cooperative relationship between DoD, USFWS, and state fish and wildlife agencies (represented by the International Association of Fish and Wildlife Agencies) for preparing, reviewing, and implementing INRMPs.

1.5.2 Department of Defense Instruction 4715.03: Natural Resources Conservation Program, March 18, 2011

This revised INRMP was prepared in accordance with the SAIA and DoDI 4715.03, *Natural Resources Conservation Program* (as updated in 2011). The SAIA states that "the Secretary of each military department shall prepare and implement an INRMP for each military installation in the United States under the jurisdiction of the Secretary, unless the Secretary determines that the absence of significant natural resources on a particular installation makes preparation of such a

plan inappropriate." DoDI 4715.03 prescribes procedures for integrated management of natural and cultural resources, including preparing an INRMP as required by the SAIA. DoDI 4715.03 also states that "INRMPs shall be prepared, maintained, and implemented for all installations and ranges that contain significant natural resources for which DoD has authority for or control of natural resources management."

1.5.3 National Environmental Policy Act

NEPA requires disclosure of environmental impacts created by proposed major federal actions. The intent of NEPA is to better inform decision makers of potential impacts from proposed projects and to use this information early in the project planning process. Title 32 of the *Code of Federal Regulations* (CFR) Part 651, *Environmental Analysis of Army Actions*, "implements the National Environmental Policy Act of 1969 (NEPA), setting forth the Army's policies and responsibilities for the early integration of environmental considerations into planning and decision-making." In particular, 32 CFR 651.14, *Integration with Army Planning*, states that "environmental analyses required by this part will be integrated as much as practicable with other environmental reviews, laws, and Executive Orders." This document incorporates this requirement by integrating into this single document the installation's INRMP and the associated NEPA analysis—in this case, a record of environmental consideration (REC)—for implementing the INRMP.

1.5.4 Army Regulations

The Army's commitment to the conservation of its natural resources is further reflected in AR 200-1. That regulation requires the preparation of INRMPs and prescribes Army policies, procedures, and standards for the "conservation, management, and restoration of land and the renewable natural resources on it, consistent with and in support of the military mission."

1.6 Biodiversity Conservation and Ecosystem Management

Biological diversity (biodiversity) refers to the variety and variability among living organisms and the environment in which they occur. Biodiversity has meaning at various levels, including ecosystem diversity, species diversity, and genetic diversity. DoD has developed a Biodiversity Management Strategy, which identifies five reasons to conserve biodiversity on military lands:

1. ***Sustain natural landscapes*** required for the training and testing necessary to maintain military readiness.
2. ***Provide the greatest return on the Defense investment*** to preserve and protect the environment.
3. ***Expedite the compliance process*** and help avoid conflicts.
4. ***Engender public support*** for the military mission.
5. ***Improve the quality of life*** for military personnel (The Keystone Center 1996).

The Keystone Center report (1996) notes that the challenge is to manage for biodiversity in a way that supports the military mission. This strategy identifies the INRMP as the primary vehicle to implement biodiversity protection on military installations. The model process developed within the strategy includes the following principles:

- Support the military mission;
- Use joint planning between natural resources managers and military operations personnel;
- Integrate biodiversity conservation into INRMP and other planning protocols;
- Involve internal and external stakeholders up front;
- Emphasize the regional (ecosystem) context;

- Use adaptive management;
- Involve scientists and use the best science available; and
- Concentrate on results.

DoDI 4715.03 describes ecosystem management as a process that considers the environment as a complex system functioning as a whole, not a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. DoD's goal with regard to ecosystem management is to ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. Over the long term, that approach will maintain and improve the sustainability and biological diversity of terrestrial and aquatic (including marine) ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training operations.

MCAAP will use ecosystem management to guide its program in the next 5 years and beyond. This management strategy enables the Installation to conduct its military mission while conserving natural resources, which provide the natural setting for that mission. Adaptive management is an important component of ecosystem management that involves implementing the best option, testing that option's results, and modifying implementation accordingly.

1.7 INRMP and NEPA Integration

This INRMP is an action-forcing document that triggers NEPA compliance requirements. AR 200-1 as updated in 2007 states that INRMPs will normally use environmental assessment (EA) procedures.

AR 200-1 requires the integration of the NEPA process early in project planning to ensure that planning and decision-making reflect environmental values, prevent delays, and minimize potential conflicts. NEPA requires disclosure of environmental impacts created by proposed major federal actions. The Council on Environmental Quality Implementing Guidelines for NEPA (40 CFR Parts 1500-1508) require environmental analyses and documentation under NEPA to be integrated as much as practicable with other environmental reviews, laws, and executive orders. AR 200-1 specifically identifies the integration or concurrent development of natural resources management plans with appropriate NEPA analysis and documentation.

Per Army memorandum (25 May 2006), *Guidance for Implementation of the Sikes Act Improvement Act*, MCAAP is not required to prepare an EA for this revision of the INRMP because "these revisions are not expected to result in biophysical consequences materially different from those anticipated in the existing INRMP and materially different from those analyzed in an existing NEPA document, then neither additional NEPA analysis nor an opportunity for public comment should be necessary." The 2011 INRMP has an incorporated EA, and this revision meets above requirements (Starry et al. 2011). Thus, an REC will be used to meet NEPA requirements.

1.8 Interagency Coordination and Public Review

Interagency coordination is invited through the INRMP development process using personal communication and reviews of drafts. Drafts of this INRMP are used to inform decision makers of likely environmental and socioeconomic consequences of implementing the management activities proposed in the INRMP. Native American groups are notified of any inadvertent discoveries made in the execution of natural resources activities, in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001 et seq.).

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SECTION 2.0
RESPONSIBLE AND INTERESTED PARTIES

2.1 McAlester Army Ammunition Plant

2.1.1 Commander

The MCAAP Garrison Commander implements policies and directives of the Department of the Army. The Garrison Commander bears ultimate responsibility for management of natural resources on MCAAP, including its land and wildlife. Acting through appropriate staff personnel, the Garrison Commander will, in part (AR 200-1, *Environmental Protection and Enhancement*):

- Ensure that Base Support activities support military training and readiness operations, enhance mission accomplishment, and are conducted in a manner conducive to environmental stewardship.
- Comply with applicable federal, state, and local environmental laws, regulations, internal directives and goals, and executive orders (EOs).
- Investigate regulatory enforcement actions, complaints, and spills/releases, and correct systemic problems.
- Ensure environmental requirements that impact ranges and training land are identified and incorporated into the installation range complex master plan.
- Ensure installation activities incorporate applicable environmental requirements into all procurement actions.
- Apply for, sign, arrange funding, and maintain all applicable federal, state and local environmental permits.
- Maintain appropriate environmental records as required by law.
- Ensure that compliance agreements and consent orders that are attributable to a tenant's mission and/or operations are coordinated through applicable legal and command channels to determine the appropriate funding activity.
- Assess the long-term resource impacts of all environmental agreements.
- Ensure that the installation strategic planning office (or equivalent) incorporates sustainability principles into strategic and other installation management plans.
- Promote recycling/reuse programs and green procurement policies.
- Ensure all environmental program plans are completed and implemented.
- Designate personnel who are responsible and accountable for executing major program requirements.
- Maintain a public affairs program that encourages public involvement.
- Ensure that the installation master plan incorporates environmental considerations.
- Identify environmental requirements, forward through command channels, and maintain auditable records.
- Execute the environmental budget to meet critical requirements.
- Maintain an efficient and well-trained environmental staff.
- Ensure that Army law enforcement personnel are trained in conservation law enforcement where appropriate.
- Ensure that sufficient numbers of professionally trained natural resource management personnel and natural resources law enforcement personnel are available and assigned the responsibility to perform tasks necessary to comply with 16 USC 670e.

- Approve INRMPs.
- Designate an installation wildland fire program manager and approve the integrated wildland fire management plan.

2.1.2 Civilian Deputy

The Civilian Deputy serves as the principal assistant to the Commander for command and management of MCAAP. The deputy directs and is responsible for all aspects of operations at MCAAP, including natural resources management.

2.1.3 Engineering and Public Works Directorate

The director of the Directorate of Engineering and Public Works, acting primarily through his Chief of the Land Management Office (LMO), is responsible for:

- Developing and implementing programs to ensure the inventory, delineation, classification, and management of all applicable natural resources to include wetlands, scenic areas, threatened and endangered species, sensitive and critical habitats, and other natural resource areas of special interest;
- Providing for the training of natural resources personnel;
- Implementing this INRMP;
- Reviewing all environmental documents (e.g., EAs and environmental impact statements [EISs] and remedial plans) and construction designs and proposals to ensure adequate protection of natural resources is provided, ensuring that technical guidance as presented in this INRMP is adequately considered;
- Coordinating with local, state, and federal governmental and civilian conservation organizations relative to natural resources management for MCAAP;
- Managing all phases of the natural resources program for MCAAP with appropriate natural resources management personnel; and
- Administering the installation pest control program.

General responsibilities of the LMO include

- Administering the hunting and fishing program;
- Managing wildlife and conducting related research;
- Managing agricultural/hay leases;
- Managing wetland resources;
- Determining budget requirements for the natural resources program;
- Cooperating with the Oklahoma Department of Wildlife Conservation (ODWC) to set hunting season opening and closing dates, bag limits, and other regulations governing harvest of fish and wildlife on MCAAP;
- Coordinating with the Security Office to ensure that hunting and fishing activities do not adversely impact the military mission of MCAAP;
- Operating wildlife check stations to collect biological and other data during hunting seasons;
- Enforcing federal, state, and MCAAP laws and regulations pertaining to natural resources and the environment;
- Recommending and enforcing suspension of access privileges for specified infractions of laws and regulations pertaining to fish, wildlife, hunting, or fishing; and
- Ensuring MCAAP wildlife law enforcement personnel are qualified and trained to carry out assigned duties and responsibilities.

2.1.4 Chief of Staff

The Office of the Chief of Staff has fire, security, and safety responsibilities, including:

- All aspects of safety and occupational health, security, fire and emergency services, and chemical and explosives analysis;
- Providing advice and assistance to the MCAAP commander and managers;
- Investigating and recommending countermeasures for accidents and injuries; and
- Serving as technical advisor for security, explosive and industrial safety, and chemical engineering.

2.1.5 Environmental Management Office

Responsibilities of the Environmental Management Office (EMO) include:

- Ensuring that drinking water and sewage treatment are within environmental standards;
- Ensuring environmental quality of surface water and stormwater;
- Managing the solid waste and recycling program;
- Implementing pollution prevention measures; and
- Reviewing all environmental documents and construction designs and proposals.

Environmental programs that directly impact natural resources management on MCAAP specifically include programs affecting water quality, pollution prevention, and NEPA document action.

2.1.6 Community and Family Activities Directorate

The Director of Community and Family Activities establishes procedures and governs various aspects of installation morale, welfare, and recreational activities (AR 215-1, *Military Morale, Welfare, and Recreation Programs*). Responsibilities associated with this plan include:

- Managing Murphy's Meadow campground and boat docks on Brown Lake;
- Conducting fishing and other outdoor recreation tournaments; and
- Providing outdoor equipment rental.

2.1.7 Public Affairs Office

The Public Affairs Office is responsible for promoting an understanding of MCAAP among its various publics and providing professional public affairs advice and support to Installation leaders and activities. The Public Affairs Office is an important component of the natural resources program for MCAAP, especially in disseminating information critical to the success of the program. Specific responsibilities include:

- Providing news releases and public information notices of activities and projects important to the installation or community, such as kids' fishing derbies;
- Assisting the LMO in promoting, publishing, and promulgating fish and wildlife and natural resources information for public release in support of the command, the resource, and the resource user, such as the prescribed burning program; and
- Assisting the LMO through coordination of wildlife tours and presentations to civic organizations, scout groups, and civilian users of Installation lands.

2.1.8 Office of Counsel

The Staff Judge Advocate provides legal advice, counsel, and services to command, staff, and subordinate elements of MCAAP. Specific staff judge advocate responsibilities with regard to integrated natural resource management include NEPA review and general legal advice concerning projects, programs, and endangered species.

2.1.9 Conservation and Beautification Committee

The Conservation and Beautification Committee is an appointed non-governing advisory body comprised of military personnel and civilians interested in the development of natural resources on the Installation. The committee aids in planning projects, assists in implementing the natural resources program, and monitors the program's accomplishments.

2.1.10 Other Installation Organizations

Implementation of this INRMP will require assistance from other directorates and organizations, including the Resource Management Directorate (responsible for budget and equipment authorizations) and the Depot Operations Directorate (responsible for supply and transportation).

2.2 Other Defense Organizations

2.2.1 Army Materiel Command Headquarters

The Army Materiel Command Headquarters is responsible for providing command and technical guidance to the MCAAP natural resources program by (AR 200-1), including:

- Providing technical assistance to acquisition program managers and program executive offices as required to ensure integration of environmental quality considerations in all aspects of acquisition programs and weapons system's life cycle, such as acquisition, maintenance, disposal, and demilitarization.
- Conducting environmental research, development, testing, and evaluation and technical investigations in support of its missions and activities.
- Conduct Army Command responsibilities for installations under its purview.

AMC will conduct an on-site evaluation of the Installation's natural resources program at least once every 3 years and will act as trustee for the overall natural resources program.

2.2.2 Army Environmental Center

The Army Environmental Center, located at Fort Sam Houston, Texas, provides oversight, centralized management, and execution of Army environmental programs and projects. It has support capabilities in the areas of NEPA, endangered species, cultural resources, environmental compliance, and related areas.

2.2.3 U.S. Army Corps of Engineers

2.2.3.1 Tulsa District

The U.S. Army Corps of Engineers (USACE), Tulsa District, supports the MCAAP natural resources program by administering contracts for outside or other agency support. The primary natural resources contract at MCAAP is for agricultural outleasing.

2.2.3.2 Cold Regions Research Engineering Laboratories

The USACE Cold Regions Research Engineering Laboratories has provided design and implementation assistance for igloo soil stabilization projects. This relationship will continue during implementation of this INRMP.

2.2.3.3 Waterways Experiment Station

The Waterways Experiment Station is a USACE laboratory located at Vicksburg, Mississippi. It has experimented with vegetation for erosion control on MCAAP in the past and will be considered as a source of technical assistance during implementation of this INRMP.

2.3 Other Federal Agencies

2.3.1 U.S. Fish and Wildlife Service

USFWS, a bureau of the Department of Interior, has a field office in Tulsa, Oklahoma, that provides technical advice for management of natural resources in general as well as protection of the threatened American burying beetle (*Nicrophorus americanus*) on MCAAP. The USFWS is a signatory cooperator in implementing this INRMP in accordance with the Sikes Act. Appendix C contains specific items of agreement among the USFWS, the ODWC, and MCAAP, as required by the Sikes Act.

2.3.2 Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS), an agency of the U.S. Department of Agriculture, is a source of technical advice and a potential vendor to develop, plan, and implement natural resource conservation and environmental enhancement projects on MCAAP.

2.4 Oklahoma Department of Wildlife Conservation

The state of Oklahoma, functioning through the ODWC director, provides technical advice and assistance for programs relating to natural resources, or more specifically, on-Installation assistance during annual deer and turkey hunts and stocking and live-trapping operations. ODWC is a very active partner in implementing natural resources management programs on MCAAP. For example, ODWC provides a full-time on-site wildlife biologist to assist with INRMP implementation as well as with administering the deer and turkey hunts for MCAAP.

ODWC is a signatory cooperator in implementing this INRMP. Appendix C contains specific items of agreement among the ODWC, USFWS, and MCAAP, as required by the Sikes Act.

2.5 Oklahoma Department of Agriculture

The Department of Wildlife Services, an agency of the Oklahoma Department of Agriculture, Food, and Forestry (Oklahoma Department of Agriculture) assists the Installation with aerial control of feral hogs and other nuisance wildlife.

2.6 Native American Tribes

The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, executive orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. Executive Order (EO) 13175, *Consultation and Coordination with Indian Tribal Governments*, and the DoD American Indian and Alaska Native Policy establish regular and meaningful consultation and collaboration with Indian tribal governments. MCAAP has implemented a process that permits elected officials and other representatives of Indian tribal governments to provide meaningful and timely input on actions or policies that might be of tribal interest, such as those that affect sacred or Indian cultural sites.

Tribes that could be consulted with regard to these issues include:

- Caddo Indian Tribe of Oklahoma
- Chickasaw Nation
- Choctaw Nation of Oklahoma
- Quapaw (on behalf of other Wichita and affiliated tribes)

2.7 Universities

Regional universities have provided specialized expertise to help manage natural resources on MCAAP. Oklahoma State University has been the primary institution providing research support and assistance on various aspects of natural resources programs at MCAAP. The University of Oklahoma has provided support by performing a rare plant and animal survey. Partnerships with other state universities could be explored during 2021–2025. MCAAP has provided many universities with educational tours and field trips.

2.8 Municipalities

Communities adjacent or in proximity to MCAAP are positively affected by natural resources management on the Installation. No significant conflicts exist between natural resources management on MCAAP and surrounding communities. The Installation provides opportunities for general public hunting and fishing and other recreation. In addition, the towns of Savanna and Haywood, Oklahoma, are provided with potable water from the Installation. MCAAP management enhances surrounding wildlife populations with animals moving off-Installation, which offers more consumptive and non-consumptive opportunities.

2.9 Other Interested Parties

The Noble Foundation, Oklahoma State Bow Hunting Council, National Bow Hunters Council, Oklahoma Longbow Association, Pittsburg County Law Enforcement Association, Girl Scouts of America, and Boy Scouts of America are local and regional organizations that have demonstrated an interest or provided assistance in the management of natural resources on MCAAP.

Probably the single most valuable source of assistance the natural resources program receives is from a dedicated group of volunteers known as “the White Hats.” They are a group of about 25 individuals who assist with programs such as annual deer and turkey hunts, fish structure installation, kids’ fishing derbies, and species surveys.

SECTION 3.0
INSTALLATION ENVIRONMENT

We do not own this land; we are caretakers of the land and the plant and animal species that inhabit it. The American people entrust the land to our care, and we shall fulfill their trust. We shall conserve and protect these resources for the future. (Walker 1995)

3.1 General Background

3.1.1 Location

MCAAP is located 9 miles southeast of the City of McAlester in east-central Oklahoma. Tulsa is 84 miles north; Oklahoma City is 130 miles northwest; Fort Smith, Arkansas is 80 miles east; and Dallas, Texas is 166 miles southwest of MCAAP. Figure 3-1 shows the location of MCAAP as well as main access roads servicing the Installation.

3.1.2 Neighbors

MCAAP's nearest neighbors are the Town of Savanna adjacent to the eastern portion of the Installation and the Town of Haywood adjacent to the northern portion of the Installation. The City of McAlester is northeast of the Installation. Other communities in the immediate area include Krebs, Stuart, Ashland, and Pittsburg.

3.1.3 Satellite Installations

MCAAP has two satellite installations: Red River Munitions Center, Texas, and Lake City Army Ammunition Plant in Independence, Missouri. Each installation has its own INRMP that directs its natural resources management.

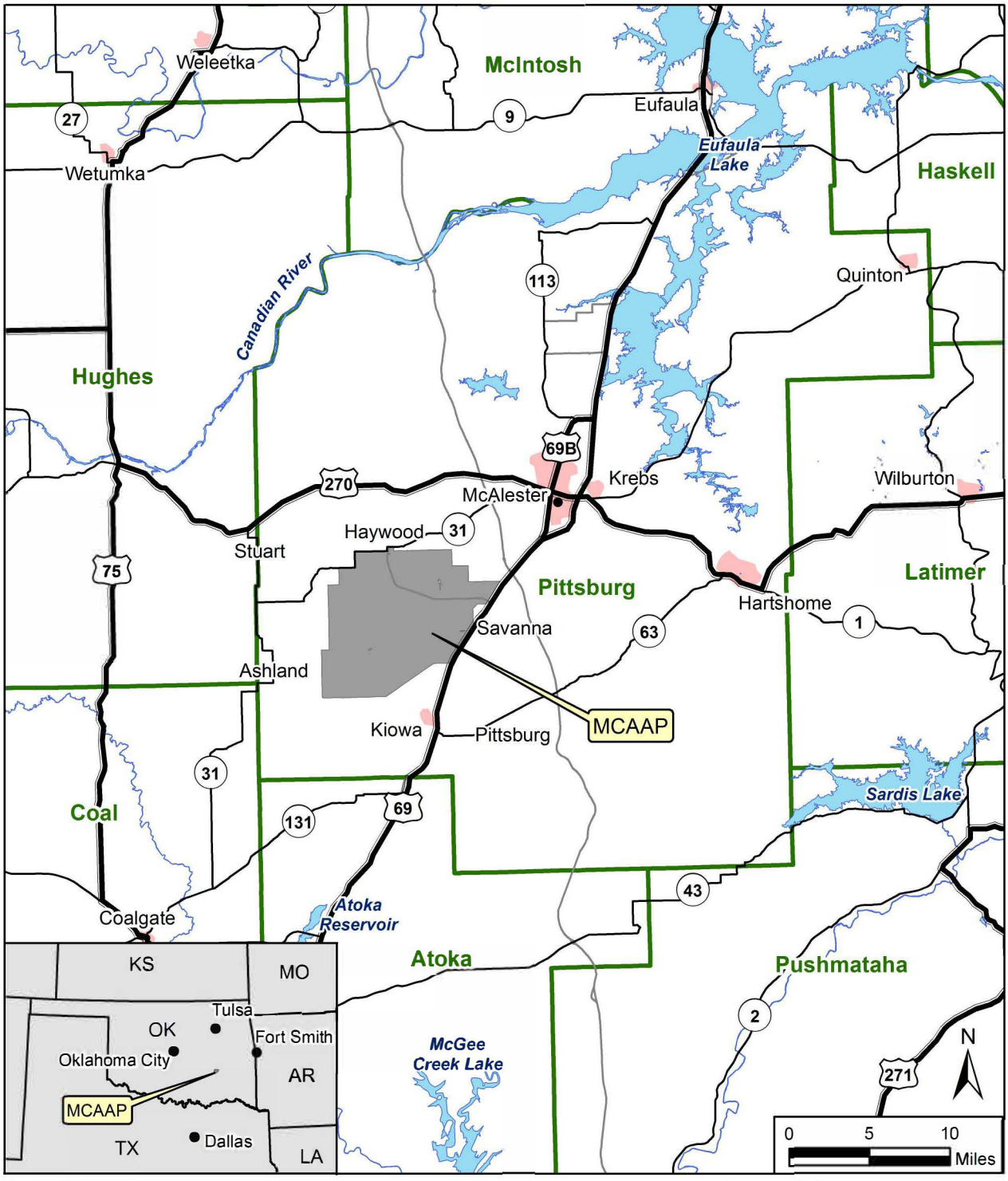
3.1.4 Acreage and Acquisition

Development of the area began in 1832 with the arrival of the first permanent inhabitants, the Choctaw Indians. The region was designated Territory of the Choctaw Nation in 1820. The Chickasaw tribe came to the area following another treaty in 1833. A stage station and post office, established in 1840 and 1841, respectively, brought limited development to the area, but the Civil War brought fast change and many people. The railroad reached McAlester in 1872 and with it came a construction boom. Coal fields were opened, and new residents flocked to the area. Until about 1940, McAlester's growth and prosperity were primarily dependent upon coal development. Later, MCAAP became a major factor in growth of the city. The present economic base of McAlester is light industry. The 2014 population estimate for the City of McAlester was 18,247, and Pittsburg County was estimated as having 44,626 residents in 2014 (U.S. Census Bureau 2015).

MCAAP is irregularly shaped and includes 44,965 acres within Pittsburg County, Oklahoma. Land for the Installation was purchased in 1942. Events leading to establishment of MCAAP are discussed in section 3.1.5, Installation History. Approximately 43,400 acres of MCAAP are suited for natural resources management. The remaining acreage includes areas occupied by roads, railroads, buildings, parking areas, and storage yards.

3.1.5 Installation History

The following discussion is from the information sheet *Plant History* (Public Affairs Office 1998).



LEGEND

- County Boundary
- U.S. Route
- State Route
- Surface Water
- Urban Area

MCAAP Location

Figure 3-1

The McAlester Naval Ammunition Depot, renamed the McAlester Army Ammunition Plant, was established during World War II. When Pearl Harbor was bombed in 1941, Hawthorne, Nevada was the nation's only Naval Ammunition Depot to support the Pacific Fleet. However, the Navy had started building an ammunition depot at Crane, Indiana to support the Atlantic Fleet and was actively seeking sites for at least three other inland depots.

A group of prominent citizens in McAlester formed a task force to secure one of the depots for McAlester. With the aid of U.S. Senator Elmer Thomas and Congressmen Wilbur Cartwright, the task force convinced the Navy to consider McAlester as a depot site. The other two sites, which have since been closed, were Shumaker, Arkansas and Hastings, Nebraska.

On June 10, 1942 the Navy announced that it had chosen McAlester as a site for an ammunition depot. Construction started in August 1942, and commissioning ceremonies were held on May 20, 1943. The first production, 5-inch 38-caliber projectiles came off the line 3 months later. During World War II the depot employed 8,000 people and produced 325,000 tons of ammunition, including 16-inch gun ammunition, rockets, mines, and depth charges.

During the Korean War more than 3,000 people worked at the depot, but post-war employment dropped to an all-time low of 632 employees by 1958.Employment increased in the early 1960s with the nation's growing involvement in Southeast Asia.

As U.S. forces were deployed to Vietnam, the depot entered an era of full-scale bomb production for the first time. More than 3,000 people were employed by the late 1960s and early 1970s, many working on the Installation's bomb line producing more than 3.5 million low-drag bombs. Depot employees also loaded, assembled, and packed 13 million 2.75-inch "Mighty Mouse" rockets, 556,000 5-inch Zuni rockets, 43.5 million rounds of spinner stabilizing rockets, and a special type of 40-millimeter ammunition.

In 1975, postwar employment dropped to slightly more than 1,000 people. Two years later the DoD issued a directive designating the Department of Army as the single manager for conventional ammunition. McAlester, along with its sister installations at Hawthorne, Nevada and Crane, Indiana, were officially transferred to the Army on October 1, 1977, and the Installation's name was changed to the McAlester Army Ammunition Plant.

MCAAP is a major ammunition storage site for all branches of the Armed Forces. The Installation employs 1,642 civilian employees, 1 military, 197 contractors and 208 tenant personnel assigned to ammunition production, storage, and demilitarization operations and various support functions. The Installation's 2,426 storage magazines have over 8 million square feet of covered explosives storage space. MCAAP is the DoD's largest explosive storage facility.

3.1.6 Military Mission

3.1.6.1 Mission of MCAAP

The primary mission of MCAAP is to produce and renovate conventional ammunition and ammunition-related components and perform industrial manufacturing, engineering, and product assurance in support of conventional ammunition and related items (Table 3-1). MCAAP also has the responsibility to receive, store, and issue ammunition, explosives, and other expendable ordnance items for DoD. Assigned functions include work in the special weapons department, explosives ordnance disposal services, shipment of personal property, calibration laboratory operation, communications, and an agreement with the DLA to dispose of excess properties.

Table 3-1.
Mission Capabilities

Load, Assemble, and Pack	Renovation
MK80 Series Bombs, 250-lb through 2,000-lb	Bombs
BLU-190/B Penetrator Bomb, 1,000-lb through 3,000-lb	Rockets
BDU Inert Bombs, 500-lb through 2,000-lb	Projectiles
16"/50-caliber Projectiles	Propelling Charges
Propelling Charges	Containers and Boxes
Rockets	
20mm and 40mm Cartridge Assemblies	**Demilitarization**
Small Arms	Bombs
Prototype Munitions	Rockets
	Bulk Explosives and Propellants
	Ammunition and Components
Support Facilities	
Calibration Lab	**Wood Products**
Chemical Lab	Pallets
Print/Photo Lab	Boxes
Machine Shop	Special Construction
X-Ray	Preservative Treatment
Grit Blasting	
Steam Out/Recovery System	**Research and Development**
Reserve Component Program	High-voltage Cable Tester

Notes: lb = pound(s), mm = millimeter

The Savanna Army Depot Activity, Savanna, Illinois, was closed under Base Realignment and Closure and the mission of the U.S. Army Defense Ammunition Center and School (USADACS) was relocated to MCAAP. Relocating USADACS involved the transfer of civilian personnel and support positions to MCAAP and was completed in 1998. The mission of the USADACS is to perform design and safety testing of containers used for ground and shipboard transportation of ammunition. Functions performed by USADACS include munitions training, logistics engineering, explosive safety, demilitarization research and development, technical assistance, and career management.

MCAAP's Reserve Component program supports mobilization training for ammunition and other units. The Installation provides year-round training to multiple units, including ordnance, maintenance, transportation, engineering, and infantry training. The Installation also has the capability to support reserve units during weekend training using its tactical areas, classrooms, and ranges.

An Armed Forces Reserve Center opened on MCAAP in 2011. A U.S. Army Reserves unit and an Oklahoma National Guard unit are now stationed at MCAAP and use the limited training facilities on the Installation.

3.1.6.2 MCAAP Population and Military Units

Active duty military personnel assigned to MCAAP are the Commanding Officer and liaison officers for the Air Force and Marines. Civilian employee strength peaked at 8,630 during World

War II and fell to an all-time low of 610 in 1958. The present authorized civilian strength is 1,700.

Tenant activities at MCAAP include:

- Army and Air Force Exchange Service (AAFES)
- Civilian Personnel Advisory Center
- US Army Defense Ammunition Center (DAC)
- McAlester AAP Federal Credit Union
- Naval Surface Warfare Center (NAVSEA)
- U.S. Army Contracting Office - McAlester Detachment
- U.S. Army Occupational Health Clinic
- U.S. Army TMDE Activity

Special staff offices at MCAAP include:

- Public Affairs Office
- Protocol Specialist
- Internal Review and Audit Compliance Office
- Reserve Affairs

3.1.6.3 Natural Resources Needed to Support the Military Mission

Open space provided by MCAAP's acreage is essential to the Installation's military mission. Open space is important for quantity distance requirements associated with ammunition production and storage areas. A specified quantity distance arc is placed on each production and storage area and is required primarily for safety reasons. Quantity distance arcs restrict other types of uses and access to such areas.

Open space also is important for the Installation's demilitarization mission, providing options for siting of a specific demilitarization site for detonation of bombs, rockets, bulk explosives and propellants, and ammunition and components. Open space also provides options for the amount and type of buffer area surrounding the demilitarization site. Material used to cover items to be demilitarized is taken from MCAAP borrow sites, which are a type of open space provided at the Installation. Natural resources management is an important aspect of maintaining MCAAP's open space.

Vegetation plays an important role at MCAAP for both the military mission and environmental protection. Vegetation management is important in maintaining the Installation's open space as well as being essential in controlling erosion. MCAAP controls erosion using vegetation to comply with water quality requirements. The Army also recognizes the need to minimize damage to vegetation, which could lead to the military environment being compromised and problems such as soil erosion making it unsuitable for future use.

Quality training opportunities necessitate quality natural resources. The mosaic of natural communities found on MCAAP provides the U.S. Armed Forces with a variety of realistic training scenarios.

3.1.6.4 Effects of the Military Mission on Natural Resources

Compared to much of the surrounding area, MCAAP has retained much of the natural character of the landscape, acting as a refuge for many plants, animals, and natural communities. Much of

the land at MCAAP is undeveloped and unoccupied. Nonetheless, threats to those resources arise from military activities.

3.1.6.4.1 Past, Current, and/or Potential Military Mission Impacts on Natural Resources

Past Military Mission Impacts on Natural Resources

Initial development of the Installation area with its buildings, roads, railroads, magazine areas, and associated infrastructure is the primary and most significant impact that the military mission has had on MCAAP's natural resources. Development of those facilities drastically altered farm lands and natural areas and changed the character of the Installation area indefinitely.

Along with development came the problem of noise associated with vehicles, trains, production, and the most significant noise producer, the demolition of surplus ammunition and waste explosives. That impact has been addressed through implementation of an Installation Compatible Use Zone to mitigate noise impacts.

Development also brought the requirement for disposal of waste materials. MCAAP disposes of municipal waste, such as garbage from the housing area, at an on-Installation landfill. Nonhazardous industrial waste from the production area is hauled to an on-Installation disposal area (Non-Hazardous Industrial Waste Landfill Permit #3561014, issued July 7, 1988).

Development continues today, but at a much lower level. Modernization of techniques and equipment as well as more stringent environmental laws and regulations have made development significantly different and much more controlled than in the past. Agricultural lease areas often appear to be ideal for siting new mission-related projects. However, through coordination between mission planners and land managers, alternative sites are often identified and often determined to be better suited to mission requirements. This type of coordination has allowed both new missions and the agricultural lease program and natural resources as a whole to coexist on MCAAP.

Erosion and Siltation

Erosion and subsequent siltation became a problem for MCAAP shortly after initial construction of the Installation began. Area streams and lakes were soon heavily burdened with silt and sediment from the construction of 2,200 ammunition igloos, all of which were built over a short period of time. The vast number of acres involved with initial construction made this undertaking the most significant event with regard to erosion and siltation in MCAAP history.

More recently, erosion and siltation problems have been much more localized. Some areas, such as borrow sites and demilitarization areas, have inherent erosion and siltation problems but are at a much more manageable scale than that associated with initial Installation construction.

Mobilization training has caused some damage to range areas, mainly through ruts created by vehicles traveling off-road during wet weather or through moist areas. Ultimately, ruts can result in erosion and siltation problems depending on their location and the slope of the area.

Water Quality

Water pollution has been an inherent risk for MCAAP. Production areas generate contaminated waste water known as "pinkwater"—washwater or wastewater associated with loading, assembling, and packing operations or with demilitarization of munitions. It is water contaminated with explosives (e.g., 2,4,6-trinitrotoluene [TNT]) or energetic materials, which come from the production, handling, and/or demilitarization of munitions. Pinkwater is trucked from collection points (pinkwater sumps) to a central pinkwater collection basin at the pinkwater

treatment plant. Heavy solids in the sumps are allowed to settle. Pinkwater is then pumped through either the activated carbon plant or the granular activated carbon—fluidized bed reactor on MCAAP.

At the activated carbon plant, explosives in the pinkwater are removed or treated as the water runs down through a bed of activated carbon, where the energetic compounds are adsorbed onto the carbon. Once this carbon is "full" of energetic compounds, it becomes spent carbon and must be replaced with new carbon. At the granular activated carbon—fluidized bed reactor, the water is made to flow upward through a bed of activated carbon, where once again the energetic compounds are adsorbed onto the carbon particles. The difference in the second system is that it contains microorganisms that will clean/eat energetic compounds off of the carbon particles for use as an energy source. Because the activated carbon is continually cleaned of explosives, it does not become spent and does not require disposal.

The spent carbon produced in the activated carbon plant is hauled off-plant and disposed of properly. Effluent water from both treatment systems is discharged into the sewer, where it flows to the sewage treatment plant along with all other wastewater from MCAAP.

When the installation was first constructed, industrial wastewater was allowed to run off into the Brown Lake watershed. Pinkwater is now treated at the pinkwater treatment facility on MCAAP and released downstream of Brown Lake once water quality standards have been met. Water quality is further discussed in section 3.2.5.2, Surface Waters.

The sewage treatment plant was constructed in 1943, and several lagoons were constructed to treat the Installation's domestic and industrial wastes. Raw water is treated for human consumption at the water treatment plant located near the spillway at the eastern end of Brown Lake.

Current Military Mission Impacts on Natural Resources

There are numerous positive effects of the military mission on natural resources. The most general and most significant of those on MCAAP is its commitment to natural resources management, including minimizing and mitigating military mission damage. This commitment is beneficial for both natural resources in general and people who use natural resources products in particular.

The presence of MCAAP continues to preserve native ecosystems by preventing development and ensuring that land uses are conducted in a manner that protects the environment. Natural resources considerations and safety demands associated with the Installation's production and storage mission limit the extent of other potentially damaging land uses.

Future Military Mission Impacts on Natural Resources

It is difficult to quantify effects of future military missions on natural resources at MCAAP. If basic mission, land area, and intensity of missions remain unchanged, mission impacts on natural resources will remain similar to current impacts. MCAAP's primary mission is not likely to change, nor is the size of its land area. Mission intensity, however, can potentially change depending on military needs.

3.1.6.5 Effects of Natural Resources or Their Management on the Military Mission

At MCAAP, relatively few restrictions are imposed on the military mission due to natural resources needs. Restrictions are generally those that are associated with compliance with laws, such as the ESA, the Clean Water Act (CWA), and the Clean Air Act (CAA). Overall, management of natural resources has enhanced the ability of MCAAP to perform its mission. By

virtue of being a military installation, most resources at MCAAP have retained values often lost in areas less protected. Wetlands and the many functions they perform, such as acting as a filtration system and water retention areas, might have been lost without establishment of MCAAP. Natural systems such as these are advantageous to and often enhance the military mission.

3.1.6.5.1 Soils

Soils on MCAAP are generally well-drained, but erodible if denuded of vegetative cover. Consequently, intensive soil disturbing activity can cause damage and expose the affected areas to serious erosion. Many areas of the Installation have experienced severe erosion damage in the past, but vegetation management practices have been very successful in stabilizing soils. Restrictions associated with soils are essentially nonexistent, although potential damage to soils is considered when new projects or construction are being sited. If soils at one location are an issue for project development, an alternative location often can be found.

3.1.6.5.2 Water

Protection of surface waters is important for MCAAP and downstream users of the water. Water protection is achieved by protecting areas along the shores of ponds and lakes and banks of streams on MCAAP, by controlling erosion from disturbed areas, by stabilizing denuded soils, and by protecting surface waters and groundwater from industrial process pollutants. Undertaking soil protection measures does not hinder the ability of MCAAP to perform its military mission.

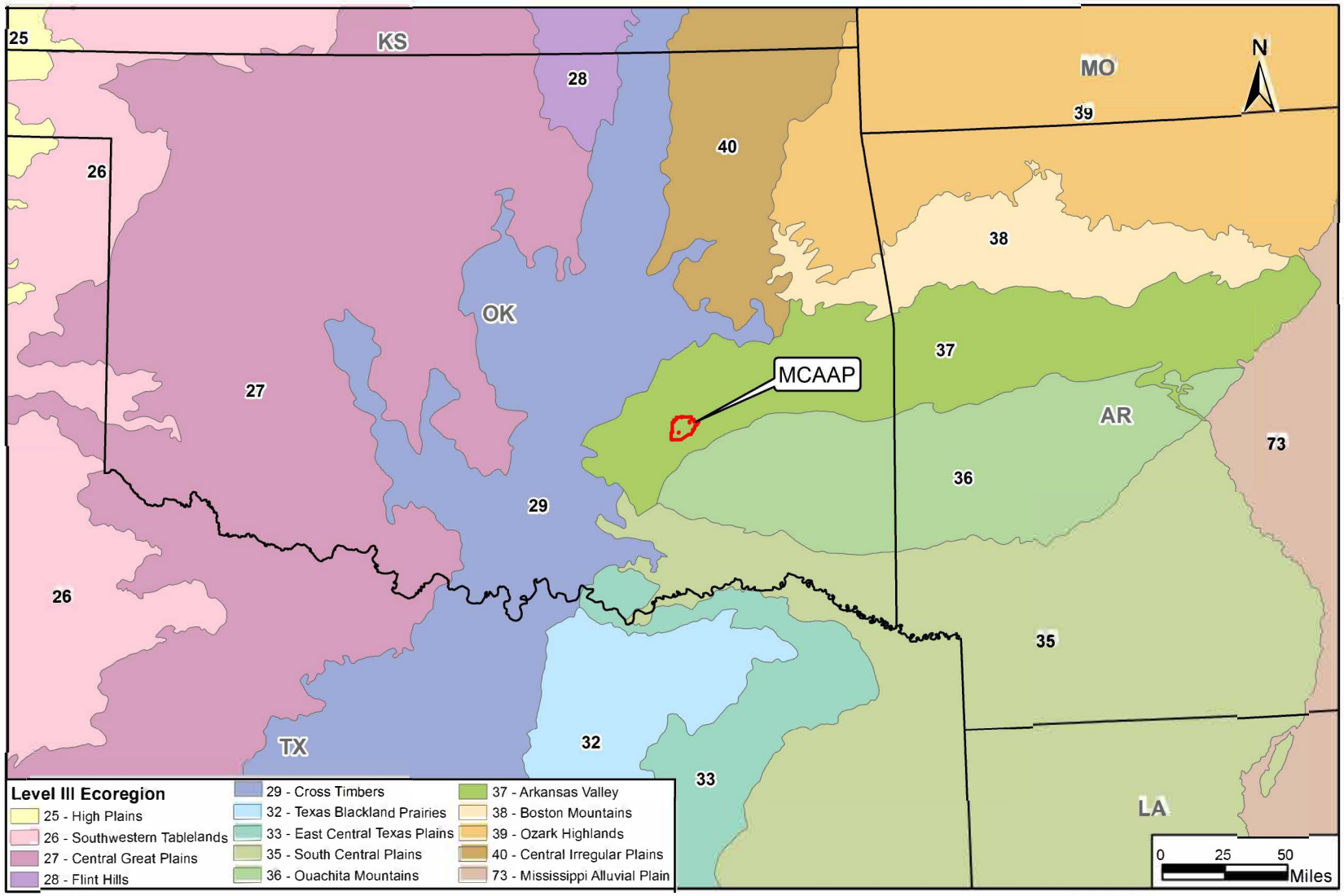
3.1.6.5.3 Biological Resources

MCAAP has become known as a military installation that provides high-quality outdoor recreation, especially trophy deer and quality turkey hunting. That reputation, along with recreational fishing, picnicking, and camping, has had an effect on how the Installation performs its mission. Security and safety issues are of concern when allowing the military community and the general public to access Installation areas that would otherwise be off-limits. Procedures for allowing access have been developed and implemented. In general, those procedures require extra effort by MCAAP, particularly for the special deer and turkey hunts. Some military mission activities, such as reserve training, also might have to be rescheduled to accommodate high-profile hunts or other outdoor recreation activities that have significant community support. MCAAP has adapted to impacts that management of its natural resources have imposed on its military mission and is proving that they are not mutually exclusive.

3.2 Physical Environment and Climate

3.2.1 Physiography and Topography

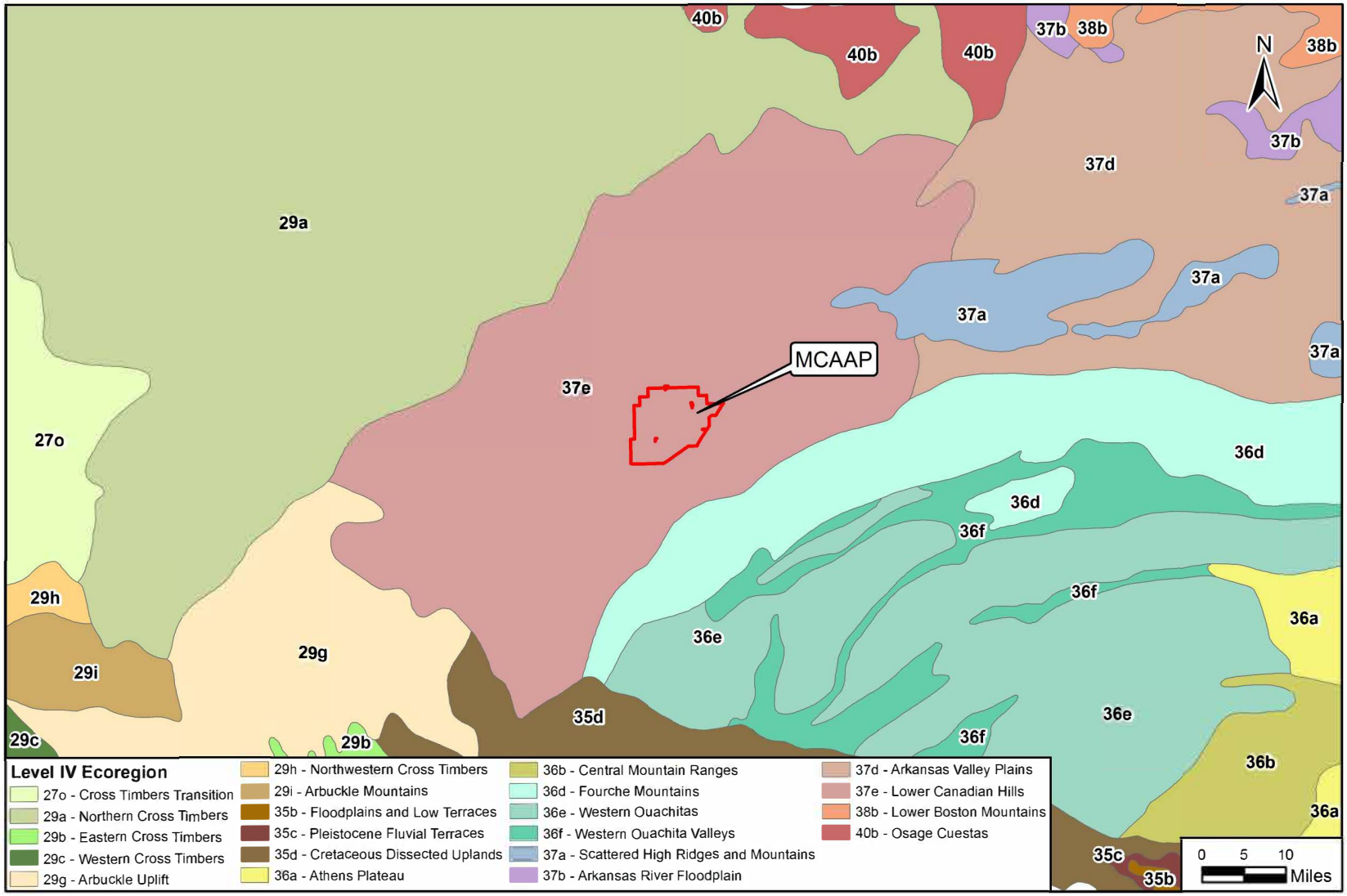
The U.S. Environmental Protection Agency (EPA) ecoregion classification system places MCAAP in the Arkansas Valley (Ecoregion Level III 37), close to the ecological divide between the Eastern Temperate Forests to the east and the Great Plains to the west (Figure 3-2) (Woods et al. 2005). The Arkansas Valley separates the Ozark Plateau from the Ouachita Mountains. It is characteristically transitional and diverse. Plains, hills, floodplains, terraces, and scattered mountains all occur; the terrain is distinct from nearby ecoregions. Within the Arkansas Valley ecoregion, MCAAP is located in the Lower Canadian Hills subregion (Ecoregion Level IV 37e) (Figure 3-3). This subregion is a transition between the drier Cross Timbers subregion to the west and moister parts of the Arkansas Valley to the east. A mix of oak savanna, prairie, oak–hickory–pine forest, and oak–hickory forest is native on uplands. Bottomland forest is native on floodplains and low terraces. Today, steep slopes are wooded and used for timber, woodland grazing, or recreation. Gently sloping uplands are used as pastureland or hayland. Other main land uses include poultry farming, coal mining, and natural gas production. The ecoregion has the



Level III Ecoregions

Figure 3-2

Source: USEPA 2015.



Level IV Ecoregions

Figure 3-3

Source: USEPA 2015.

richest fish fauna in Oklahoma. Fish communities usually contain many sensitive species; a sunfish- and minnow-dominated community exists along with large numbers of darters and catfishes. Common fish include the bigeye (*Notropis boops*), steelcolor (*Cyprinella whipplei*), and redfin shiners (*Lythrurus umbratilis*); orangethroat (*Etheostoma spectabile*) and redfin darters (*Etheostoma whipplei*); and suckers—the creek chubsucker (*Erimyzon oblongus*), golden (*Moxostoma erythrurum*) and black redhorses (*Moxostoma duquesni*), river carpsucker (*Carpiodes carpio*), spotted sucker (*Minytrema melanops*), and smallmouth buffalo (*Ictiobus bubalus*). Summer flow in small streams is often limited or nonexistent.

The topography of MCAAP includes about 75 percent level-to-gently sloping land and about 25 percent rolling sandstone hills. Mean elevation of the Installation is 717 feet above mean sea level, ranging between 700 and 900 feet above mean sea level.

3.2.2 Geology

Pittsburg County is generally within the Arkansas Valley geosyncline. Outcropping formations in the county range in age from Middle Ordivician to recent deposits. The lowest surface formation is Viola Limestone (Starry and Hodge 1991).

Rock units in the cross timbers and prairie section were formed during the Paleozoic (30 percent) and Mesozoic (70 percent) eras. Paleozoic strata consist of Pennsylvanian marine deposits (sandstone, shale, coal, and limestone), and Mesozoic strata consist of Lower Cretaceous marine deposits (limestone). MCAAP is underlain by sandstone and shale bedrock deposited during the Pennsylvanian age, about 300 million years ago. The oldest exposed rocks at MCAAP belong to the McAlester formation and are found in a narrow strip that generally parallels the southeastern boundary of the Installation. The McAlester formation consists primarily of shale with many interbedded sandstone units. It is reportedly up to 2,800 feet thick and contains coal beds 600–800 feet below the top of the formation (Marcher and Bergman 1983).

The upland area north of Brown Lake is underlain by the Boggy formation. The Boggy formation is predominantly a brown-to-blue-gray shale, between 1,470 and 2,000 feet thick containing many hard, erosion-resistant sandstone units and a coal bed near the base of the formation.

Brown Lake and the immediate surrounding area are underlain by a thin, unconsolidated formation called the Gertie Sand. The Gertie Sand consists of sands, silts, and gravels up to 30 feet thick that were deposited less than 2 million years ago in an ancient meander of the Canadian River. In the southern half of MCAAP, the Gertie Sand rests directly on the Thurman sandstone, which overlies the Boggy formation. In the northern half of MCAAP, the Gertie Sand rests directly on the Boggy formation.

3.2.3 Petroleum and Mineral Resources

MCAAP is located in an area of abundant bituminous coal-bearing rocks and sand and gravel quarries. Oil fields are common in the western portion of Hughes County (northwest of MCAAP) and in Coal County (west of MCAAP), and natural gas wells are scattered throughout the region.

MCAAP has had an active mineral lease program since 1965. There are currently seven mineral leases for natural gas production wells on the Installation. Development of gas wells benefited the Installation by the initial lease payment of $2,464,354—making gas available to the Installation at wellhead prices—and by road building and maintenance of roads associated with wells along the western boundary of MCAAP. An extensive discussion of activities associated with the mineral lease program on MCAAP can be found in *McAlester Army Ammunition Plant - The Land of Plenty* (MCAAP n.d.).

No new drilling is expected because of DoD explosive safety requirements. The lessee is required to maintain fireguards around each well during drilling and workover operations, including clearing and planting rye grass (*Lolium* sp.) or slender lespedeza (*Lespedeza virginica*) and brush hogging. The fireguards serve a single purpose: fulfilling the safety requirement of the installation. The fireguards benefit certain wildlife species—white-tailed deer (*Odocoileus virginianus*), eastern wild turkey (*Meleagris gallopavo silvestris*), bobwhite quail (*Colinus virginianus*), and many songbirds—because the plantings provide cool-season forage for deer and turkey and a winter seed source for many bird species. The fireguards might adversely affect the American burying beetle, but fireguards are necessary and must be maintained to ensure the safety of the installation and accomplishment of the mission.

3.2.4 Soils

Soils at MCAAP are predominantly sandy and contain varying amounts of silt, clay, and rock fragments. Soil depths range from a few inches to several feet. There are 49 soil types on MCAAP, not counting water, urban land, a pit, a landfill, and a large dam (USDA-NRCS 2015). The single most common individual soil type is Endsaw-Hector-Clearview complex, covering almost 8,000 acres of the Installation. Arents-Urban land soil types are the next most common, with a combined total of 9,321 acres. The Eram soil type covers 5,672 acres, and the Verdigris soil type covers 3,783 acres. Other soil types that individually account for 1 percent or more of the land area of MCAAP are in the Bates, Choteau, Clearview, Cupco, Dennis, Larton, and Parsons soil types. Combined these account for 16,329 acres of the Installation. Soil types that individually account for less than 1 percent of the MCAAP land area collectively cover 2,333.7 acres of the Installation. Soils of MCAAP are shown in Figure 3-4.

Soils are generally medium in natural fertility and require no fertilization to produce grass cover. The available water-holding capacity is medium to low. Susceptibility to erosion is high; thus, adequate cover is needed to prevent erosion.

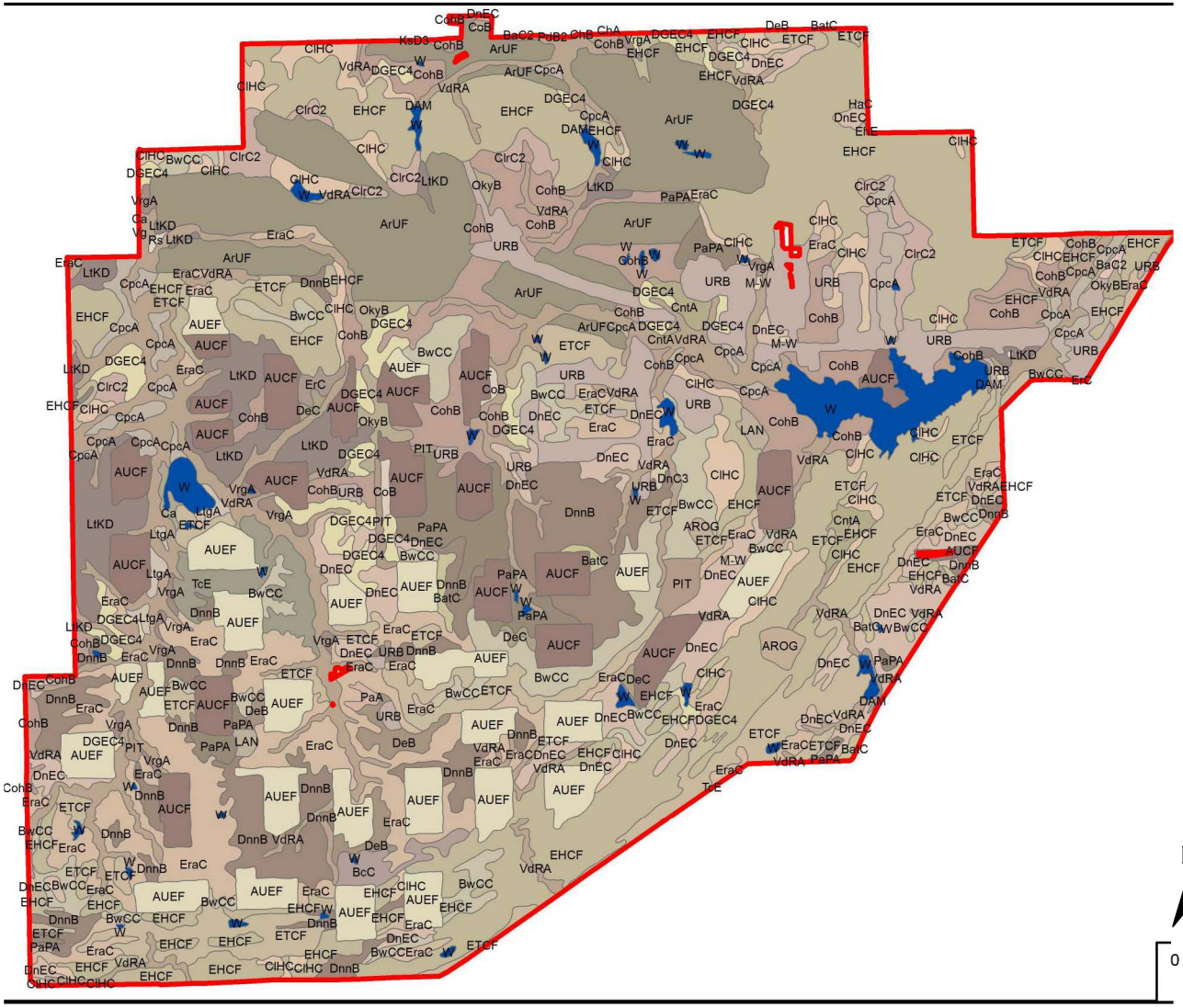
MCAAP's initial soil survey was conducted in 1948 and 1949. NRCS, then the Soil Conservation Service, prepared *The Master Erosion Control Plan* for the U.S. Bureau of Yards and Docks in 1950. This plan was updated as the *Long Term Soil and Water Conservation Management Plan, U.S. Naval Ammunition Depot McAlester, Oklahoma* (U.S. Department of the Navy 1963). This survey was supplemented by the *Soil Survey of Pittsburg County, Oklahoma* (Shingleton 1971; USDA-NRCS 2015). The *Soil Survey of McAlester Army Ammunition Plant, Oklahoma* (USDA-NRCS 2001) updated the MCAAP portion of the Shingleton 1971 survey. It provides additional information and has larger maps showing soils in greater detail. Information on the different soil series identified by NRCS on MCAAP are listed below.

3.2.4.1 Soil Series and Descriptions

Arents Series – no diagnostic horizons because they have been deeply mixed by plowing, spading, or other methods. They are a type of Entisol. In general, they are moderately deep; moderately well drained; occur on cropland, urban land, or pasture; and have 1–15 percent, but up to 30 percent slopes. (Map symbols: AROG, ArUF, AUCF, AUEF)

Bates Series – moderately deep, well drained, occur on upland landscapes, 1–8 percent slopes. (Map symbols: BaC2, BatC, BcC, BwCC)

Bengal Series – moderately deep, well drained, occur on upland landscapes 1–60 percent slopes. (Map symbol: EhE)



LEGEND

Installation Boundary

Soils

Figure 3-4

Source: USDA NRCS 2014.

Choteau Series – very deep, somewhat poorly drained, occur on upland landscapes, 0–5 percent slopes. (Map symbols: AUCF, ChA, ChB, CoB, CohB)

Clearview Series – moderately deep, somewhat poorly drained, occur on undulating-to-gently rolling hills of uplands, 1–12 percent slopes. (Map symbols: ClHC, ClrC2, EHCF, EhE, HaB, HaC, HaC2, HhD3)

Clebit Series – shallow, well drained, occur on mountain tops and mountain sideslopes of forested uplands, 2–60 percent slopes. (Map symbols: EhE, HhD3)

Collinsville Series – very shallow and shallow, well drained-to-somewhat excessively drained, occur on upland landscapes, 1–35 percent slopes. (Map symbols: ETCF, TcE)

Counts Series – very deep, moderately well drained, occur on upland landscapes, 0–12 percent slopes. (Map symbol: CntA)

Coweta Series – shallow, well drained-to-somewhat excessively drained, occur on upland landscapes, 1–30 percent slopes. (Map symbols: BcC, BwCC)

Cupco Series – very deep, very poorly drained, occur on valley landscapes, 0–2 percent slopes. (Map symbols: CpcA, Rs)

Dennis Series – very deep, somewhat poorly drained, occur on interfluves and hillslopes, 0–8 percent slopes. (Map symbols: DeB, DeC, DeC2, DGEC4, DnC3, DnEC, DnnB)

Endsaw Series – deep, well drained, occur on upland landscapes, 3–40 percent slopes. (Map symbol: EHCF)

Eram Series – moderately deep, moderately well drained, occur on upland landscapes, 1–20 percent slopes. (Map symbols: AUEF, DGEC4, DnC3, DnEC, EraC, ErC, ETCF)

Hector Series – shallow, well drained, occur on upland landscapes, 2–60 percent slopes. (Map symbols: ClHC, EHCF)

Kamie Series – very deep, well drained, occur on hill landscapes, 1–20 percent slopes. (Map symbol: LtKD)

Karma Series – very deep, well drained, occur on broad level-through-moderately steep terraces, 0–3 percent but up to 20 percent slopes. (Map symbol: KsD3)

Larton Series – very deep, well drained, occur on valley landscapes, 0–20 percent slopes. (Map symbol: LtKD)

Lightning Series – very deep, poorly drained, occur on valley landscapes, 0–1 percent slopes. (Map symbols: Ca, LtgA)

Okay Series – very deep, well drained, occur on valley landscapes, 0–5 percent slopes. (Map symbol: OkyB)

Parsons Series – very deep, somewhat poorly drained, occur on upland landscapes, 0–3 percent slopes. (Map symbols: PaA, PaB, PaPA, PdB2)

Pharoah Series – very deep, somewhat poorly drained, occur on upland landscapes, 0–3 percent slopes. (Map symbols: DnC3, PaPA, PdB2)

Rexor Series – very deep, moderately well drained, occur on valley landscapes, 0–3 percent slopes. (Map symbols: En, Eo, VdRA)

Talihina Series – shallow, poorly drained, occur on upland landscapes, 5–30 percent slopes. (Map symbols: ETCF, TcE)

Taloka Series – very deep, somewhat poorly drained, occur on upland landscapes, 0–3 percent slopes. (Map symbol: TkA)

Verdigris Series – very deep, well drained, occur on valley landscapes, 0–3 percent slopes. (Map symbols: Eo, VdRA, Vg, VrgA)

3.2.5 Water Resources

3.2.5.1 Watersheds

Surface runoff from MCAAP drains into seven creeks. Five major watersheds occur on MCAAP: Hominy Creek, draining western and northern sections; Bull Creek, draining central and northeastern sections; Deer Creek, draining northern sections; Chun Creek, draining southeastern sections; and North Boggy Creek, draining southern sections. Sassafras Creek drains the very southern edge, and Caney Boggy Creek drains a small section of the southwestern MCAAP. Figure 3-5 shows watersheds on MCAAP. Surface runoff from Deer, Bull, Hominy, and Chun creeks ultimately drains into Lake Eufaula in southeastern Oklahoma, with about 20 miles of distance between MCAAP and the lake. Based on the small percentage of actual watershed of Lake Eufaula, a major contamination event would be required to adversely affect the water resources of the lake. Sassafras and North Boggy creeks drain into the Red River.

3.2.5.2 Surface Waters

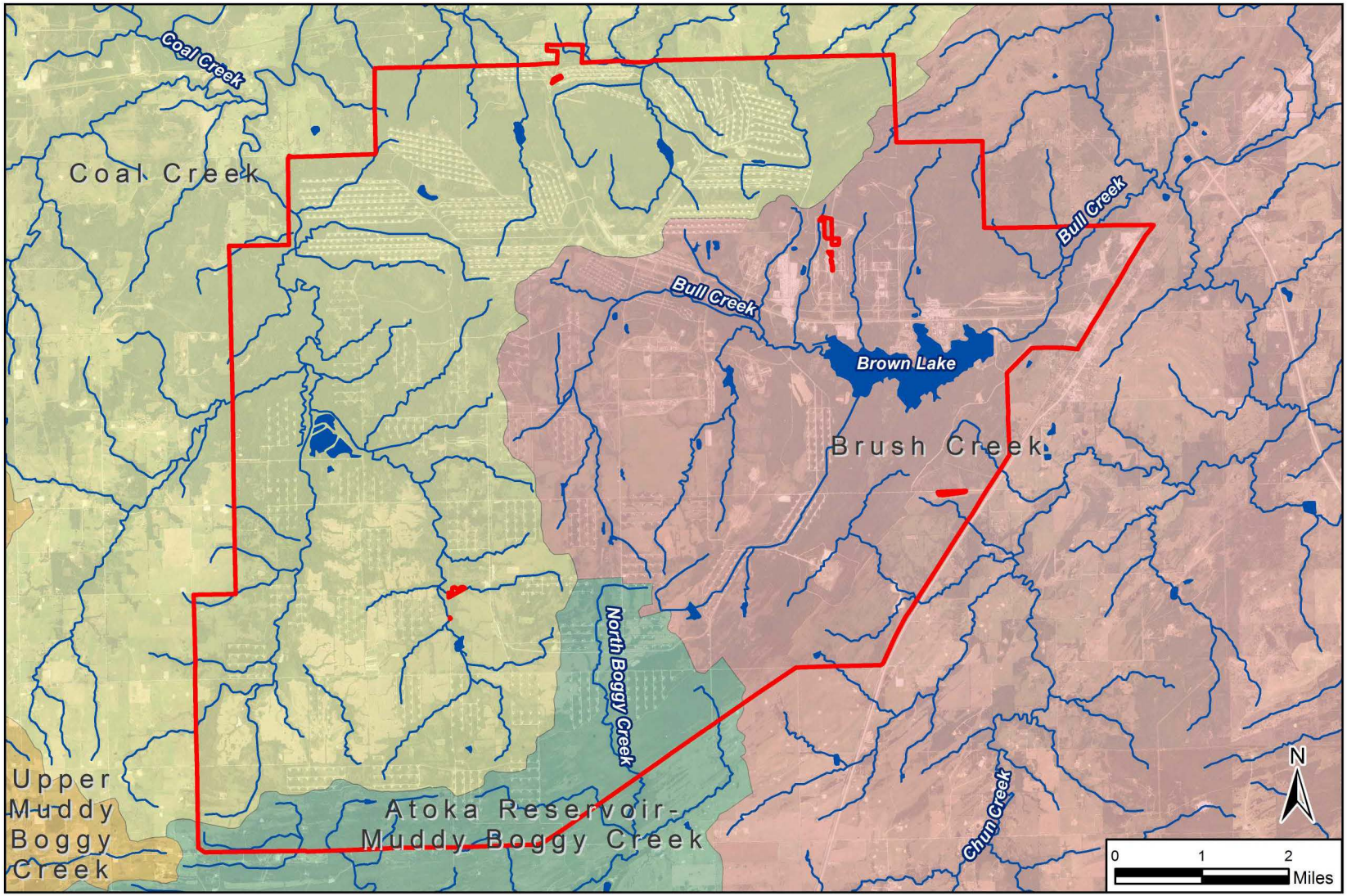
There are eight major watershed lakes on MCAAP. Seven are drained by drop inlets with emergency spillways. Brown Lake, the largest, has a concrete overflow and spillway. The Installation has five flood retention reservoirs that augment the flood control status of the county as well as 125–150 lakes and ponds that total about 1,030 acres and 12 miles of streams. Figure 3-6 shows the Installation's surface water features.

3.2.5.3 Surface Water Quality

Creeks on MCAAP are generally intermittent; during extended dry periods, only pooled areas remain in the upper reaches. Substrates along creeks vary from soft clays and detritus material to stony riffle areas. Extensive riparian tree growth provides a heavy canopy—especially in the upper reaches—and leaf drop adds a substantial amount of organic matter to the streams. MCAAP streams might have dissolved oxygen limitations. During high flows, riffle areas likely maintain oxygen saturation. However, stagnation and dissolved oxygen depletion likely occur during periods of pooling, especially during hot weather.

Water quality standards for surface waters of Oklahoma have been established by the Oklahoma Water Resources Board (OWRB). The standards are based on the beneficial uses of surface waters and are prescribed in chapter 45 of Title 785 of the Oklahoma Administrative Code (OAC 785:45). Beneficial uses of MCAAP surface watersheds are as follows:

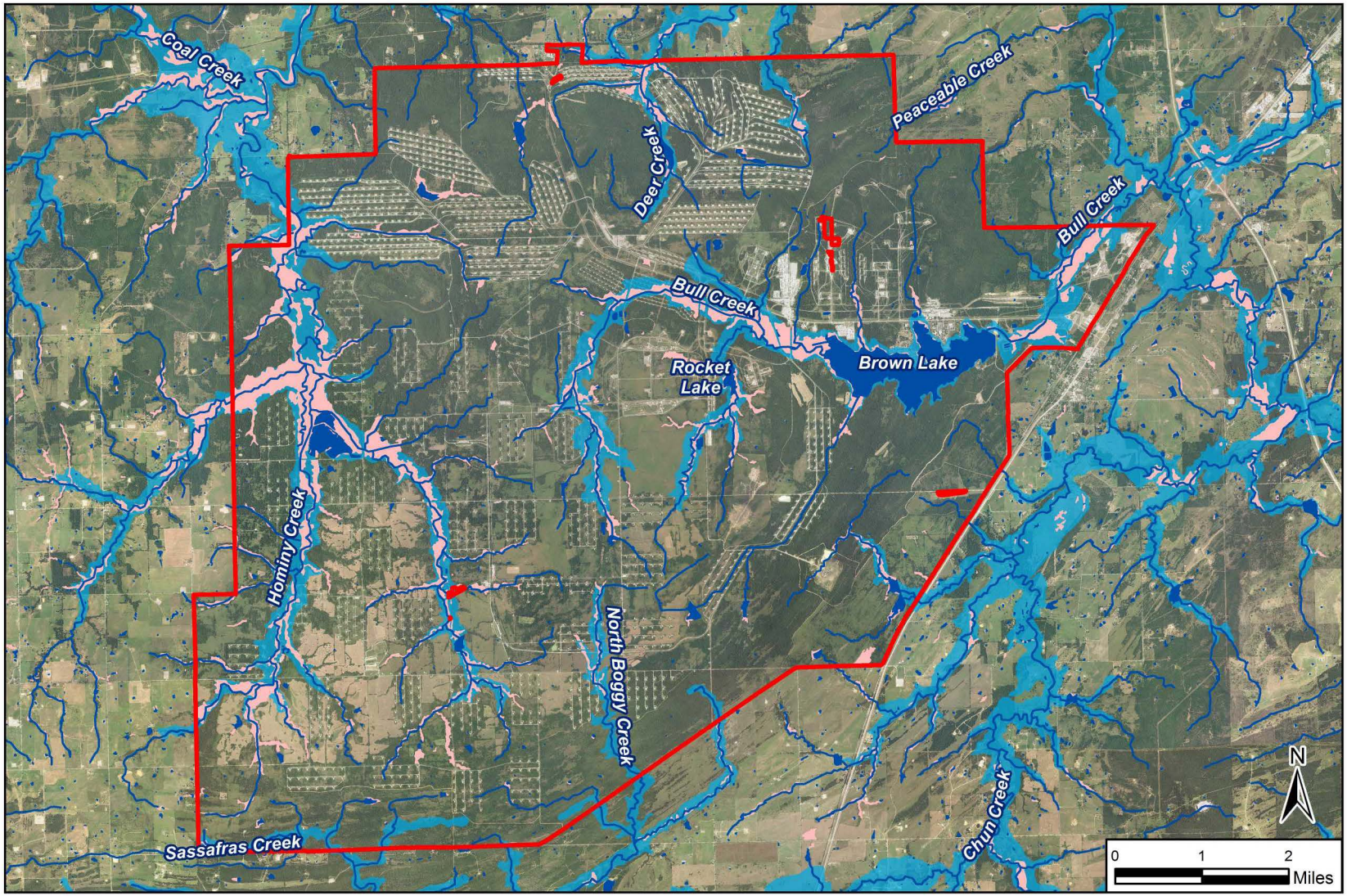
Brown Lake and watershed–uses include public and private water supply, warm water aquatic community, agriculture, primary body contact recreation, and aesthetics. Limitations to uses exist because it is a sensitive water supply.



Watersheds

Figure 3-5

Source: OWRB 2015.



LEGEND

- Installation Boundary
- Surface Water
- 100-Year Floodplain
- NWI Wetland

Surface Waters

Figure 3-6

Source: USFWS NWI 2015; FEMA 2015; OWRB 2015.

***Bull Creek downstream from Brown Lake*—**uses include warm water aquatic community, agriculture, primary body contact recreation, and aesthetics.

Chun Creek upstream from Section 15, T4N, R14E, IM—uses include emergency water supply, warm water aquatic community, agriculture, secondary body contact recreation, and aesthetics.

North Boggy Creek—uses include public and private water supply, warm water aquatic community, agriculture, primary body contact recreation, and aesthetics. Limitations to uses exist because it is a sensitive water supply.

Caney Boggy Creek—uses include public and private water supply, warm water aquatic community, agriculture, primary body contact recreation, and aesthetics.

Deer Creek—uses include public and private water supply, warm water aquatic community, agriculture, primary body contact recreation, and aesthetics.

Sassafras Creek—uses include agriculture and aesthetics.

3.2.5.4 Water Permits

MCAAP has a comprehensive monitoring schedule to prevent environmental damage from water pollution. Water samples have been routinely collected from Brown Lake since 1974. Brown Lake is monitored as a drinking water source reservoir as required by the Safe Drinking Water Act. MCAAP operates under Stormwater Industrial Permit #OKR050886 (issued December 7, 2017; valid for 5 years) and Stormwater Construction Permit #OKR106590 (issued October 18, 2017; valid for 5 years). An Oklahoma Pollutant Discharge Elimination System permit (Permit #OK0000523, issued August 1, 2015; valid for 5 years) regulates point source discharges and establishes limits of pollutants that can be discharged. It lists outfalls and wastewater constituents monitored at each outfall. MCAAP's industrial area is upstream of Brown Lake and, as such, the industrial wastewater and most of the stormwater from industrial area discharge into the Brown Lake watershed. The number of discharges has been reduced to lower pollutant loading - primarily suspended solids - into Brown Lake by directing those discharges into the sewage treatment plant, which discharges to Bull Creek downstream from Brown Lake. Permitted wastewater discharges to the environment are limited to Outfall 01S (sewage treatment plant). Internal Monitoring Point (IMP) 02A, the pinkwater treatment plant, IMP 02B, the anaerobic fluidized bed reactor, and IMP 02C, IMX-101 Treatment System, discharge to the sanitary sewer which flows to the Sewage Treatment Plant for further treatment before discharge at Outfall 01S. In addition, the Oklahoma Department of Environmental Quality (ODEQ) regulates 14 surface water impoundments for the treatment of wastewater or stormwater run-off. Industrial and domestic wastewater discharges into these waters are monitored monthly, as required by the Oklahoma Pollutant Discharge Elimination System permit. MCAAP is in compliance with regard to water resources.

MCAAP has 12 septic tanks with drain fields and two small facility total retention septic lagoons at various locations throughout the Installation where it was not practical to connect the sewage treatment system.

MCAAP has constructed five flood retention structures to reduce movement of soil sediment. A sixth structure was a joint venture with the Soil Conservation Service (now the NRCS) and the Brushy-Peaceable Conservancy District.

3.2.5.5 Floodplains

Floodplains are areas subject to a 1 percent or greater chance of flooding in any given year. The magnitude of a floodplain depends on numerous factors, including the size of the watercourse, size of the watershed, topography adjacent to the watercourse, soils and geology, and density of development in the watershed and adjoining the watercourse. Floodplains on MCAAP consist primarily of riparian areas associated with the Installation's streams and occupy about 2,300 acres of the Installation. Figure 3-6 shows surface water features of MCAAP.

3.2.5.6 Groundwater

Groundwater is not present on MCAAP in great quantities except in some terrace gravel deposits. Groundwater in the bedrock flows primarily through joints in the rocks and is perched over impervious beds.

OWRB supplies data on groundwater wells throughout Oklahoma and lists two on MCAAP (OWRB 2015). One well is 300 feet deep with first water encountered at 160 feet and an average yield of 2.5 gallons per minute (gpm). The other well is 35 feet deep with first water encountered at 19 feet. No yield information is provided for this well. Groundwater wells immediately surrounding MCAAP vary greatly as well, with depths to 300 feet and as shallow as 35 feet, and yields varying from 0.1 to 300 gpm. On average, wells near MCAAP are 113 feet deep, first water is encountered at 109 feet, and the yield is 21 gpm (OWRB 2015).

Water levels in groundwater wells in the region respond rapidly to recharge from precipitation. Relatively low yields and rapid response to recharge are consistent with an aquifer in which the groundwater flows primarily within bedrock fractures.

Groundwater chemical composition ranges between sodium-potassium bicarbonate to calcium-magnesium bicarbonate, and water that is typically moderately hard-to-hard is characteristic of water from Paleozoic rocks in the northwestern region of Oklahoma surrounding McAlester.

There are no registered aquifers at MCAAP and all drinking water is supplied by surface water. Therefore, ODEQ requires MCAAP to sample groundwater monitoring wells (on a semi-annual basis) at the fuel farm, the new landfill, and open burn/open detonation areas. Fuel farm groundwater parameters monitored include pH; conductivity; temperature; turbidity; total petroleum hydrocarbons; benzene, toluene, ethylbenzene, and xylenes (BTEX); and chemical oxygen demand. OB/OD groundwater parameters include Perchlorates, Total Metals, energetics including explosive compounds, semi-volatile organic compounds (SVOCs) and Nitrate/Nitrite. The new landfill groundwater parameters include pH, chemical oxygen demand, specific conductivity, chloride, sulfate, calcium, magnesium, nitrates, sodium, carbonates, potassium, total metals, energetics including explosive compounds, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs).

Approximately 120 groundwater monitoring wells are located at the areas surrounding the active solid waste industrial landfill, the open burning grounds, the old and new open demolition grounds, the medium caliber production area, the railroad engine maintenance facility (roundhouse), the vehicle fueling station, 20mm, 40mm and the former DRMO yard.

Groundwater monitoring is performed as required in RCRA operating permits, ODEQ directives, and Army directives on the Installation. Temporary groundwater wells may be installed to investigate emerging contaminants or an incident involving release of a contaminate.

Known contamination affecting groundwater is being monitored for natural attenuation and to ensure public health is protected. Remedial technologies would be implemented if a risk to public health were discovered. In 2012, MCAAP successfully performed a remedial action to prevent contaminated groundwater from reaching Brown Lake. MCAAP is protective of public health and in compliance with regard to groundwater resources.

3.2.6 Air Quality

Air quality is regulated at the national level through regulations promulgated under the CAA and its subsequent amendments. The CAA requires state or local governments to monitor ambient levels of pollutants for which federal standards exist. MCAAP is within an attainment area; therefore, state ambient air quality standards are not applicable to the Installation. MCAAP holds Title V Air Permit #2019-0987-TVR2 (issued February 2021; valid for 5 years).

MCAAP experiences wildfires and uses prescribed burning as an ecosystem management tool. The EMO maintains a copy of MCAAP's prescribed burn plans each year and provides them to ODEQ upon request. Particulate excursions (dust leaving the Installation) from open burning/ open demolition operations are monitored by the EMO. MCAAP meets requirements of Oklahoma Title 252, chapter 100, subchapter 13, which addresses open burning. Other military activities generate relatively insignificant concerns for air quality (e.g., vehicle emissions, dust).

3.2.7 Climate

Climate of the MCAAP area is characterized as warm, moist, and temperate to subtropical. A continental pattern of warm, moist air from the Gulf of Mexico frequently colliding with cooler air masses from the west and north result in wide temperature ranges.

Precipitation is well distributed throughout the year with peak rainfall occurring in May and the least rainfall occurring in July and August (OCS 2010). Average annual rainfall is about 42 inches. Rainfall occurs on average 89 days per year. The amount and distribution of rainfall provide ample water for abundant plant growth and supply numerous lakes and ponds. Spring rains are reliable and ensure nearly saturated soil conditions in early summer. Large hail and/or destructive winds occasionally accompany thunderstorms in late spring and early summer.

The record low temperature of -14 degrees Fahrenheit (°F) occurred in 1977, and the record high of 113 °F occurred in 2011 at McAlester Regional Airport (WUG 2015). Monthly mean temperatures reach a high of 82 °F in July and August and a low of 39 °F in January. The average annual temperature is about 62 °F, with an average annual high temperature of about 73 °F and an average annual low temperature of about 51 °F (U.S. Climate Data 2015). An average frost-free season is 214 days (OCS 2010).

The prevailing wind direction is from the south, except in January and February when it shifts to the north. The average wind speed is 6 miles per hour. Strong southerly winds occur during spring. Tornadoes occasionally occur in March, April, and May, but most affect small areas and do limited damage. Between 1950 and 2003, there were 67 tornadoes recorded in the area (Pittsburg County) (OCS 2010).

Snowfall occurs at MCAAP about two to five times per year, and it rarely remains for more than a day or two. Average annual snowfall is about 5 inches. Snowfall is variable and accounts for only about 5 percent of total annual precipitation.

Monthly weather parameters collected by the U.S. Weather Service for McAlester are shown in Table 3-2 (www.weather.com).

Table 3-2.
Summary of McAlester, OK, Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. High	51°F	56°F	64°F	73°F	80°F	87°F	93°F	93°F	85°F	75°F	63°F	52°F
Avg. Low	30°F	34°F	42°F	50°F	59°F	67°F	71°F	71°F	62°F	51°F	41°F	32°F
Mean	39°F	45°F	53°F	62°F	69°F	78°F	82°F	82°F	74°F	63°F	52°F	42°F
Avg. Precip.	2.36 In	2.64 In	3.54 in	3.9 in	5.16 in	4.49 in	2.64 in	2.64 in	3.98 in	4.33 in	3.35 in	2.99 in
Record High	80 °F 1957	92 °F 1996	94 °F 1974	94 °F 1987	95 °F 1956	106 °F 1953	112 °F 1954	110 °F 1956	104 °F 1954	99 °F 1953	85 °F 1987	80 °F 1970
Record Low	-14 °F 1977	-6 °F 1985	9 °F 1980	25 °F 1975	34 °F 1954	45 °F 1983	51 °F 1972	51 °F 1989	34 °F 1984	19 °F 1993	9 °F 1976	-5 °F 1989

Source: U.S. Climate Data 2015

3.3 Biological Resources

3.3.1 Flora

3.3.1.1 Vegetation Types

Habitat types on MCAAP include timber, brushland, grassland, agricultural, and aquatic areas. Grassland makes up the largest percentage with timber being second in total acreage. Vegetation on uplands is predominantly native range grasses. Uplands usually have tree cover, and prairie areas exhibit scattered brushland shrubs. Vegetation on magazine areas includes bermuda grass and a mixture of dormant prairie grasses in about equal proportions. Figure 3-7 shows vegetative types on MCAAP.

The timbered area of MCAAP occupies approximately 10,400 acres (excluding 6,423 acres of bottomland timber) mainly along the Installation's boundaries. Timber areas are typical of "cross-timber." Principal species are post oak (*Quercus stellata*) and blackjack oak (*Q. marilandica*) with occasional significant mixtures with hickory (*Carya* spp.). Red oak (*Q. shumardii*) is found in fair quantities on a few better suited sites throughout timbered areas.

In stands consisting primarily of oak and hickory, three timber types are recognized: (1) post oak type in which post oak represents 80 percent or more of the total stand; (2) blackjack oak-post oak type, which is characterized by about 20 percent blackjack oak; and (3) oak-hickory type, which exhibits about 20 percent hickory with the remainder being predominantly oak. About 6,423 acres (about 6 percent of the total area) of timber are classified under bottomland types, which represents the better timber on the Installation. The highest quality bottomland timber is found in the west-central area of MCAAP, containing considerable quantities of red oak, pecan (*Carya illinoesis*), green ash (*Fraxinum pennsylvanica*), hackberry (*Celtis occidentalis*), American elm (*Ulmus americana*), winged elm (*U. alata*), and sycamore (*Plantanus occidentalis*).

Brushland area comprises about 10,731 acres and is very diverse across the installation, serving as beneficial habitat for a wide array of species. Surveys conducted on MCAAP also have

Vegetative Types on MCAAP

Figure 3-7

indicated that there is considerable use of this habitat type by American burying beetles. Brushland is understoried with excellent stands of native bluestem grasses on well-drained soils.

Major shrub species of the brushland type are sumac (*Rhus glabra*), hawthorne (*Crataegus* spp.), persimmon (*Diospyros virginiana*), winged elm, and Osage orange (*Maclura pomifera*). Associated stands of shrubs in the brushland type include wild rose (*Rosa* spp.), blackberry (*Rubus* spp.), dew berry (*Rubus* spp.), green briar (*Smilax* spp.), and Chicksaw plum (*Prunus angustofolia*).

Grassland types include 14,437 acres of MCAAP. Grassland areas and their associated forbs are excellent wildlife habitat. Dominant grass species include big bluestem (*Andropogon qerardi*), little bluestem (*A. scoparius*), Indian grass (*Sorghastrum nutans*), and switch grass (*Panicum virgatuem*). Other grasses and forbs of importance in grassland areas include eastern gamma (*Tripsacum dactyloides*), broad leaf uniola (*Uniola latifolia*), beaked panic (*Panicum angustifolium*), compass plant (*Silphium* spp.), goldenrod (*Solidazo* spp.), and *Carex* species.

MCAAP has approximately 56 agricultural land plots (food plots) of 1–10 acres each (275 acres total). These are disked, fertilized, and planted to clover and winter rye grass for wildlife.

3.3.1.2 Floral Inventory

The *Survey for Rare Species at the McAlester Army Ammunition Depot* searched Oklahoma Natural Heritage Inventory (ONHI) databases and performed field studies for rare species of plants and animals on MCAAP (Lomolino and Leimgruber 1994). No rare species of plants were found. Lomolino and Leimgruber (1994) included information on habitats and environmental characteristics at MCAAP.

A flora and fauna planning level survey (PLS) was conducted on MCAAP during 2000 and 2001 (Tetra Tech EM 2002). LMO personnel have documented numerous species observed as being common on the Installation through field observations. Deer browse transects are performed on major browse species at the beginning of each growing season (usually March) to assess habitat conditions. Browse species including winged elm, sumac, green briar, and hackberry are inventoried at six specific locations using visual observations. Browse conditions are documented. Of particular interest is the degree of usage, which is recorded as low, moderate, or high for each species of browse at each location. Less than 40 percent utilization of browse species is desirable. This information assists managers in determining harvest objectives for the following deer hunting season.

Tetra Tech EM (2004) conducted an invasive species survey of MCAAP in 2003. Much of the survey's field efforts were devoted to characterizing eastern red cedar (*Juniperus virginiana*) infestations on the Installation. The survey also recognized Johnsongrass (*Sorghum halepense*) and sericea lespedeza (*Lespedeza cuneata*) as invasive species that should be prevented from spreading into native plant communities. Several other species were documented as presenting a potential problem as invasive species. Sericea lespedeza is no longer planted as an erosion control ground cover on MCAAP. Mulch hay used to control erosion is purchased from local areas to ensure invasive, nonnative species, such as Johnsongrass, do not spread to newly disturbed areas. Eastern red cedar is controlled through prescribed burning and mechanical cutting using a tree saw on a skid steers. The best control methods for both Johnsongrass and sericea lespedeza include the prevention of the spread of these plants by promoting the establishment of native grass species. As more funding becomes available, additional practices for controlling Johnsongrass and sericea lespedeza will be implemented.

MCAAP's limited commercial forest resources have precluded the need for a standard forest inventory. Thus, no forest inventory has been conducted; however, Tetra Tech EM (2002) included basic vegetative inventory of forested areas. The Tetra Tech EM documents (2002, 2004) contain detailed lists of floral species known to occur on MCAAP and are on file at the LMO.

3.3.1.3 Special Status Flora

MCAAP surveyed for rare plant and animal species in 1993 and 1994 using the ONHI (Lomolino and Leimgruber 1994). This survey included searches of ONHI databases and field studies for rare species. Databases indicated the possible occurrence of sandgrass (*Calamovilfa arcuata*), pipewort (*Eriocaulon kornickianum*), and the community of xeric oak-hickory-pine forest on MCAAP. These plant species were not identified in either of the floral surveys conducted on MCAAP. The survey covered all accessible areas of the Installation representing habitats important to rare species, and information on habitats and environmental characteristics was collected. The compiled information was digitized and summarized in a geographic information system (GIS). Neither the ONHI survey nor the Tetra Tech EM (2002) survey found any threatened, endangered, or special concern plants on MCAAP. However, the bristly locust (*Robinia hispida*), a rare species in Oklahoma according to McCoy (1987), was noted along the western boundary road, west of bunker group 12AT (Tetra Tech EM 2002).

In 2020, Bio-West and Tetra Tech surveyed MCAAP again for special status flora and fauna while revising MCAAP's PLS for Threatened and Endangered Species (February 2020). As part of this study, no additional findings of special status flora were documented.

3.3.1.4 Areas of Special Interest

MCAAP has become nationally known as a place to see native bluestem prairies, virgin pecan timber creek bottoms, and virgin post oak and blackjack cross timber types. Management over the past 65 years has resulted in outstanding native vegetation, including eastern gamma grass.

Eastern gamma grass was once found from south Texas to Kansas to the Atlantic coast, including Illinois and Indiana. Eastern gamma grass is highly palatable and highly productive, especially under irrigation or in areas like MCAAP where rainfall is adequate. It is about 65 percent digestible. However, it can be killed by excessive grazing or over-mowing, as occurred in much of its original range. Although eastern gamma grass is difficult to establish, MCAAP has introduced it in all Installation hay meadow areas with good success. Hay meadows also are important areas because of their benefits to wildlife and the Installation's agricultural lease program.

Duck Marsh, a 454-acre marsh in the west-central portion of the Installation, is an important special management area because of the exceptional waterfowl habitat it provides and its overall wetland characteristics. The marsh was developed specifically for waterfowl habitat and includes flood control structures to alter water levels depending on the season and current objectives.

Weather and wildlife damage has altered the structural integrity of the dike system in Duck Marsh over time. Duck Marsh serves as an important habitat to all species that inhabit or use wetlands. LMO completed renovation of the dike system in 2006. Additionally, annual maintenance is performed in this area to preserve the dikes and prevent damage by wildlife species. Wildlife species that benefited from these repairs include waterfowl, shorebirds, aquatic mammals, many terrestrial mammals, and many aquatic invertebrates that rely on shallow water wetlands at certain times of the year.

By fluctuating the water level throughout the year, the LMO controls how much and what types of vegetation occur in this mash area. Riparian areas are important management areas. Not only do they consist of some of the last remaining uncut pecan timber creek bottoms and uncut post oak and blackjack cross timber in the state, but they also provide habitat for many plant and wildlife species. Also bottomlands and riparian areas on MCAAP have a good potential to be suitable habitat for river otters (*Lutra canadensis*) (Lomolino and Leimgruber 1994).

River otters have occurred on MCAAP since 1984. Through personnel observations, the species has appeared to increase in number. Their feeding habit appears to be having some negative impacts on fish species on the installation, especially in brood stock rearing ponds used to grow fingerlings to releasable-sized fish. The impact of river otters might need to be addressed in the future to prevent damage to the fisheries of MCAAP. The LMO is awaiting results from a statewide study currently being conducted by ODWC and Oklahoma State University on the impact of river otters to fisheries in the state before developing any management plans.

3.3.1.5 Wetlands

The U.S. Congress enacted the CWA in 1972 to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA delegates jurisdictional authority over wetlands to USACE and EPA. Waters of the United States protected by the CWA include rivers, streams, estuaries, and most ponds, lakes, and wetlands. USACE and EPA jointly define wetlands as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support—and that under normal circumstances do support—a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

USFWS defines wetlands to include a variety of areas that fall into one of five categories:

- Areas with hydrophytes and hydric soils, such as those commonly known as marshes, swamps, and bogs;
- Areas without hydrophytes but with hydric soils, such as flats where drastic fluctuation in water levels, wave action, turbidity, or high concentration of salts could prevent the growth of hydrophytes;
- Areas with hydrophytes but nonhydric soils, such as margins of impoundments or excavations where hydrophytes have become established but hydric soils have not yet developed;
- Areas without soils but with hydrophytes, such as the seaweed-covered portion of rocky shores; and
- Wetlands without soils and without hydrophytes, such as gravel beaches or rocky shores without vegetation.

Wetland functions and values include groundwater recharge, groundwater discharge, flood flow alteration, sediment stabilization, sediment or toxicant retention, nutrient removal or transformation, production export, wildlife diversity/abundance, aquatic diversity/abundance, uniqueness/heritage, and recreation. EO 11990, *Protection of Wetlands*, and the CWA require no net wetland losses on federal lands in the United States.

Teta Tech conducted a wetlands inventory of MCAAP during 2019–2020, which included ground-truthing of the National Wetlands Inventory database. MCAAP was provided with a set of aerial photographs, photograph interpretation, GPS data layers, and field investigation results as part of a revised PLS for Wetlands on MCAAP (2021).

MCAAP has about 1,030 acres of wetlands, lakes, streams, ponds and marsh areas. Beaver activities, such as damming streams and outflow areas of ponds and lakes, are annually increasing the amount of wetlands on MCAAP. LMO manages these newly created areas as wetlands as long as they do not compromise military mission. In the last 5 years, at least 20 acres of shallow-water wetlands have been created as a result of beaver activity. Additionally, as borrow areas are closed, LMO assesses the feasibility of establishing wetlands in these areas. In recent years, two wetlands have been created following the closure of borrow areas, increasing MCAAP's wetland acreage by approximately 5 acres.

3.3.2 Fauna

Tetra Tech EM (2002) conducted a flora and fauna PLS on MCAAP during 2000 and 2001. This survey included birds, amphibians and reptiles. LMO personnel have documented numerous species on the Installation through field observations. MCAAP has rich and diverse fauna in a wide variety of habitats. Twenty-five mammal species, 163 bird species, 20 fish species, 12 reptile species, and 9 amphibian species are known to occur on MCAAP. The following sections summarize the biological diversity on MCAAP. A list of fauna known to occur on MCAAP is included in Appendix D.

3.3.2.1 Mammals

Mammals typically found on MCAAP include the white-tailed deer, eastern cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), eastern gray squirrel (*Sciurus carolinensis)*, eastern fox squirrel (*S. niger*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), bobcat (*Lynx rufus*), beaver (*Castor canadensis*), skunk (*Mephitis mephitis*), and opossum (*Didelphis marsupialis*). Feral hogs (*Sus scrofa*) also occur on MCAAP. Appendix D lists mammals known to occur on MCAAP.

3.3.2.2 Birds

Birds typically found on MCAAP include the eastern wild turkey (*Meleagris gallopavo*), northern bobwhite quail (*Colinus virginianus*), red wing blackbird (*Agelaius phoeniceus*), great blue heron (*Ardea herodias*), American crow (*Corvus brachyrhynchos*), brown-headed cowbird (*Molothrus ater*), common grackle (*Quiscalus quiscula*), European starling (*Sturnus vulgaris*), American robin (*Turdus migratorius*), and scissor-tailed flycatcher (*Tyrannus forficatus*).

Several species of migratory birds reside on MCAAP, including the Canada goose (*Branta canadensis*), wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), and mourning dove (*Zenaida macroura*).

Tetra Tech EM (2002) observed 77 bird species on MCAAP. LMO personnel have documented numerous bird species through field observations. In some areas of Oklahoma, the brown-headed cowbird is having a negative impact on native bird species. LMO recognizes the impact the species is having, however, through incidental observation, it does not occur in substantial numbers on MCAAP. Appendix D lists avian species known to occur on MCAAP.

3.3.2.3 Fish

Thirty-three fish species have been identified in MCAAP waters. Fish species commonly found on MCAAP include warmouth (*Lepomis gulosus*), green sunfish (*L. cyanellus*), bluegill (*L. macrochirus*), blue catfish (*Ictalurus furcatus*), flathead catfish (*Pylodictis olivaris*), channel catfish (*Ictalurus punctatus*), largemouth bass (*Micropterus salmoides*), white crappie (*Pomoxis annularis*), and black crappie (*P. negromaeulatus*). Appendix D lists fish species known to occur on MCAAP.

3.3.2.4 Reptiles and Amphibians

Tetra Tech EM (2002) documented 22 herpetofauna species on MCAAP and estimated the following species as abundant: Blanchard's cricket frog *(Acris crepitans blanchardi)*, western cottonmouth *(Agkistrodon piscivorous leucostoma)*, ground skink *(Scincella lateralis)*, and three-toed box turtle *(Terrapene carolina triunguis)*. Watersnakes *(Nerodia sp.)* and garter snakes *(Thamnophis sp.)* also were observed, but could not be identified to the species level. LMO personnel have noted that the southern copperhead snake (*Agkistrodon contortrix*) is commonly found on MCAAP. This species was not observed by Tetra Tech EM (2002). Appendix D lists herpetofauna species.

3.3.2.5 Invertebrates

Invertebrates have not been inventoried on MCAAP. The exception is the American burying beetle, which is discussed in section 3.3.2.6, Special Status Fauna. Various invertebrates, such as worms, beetles, and grubs, however, were observed during herpetofauna surveys (Tetra Tech EM 2002).

3.3.2.6 Special Status Fauna

Army regulations require consideration of federal candidate and state-listed species in all Army actions. MCAAP has one known species that is federal- and state-listed, the American burying beetle. A survey performed in 1993 and 1994, *Survey for Rare Species at the McAlester Army Ammunition Depot* (Lomolino and Leimgruber 1994), searched ONHI databases and conducted field studies for rare species, including the American burying beetle, on MCAAP. Database searches found two insects, one mussel, three reptiles, five birds, 12 mammals, two plant species, and one plant community detected in Pittsburg and surrounding counties of Oklahoma. Of the species detected, only the American burying beetle and the interior least tern (*Sterna antillarum*) were found in Pittsburg County. Interior least terns are unlikely to occur at MCAAP because of their habitat requirement of broad sandy expanses of large rivers (Lomolino and Leimgruber 1994).

The endangered species management plan (ESMP - 2016) provides monitoring programs for the American burying beetle on MCAAP. Monitoring required by the ESMP focuses on surveys within each habitat category to monitor fluctuations in the population. The USFWS Oklahoma Ecological Services field office issues an *American Burying Beetle* Nicrophorus americanus *Oklahoma Presence/Absence Live-trapping Survey Guidance* (USFWS 2015a). In summary, trap locations are established in each dominant habitat, with trap stations in each. Live-trapping uses pitfall traps (suspended 5-gallon bucket traps covered to prevent loss of beetles from excess heat or accumulation of rain water) baited with rotted chicken.

The American burying beetle was first listed as endangered by USFWS in 1989, and was recently reclassified to threatened on November 16, 2020. As part of the down-listing, the new 4(d) rule included the MCAAP as one of four Conservation Lands within the Southern Plains populations and provides exceptions for all incidental take if in compliance with a USFWS-approved management plan. This INRMP will serve MCAAP in this capacity. All anticipated activities occurring on MCAAP from 2021 through 2025 that can or will result in soil disturbance, both temporary and permanent, are summarized in Table 3.3 on the following page. These are maximum levels of anticipated soil disturbance. Actual disturbances are likely to be less. Most of the proposed activities have temporary effects and provide longer-term benefits to ABB habitat. MCAAP will reinitiate consultation with the USFWS if these levels of soil disturbance have any potential to be exceeded. Table 3.4 shows the Federal- and State-listed faunal species in Pittsburg County. The official threatened and endangered species list for MCAAP, provided as a result of consultation with USFWS, can be found in Appendix E of this document.

Table 3.3.
Anticipated Soil Disturbances (Temporary and Permanent) on MCAAP – 2021 through 2025

Activity	Temporary Disturbance In Acres	Permanent Disturbance In Acres
Road/Rail New Construction	100	100
Existing Road/Rail Maintenance	150	50
New Building Construction	150	75
Ammunition Storage Igloo Maintenance	40	5
Soil/Shell/Rock Quarry/Borrow Pit Construction	15	15
New Utility Line Construction (i.e., water, electric, fiber)	150	75
Utilities Maintenance (i.e., water, electric, fiber)	100	10
Annual Routine Fire Guard Maintenance	450*	0
Agriculture Program Maintenance	250	0
Wildlife Food Plots	185*	0
Invasive Species Control (i.e., cedar control) through mulching	750	0
Invasive Species Control through prescribed fire (ABB dormant season only)—temporary fire breaks	300	0
Wildfire Control/ New Fire Line Construction (unanticipated/not routine)	60	0

Denotes annual disturbance of the same acreage and locations each year (routine disturbance)

American burying beetle surveys to monitor fluctuations in the population were conducted annually from 1997 to 2001, then every other year, and now every 3 years (Toby 2012). Summaries of the results of surveys for the American burying beetle are on file in the LMO. Annual inspections of habitat in the identified capture areas are made to gain information on habitat changes due to mission requirements or other processes. Items considered during inspections include the density of hardwoods, ground disturbances, height and density of brush, and a description of any damage to vegetation due to fire or mission-related activities.

The American burying beetle is the largest member of the genus *Nicrophorus* in North America. It ranges from 1 to 1.5 inches in length. Beetles are characterized by a shiny black body; smooth, shiny black elytra with two orange spots on each; a flattened black pronotum with an orange star-shaped marking; and large antennae that are orange and clubbed at the end. Males have a rectangular orange facial marking, while the female's facial marking is triangular.

The American burying beetle has disappeared from over 90 percent of its historic range (Creighton et al. 1993). The beetle's former distribution was throughout temperate eastern North America and is now known to occur only in Nebraska, Rhode Island, Massachusetts, South Dakota, Iowa, Kansas, Missouri, Arkansas, Texas and Oklahoma. Beetles have been recorded in 27 counties in eastern Oklahoma.

Bald eagles (*Haliaeetus leucocephalus*), protected under the Bald and Golden Eagle Protection Act, are frequent winter visitors to MCAAP. In 1982, a pair of Bald Eagles nested at Duck Marsh and successfully fledged two young. Unfortunately, the nest was apparently unstable, and the following year it was blown down. No known nesting or attempted nesting has occurred on MCAAP since that time.

Table 3-4 lists the federal and state-listed faunal species detected by ONHI in Pittsburg County and surrounding counties, noting the county(s) in which the species occurs. Although Lomolino and Leimgruber's (1994) study did not document most of these species, appropriate habitat is available on the Installation for all of them. Others identified as potentially occurring are not included because necessary habitat requirements cannot be met by MCAAP. Table 3-4 has been updated from the species listed by Lomolino and Leimgruber (1994) using the USFWS Information for Planning and Conservation website, http://ecos.fws.gov/ipac/.

Table 3-4.
Federal- and State-listed Faunal Species in Pittsburg County

Common Name	Scientific Name	Federal Status*	County Occurrence	Habitat
Northern long-eared bat	*Myotis septentrionalis*	T	Atoka, Haskell, Latimer, McIntosh, Pittsburg, Pushmataha	Caves, hollow trees, culverts
Piping Plover	*Charadrius melodus*	T	Atoka, Coal, Haskell, Hughes, Latimer, McIntosh, Pittsburg, Pushmataha	Wide, flat, open, sandy beaches with very little grass or other vegetation
Red Knot	Calidris canutus rufa	T	Atoka, Coal, Haskell, Hughes, Latimer, McIntosh, Pittsburg, Pushmataha	Intertidal, marine habitats, especially near coastal inlets, estuaries and bays
American Burying Beetle	*Nicrophorus americanus*	T	Atoka, Coal, Haskell, Hughes, Latimer, McIntosh, Pittsburg, Pushmataha	Generalist, resident at MCAAP

Sources: USFWS Information for Planning and Consultation website - Feb. 3, 2021.
* Federal Status: C = Candidate, E = Endangered, S/A = Similarity of Appearance, T = Threatened.

3.4 Human Environment

3.4.1 Cultural Resources

Cultural resources include buildings, structures, prehistoric and historic archeological sites, native sacred sites, and cemeteries.

3.4.1.1 Cultural Resources Inventory

The following is taken from DE-Plan-03, the *Integrated Cultural Resources Management Plan for McAlester Army Ammunition Plant*, McAlester, Oklahoma (MCAAP 2020).

> Twenty-seven archeological investigations, covering nearly 2,000 acres, have been conducted on MCAAP since the mid-1970s. These studies have identified six archeological sites on the Installation: 34PS-252 (Archeological Research Associates 1980), 34PS-255 (Archeological Research Associates 1981), 34PS-327 (Cojeen 1991), 34PS-328 (Cojeen 1991), 34PS-379 (Winchell 1995), and Site 34PS-381 (Geo-Marine 1996).

Archeological resources consist of sites and associated cultural material (i.e., artifacts). No artifacts are curated by or under the stewardship of MCAAP.

Areas of concern for archeological resources on MCAAP consist of locations where the presence of archeological sites is suspected or where MCAAP undertakings have significant potential to negatively impact undiscovered archeological resources. The 1984 overview of archeological resources on MCAAP identified 417 potential locations of archeological sites. Potential sites included:

- cemeteries and isolated graves present at the time of government acquisition;
- razed farmsteads, churches, schools, and coal mines; and
- historic locations marked by signs installed by Jack Dixon and Bill Starry, including a portion of the former Texas Trail (Heartfield, Price, and Greene 1984).

3.4.1.2 National Register of Historic Places Eligibility

Eligibility of archeological sites for inclusion on the National Register of Historic Places (NRHP) is the principal criterion determining management prescriptions. Generally, sites fall into one of three categories with regard to NRHP eligibility:

- ***Eligible:*** These sites have been determined eligible for the NRHP and, therefore, are subject to protection. They should not be affected without consultation per section 106 of the National Historic Preservation Act (NHPA) and development of a plan to mitigate adverse effects.
- ***Ineligible:*** These sites have been determined ineligible for the NRHP and do not require protection from adverse effects.
- ***Potentially eligible:*** Further investigation is required to determine NRHP eligibility. Therefore, these sites are potentially eligible for the NRHP and require protection until determinations of eligibility can be made.

The 1996 inventory of historic properties on MCAAP identified 338 buildings and structures as potentially eligible and another 71 as ineligible for inclusion on the NRHP (Newlan 1996). Because of the inadequacy of the 1996 inventory, however, all 409 properties require further investigation to determine NRHP eligibility. In addition, the Memorial Cemetery and the location of a 1944 explosion where seven military and four civilian personnel were killed require further investigation to determine if they are eligible.

3.4.2 Land Uses

The two primary land uses of MCAAP's 44,965 acres are magazines and buffer areas around magazines, which also are considered wildlife or natural areas. Table 3.5 lists land area descriptions, acreage, and classification criteria of land uses. Classification is based on operational needs and intensity of maintenance required. Figure 3-8 shows land use categories for MCAAP.

3.4.2.1 Controlled Restricted Area

The primary purpose of MCAAP is to produce and renovate conventional ammunition and components and, as a result, the entire area of MCAAP is considered controlled restricted area. Wildlife or natural areas and wildlife food plots account for almost three-fourths of the land use within MCAAP. Magazines and magazine areas account for most of the military use of MCAAP's lands. Small arms ranges comprise less than 1 percent of total land use.

Table 3-5.
MCAAP Land Area Descriptions, Acreage and Classifications (acres)

Location	Improved Areas	Semi-Improved Areas	Unimproved Areas	Other Areas	Total
Administration and Housing	45.25				45.25
Road Shoulders, Magazine Areas, etc.		837			837
Picnic Area		32			32
Hay Meadow Production Areas (leased)			2,651		2,651
Wildlife Areas (natural)			29,306		29,306
Wildlife Areas (waterfowl)			454		454
Magazines		577	6,985		7,562
Lakes			1,030		1,030
Roads, Shops, Buildings				1,360	1,360
Fire Breaks		360			360
Wildlife Food Plots		275			275
Security Fences		174			174
Utility Lines		688			688
Small Arms Ranges		31			31
Industrial	68.75				68.75
Athletic Fields	43				43
Production and Cafe Buildings	38				38
Shipping Depots	10				10
Total	205	2,974	40,426	1,360	44,965

Notes:
Improved Areas: Grounds on which development and maintenance are performed to obtain a pleasing appearance.
Semi-Improved Areas: Grounds on which maintenance is performed to provide an erosion-resistant stand of grass, control weeds and brush, and reduce fire hazards.
Unimproved Areas: Other unpaved areas not included in I and SI categories and on which no maintenance is performed.
Other Areas: Pavement, roads, buildings, and other land not available for productive use.

3.4.2.2 Production and Other Improved Areas

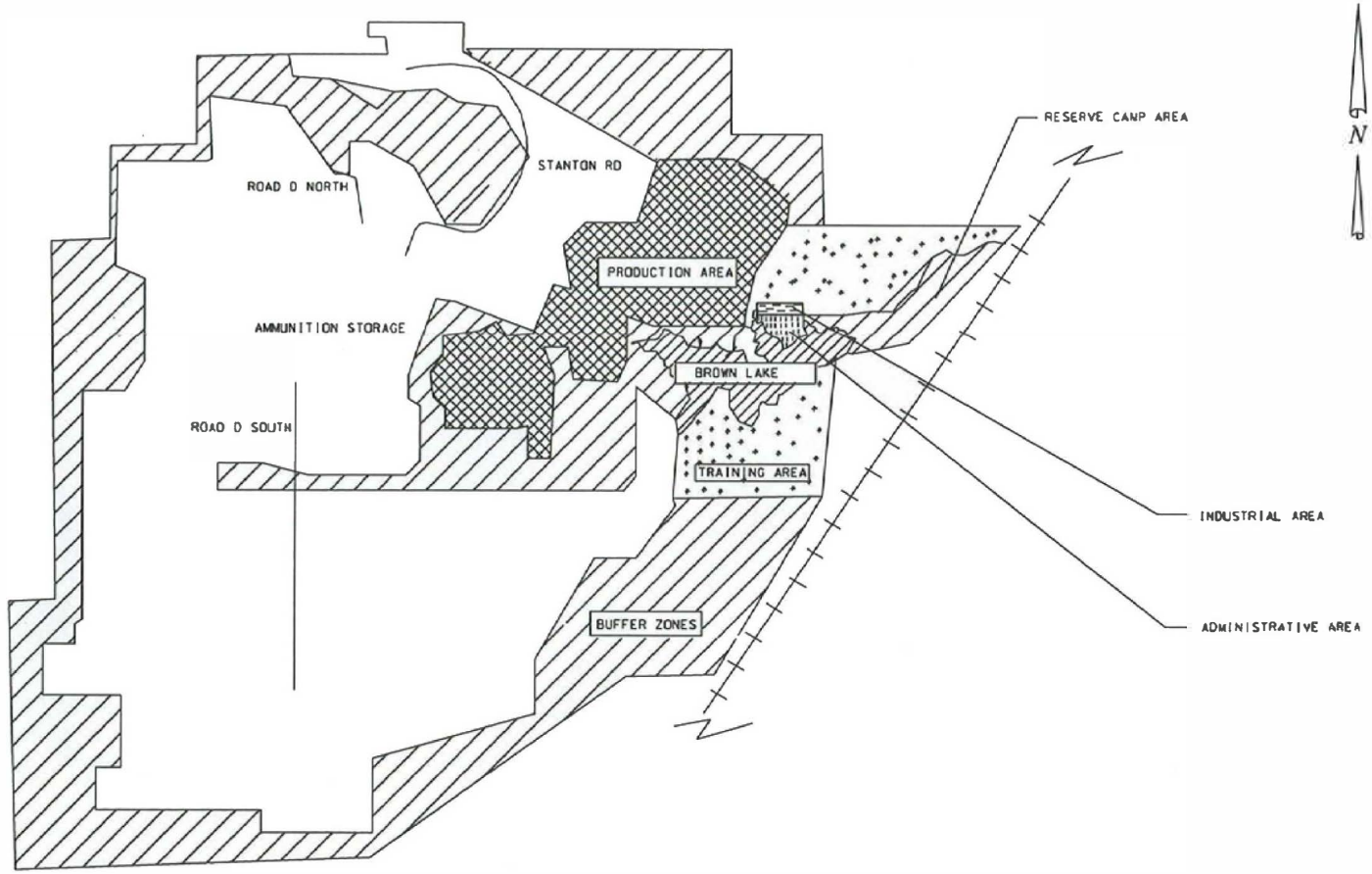
Production areas and associated facilities occupy a small percentage of MCAAP. Only 205 acres of MCAAP's total acreage is considered improved, including administration and housing, athletic fields, production and cafe buildings, and shipping depots. An additional 1,360 acres are covered with roads, shops, and other buildings.

3.4.2.3 Surrounding Land

Most land surrounding the Installation is undeveloped and used as pasture, for agriculture, or maintained as open space. The Town of Savanna is adjacent to the Installation's eastern boundary, and the Town of Haywood is adjacent to the Installation's northern boundary.

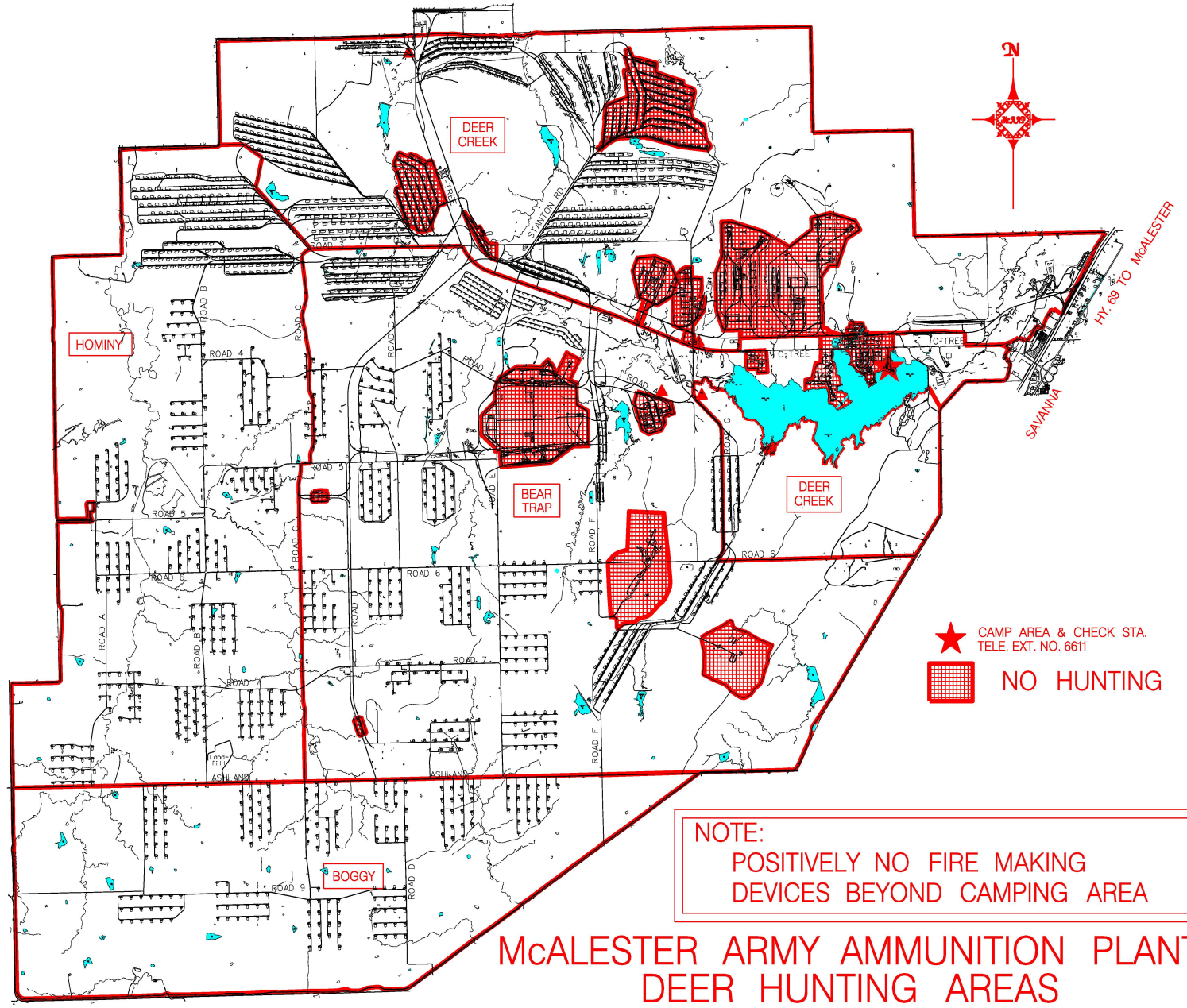
3.4.2.4 Hunting and Fishing Areas

The Installation is divided into four areas for deer and fall turkey hunting—Deer Creek, Hominy, Bear Trap and Boggy—using roads and other easily identifiable features as boundaries. Figure 3-9 shows deer and fall turkey hunting areas. For spring turkey hunting, the Installation is divided into 12 areas—Gobbler, Poult, Spur, Cedar Box, Eagle, Duck Creek, Split Beard, Jake, Nest, Slate, Tom and Coyote. Figure 3-10 shows spring turkey hunting areas on MCAAP.

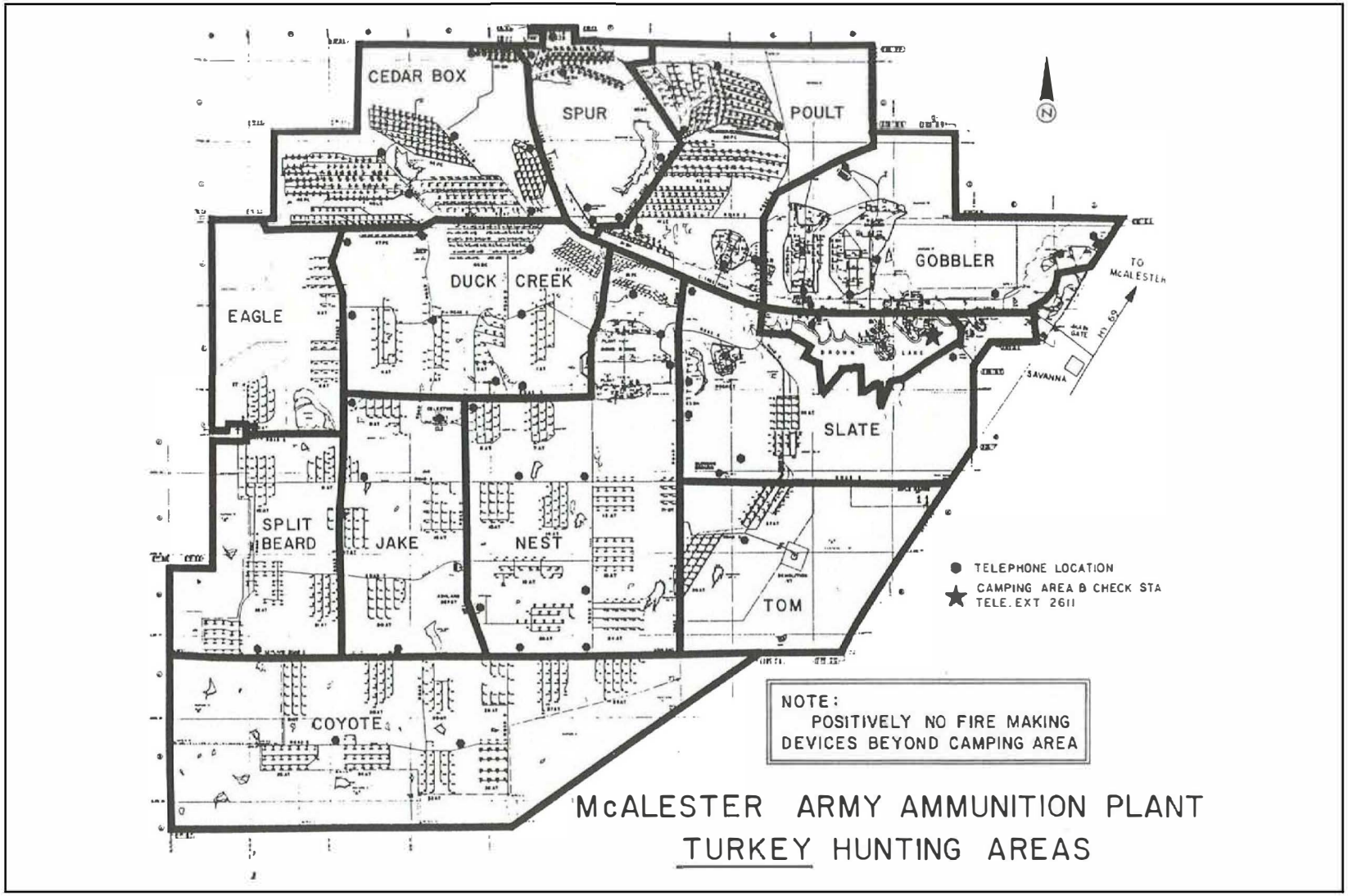


MCAAP Land Uses

Figure 3-8



Deer and Fall Turkey Hunting Areas **Figure 3-9**



Spring Turkey Hunting Areas

Figure 3-10

Fishermen entering MCAAP to fish are required to sign in and out and are required to obtain a MCAAP fishing permit at no charge. Figure 3-11 shows lakes and ponds open to fishing on MCAAP.

3.4.3 Facilities, Public Services, and Utilities

3.4.3.1 Overview

Most of MCAAP is undeveloped rural area, comprised primarily of magazine areas and buffer areas surrounding magazines and production areas. Unimproved and other areas (e.g., lakes, roads, buildings, land not available for development) account for most of MCAAP's land (67 percent of the total land area). Land area descriptions are discussed in section 3.4.2, Land Uses.

3.4.3.2 Transportation System

3.4.3.2.1 Road and Trail System

U.S. Highway 69 borders MCAAP's eastern boundary, U.S. Highway 270 parallels the northern boundary 4 miles north of MCAAP, and State Highway 31 parallels the northern and western boundary for a distance of 4 miles. A county road borders the southern boundary, and most of the western boundary is bordered by county roads. Ingress and egress to MCAAP is through two gates: the Main Gate, entering from Highway 69 at the Town of Savanna, and the North Gate (Haywood Gate), accessed from Highway 270 to Highway 31. Ashland Gate is the third Installation access point entering from the west, but it remains closed and locked to general access. MCAAP has 406 miles of roads within its boundaries, most of which are blacktop or gravel. There are about 75 miles of firebreaks, which can be used to access more remote areas of the Installation.

3.4.3.2.2 Railway System

The Union Pacific main line railroad parallels MCAAP's eastern boundary, and the now-unused Chicago, Rock Island and Pacific Railroad parallels the northern boundary. MCAAP has 221 miles of track, 771,728 crossties, and a roundhouse within its boundaries.

3.4.3.2.3 Aircraft Facilities

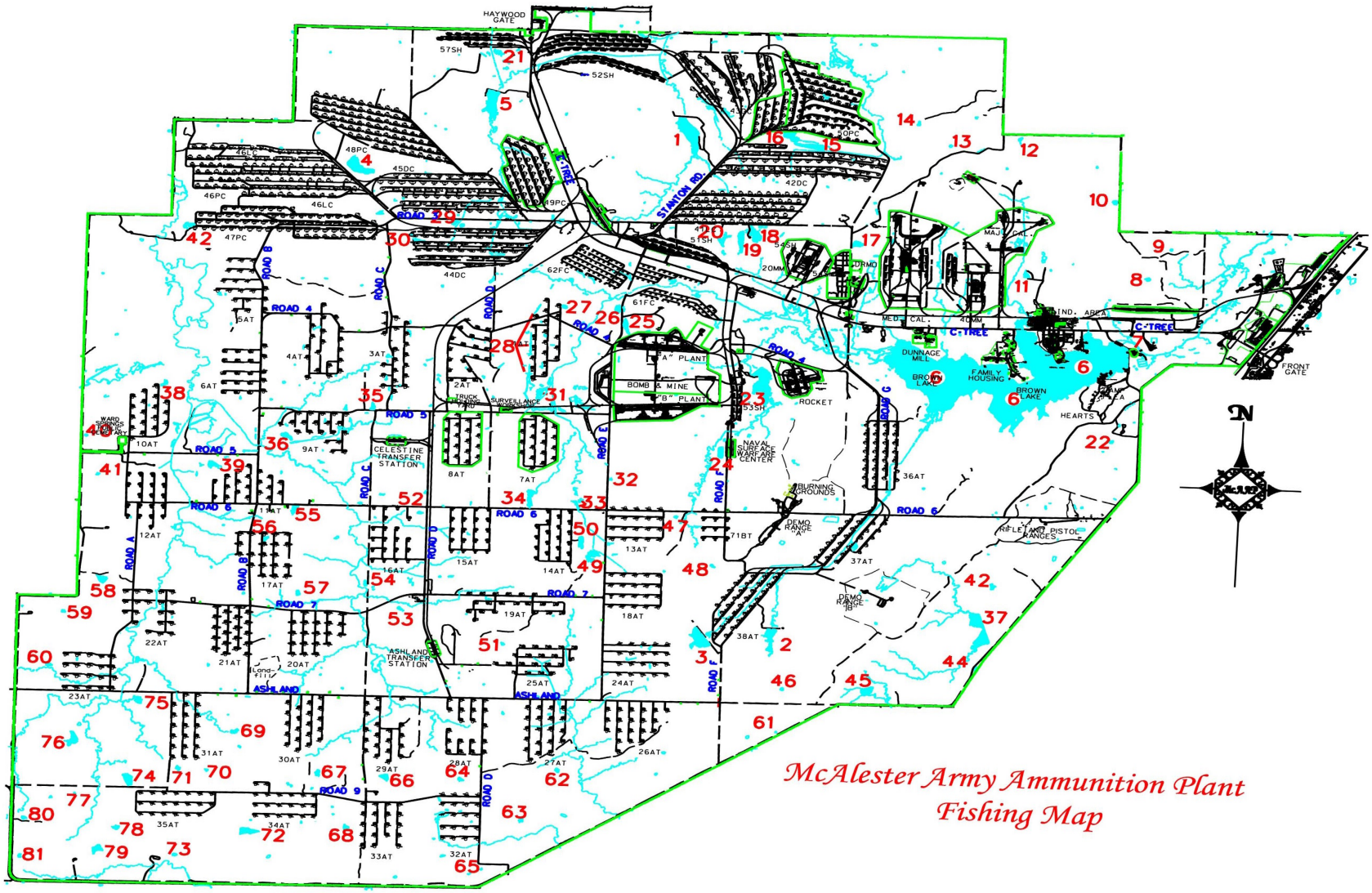
MCAAP has two grass helipads used primarily for emergency situations and by dignitaries. The Installation does not have a landing strip for winged aircraft. The City of McAlester has a regional airport (McAlester Regional Airport), and major airports in the region are in Tulsa, Oklahoma City, and Dallas.

3.4.3.3 Water Supply

The primary source of potable water for MCAAP is Brown Lake. MCAAP holds Water Rights Permit #19930025, allowing withdrawal of 900 acre-feet per year. In 2011 the following data were recorded for Brown Lake:

- Surface area: 578.83 acres
- Water capacity: 4,157.786 acre-feet
- Average depth: 7.18 feet
- Maximum depth: 25.46 feet (at full capacity)

Lake water is treated to potable water standards at the water treatment plant (Permit PWSID #1020605; rated to treat 1 million gallons per day [GPD]), routed into a 1-million gallon clear well, and pumped to various users, including MCAAP, the towns of Savanna and Haywood, and Haywood School. Water usage in 2014 was 169,126,000 gallons for industrial uses and 29,167,000 gallons for public water supply (Haywood/Savanna).



Fishing Lakes and Ponds Figure 3-11

Surface water supplies for the cantonment area are adequate for current and future requirements of MCAAP. Brown Lake can supply all domestic and special purpose needs projected at this time. In general, the source and equipment for the water supply are reliable and adequate.

The water treatment system at MCAAP was originally constructed in 1943 and has undergone periodic upgrading. The treatment plant is located at the eastern edge of Brown Lake and is rated to treat 1 million GPD. There are three ground-level storage tanks, two capable of holding 200,000 gallons and the third capable of holding 100,000 gallons. There are five elevated storage tanks, four with holding capacities of 100,000 gallons and a fifth capable of holding 50,000 gallons. Water is distributed by gravity-fed pipelines.

3.4.3.4 Waste Water System

The wastewater system, originally constructed in 1943, underwent substantial replacement during the 1990s. The wastewater system at MCAAP conveys wastewater through collection pipes to the treatment plant via gravity feed. The treatment plant (Permit SWDP #WD-79-011) is designed to process 0.5 million GPD with a maximum capacity of 0.75 million GPD. The system includes two flow management lagoons with capacities of 2.3 and 1.7 million gallons, respectively, which are designed to store wastewater when the flow exceeds the treatment plant's capacity (USACE 1996).

3.4.3.5 Stormwater Drainage System

Stormwater runoff is collected from administration and industrial areas and conveyed via piping to Brown Lake. No stormwater collection system exists in production areas of the Installation.

3.4.3.6 Range Facilities

MCAAP has one small arms range of 31 acres, two demolition areas, and 2,426 ammunition storage magazines (igloos). Ranges are discussed further in section 3.4.2, Land Uses.

3.4.3.7 Projected Changes to Facilities

Proposed projects potentially occurring from 2021-2025 are as follows:

1. Construction of a Shipping/Receiving Building next to Building 419. Estimated size of project is 34,000 square feet.

2. Construction of a General Purpose Maintenance Shop next to Building 476. Estimated size of project is 33,987 square feet.

3. Construction of an Access Control Facility/Trammel Gate on southeast corner of installation. Estimated size of project is 3,922 square feet.

Range facilities are not expected to change between 2021-2025. Any new construction projects requiring an EA would be coordinated and reviewed, if appropriate, by USFWS through projects level section 7 consultations.

3.4.4 Hazardous and Toxic Materials

Contaminated waste water from production areas, or "pink water," is discussed in section 3.1.6.5, Effects of the Military Mission on Natural Resources.

3.4.5 Outdoor Recreation

The history of outdoor recreation on MCAAP is directly related to the history of hunting and fishing on the Installation. Until about 1992, outdoor recreation, other than that associated with hunting and fishing, was insignificant. MCAAP's outdoor recreation program began to develop at

about that time and now provides recreational opportunities other than hunting and fishing. Further information on hunting and fishing on MCAAP is provided in section 5.3.2.

Camping has always been a popular pursuit at Murphy's Meadow campground, which is operated and maintained by the Community and Family Activities Directorate at MCAAP. The directorate has built facilities, including boat docks on Brown Lake, and acquired an extensive assortment of recreational equipment available to rent by MCAAP-associated personnel. It also administers many sporting tournaments, including fishing tournaments on Brown Lake.

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SECTION 4.0
NATURAL RESOURCES MANAGEMENT

This chapter discusses programs implemented specifically for natural resources conservation. Some of the programs, such as pest management and cantonment area management, are the responsibility of organizations other than the LMO, but items discussed in this INRMP emphasize the facets of the programs for which the LMO is responsible.

Programs are described in terms of their status and recent history (Current Management) followed by proposed project(s) (Proposed Management), if appropriate. These projects are intended to be environmental program requirements submissions to integrate implementation of this INRMP into the budget process (see section 7.5.4).

Projects are presented in a goal-objective format to provide process descriptions that are compatible with adaptive management analyses and overall INRMP implementation monitoring processes. All goals and objectives are summarized in tabular format in Appendix A.

The Proposed Management section for each project begins with a summary description presented in the following format:

Project: Title
Justification: Laws, regulations, or policy compliance (e.g., participation in regional initiatives; Sikes Act, ESA, AR 200-1, stewardship)
Funding Priority: Proposed or actual budget classification
Project Timing: Dates to be accomplished, by objective (e.g., 2021, 2021–25, indefinitely, uncertain)
Regulatory Coordination: Agencies with whom coordination is required

4.1 History of Natural Resources Management

Much of the following historical account is from the Natural Resources Management Plan (Starry and Hodge, 1991). The need for wildlife management became obvious in 1945 when 35 Virginia white-tailed deer were released on the Installation by ODWC. In 1953, the need for wildlife management brought about a three-way cooperative agreement for management and conservation of Installation fish and wildlife resources.

Signatory parties of the original agreement were the U.S. Department of Interior through the Bureau of Sport Fisheries and Wildlife, ODWC, and the McAlester Naval Ammunition Depot. This agreement made the services of a professional wildlife biologist and native wildlife species for restocking purposes available to the Installation. This agreement resulted in tremendous increases in wildlife populations within the Installation's protection and management.

Increasing wildlife populations within the Installation necessitated the introduction of systematic, controlled harvest of wildlife numbers. In 1963, the original agreement was revised to include harvest of wildlife species. Extensive wildlife management continued on the Installation although administration changed from the Navy to the Army in 1977. In 1984, the cooperative agreement was rewritten, and the signatory parties included USFWS, ODWC, and MCAAP. This 1984 agreement was superseded by the 1999 INRMP, which in turn is superseded by this INRMP, which includes specific items of agreement between the signatory parties (see Appendix C).

From the meager initial stocking of 35 white-tailed deer, ODWC proceeded to live-trap and transplant from MCAAP over 8,000 deer statewide, including other federal lands, such as Fort

Sill and the Wichita Mountains National Wildlife Refuge. When deer trapping began on the Installation, Oklahoma had a 3-day deer season in only four southeastern counties. As a direct result of Installation deer trapping and transplanting, Oklahoma now has a statewide deer season.

In 1962, it became impossible to sufficiently control deer numbers on Installation lands with the live-trapping program, and an annual deer hunt was initiated. The system allows hunters from across the state, as well as nonresident hunters, to apply to ODWC for MCAAP hunting privileges. Participants are chosen by public lottery. This lottery provides 75 percent of the hunters from general public applicants with the remaining 25 percent provided by a lottery of Installation employees. An annual average of 1,800 hunters pursue deer on the Installation in both shotgun and archery hunts.

Bobwhite quail trapping and transplanting had been instrumental in supplying surrounding areas with quail for restocking operations. Requests were filled periodically for stocks of raccoons, beavers, and muskrats.

The land, lakes, and ponds of the Installation serve as a migratory waterfowl refuge in the Central Flyway. Duck Marsh, a 500-acre body of water constructed specifically for waterfowl, supports about 20,000 ducks and 8,000 Canada geese during winter.

In an effort to extend mallard nesting range further south, MCAAP, in cooperation with the Oklahoma Wildlife Research Unit at Oklahoma State University and the McGraw Wildlife Institute in Illinois, released about 1,500 mallard ducklings in the early 1960s. This was done to encourage the ducklings to return to the Installation for nesting when they mature rather than traveling to the northern United States and Canada. The plan appeared to work extremely well, as evidenced by numerous mallard hens with small ducklings on the Installation and surrounding bodies of water in southeastern Oklahoma. Note that historical numbers of waterfowl were not surveyed by scientific standards, but based on personal observation. There have been no releases since, and no more releases are planned. The Installation also has a resident flock of about 100 Canada geese, which produce 40–75 young each year.

MCAAP's quality deer management program is probably the most recognized success story in the Installation's wildlife management history. The Installation has become nationally recognized as a producer of some of the largest antlered white-tailed deer in the country. This is further discussed in section 4.7, Fish and Wildlife Management.

The basis for the Installation's successful wildlife program is good soil management. Through the use of diversions, terraces, drop inlets, dams, pour-overs, hay mulch, fertilizer, selected species of plants, and careful attention to construction procedures, soils have been virtually tied down by vegetation. When construction or maintenance of areas becomes necessary, fertilizer and winter cover species are used for stabilization and protection. This establishes numerous areas across the Installation that both stabilize soils and produce green winter forage for wildlife.

The need for a land management program became apparent within the first year after construction of the Installation. No consideration was given to protecting the ground from erosion during construction of Installation facilities, mainly due to pressures for quick construction. In a matter of months, construction sites were deeply scarred by trenches gouged out by erosion. Water storage areas and surrounding waterways showed the dingy silt-laden color associated with heavy sediment loads.

Formal land management began on Installation lands in 1949 with the signing of a cooperative agreement between the U.S. Department of Agriculture's Soil Conservation Service and the

Department of the Navy's Naval Ammunition Depot, McAlester, Oklahoma. This original agreement resulted in a 10-year soil erosion control plan costing $3 million. The outstanding positive results of this work established excellent wildlife habitat Installation-wide.

Erosion is MCAAP's most significant long-term natural resources issue. As described in section 4.3, Soils Management, many soils on the Installation are highly susceptible to erosion, and the MCAAP mission has requirements that exacerbate erosion due primarily to maintaining ammunition storage igloos free of woody vegetation. The firebreak system adds to the erosion problem. Wetlands protection issues are often involved with eroding soil.

Native vegetative cover on the Installation has developed from over 40 years of proper management. The Installation has become nationally recognized for its native bluestem prairies, virgin pecan timber creek bottoms, and post oak and blackjack cross-timber types. Proper management of vegetative resources dictates proper utilization. Forage in excess of the Installation's wildlife needs is used by outleasing areas for hay production. The outleasing program requires careful administration of cutting schedules and fertilization rates to benefit wildlife as well as the lessees. The Installation benefits from the use of this high-grade forage in the form of conservation work required in the outlease contract.

4.2 Ecosystem Management Coordination and Planning

4.2.1 Ecosystem Management Coordination

4.2.1.1 Current Management

Natural resources management on military installations must be coordinated with the military mission to provide the support needed for the mission as well as effectively conserve natural resources. At MCAAP, this coordination is accomplished by the LMO in cooperation with the Risk Management Directorate.

As discussed in section 2.3, Other Federal Agencies; section 2.4, Oklahoma Department of Wildlife Conservation; section 2.8, Municipalities; and section 2.9, Other Interested Parties, MCAAP has much in common with other federal and state agencies, municipalities, and other parties interested in Oklahoma ecosystems. Cooperating with other organizations to manage and protect MCAAP and surrounding ecosystems is a significant commitment.

4.2.1.2 Proposed Management

Project: Ecosystem Management Coordination
Justification: Participation in regional initiatives, ESA compliance, stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal 1. Use coordinated planning to manage natural resources to sustain military mission capability.

Objective. Coordinate natural resources planning with planning for the sustainment of the military mission.

Goal 2. Promote and participate in regional planning for natural resources conservation at scales larger than MCAAP.

Objective 1. Continue to coordinate with and support regional planning and programs.

Objective 2. Continue to coordinate with and support military regional planning and programs.

4.2.2 Integrated Natural Resources Management Planning

4.2.2.1 Current Management

This INRMP must be reviewed annually by MCAAP, ODWC, and USWFS as stipulated in AR 200-1. The list of goals and objectives can be used to guide the review and adjust programs, per the adaptive management process (see Appendix A for a list of goals and objectives). This INRMP must be revised and approved at least every 5 years or when major changes are made to the natural resources program. The next major update is scheduled for FY 20 with implementation to begin in FY 21.

4.2.2.2 Proposed Management

Project: Integrated Natural Resources Management Planning
Justification: Sikes Act compliance, AR 200-1, stewardship
Funding Priority: Class 0
Project Timing: Objective 1—annually; Objective 2—2025
Regulatory Coordination: USFWS and ODWC

Goal. Use coordinated planning to fully integrate the natural resources program into operations at MCAAP.

Objective 1. Internally review this INRMP annually using project goals and objectives to guide reviews; revise projects and budgets as required; coordinate significant changes with USFWS and ODWC.

Objective 2. Update the INRMP at least every 5 years or when major changes are made to the natural resources program; coordinate this update with USFWS and ODWC. (This will require the next INRMP update to begin in 2024, as scheduled.)

4.3 Soils Management

4.3.1 Current Management

MCAAP has a complete soil inventory (USDA-NRCS 2001). Earlier inventories and soils descriptions are discussed in section 3.2.4, Soils. No additional general soils surveys are required during the next 5 years.

MCAAP uses a watershed planning and management approach to soil conservation. This watershed approach is based on water quality and considers effects within watersheds that individual site characteristics and restoration techniques might have on ecosystem integrity and/or the military mission.

The primary objective in control of erosion is to retard rainfall at the point of impact so that it either soaks into the soil or is directed to well-protected waterways where it flows at non-erosive speeds. Prevention and correction of soil erosion on MCAAP is accomplished by improving vegetative cover and installing supporting engineering measures.

Vegetation provides effective control of erosion for most sites on MCAAP. Even on steep slopes, vegetation is used effectively when combined with other control measures. Maintenance of areas established to vegetative cover is often necessary and includes activities, such as mowing, fertilization, and application of herbicides. Vegetation is established on disturbed areas, and

flumes, terraces, retaining walls, and other facilities are constructed where vegetation is inadequate in controlling erosion.

Hay is the most commonly used and readily available soil stabilizing and mulching material on MCAAP. It has many properties that make it ideal for erosion control, including soil moisture conservation, energy and falling raindrop dissipation, solar radiation insulation, and reduction of overland sheet flow. Hay is used in conjunction with native grass seed, Bermuda grass (*Cynodon dactylon*), and/or annual rye grass and adequate fertilizer. Bermuda grass is used to cover bare soil while recovering igloos until native plant communities can reestablish on the disturbed site. A hydroseeder is used to establish vegetative cover especially on slopes.

The Grounds and Structure Team DE is responsible for maintaining main roads and firebreaks, and the LMO provides technical assistance. Both roads and firebreaks are important to natural resources management in that they are needed for natural resources management, prescribed burning, management unit boundary marking, wildfire suppression/prevention, and recreational access.

Maintenance and upgrade of main roads and firebreaks is an important soils management project since drainage associated with these access routes can be a significant source of erosion. The Grounds and Structure Team is continuing to maintain range roads and firebreaks, and the LMO accomplishes additional maintenance of firebreaks through the agricultural outlease program.

MCAAP has a magazine protection plan, which provides guidance on vegetation management on igloos. Geomembrane coverings have been installed on almost 2,200 magazines, which effectively waterproof them. This material is applied to the exterior of magazines and eliminates vegetative growth and water leakage, stabilizes foundations, and prevents erosion and ground slides from saturated soil conditions. Numerous terraces and drop inlets also have been constructed around magazines to curtail erosion.

MCAAP's two demolition areas are heavily eroded. Terraces and drop inlets have been installed in these areas to control erosion. MCAAP will continue to monitor these control measures to ensure their long-term effectiveness. If necessary, coordination with USFWS through project-level section 7 consultations would be conducted. Until these areas can be closed permanently or a solution is developed, some erosion will continue. Demolition areas are monitored and erosion is controlled as much as possible by maintaining drop inlets, terracing, and managing vegetation.

Borrow sites on MCAAP have been established primarily to supply demolition areas with material to cover ordnance for detonation. Development of borrow sites entails removing all vegetation and removing the soil, sand, clay, and other material, which greatly increases the potential for erosion and subsequent runoff from these sites. Borrow sites are managed using the same techniques used on other erodible areas of MCAAP—such as revegetation and use of terraces—to control the amount of erosion. Several old sites have become ephemeral ponds and are now providing habitat for fish and wildlife. This is the preferred reuse of discontinued borrow sites following stabilization of the areas.

MCAAP continues to use geomembrane and other coverings as well as other methods, such as terraces, to reduce erosion associated with magazines. When new borrow sites are needed, MCAAP selects sites in previously disturbed areas. A categorical exclusion is normally adequate environmental documentation for such sites.

4.3.2 Proposed Management

Project: Soils Management

Justification: Maintaining the capability of training lands to support the military mission (Sikes Act), compliance with the CWA, and stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely, as needed
Regulatory Coordination: None required

Goal 1. Use soil parameters to manage military activities, protect soil stability, restore training lands, and conserve wildlife habitat.

Goal 2. Repair damaged soils and use soil parameters to manage military activities, protect soil stability, restore training lands, and conserve wildlife habitat.

Goal 3. Eliminate and/or minimize soil contamination and take necessary remediation efforts in areas previously contaminated.

Objective 1. Use improvement of vegetative cover and installation of supporting engineering as the primary means to prevent soil erosion.

Objective 2. Ensure that the Grounds and Structure Team maintains and upgrades roads and firebreaks and that the agricultural lessee maintains additional firebreaks.

Objective 3. Implement the magazine protection plan regarding vegetation management on igloos.

Objective 4. Monitor sediment control and containment measures on sites used to support open burn/open demolition activities.

Objective 5. Manage borrow sites using revegetation, terraces, and other structures to control erosion.

Objective 6. Use soil inventory data to make decisions regarding land use, rehabilitation options, and wildlife habitat management options.

Objective 7. Assist the EMO in its responsibility in monitoring pollution levels and pollution control, and the oversight of several ongoing and anticipated projects to remediate areas of previous contamination.

4.4 Water Resources Management

AR 200-1 establishes the following objectives for water resources on Army lands:

- Conserve all water resources.
- Control or eliminate sources of pollution to surface water or groundwater through conventional or innovative treatment systems.
- Demonstrate leadership in attaining the national goal of zero discharge of water pollutants.
- Provide drinking water that meets applicable standards.
- Cooperate with federal, state, and local regulatory authorities in forming and implementing water pollution control plans.
- Control or eliminate runoff and erosion through sound vegetative and land management practices.
- Consider nonpoint source pollution abatement in all construction, installation operations, and land management plans and activities.

An additional Army requirement is the preparation and implementation of a stormwater management plan. Attainment of most of the AR 200-1 objectives is not the responsibility of Army installation natural resources programs. Some of them, however—especially the last two—are clearly natural resources management concerns. The EMO is responsible for monitoring pollution levels and pollution control. The following discussion specifically deals with actions taken by LMO with regard to water quality.

4.4.1 Current Management

4.4.1.1 Monitoring

Water quality reflects environmental pollution, including sedimentation. MCAAP has its own drinking and other-use water supply system and reasonably high-quality surface water and groundwater. Section 3.2.5.2, Surface Waters, describes water quality monitoring. Site-specific testing at areas of concern in addition to the existing water quality regime conducted by the Environmental Office of MCAAP provide adequate water quality information for MCAAP. The Installation is in compliance with all federal and state regulatory laws regarding water quality. MCAAP is permitted by ODEQ to provide drinking water to surrounding communities. MCAAP takes samples monthly at specific sites designated by the ODEQ to monitor the water quality of Brown Lake.

4.4.1.2 Management

Compliance with most water quality laws and regulations is not the responsibility of the LMO at MCAAP and is not discussed in this INRMP. The Environmental Office at MCAAP conducts monitoring of water quality. The Environmental Office and LMO work together to coordinate testing procedures and to correct areas of concern identified during testing. If areas of concern are identified, a plan is implemented using input from both offices to ensure that any water quality issues are addressed and that impacts to wildlife are minimal. Groundwater management consists of restoration projects associated with individual sources of pollution. These projects are not considered natural resources management and are not considered in this INRMP.

Erosion is a significant threat to water quality, and it has locally significant impacts. The implementation of formal land management more than 60 years ago has greatly enhanced MCAAP's capability to protect water quality from sedimentation.

There are other provisions within this INRMP that specifically reduce negative impacts to water quality or mitigate such damage. These are found in sections 4.3, Soils Management; 4.6.1.2, Wetlands Management; 4.11, Pest Management; and 5.5, NEPA Implementation.

MCAAP is committed to protecting water quality and its associated values of MCAAP watersheds and of watersheds that drain from the Installation. MCAAP controls or eliminates runoff and erosion through sound vegetative and land management practices and considers nonpoint source pollution abatement in all construction, operations, and land management plans and activities.

4.4.2 Proposed Management

Project: Water Resources Management
Justification: Stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: USACE (CWA objectives)

Goal. Protect surface water quality at MCAAP.

Objective 1. Use site-specific water testing for natural resources programs, such as erosion control and pond management during the next 5 years.

Objective 2. Use existing water quality data from MCAAP's Environmental Office to make decisions regarding land use, restoration options, and fish and wildlife habitat management options.

Objective 3. Control or eliminate runoff and erosion that could affect surface waters.

Objective 4. Consider nonpoint source pollution abatement in construction, operations, and land management plans and activities.

4.5 Forest Management

MCAAP has very limited commercial forest resources. A small area was planted in longleaf pine (*Pinus palustris*) in the 1960s, but those trees have not been managed and their commercial value is extremely limited. Efforts to find markets for other timber resources were met with limited success, with projected costs exceeding income (Starry and Hodge, 1991).

MCAAP manages its forest resources, but not for commercial value. Instead, forest ecosystem management is considered a wildlife habitat program.

4.6 Habitat Management

This section describes general fish and wildlife habitat management programs, including wetland management. Forest management is described in section 4.5. Programs to manage and protect sensitive and listed species are described in section 4.8. Programs designed to manage special interest areas are described in section 4.9. Urban habitat management programs are described in section 4.12. Fire management aspects of habitat management are described in section 4.13.

4.6.1 Current Management

4.6.1.1 Inventory and Monitoring

4.6.1.1.1 Flora and Fauna Inventory

Lomolino and Leimgruber (1994) searched ONHI databases and conducted field studies for rare species of plants and animals on MCAAP. Tetra Tech EM (2002) conducted a flora and fauna PLS during 2000 and 2001. This survey updated and added to the 1994 study and to overall MCAAP knowledge of vegetative resources. LMO personnel document species observed as being common on the Installation through field observations. They perform deer browse transects on major browse species annually to assess habitat conditions. Results of these efforts are discussed in section 3.3.1.2, Floral Inventory. These studies are useful both as benchmarks for future comparisons and as basic references for current and future management and studies.

4.6.1.1.2 Vegetative Mapping

The vegetation types map (Figure 3-7) should be adequate for MCAAP natural resources needs during 2021–2025. The map should be updated periodically, at least every 5 years.

4.6.1.2 Wetland Management

4.6.1.2.1 Inventory

Inventory of wetlands on MCAAP is discussed in section 3.3.1.5, Wetlands. MCAAP has no particular need for additional general wetland surveys since adequate wetlands information for the Installation is readily available.

4.6.1.2.2 Management

Wetlands protection is required by EO 11990, *Protection of Wetlands*. Protection and maintenance of habitat are the primary focus of wetlands management on MCAAP. The quality of wetland watersheds affects the quality of downstream wetland plant and animal communities.

Environmental clearance review is the primary means of detecting threats to wetlands on MCAAP. The LMO reviews actions that could affect wetlands. Reviews come from engineer work orders, service orders, military mission plans, NEPA documentation, major construction plans, and other sources. Section 404 of the CWA requires that a permit be obtained for any activity that could affect "waters of the United States, including wetlands." USACE has the primary responsibility for administering the section 404 permitting process. If necessary, projects with potential impacts are referred to USACE, Tulsa District to determine if jurisdictional wetlands are implicated, to establish mitigation procedures, and/or obtain permits. Wetland-affecting projects require NEPA documentation.

Activities in wetlands that require federal permits include the following:

- Placement of fill material;
- Ditching activities when the excavated material is sidecast;
- Mechanized land clearing;
- Land leveling;
- Most road construction; and
- Dam construction.

The USACE permit process requires coordination with USFWS and the State Historic Preservation Office (SHPO) for assessment of potential impacts to protected species and cultural resources.

The most significant impact upon wetlands on MCAAP stems from watershed erosion and subsequent silting of low-lying areas and streams. Other sections of this INRMP have provisions to protect water quality and, therefore, wetlands, including section 4.3, Soils Management, and section 4.4, Water Resources Management.

4.6.1.3 Terrestrial Habitat Management

4.6.1.3.1 General

The goal of MCAAP's habitat management program is to provide habitat diversity across the installation. The LMO focuses on maintaining a wide variety of habitats at different stages of succession to increase diversity. Habitat management on MCAAP is beneficial to numerous species, migratory birds, nongame and game species by providing a variety of habitats. This section categorizes habitat management practices on MCAAP as a means to discuss them. However, there is overlap within these sections as well as with other sections of this INRMP.

Deer habitat on the Installation is in good-to-excellent condition, and the vegetative trend is positive. Habitat favorable to deer is managed by maintaining as much diversity as possible, providing well-distributed water sources, and other maintenance, such as brush control, prescribed burning, and planting food plots.

Wild turkey habitat on the Installation is excellent. Habitat plots and watering areas have been developed to stabilize brood stock within the Installation. Habitat and other turkey management includes maintaining large areas with oak and hickory overstory, creating small openings within

overstory areas, providing adequate water, planting green winter forage, and maintaining open understory in traditional roosting areas.

Swamp rabbit (*Sylvilagus aquaticus)* habitat consists of riparian areas along creek bottoms and around ponds and lakes and produced by the area's many beaver dams. Protection of these riparian areas should be adequate for habitat management for swamp rabbits.

4.6.1.3.2 Nesting/Roosting Structures

Nesting and roosting structures can be used to enhance populations of wildlife for which there is inadequate natural nesting or roosting structures. MCAAP has about 50 Bluebird boxes in and around the cantonment area and several wood duck boxes in Duck Marsh, all of which were installed and maintained by volunteers and scout groups. A few goose nesting platforms have been installed on Installation ponds and lakes.

The Installation has an abundant supply of natural nesting or roosting cavities. Nesting and roosting structures currently in place are adequate for MCAAP's needs for the next 5 years. Additional structures will not be installed unless the project assists scouts in earning badges or school children in completing wildlife projects. The management scheme of limiting development of this program to allowing scouts and volunteers to install nest/roost structures fosters good public relations and natural resources awareness while maintaining an overall natural environment.

4.6.1.3.3 Wildlife Food

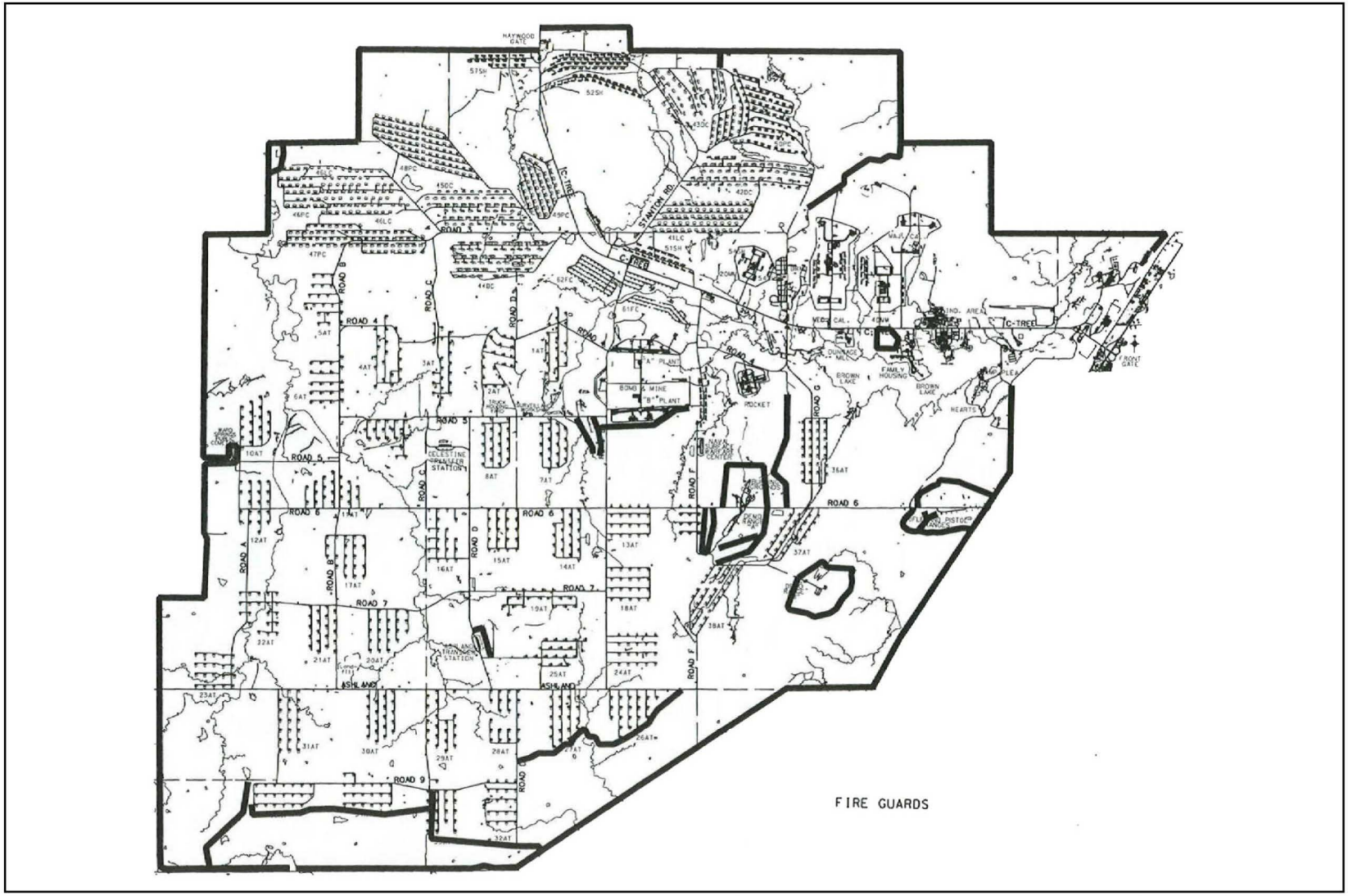
The quantity and quality of the Installation's native vegetation provides ample food for many wildlife species. However, in years of drought or poor mast crop production, additional food sources for some species become invaluable. An important aspect of the agricultural lease program is the requirement of the outlease to provide for 132 acres of annual ryegrass (*Lolium mulriflorum*) and clover (*Ladino* spp.) planting and fertilization. These plots range from 2 to 20 acres, averaging about 6 acres each. They provide green winter forage for deer and turkey, particularly in years of poor mast crops. In spring, when rye grass matures, it provides feed for turkey and nongame birds. Wildlife food plots and firebreaks are depicted on Figure 4-1.

Land management on MCAAP requires planting annual ryegrass on fire breaks and other disturbed areas. This practice stabilizes soils, provides forage for wildlife, and is effective in stopping wildfires. Firebreaks are further discussed in section 4.13, Fire Management. New construction projects that result in disturbed soil are required to have a covering of topsoil, fertilizer, annual and perennial grass and legume plantings, and a covering of anchored native grass mulch, which substantially increases the winter forage. The current level of food plot planting, including planting of firebreaks, has been developed over many years of vegetation and wildlife management on MCAAP and meets objectives and needs of the Installation's natural resources and military mission.

4.6.1.3.4 Wildlife Openings

Wildlife openings make hunting more productive and allow for a more efficient harvest. The nonhunter also has a better chance to observe wildlife at wildlife openings. The LMO manipulates vegetation on about 2,500 acres to maintain wildlife openings. Primarily overmature browse species are cut back to lower the growing portion to within reach of browsing animals.

Cutting heavy overstory also releases low-growing shrub and forbs, which is beneficial to many species of wildlife. A tractor with a brush hog attachment is used to do most of the vegetation manipulation. The agricultural outlease program and prescribed burns also maintain openings for wildlife.



Wildlife Food Plots and Firebreaks

Figure 4-1

Mature overstory timber clearing is done in 2–5-acre plots, creating small openings within large blocks of mature timber. The openings are planted with winter grasses and legumes and are designed primarily for use by the Installation's turkey population. These openings are maintained with either a bulldozer or brush hog depending on the degree of growth. If maintained properly, the openings should require maintenance no more than once in a 5-year period. Firebreaks and some food plots also provide de facto wildlife openings within MCAAP's dense vegetation.

Wildlife openings with feed high in nutritional value attract game even when natural food is abundant.

4.6.1.3.5 Eastern Red Cedar Control

The eastern red cedar is an invasive species that is causing a significant problem on MCAAP. The species spreads rapidly and grows quickly, effectively crowding out other, more desirable, native vegetation. MCAAP has adopted a control program that includes making cedars available for cutting for Christmas trees, cutting and using cedars as fish structure, cutting large cedars, and controlling small cedar trees with prescribed burning.

Many areas where large cedars are cut and left lying are scheduled for prescribed burns the following year or 2 years later. A contract to cut all cedar trees in scheduled prescribed burn areas was initiated in 1997. Cutting has been successful in reducing the number of eastern red cedar in those areas, and when followed by prescribed fire, control has been effective for several years. Tetra Tech EM (2004) recommended that the prescribed burning program be continued and expanded to other portions of the Installation to help control the eastern red cedar. However, some portions on-plant, including production and certain ammunition storage areas, cannot be burned. In those areas, mechanical control is the only option.

MCAAP has begun mechanically mulching cedar trees in areas where burning is not an option. This process mulches small cedar trees directly without cutting, which helps control the species and improves soil conditions by spreading mulch on the ground. The LMO also uses a skid steer tree cutter to cut cedars in accessible areas. Current equipment and manpower cannot annually treat a large enough area to significantly reduce the number of eastern red cedars on the Installation. The number of acres prescribe-burned annually also is limited by manpower and other factors. For the Installation to succeed in controlling this invasive species, more manpower, equipment, and funding is required. The LMO is using the best combination of management measures for eastern red cedar trees to meet the Installation's vegetative management needs at a reasonable cost. MCAAP is dedicated to preventing the introduction of any other invasive species as well as their control, per EO 13112, *Invasive Species*.

4.6.1.4 Aquatic Habitat Management

4.6.1.4.1 General

MCAAP has 125 lakes and ponds of which about 81 are suitable for fishing, mainly due to size and water holding capability. Fishing lakes range from less than 1 acre to the 620-acre Brown Lake, which is the most intensively managed of the Installation's lakes. Lakes and ponds on the Installation are managed primarily for largemouth bass, catfish, and various sunfish.

The environmental review process is used to protect wetlands on MCAAP. All construction projects are reviewed by LMO for potential effects on surrounding wetlands. If appropriate, an on-site visit by a USACE representative occurs to delineate wetlands to ensure that no negative impacts to wetlands occur.

4.6.1.4.2 Pond Construction/Maintenance

Most Installation ponds and lakes were constructed in conjunction with either erosion control projects or the agricultural outlease program. Most pond construction took place during the early to mid-1960s, primarily for cattle watering.

An effort to provide wildlife water sources Installation-wide was a priority at MCAAP for several years. Ponds were constructed to maintain a water supply even during drought. Today, water sources are spread across the Installation and appear to be supplying adequate water to wildlife.

Pond building is now a lower priority; however, new ponds could still be developed from borrow sites that are closed. Several of these areas could be developed over the next 5 years.

Wave action on the shoreline of the island in Brown Lake has caused significant shore erosion. The shoreline could be stabilized by placement of riprap in the appropriate areas. However, methods to transport riprap material across the shallow Brown Lake to the island will need to be investigated.

4.6.1.4.3 Structural Diversity

Structural diversity can benefit all species of fish by aggregating bait fish and providing additional substrate for aquatic invertebrate production, increased spawning habitat, and shelter. Numerous fish attractors have been used in MCAAP lakes, most of which are sunken eastern red cedar trees. Fish structure site selection is based on naturally occurring structure, water depth, pond size, and angler use. The primary purpose of fish attractors is to concentrate fish for anglers and provide cover for fish.

4.6.1.4.4 Aquatic Weed Control

Aquatic weeds are not a major problem at MCAAP. The most common problem aquatic weeds are milfoil (*Myriophyllum* spp.), pondweed (*Potamogeton* spp.), and American lotus (*Nelumbo lutea*).

MCAAP uses biological control of aquatic weeds. The grass carp, or white amur (*Ctenopharyngodon idella*) is an herbivorous fish primarily stocked to control submerged weeds. Triploid fish are stocked, ensuring 100 percent sterility and preventing natural reproduction. Once stocked, grass carp can provide long-term control of nuisance aquatic weeds. They are capable of eating two to three times their body weight per day in aquatic vegetation and can gain 5–10 pounds in 1 year. Individual grass carp can provide control for as long as 10–15 years. The Installation has been effectively using these fish to control pondweed and milfoil with no noticeable adverse side effects.

4.6.1.4.5 Aquatic Nuisance Species Control

The LMO has taken preventative measures to stop the introduction of aquatic nuisance species (ANS). In cooperation with ODWC's ANS biologist, it has taken several steps to minimize the introduction of ANS, including information signs posted at boat ramps, scientific literature distributed to lake users, briefing all fishermen/lake users, and periodic boat inspections. All watercraft must be thoroughly washed prior to use on MCAAP to prevent the introduction of any ANS to MCAAP waters.

4.6.2 Proposed Management

Project: Habitat Management

Justification: Maintaining the capability of training lands to support the military mission (Sikes Act); compliance with EO 13112 (objective 13); stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: USACE (CWA objectives)

Goal 1. Inventory MCAAP floral resources and monitor species or communities that are indicators of ecosystem integrity, capability of lands to support military missions, status of sensitive species or communities, and other special interests.

Objective 1. Update the flora inventory as new species are found through field observations, site-specific surveys, sensitive plant species surveys, and other projects.

Objective 2. If plants that are federal-listed are found on MCAAP, develop an inventory/monitoring program for those species.

Objective 3. Periodically update the vegetation map.

Goal 2. Manage wetlands to ensure "no net loss" per EO 11990.

Objective 1. Maintain a database on wetland resources at MCAAP.

Objective 2. Use site-specific surveys to evaluate wetland resources if potential wetland impacts are identified.

Objective 3. Use the environmental review process to protect wetlands (see 4.6.1.2).

Objective 4. Provide certified jurisdictional wetland delineations (and permit application, if necessary) if a project is planned in a suspected wetland.

Objective 5. Maintain wetlands quality through active management (e.g., prescribed burning), if necessary.

Goal 3. Manage wildlife species habitats based on conservation needs, distribution and threats, population trends, importance of areas to species, potential for population and/or habitat management, and human interests.

Objective 1. Install and maintain nesting/roosting structures using volunteers and scout groups.

Objective 2. Provide wildlife food through plantings associated with the agricultural lease program and planting of annual ryegrass on fire breaks and other disturbed areas.

Objective 3. Develop and maintain wildlife openings.

Objective 4. Control invasive species, particularly eastern red cedar, through cutting and burning.

Objective 5. Continue using the skid steer for cutting eastern red cedars.

Objective 6. Maintain riparian habitats currently found on MCAAP, and explore the feasibility of riparian habitat restoration.

Goal 4. Maintain and enhance the natural diversity of native aquatic communities on MCAAP.

Objective 1. As borrow sites are closed, consider converting them to ponds as determined by their proximity to existing water sources and whether their soil type is suitable for holding water.

Objective 2. Stabilize eroding shorelines of the island in Brown Lake by installing temporary wave-breaking structures to allow native vegetation to establish along the water's edge.

Objective 3. Use eastern red cedar trees to enhance structural diversity in lakes and ponds, as needed.

Objective 4. Restock grass carp as necessary to control common aquatic weeds.

Objective 5. Eliminate the introduction of any ANS through education and periodic inspections.

4.7 Fish and Wildlife Management

Conserving the biodiversity of native species is a cornerstone of ecosystem management. MCAAP is taking appropriate steps via this INRMP and previous studies and reports to ensure that overall biodiversity is not compromised at MCAAP. Wildlife population management directly influences wildlife as opposed to soil, water, and vegetation management practices and protective measures, which indirectly affect populations.

The overall goal of fish and wildlife management is to maintain populations in accordance with species priorities, population ecology, population health considerations, and habitat capacities. Much of the historical information in this section, especially references to fish and wildlife stockings, hunting seasons, etc., is taken from annual wildlife management program reports (1962–1972) and the fish and wildlife management plans (1976 and 1991). Those documents contain detailed information on activities of the fish and wildlife management program and are available at the LMO.

This section describes general programs designed to manage fish and wildlife populations. Specific habitat management programs are described in section 4.6, Habitat Management. Programs to manage and protect sensitive and listed animal species are described in section 4.8, Rare and Listed Species Management. Pest species management related to natural resources programs is described in section 4.11, Pest Management.

4.7.1 Current Management

4.7.1.1 Inventory and Monitoring

Information on species occurrence on MCAAP has been collected through many projects. Section 3.3.2, Fauna, discusses faunal species found on MCAAP, and Appendix D lists wildlife species known to occur on the Installation.

4.7.1.1.1 Mammals

Harvest numbers provide an inexpensive means to monitor game populations. All game harvested on MCAAP must be reported. Combining harvest data with hunter effort provides basic information that can be used to manage most game species. Harvest data are stored in LMO computer files.

Broodstock census strips, browse transects, classification routes, and harvest data are used to census white-tailed deer on MCAAP. The broodstock census is performed in January and consists of three standard strips that are driven 15 times each. The number of acres for each strip is

known. The deer/acre can be calculated and extrapolated to the rest of the Installation, using the average number of deer seen on each strip. Browse transect evaluations are performed on major browse species at the beginning of each growing season to assess habitat conditions.

During August, a deer classification census is performed, which consists of driving a standard route (145 miles) and identifying between 600 and 1,000 deer—bucks, does, or fawns. Buck:doe and doe:fawn ratios are used to help determine the number of antlered and antlerless deer that should be harvested. Additionally, this census is an incidental furbearer census that also collects data on raccoons, coyotes, bobcats, and other species.

The LMO collects biological data associated with deer harvests to assess and monitor population health. All legally harvested deer are evaluated at a deer check station. Data on area harvested, age, body weight, and antler development are collected. Age-specific antler measurements and body weights are compared with data from previous years to obtain a trend of the herd's overall condition. Data are used for analyses of hunting effort and success and harvest by area and time. Statistical analyses are used to determine population levels, trends, and harvest strategies.

4.7.1.1.2 Birds

LMO personnel monitor Wild Turkey populations using spring gobbling, summer brood, and winter flock counts. Gobbling counts are usually performed in April and consist of stopping and listening for gobbles at 20 predetermined locations along a driven route. Three minutes are spent at each location, and counts continue until the weather, usually wind, hinders the ability to hear or the route is completed. Gobbling counts provide an index to the number of mature gobblers in the population.

Brood counts conducted by LMO staff consist of incidental observations made during summer months while performing other management activities. During the summer, turkeys often can be seen crossing or feeding near roads, which facilitates gathering data, such as the number of birds in each classification—juveniles (poults), hens, jakes (yearling toms), or mature toms. Poult:hen ratios provide a good index to turkey reproduction and recruitment of young into the population.

Winter flock counts are performed in several specific areas where turkeys at MCAAP historically winter, usually associated with winter rye grass plantings in or near bottom lands. All turkeys in the area are counted, and the areas are visited several times until consistent counts are achieved. Flock counts indicate the overall population size and provide good trend information.

No specific data is available on the number of waterfowl currently using the Installation. A decline in the number of waterfowl occurred across the region prior to 2010 for several reasons. However, the 2015 Trends in Duck Breeding Populations report released by USFWS indicates that 2015 was a strong year for waterfowl populations (Ducks Unlimited 2015). The report is based on surveys conducted in May and early June by USFWS and the Canadian Wildlife Service in partnership with state and provincial agencies and private conservation organizations. Overall duck numbers were statistically similar to those of 2014 and remain high. Total populations were estimated at 49.5 million breeding ducks in the traditional survey area. This estimate represents a 1-percent increase from the 2014 estimate of 49.2 million birds, and is 43 percent higher than the 1955–2014 average.

As time and funding permits, LMO implements monitoring and inventory of nonwaterfowl migratory birds. Since 2013, MCAAP has been conducting an annual federal mourning dove survey for Pittsburg County in May and reporting the results to USFWS.

4.7.1.1.3 Fish

Manipulating fish populations is based on data collected and analyzed from fish population surveys. Fisheries management on MCAAP is lake-specific, which requires collection of population data from many bodies of water. Fisheries surveys are most often done from spring through late-summer. Fish population data are collected using electrofishing, seines, gill nets, hook and line, and other techniques appropriate for each impoundment. ODWC, with assistance from the LMO, performs electrofishing surveys on MCAAP. Gill netting and hook and line surveys are performed by LMO personnel in some lakes and ponds to supplement electrofishing data and are the only techniques used on other lakes and ponds. Parameters monitored include proportional stock density, species composition, relative abundance (weight and numbers), length frequencies, average weight by size class, and age/growth relationships. Sampling has occurred on Brown Lake for all fish species.

Creel surveys are an important component of managing recreational fisheries. They are particularly useful for lakes with channel catfish, which are difficult to survey using electrofishing gear. Angler success and degree of satisfaction with the fishery are important parameters of success of the overall fish management program. MCAAP uses creel surveys to obtain information on fish and fisheries in the Installation's lakes and ponds.

4.7.1.1.4 Other Species

Other species are not formally monitored other than through incidental observations for abundance and general health. Observations are normally made by LMO personnel while they are performing other management activities.

4.7.1.2 Fish and Wildlife Population Management

The manipulation of fish and wildlife populations is an important aspect of fish and wildlife management. Human use of sustainable resources on MCAAP is a critical aspect of ecosystem management, including hunting and fishing. AR 200-1 requires management of game and sport fish to ensure sustainability of harvests and protection of the species involved.

Section 5.3, Outdoor Recreation, includes recreational aspects of game management. The descriptions of harvest strategies in this section do not include detailed historic harvest data. These data are kept in files and computer databases at the LMO. MCAAP Regulation 420-5, *Hunting at McAlester Army Ammunition Plant*, outlines responsibilities, eligibility, safety, and other aspects of hunting at MCAAP.

4.7.1.2.1 White-tailed Deer

In 1945, 35 white-tailed deer were released on MCAAP by ODWC. By 1962 the Installation's deer population had expanded to the point of requiring control, and the first deer hunt was held. Live-trapping and relocating deer to other areas of Oklahoma also assisted in controlling overpopulation problems in the early days of the Installation's deer herd. Management of white-tailed deer on MCAAP focuses on maintaining the population slightly below or at the carrying capacity of the range to allow for an upward trend in habitat condition.

MCAAP has attained a prestigious national reputation for consistently producing quality (trophy) white-tailed deer bucks, a status that began with the use of archery hunting as the primary harvest method. However, the tremendous improvement in buck quality seen today at MCAAP is a direct result of significant and innovative changes made in the Installation's deer management philosophy.

In 1989, MCAAP initiated traditional archery hunting (using a longbow or recurve with no sights) for the Installation's bucks as opposed to allowing compound and other more advanced bows and other technological advances, which have steadily developed in the sport of archery hunting. Before adoption of traditional archery, hunter success rates became unacceptably high (about 20 percent) and were devastating to the Installation's quality deer management program. For example, in 1997, the archery success rate was 9.8 percent, which is much lower than when modern archery equipment was allowed. This innovative strategy allows more hunters to participate without decreasing the quality of the herd and increases the quality of the hunt.

The second innovation in the quality deer program is management of the Bear Trap hunting area (Figure 3-9) as a single large management unit where hunting pressure is maintained at a low level. This approach provides an area from which quality bucks can disperse into adjacent management units where hunting pressure is higher and open to seasonal harvest. This management scheme has been successful in providing quality bucks to surrounding areas for the past 20 years.

- During 1994–1996, MCAAP, ODWC, and Oklahoma State University cooperated on a research project to evaluate the efficacy of quality deer management techniques on the Installation. Fifty yearling and quality bucks (i.e., scoring more than 125 Pope and Young points) were captured over the 3-year period using drop-nets. They were fitted with radio transmitters equipped with mortality sensors. Deer were monitored daily during scheduled hunts and every third day throughout the remainder of the year. The results indicated:
    - Management of the Bear Trap unit is effective in providing quality bucks via dispersal to other management units;
    - Survival rates are much lower for yearling bucks than older bucks;
    - Mortality rates for bucks that moved onto adjacent private lands is very high (100 percent for collared bucks);
    - The wounding rate on bucks is much lower than was anticipated; and
    - Illegal taking of bucks is present but not to a greater degree than predicted.

Body samples taken from harvested collared deer indicated that the MCAAP herd overall is in exceptionally good health.

A permit for the annual traditional archery hunt for MCAAP's trophy deer has become one of the most highly sought after and coveted controlled hunt permits in the country. An average of 10,000 hunters apply each year for the 1,800 permits with several applications coming from out of state. The number of permits is adjusted periodically, depending on range condition, population levels, and other criteria. MCAAP also allows shotgun deer hunts, but they are antlerless-only hunts used to control overall deer population levels. This controlled hunt is also fairly popular, with many applicants vying for 40 annual permits.

Annual harvest of white-tailed deer by public hunting is the primary control measure used for the Installation's deer population. The number of deer harvested annually on MCAAP has fluctuated. Deer harvest numbers range from a high of about 600 in 1988 to just a few deer taken in the first few years of legal hunting. The MCAAP deer herd has stabilized, with an average of 200 deer harvested annually.

Security at MCAAP will always be a significant concern. The deer population on the Installation must be controlled, but National security concerns could warrant discontinuance of public deer hunts. If that were to happen, MCAAP would investigate alternative methods of population control to manage the deer population. In the event of construction of additional security fences

or cancellation of the hunting program, additional studies, including NEPA documentation, would be required.

Regulations, permits, bag limits, procedures, and other topics applicable to deer hunting on MCAAP are discussed in section 5.3, Outdoor Recreation, and Figure 3-9 shows deer and fall archery turkey hunting areas on MCAAP. The hunting regulations for the white-tailed deer and fall turkey hunt are the primary regulations for deer.

In 1946, a local rancher donated 17 fallow deer, native to the Pyrenees Mountains of France, to the Installation. As happens with many introduced species, the population increased rapidly following introduction and then steadily decreased to a much lower level. At one time, fallow deer numbers were high enough to allow limited hunting opportunity. However, as their population declined, hunting was discontinued. The genetic pool of the Installation's fallow deer was limited enough that recovery from the low population level could not occur, and today no fallow deer remain.

4.7.1.2.2 Turkeys

Eastern wild turkey stocking on MCAAP began in 1970 when ODWC released 24 birds. Numerous stockings followed, and reproduction and habitat improvements were considered successful in 1981 when surveys confirmed turkeys in almost every area of the Installation. The turkey population on MCAAP is estimated at 850 birds. The goal for the Installation's turkey population is to allow it to reach habitat carrying capacity.

The Installation uses harvesting to manage its turkey population. Turkeys were first harvested by archers during the 1981 fall deer hunt, and spring turkey hunting began in 1984.

MCAAP has become well known for its high-quality and highly successful turkey hunts. The limited number of permittees, especially during the spring seasons when turkey calling is effective, makes the hunts highly desirable.

Twenty public permits and 20 Installation personnel permits are allotted for each of the spring hunts. Archery deer hunters also are allowed to harvest a tom turkey during fall deer hunts. The bag limit for all hunts is one tom turkey. The average annual turkey harvest on MCAAP is about 30.

Section 5.3, Outdoor Recreation, discusses regulations, permits, bag limits, procedures, and other topics applicable to turkey hunting on MCAAP. Figure 3-9 shows deer and fall turkey hunting areas, and Figure 3-10 shows spring turkey hunting areas on the Installation. The hunting regulations for the white-tailed deer and fall turkey hunt and the hunting regulations for spring turkey hunt are the primary regulations for turkey.

4.7.1.2.3 Small Game

Small game species on MCAAP include bobwhite quail , cottontail and swamp rabbits, fox and gray squirrels, mourning doves, and woodcocks (*Scolopax minor*). Prairie chickens (*Tympanuchus cupido*) were historically present on MCAAP. They were later stocked at MCAAP in 1946 by ODWC, and further releases were made in 1973 and 1974, but a self-sustaining population was never achieved.

The bobwhite quail population is at or near habitat carrying capacity, although the habitat is not optimal due to a lack of annual weeds in the vegetative stand. A small amount of live-trapping and transplanting to areas outside the Installation was done in the past in cooperation with ODWC. The objective for quail population management is to maintain the current level. This

includes no quail-specific habitat improvement projects beyond what is accomplished through general vegetation management practices. Quail hunting was allowed on the Installation for the first time in 1963 and was stopped in 1985 due to budget limitations and minimal interest by hunters.

The swamp rabbit population is increasing with much of the available habitat occupied. No harvest is planned for this species, and the population management objective is protection until habitat carrying capacity is reached.

Other small game species populations are consistent with their available habitat. Protection is the focus of management measures for small game species on MCAAP. There is no small game hunting on the Installation. Opening MCAAP to small game hunting is unlikely due to security requirements.

4.7.1.2.4 Furbearers

The management of furbearers is limited to control of animals to maintain populations within habitat carrying capacities. This degree of control limits outbreaks of mange, rabies, and distemper in furbearer populations and also prevents populations from inflicting damage to adjoining landowners. Some furbearer control has been used in and around nesting sites of Canada geese and wild turkeys.

Live-trapping and relocation of raccoons, beaver, and other furbearers have long been used to control populations on the Installation. In 1964, as many as 2,250 raccoons were live-trapped and transplanted to other areas of the state in cooperation with ODWC. Since then, numbers have not gotten that high, but raccoons and beavers continue to be trapped and, as often as possible, relocated.

MCAAP has held controlled hunts for raccoons for the Governor's Cup, the United Kennel Club's State and World championships, and other events. Permits for these hunts are considered on an individual basis.

From 1950 to 1965, USFWS provided MCAAP with a full-time predator trapper, which was not unusual considering management philosophies of the time. From 1958 through 1965, 720 coyotes (*Canis latrans*) and bobcats where taken off the Installation. Annual wildlife program reports, especially the 1965 report, document trapper activities. No intensive predator control program is planned, nor is the need for such a program anticipated.

River otters appear to be increasing in number on MCAAP. The feeding habit of otters appears to be having some negative impacts on fish species on the installation, especially in broodstock-rearing ponds used to grow fingerlings to releasable-sized fish. The impact of otters might need to be addressed in the future to prevent damage to the fisheries of MCAAP. The LMO is awaiting results from a statewide study currently being conducted by ODWC and Oklahoma State University on the impact of river otters to fisheries in the state before developing any management plans.

4.7.1.2.5 Migratory Birds

The Installation area is managed as a refuge for migratory waterfowl (i.e., no harvest). The many lakes, ponds, and grain and winter forage plantings and protection offered at the Installation afford waterfowl an excellent resting and feeding refuge during migration. Maintenance of proper water levels encourages nesting by teal, mallards, wood ducks, and Canada geese.

4.7.1.2.6 Fish

Fish management at the Installation is directed at maintaining a harvestable surplus of game fish. Each lake is an entity in itself and can experience population fluctuations over the short and long term stemming from fish harvest, enforced regulations, stocking, fish kills, pond productivity, aquatic weed infestation, and other causes. Primary species emphasized in the MCAAP fisheries program are largemouth bass, bluegill, and channel, blue, and flathead catfish. A specific fisheries management plan has not been developed for MCAAP. MCAAP will develop a fisheries management plan if one becomes necessary. The ODWC Fish Division can provide technical assistance with development of this plan.

4.7.1.2.7 Fish Harvest Management

Lakes and ponds are available for recreational fishing, provided they are not closed due to military restrictions, fisheries management, renovation, or other activity. Fishing regulations are identical to state limits, except that some MCAAP regulations are more restrictive on certain lakes (e.g., slot limit, length limit, catch and release). MCAAP Regulation 420-7, *Fishing at McAlester Army Ammunition Plant*, outlines responsibilities, eligibility, procedures, and other criteria for fishing at MCAAP. Figure 3-11 shows lakes and ponds open to fishing. Regulations, permits, bag limits, procedures, and other topics applicable to fishing on MCAAP are discussed in section 5.3, Outdoor Recreation.

4.7.1.2.8 Fish Population Control

Fish population control for game species consists of recreational harvest, which is managed through bag and other limits established for various fisheries. There has been little need for direct control of undesirable species in the Installation's lakes and ponds. The exception is the establishment of blue and flathead catfish in Brown Lake to control carp, shad, and crappie populations. The establishment of catfish in Brown Lake has been very successful.

4.7.1.2.9 Fish Stocking

Stocking is used to establish fish populations in new or renovated lakes and ponds and to maintain populations in intensively managed lakes. Fish stocking on the Installation began in 1945 when ODWC stocked Brown Lake and eight small ponds with largemouth bass, bluegill, channel catfish, and crappie.

Stocked fish are usually obtained through ODWC. When available, fish (usually catfish) are transported from a state hatchery to MCAAP by the LMO. Catfish are received as fingerlings in early fall (usually September) and put into a 1 million-gallon tank to be grown out until about August of the following year. Stocking of smaller catfish proved ineffective as most became prey for larger predatory fish in the ponds and lakes. From 1995 through 2007, about 6,000 catfish were stocked in MCAAP ponds. Catfish are no longer provided by ODWC. Fish caught in the Brown Lake spillway after spring runoff are distributed to other waterbodies on MCAAP.

Largemouth bass and other species are occasionally moved from two or three small, off-limits ponds to stock larger ponds and lakes that are open to fishing.

4.7.1.2.10 Other Species

Feral hogs have been a problem on MCAAP since about 1996. There are several theories as to how feral hogs become established in previously unoccupied areas, the most common being that they are transported and released by individuals wanting to establish another species to hunt. Hogs on MCAAP probably have moved onto the Installation from the surrounding area from that type of release. On MCAAP, the estimated population of feral hogs is about 1,000. Populations

can increase rapidly as feral hogs can breed twice a year and can have from 6 to 11 young per litter.

Feral hogs are very detrimental to vegetative resources and can be particularly hard on agricultural crops. The degree of damage is directly related to the number of hogs present. Hog rooting disturbs soil and uproots vegetation. Sows will build nests using large piles of vegetation gathered together from a localized area. Effects on vegetation from both rooting and nest building are apparent on the Installation, particularly in agricultural hay lease areas. Repair of that damage is conducted through work orders.

On MCAAP, the primary management tactic employed for feral hogs is to control their numbers through harvest by LMO personnel. Between 136 and 430 feral hogs were harvested annually from 2006 to 2020, with an average annual removal of 246 hogs. In 2020, 212 were removed using the same method and amount of effort, which indicated the control program was successful. Control efforts must continue to maintain the population at a low level. Hunters are allowed and encouraged to harvest feral hogs, but other means are needed to effectively control the hog population. MCAAP now also uses remotely dropped traps monitored by video and aerial hunting from helicopters to remove hogs.

The land management program as a whole results in excellent habitat for songbirds, raptors, and other nongame species. Specific management actions are not undertaken for nongame species other than endangered species, and those actions are not anticipated during 2021–2025. If nongame numbers decline, MCAAP will use research and/or management programs to deal with individual or groups of species. As time and funding permits, LMO will implement monitoring and inventory of nonwaterfowl migratory birds.

4.7.2 Proposed Management

Project: Fish and Wildlife Management
Justification: Stewardship, Sikes Act compliance
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely and/or as needed
Regulatory Coordination: None required

Goal 1. Inventory MCAAP faunal resources and regularly monitor species that are indicators of ecosystem integrity and other special interests.

Objective 1. Perform white-tailed deer census (broodstock census strips, browse transects, classification routes), collect harvest data at check stations, and conduct supplemental census as required.

Objective 2. Monitor wild turkey populations using spring gobbling counts, summer brood counts, and winter flock counts.

Objective 3. Perform small mammal (including bats), bird, nongame fish, and terrestrial invertebrate surveys as time and funding become available.

Objective 4. Perform fish population data collection, using techniques such as electrofishing, seines, gill nets, and hook and line, as appropriate for each impoundment.

Objective 5. Investigate performing periodic creel surveys on MCAAP.

Objective 6. Monitor other species through incidental observations for abundance and general health.

Goal 2. Maintain fish and wildlife populations at optimal levels in accordance with species priorities, population ecology, population health considerations, and habitat capacities.

Objective 1. Use established hunting seasons, procedures, methods, and other approaches to maintain white-tailed deer and turkey populations at or slightly below carrying capacities.

Objective 2. Investigate the feasibility of options other than traditional archery for management of deer at MCAAP, in the event of heightened security requirements.

Objective 3. Maintain small game and furbearers within habitat carrying capacities and provide a refuge for migratory birds during migration.

Objective 4. Manage fisheries resources to maintain a harvestable surplus.

Objective 5. Develop a fisheries management plan during the next 5 years to include surveying and management of both game and nongame fish species.

Objective 6. Use recreational harvest to manage game fish populations.

Objective 7. Annually stock catfish to support heavy recreational fishing use.

Goal 3. Eradicate/minimize feral hogs on MCAAP.

Objective 1. Continue to control feral hogs to maintain the population at a low level through trapping, shooting, and the use of dogs to capture.

Objective 2. Investigate and incorporate, as appropriate, new control options/methods including helicopter shooting to more effectively control the feral hog population.

4.8 Rare and Listed Species Management

Section 3.3.1.3, Special Status Flora, and section 3.3.2.6, Special Status Fauna, discuss the status of species that are federal and/or state endangered, threatened, or special concern species at MCAAP.

4.8.1 Federal-listed Species Management

The ESA requires lands under the jurisdiction of the Department of the Army to conserve listed species. As defined in the ESA, conservation is the use of all methods and procedures necessary to bring any listed species to the point where protections provided by the ESA are no longer necessary. The ESA requires the Army to consult with USFWS if any action might affect a federally listed species or critical habitat.

AR 200-1 (section 11-2(a-e)) states that the Army has five primary requirements under the ESA:

1. To conserve listed species
2. Not to "jeopardize" listed species
3. To "consult" and "confer"
4. To conduct a biological assessment
5. Not to "take" listed fish and wildlife species or to remove or destroy listed plant species

MCAAP is committed to these five primary requirements.

4.8.1.1 Current Management

4.8.1.1.1 Critical Habitat

Within the spirit and intent of the Sikes Act Amendments of 1997 and the ESA, this INRMP serves to provide "adequate management or protection," a term that originated in the definition of occupied habitat from section 3 of the ESA. If adequate management or protection is already in place, then additional special management (i.e., critical habitat designation) is not required when lands are found to contain physical and biological features essential to the conservation of the species. Adequate management or protection is provided by a legally operative plan that addresses the maintenance and improvement of primary constituent habitat elements important to the species and manages them for the long-term conservation of the species. This reasoning leads to the conclusion made by USFWS that, where applicable, federal critical habitat designation is not warranted if the INRMP includes the following three criteria:

1. The plan provides a conservation benefit to the species. Cumulative benefits of the management activities identified in a management plan, for the length of the plan, must maintain or provide for an increase in a species' population or the enhancement or restoration of its habitat within the area covered by the plan (i.e., those areas deemed essential to the conservation of the species). A conservation benefit may result from reducing fragmentation of habitat, maintaining or increasing populations, ensuring against catastrophic events, enhancing and restoring habitats, buffering protected areas, or testing and implementing new conservation strategies.

- Flora and fauna inventory and monitoring, habitat management, wildlife population management, federal-listed species protection, and numerous other projects discussed in this INRMP will provide a cumulative conservation benefit to federal-listed species.

2. The plan provides certainty that the management plan will be implemented. Persons charged with plan implementation are capable of accomplishing objectives of the management plan and have adequate funding for the management plan. They have the authority to implement the plan and have obtained all necessary authorizations or approvals. An implementation schedule (including completion dates) for the conservation effort is provided in the plan.

- The Commander has the authority to implement the INRMP, which will be accomplished primarily by the LMO staff, as scheduled (Appendix A) and budgeted (section 7.5, Implementation Funding Options, and section 7.6, INRMP Implementation Costs).

3. The plan provides certainty that the conservation effort will be effective. The following criteria will be considered when determining the effectiveness of the conservation effort. The plan includes (1) biological goals (broad guiding principles for the program) and objectives (measurable targets for achieving the goals); (2) quantifiable, scientifically valid parameters that will demonstrate achievement of objectives and standards for these parameters by which progress will be measured are identified; (3) provisions for monitoring and, where appropriate, adaptive management; (4) provisions for reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort are provided; and (5) a duration sufficient to implement the plan and achieve benefits of its goals and objectives.

- Goals, objectives, and long-term ecosystem needs, based on land use sustainability for the MCAAP mission, have been analyzed and considered extensively in collaboration with persons contacted while preparing this plan. Goals and objectives are defined for the plan as a whole (section 1.3) and each project within the plan (chapters 4, 5, and 7, as summarized in Appendix A). The INRMP will be evaluated through monitoring programs, including the Army's Environmental Compliance Assessment System and

ODEQ's Environmental Quality Report, and reviews by the Southwest Installation Management Agency and other interested parties.

An ESMP for MCAAP was produced in 2017 (Toby 2017). Unless stated otherwise, information in this section is taken from that plan, which includes an implementation schedule and budget estimates.

4.8.1.1.2 Management

Based on the findings summarized in a biological assessment, USFWS declared that no formal consultation was needed and that normal operation and maintenance activities conducted on MCAAP will have no effect on the American burying beetle. Informal consultation continues between MCAAP and USFWS for any proposed construction projects or other activities that could impact the American burying beetle. However, further consultation might be required with USFWS regarding activities potentially affecting the American burying beetle as more is understood about this species since the 1994 biological assessment was completed.

American burying beetles are found in the soil and leaf litter of a variety of habitats. Disturbance of soil and leaf litter could adversely affect them by crushing, displacing, and/or separating adults from broods. Activities that potentially could affect the American burying beetle on the Installation include creating and maintaining firebreaks, food plots, hay cutting, brush hogging for wildlife openings, and prescribed burning. While firebreaks could affect the American burying beetle, they must be maintained for installation safety and mission. Firebreaks also comprise a small fraction of the Installation's land area. Food plots, hay cutting, and brush hogging would be expected to have minimal, if any, impact on American burying beetles. Based on informal consultation with USFWS, prescribed burning during summer has minimal impact to the beetles. Food plots affect a much smaller area and hay cutting and brush hogging are much slower actions that have a smaller areas of disturbance than prescribed burning. Also, brush hogging for wildlife openings occurs at a height of 12–14 inches. Brush control occurs between August and October, mostly after the American burying beetle active period, and the duff and litter layer are not severely impacted. MCAAP surveys indicate an upward trend in the American burying beetle population, indicating that normal management practices are not having a negative impact that is not overcome with long-term benefits from these practices.

MCAAP military and civilian personnel who might have contact with listed species or their habitats are required to attend an educational program. The program includes individual responsibilities and liabilities under federal law, the importance of protecting the American burying beetle and other listed species, and balancing accomplishment of the Installation's mission with conservation of the American burying beetle and its habitat. A manual has been developed and disseminated that contains information on identifying the American burying beetle and a list of guidelines on activities prohibited because of possible damage they could cause to the American burying beetle or its habitat.

4.8.1.1.3 Surveys

Surveys to determine population fluctuation of the American burying beetle on MCAAP are conducted within each habitat category. They are conducted every third year using the same methods used to conduct the initial survey. Habitat inspections in the identified capture areas are made to identify any habitat changes that might have been caused by mission requirements or other processes. At a minimum, habitat inspections must be performed annually. Items considered during inspections include density of hardwoods, ground disturbances, height and density of brush, and any damage to vegetation due to fire or other mission-related activities. MCAAP

submits an annual report to USFWS, which includes the number of all species trapped during beetle sampling. These results are available from the LMO upon request.

4.8.1.2 Proposed Management

Project: Federal-listed Species Management
Justification: ESA
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: USFWS

Goal 1. At a minimum, sustain residential or migratory populations of endangered, threatened, or special status species and their habitats at current levels, with the long-term goal of conserving listed species and their habitats in accord with specific recovery plans and the ESA.

Objective 1. Implement requirements of the ESA, as stated in AR 200-1.

Objective 2. Implement management requirements of the ESMP (Starry 2007), including continued informal consultation, surveys and trapping in project areas before significant ground disturbance, and awareness training.

Objective 3. Implement survey, inspection, and monitoring requirements of the ESMP (Starry 2007).

Objective 4. Maintain records from American burying beetle surveys and reports.

Objective 5. If species that are federal-listed are found on MCAAP or if species already known on MCAAP become federal-listed, consult with USFWS and develop an inventory/monitoring program and management plan for those species.

4.8.2 Other Sensitive Species Management

4.8.2.1 Current Management

MCAAP understands the importance of protecting sensitive species that might not be federally listed, particularly since those species have the potential to become federally listed, potentially affecting the military mission on the Installation. Thus, even though it is more difficult to justify funding specifically for the management of the sensitive species, MCAAP will protect and manage them as funding permits. Monarch butterflies have recently been proposed as a candidate species under the ESA. Monarch butterflies generally occur on the MCAAP from May through October, with occasional greater numbers during fall migration (October). Suitable habitat occurs across the MCAAP and prescribed fire practices foster native wildflower growth, including numerous milkweed species. Additional information relevant to life history, population dynamics, status and distribution are located in the USFWS species profile. The proposed actions will generally benefit monarch butterflies and their habitat.

4.8.2.2 Proposed Management

Project: Nonfederal-listed Species Management
Justification: Stewardship
Funding Priority: Class 3
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Monitor and manage nonfederal-listed, special status plant and animal species on MCAAP during 2021–2025 to the degree possible with available funding.

Objective 1. Consider state-protected species in all MCAAP actions.

Objective 2. Whenever possible, use actions designed for federal-listed species to protect or manage other sensitive species as identified. When a sensitive species is identified, species-specific actions will be implemented to monitor and manage that particular species.

4.9 Special Interest Areas Management

DoDI 4715.3 (*Environmental Conservation Program*) requires INRMPs to address the management of special interest areas. Wetland management is described in section 4.5.2; cultural resources protection is included in section 5.4. This section describes programs to protect other special interest areas on MCAAP.

4.9.1 Current Management

Designation of special protection status for unique or fragile areas is an important management tool. It is more cost-effective to put use restrictions on some areas to minimize damage or disturbance than to mitigate damage or disturbance after it has occurred.

MCAAP has several areas of special interest, including native bluestem prairies; virgin pecan timber creek bottoms, such as in the Hominy Creek drainage; post oak and blackjack cross timber types; areas with eastern gamma grass; Duck Marsh; and riparian areas. Each of these is discussed further in section 3.3.1.4, Areas of Special Interest.

Recommendations to protect these sites can be grouped into two categories at MCAAP. Some recommended practices are strictly inventory/monitoring or management (such as burning and controlling erosion). Implementation of these practices is based on funding and priorities, considering available personnel. Other recommendations for these sites are protection-oriented (e.g., limited use, steering new mission projects to other locations). Implementation of those practices often involves compromises with military planners.

As part of project review and the NEPA process, the LMO reviews proposed projects and activities at MCAAP. Natural resources managers can identify concerns and recommend measures to minimize damage. Examples include avoiding cultural resources and wetlands, and siting missions in areas best suited to mission needs and environmental considerations. Use of NEPA is discussed in section 5.5, National Environmental Policy Act Implementation.

4.9.2 Proposed Management

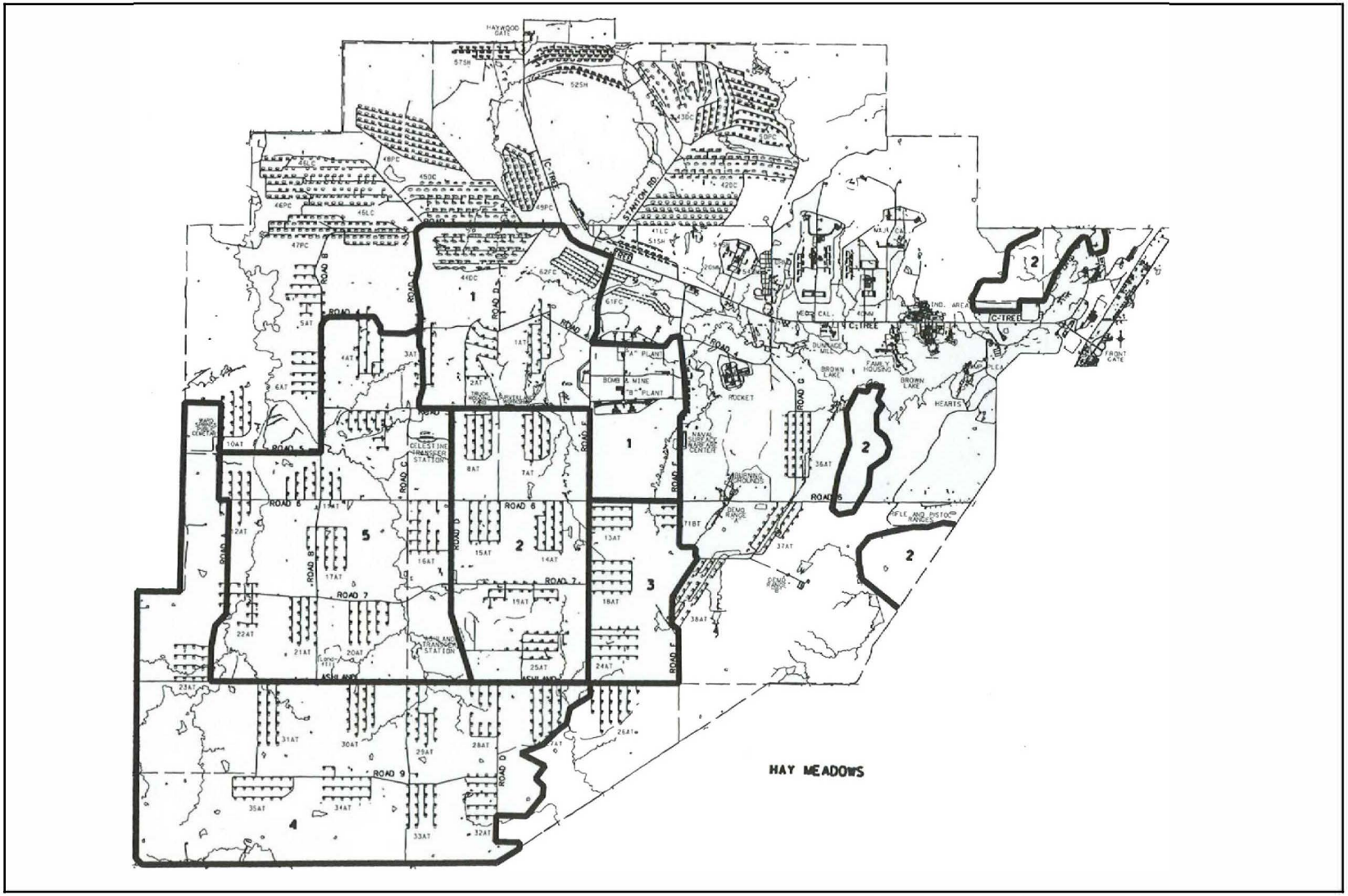
A specific project for management of special interest areas is not necessary as these areas are included in other sections of the INRMP.

4.10 Agricultural Outleases

4.10.1 Current Management

Past outleases on MCAAP included cattle grazing and agricultural hay leases. Grazing was eliminated in 1985 because of soil compaction, which reduces water infiltration and percolation; alteration of vegetative structure and composition; possible trampling of rare plants; soil erosion associated with livestock trails, watering sites, and winter feeding areas; and other reasons.

The present agricultural outlease program includes five outlease tracts on which 2,651 acres are managed for native grass hay production (Figure 4-2). On the remaining acreage, the lessees carry out the required services, such as food plots and brush hogging. These areas are managed for general diversity for all wildlife species. Acreage for outlease tracts on MCAAP is shown in Table 4-1.



MCAAP Agricultural Areas

Figure 4-2

Table 4-1.
Agricultural Outlease Acreages

Tract	Productive Acres
Tract 1	536
Tract 2	705
Tract 3	259
Tract 4	597
Tract 5	554
Total	**2,651**

An outlease is an in-kind service agreement through which the lessee provides services to MCAAP in lieu of monetary payment. Additional vegetation management of the agricultural outlease includes annual control of brush using a brush hog on 487 acres, fertilization of about 500 acres of hay meadows, and planting 128 acres of wildlife food plots.

4.10.2 Proposed Management

Project: Agricultural Outlease Management
Justification: Compliance with DoD policies
Funding Priority: N/A
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Provide opportunities for agricultural use of MCAAP when consistent with the military mission and native ecosystem functionality.

Objective 1. Include planning and NEPA analysis in agricultural outlease decisions.

Objective 2. Manage and protect land resources on MCAAP while maximizing land use and providing an economic resource to the community through agricultural outleases.

4.11 Pest Management

4.11.1 Current Management

The Directorate of Engineering and Public Works is responsible for pest management on MCAAP. The program uses three pest controllers, one of which is designated as MCAAP's pest management coordinator. The Installation has a pest management plan, DE-Plan-06, (MCAAP 2020), upon which most of the discussion in this section is based. This plan is designed to be reviewed annually. It identifies and prioritizes pests and their destructive effects to determine particular levels of protection.

Integrated pest management (IPM) is used at MCAAP, and typically a combination of IPM techniques is required to resolve a problem on a sustained basis. IPM includes the implementation and coordination of optimum sanitation, good structural design and maintenance of facilities, mechanical control, cultural control, biological control, and regulatory control. The comprehensive IPM approach to pest control or prevention, using methods of pest control in a manner compatible with natural resources protection, avoids damage and minimizes adverse side effects to nontarget organisms and the environment.

Pest control efforts are implemented on the basis of surveillance. Pest surveys are conducted to determine the type of pest, extent of the problem, and pest management technique most appropriate for safe, effective, and economic control.

The pest management program is operated by two certified pest controllers—including the pest management coordinator— and one DoD-certified gardener. An additional pest controller is certified to oversee the pallet dipping operation. All MCAAP pest controllers are trained at the Academy of Health Sciences at Fort Sam Houston, Texas, and certified in accordance with the DoD plan for certification.

The MCAAP pest management program is consistent with DoD policy to reduce pesticide use by using IPM (AR 200-1). MCAAP has a policy of using chemical control only when nonchemical techniques are inadequate or impractical. Furthermore, chemical control will not be used as a substitute for good sanitary practices or proper building maintenance.

All chemicals used on MCAAP are EPA-approved. Weed and brush control is the most significant use of chemical control on MCAAP. In groomed areas, selected herbicides, such as Roundup7 and 2-4-D-LV4, are used to control unwanted vegetation. Outside of groomed areas, herbicides, such as Arsenal7, 2-4-D, Garlon-37, and Garlon-47, are used to control woody vegetation. Woody vegetation control is primarily associated with magazine areas, 535 of which are sprayed annually with Garlon-47. The application of geomembrane coverings on magazines has reduced requirements for herbicide spraying.

Structural pest problems on MCAAP are normally associated with hardwood pallets. The Installation constructs its own pallets, which are dipped in an M-guard solution to protect against termites, powder post beetles, and other structural pests. Chemical use for other pests is based solely on surveys and need for such control. MCAAP protection programs, such as pretreatment of soil at new construction sites, using pressure-treated wood to replace rotted or termite-damaged material, inspection, surveillance, record keeping, and quality assurance for purchased materials, have decreased the site-specific need to use chemicals.

Reduced chemical use is a goal of the pest management program. Installation staff understand both obvious and long-term threats to both humans and ecosystem functions from chemical abuses. Emphasizing surveillance before chemical application and using more efficient equipment and techniques to reduce chemical volume and toxicity will help ensure that threats are minimized.

MCAAP recognizes seven categories of pests that cause significant damage and require control or management:

- Disease vectors (e.g., ticks, mosquitoes, midges, domestic flies);
- Structural pests (e.g., subterranean termites, powder post beetles, carpenter ants, old-house borers);
- Stored product pests;
- Pests of ornamentals and turf (e.g., scale insects, aphids, elm leaf beetle, oak galls, twig galls, bagworms);
- Weeds and brush;
- General household and nuisance pests (e.g., cockroaches, ants, silverfish, crickets, fleas); and
- Miscellaneous pests (e.g., wasps, rodents, starlings, English sparrows).

In 1994, the DoD approved three Measures of Merit that defined the course of pest management programs through the year 2000. Those measures included having a current pest management plan by the end of FY 97, reducing pesticide use by 50 percent over a 7-year period, and having pesticide applicators certified within 2 years of employment. MCAAP maintains an approved

installation pest management plan (MCAAP 2020), verified over a 50-percent reduction in pesticide use from the end of FY 93, and provides basic and refresher training for personnel certified for pesticide handling.

Pesticide application is managed to enhance MCAAP's use by wildlife and to protect the environment and public health. Wetlands require special precautions when applying pesticides.

The presence of endangered or species of concern and their habitat, especially American burying beetles, requires that special precautions be followed closely during any pest management activities that could affect these species. Pest management personnel notify the LMO before performing any pest management actions outside of the cantonment area for review of the action. Upon review, the LMO will avoid any treatments within any known critical habitat. MCAAP will consult with USFWS on any and all activities that could affect endangered or species of concern. Federal law protects bird species, except the European starling, English sparrow, and pigeon.

To ensure that environmental issues are considered when applying pesticides, MCAAP follows precautionary statements on labels regarding contamination of water when pesticides are sprayed near wetlands. MCAAP will take special precautions during pest management activities that could affect endangered species or species of concern and coordinate and obtain approval of USFWS for bird control activity, except for unprotected species. MCAAP would consult with USFWS if a particular chemical has a negative impact on arthropods before usage on the installation. Use of chemicals on MCAAP is continually being minimized.

The MCAAP pest management plan discusses many aspects of pest management that are not directly within the scope of this INRMP, such as control of disease vectors and protection of facilities (MCAAP 2002). This section discusses animal and plant control specific to the management of natural resources on MCAAP.

4.11.1.1 Animal Pests

The number and variety of birds, mammals, and other wildlife that inhabit the Installation require that outdoor applications of pesticides avoid nontarget organisms and aquatic environments. MCAAP minimizes spray drift and prevents pesticides from entering sensitive areas.

English sparrows and European starlings are the primary bird pests on MCAAP, especially in the Installation's storage warehouses. Permanent exclusion of birds from roosting and nesting sites is the control method of choice.

Feral hogs are a problem on MCAAP due to their rooting habits, particularly in agricultural crops. Control of feral hogs is discussed in section 4.7.1.2, Fish and Wildlife Population Management.

Predator species are not a significant problem on MCAAP. Under normal conditions, predators are an asset to a well-managed wildlife program. Feral and/or stray cats and dogs can present predator-type problems if they are uncontrolled. LMO personnel remove such animals from MCAAP. Coyotes are periodically trapped if the population merits control. This program is performed in cooperation with the Installation's neighbors to lessen impacts coyotes could have on livestock.

The subject of predation and its effects on wildlife populations is debatable. For example, one theory is that quail nest predators could significantly affect quail numbers, much the same as nest predators are effective duck population agents in the prairie pothole country. If predator control is deemed necessary because of an obvious over-balance of predators or disease, more intensive

control measures and their magnitude will be authorized by the Commanding Officer and ODWC.

Nuisance wildlife in the cantonment area, such as skunks and stray animals, are captured and removed by LMO staff. Predators or other species control, if required, must be coordinated with the LMO.

4.11.1.2 Nonnative/Noxious Plants

Nonnative and/or noxious weeds pose threats to native habitats, endangered species, and plant community composition and diversity. More specifically, they threaten wetland ecosystems, complicate land management projects, add to the cost of pest management, and, in general, threaten ecosystem functionality. MCAAP is dedicated to preventing the introduction and control of invasive species, per EO 13112, Invasive Species.

Eastern red cedar trees are a significant problem on MCAAP. Control of the trees is discussed in Section 4.6.1.3, Terrestrial Habitat Management. Other species, such as nonnative lespedeza are not currently controlled due to budget and time constraints.

Aquatic weeds are not a major problem at MCAAP. The most common problem aquatic weeds are milfoil, pondweed, and American lotus. Control of aquatic weeds is discussed in section 4.6.1.4, Aquatic Habitat Management.

4.11.2 Proposed Management

Project: Pest Management Support
Justification: Compliance with EO 13112; compliance with Presidential directive; stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Control plant and animal species that affect natural resources management (e.g., reduce ecosystem functionality, displace native species) or directly affect the military mission on MCAAP.

Objective 1. Maintain an updated installation pest management plan on a 5-year cycle.

Objective 2. Emphasize IPM techniques to reduce the use of pesticides.

Objective 3. Ensure that pesticide applicators are fully certified.

Objective 4. Control nuisance wildlife as needed to protect facilities and infrastructure, enhance the natural ecosystem, and maintain the military mission.

Objective 5. Obtain appropriate permits for the control of nuisance wildlife.

Objective 6. Prevent the introduction of and control invasive species, per EO 13112.

4.12 Cantonment Area Management

4.12.1 Current Management

Grounds maintenance and landscaping within the cantonment at MCAAP is the responsibility of the Grounds and Structure Team, Directorate of Engineering and Public Works. LMO personnel provide technical assistance as requested.

The primary objective of grounds maintenance in the cantonment area is to maintain an aesthetically pleasing cantonment area landscape that maintains natural ecosystem functions as much as possible. The Natural Resources Management Plan includes detailed information on grounds management, including appropriate species of grass, shrubs, and trees for planting; planting and maintenance procedures; fertilization schedules and guidelines; mowing and irrigation guidelines; disease and insect control; and sanitation (Starry and Hodge 1991).

In managing natural resources in the cantonment area, MCAAP acknowledges its responsibilities as listed in AR 200-1:

- Comply with applicable federal, state, and local regulations regarding land resources management and permitting where applicable.
- Provide for the conservation and rehabilitation of natural resources on Army lands.
- Integrate training and testing range operations and support activities within the installation environmental management system (EMS).
- Ensure that all management plans address range operations and activities as appropriate.
- Quantify environmental encroachment vulnerabilities and assess the feasibility of using external buffer zones to enhance testing and training capabilities. Where warranted, work with private landowners and eligible entities through the Army Compatible Use Buffer (ACUB) process.

4.12.2 Proposed Management

Project: Grounds Management Support
Justification: Compliance with EO 13112; compliance with Presidential directive; stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Provide support to maintain an aesthetically pleasing cantonment landscape that preserves natural ecosystem functions as much as possible.

Objective 1. Provide professional advice to encourage the use of native species in the grounds landscaping and maintenance program.

Objective 2. Manage natural resources occurring within the cantonment area to meet appropriate natural resources objectives.

Objective 3. Implement requirements listed in the 1994 Presidential directive.

4.13 Fire Management

General

In comparison to other land under private and public ownership, MCAAP has a greater potential for fire to occur. This risk is due to the required use of the area by a large number of personnel engaged in military mission operations. The ammunition production and storage mission of MCAAP makes the mission of providing adequate fire protection more complex and perhaps more costly than operations on other areas.

The Fire and Emergency Services Division is responsible for fire protection on MCAAP. The LMO is responsible for planning and initiating prescribed burns and supports the Fire and Emergency Services Division as necessary with regard to wildfires on MCAAP.

Types of Fires

All fires can be classified as either wildfire or prescribed fires. "Wildfire" is defined as free-burning fires requiring suppression that burn with intensities capable of causing loss of life, detrimental impacts to natural resources, and damage to or destruction of man-made developments. "Prescribed fire" is defined as the managed application of fire resulting from either planned or unplanned ignition. These fires are conducted in a predetermined area to produce the intensity of heat and rate of spread required to accomplish specific management objectives.

Fire is both a threat to natural resources and, if used properly, a valuable ecosystem management tool. This section describes the means used by MCAAP to protect natural and human resources from wildfires and to use fire to ensure continued ecosystem functionality.

4.13.1 Current Management

4.13.1.1 Integrated Wildland Fire Management Plan

The Army Wildland Fire Policy Guidance requires the development of an integrated wildland fire management plan for Army installations. The MCAAP plan has been developed by the installation wildland fire program manager, who is the fire chief of MCAAP, in cooperation with the LMO. The guidance states that the plan can be contained within the INRMP. It further states that an EA is required for the plan. The 2011 combined INRMP/EA provides that NEPA documentation.

Appendix F provides the MCAAP integrated wildland fire management plan, which contains general policy and supports fire management sections of the INRMP. That plan will be updated and further refined to meet the needs of MCAAP, as necessary.

Any wildfires that occur on MCAAP are not large, nor are they as hazardous to suppress as fires in relatively unmanaged forests. Regular prescribed burning maintains fuel loading at reasonable levels, response time is rapid, and personnel and equipment are readily available to suppress (or manage) wildland fires. Thus, the MCAAP integrated wildland fire management plan contains some exceptions to the Army's guidance, which are within the authority of the MCAAP Commander.

4.13.1.2 Wildfire Management

4.13.1.2.1 Prevention

MCAAP fire regulations (MCAAP Reg. 420-1) prohibit the use or carrying of flame- or spark-producing devices west of post 14 (the guard house) without authorization from the Fire and Emergency Services Division or the Safety Office through issuance of a striker permit. Smoking is prohibited west of post 14 except in designated smoking areas. A hot work permit is required prior to any open flame or welding operations, and work sites are inspected by a Fire and Emergency Services Division officer prior to commencement of work. These restrictions minimize the number of human-caused fires.

4.13.1.2.2 Publicity

It is important to minimize the number of wildfires. To fully accomplish this, installation personnel and MCAAP visitors are made aware of the need to prevent fires while being educated on the importance of prescribed fire to the ecosystem. Reserve troops are prohibited from using pyrotechnic training devices without authorization from the Fire and Emergency Services Division. Employees are educated in fire safety through a highly visible fire prevention program.

4.13.1.2.3 Prescribed Burning

Using prescribed fires to reduce fuel loads creates conditions that make it difficult for a wildfire to start and spread rapidly. Should a wildfire occur within about 3 years following a prescribed burn, the fire will not burn as intensely and will be much easier to contain within a prescribed area because of the limited fuel buildup.

4.13.1.2.4 Containment/Suppression

Containment of wildfires is the responsibility of the MCAAP Fire Department. Fire suppression is provided by a full-time fire department manned 24 hours a day, 7 days a week, and equipped with structural, brush, and grass firefighting apparatus. Firefighters are fully trained in wildfire suppression and various hand tools are carried on the trucks to enable suppression in areas inaccessible to vehicles. The Grounds and Structures Team provides support with bulldozers and road graders if requested. The LMO provides support through technical assistance, knowledge of natural resources (including sensitive areas, natural fire breaks, and cultural resources), post-fire monitoring, and restoration. In addition, a trained auxiliary fire brigade serves as backup for the regular firefighting force at MCAAP.

4.13.1.2.5 Firebreaks

MCAAP has about 75 miles of firebreaks. The width of the firebreaks varies from 20 to 60 feet, making an exact number of acres of firebreaks difficult to calculate. The LMO estimates about 360 acres of the installation is firebreak. Every year, firebreaks are cleared of vegetation using a tractor with a disc or a grader. Clearing usually occurs in the fall followed by reseeding with green winter cover crops. The planting of cover crops is discussed in section 4.6.1.3, Terrestrial Habitat Management. Figure 4-1 shows firebreaks on MCAAP.

The firebreak system provides quick access for fire management and facilitates an effective prescribed burning program. In addition, firebreaks provide access to more remote areas for hunters and anglers and are an important wildlife food source. Range roads also act as firebreaks in the event of a wildfire and/or are used for prescribed burning operations.

4.13.1.3 Prescribed Burning

Prescribed burning is planned fire applied to a predetermined area under strict guidelines and parameters for the purpose of ecosystem restoration; endangered species habitat improvement; fuel reduction; control of undesirable species, including eastern red cedar; and wildlife habitat improvement. For about 50 years, MCAAP applied fire suppression management to an area that was originally prairie and cross timber and had evolved with fire as a regular component of the ecosystem. Changes in the vegetative composition and, perhaps more importantly from a fire perspective, the fuel load have altered the area significantly.

The fuel load on MCAAP is very high due to a long growing season (220 days) and annual average rainfall of 46 inches. Gone unmanaged, those fuel loads would become dangerous, especially considering the safety issue associated with the Installation's mission. Native vegetation is being crowded out by species that are beneficial to wildlife only if they exist in the proper proportion (e.g., winged elm and eastern red cedar). Additionally, prescribed burning is one of the most cost-effective and efficient management tools available to managers for improving the overall nutritional quality of wildlife habitat.

MCAAP initiated a prescribed burning program in 1996 to reduce the Installation's fuel load and improve wildlife habitats. Since initiation, prescribed burns have been conducted on about 32,000 acres. Note, however, that some areas have been burned more than one time, so the total acreage on which burns have been conducted is far more than 32,000 acres. MCAAP's goal is to burn

about 3,000 acres annually. During FY 08 and FY 09, approximately 15 prescribed burns were successfully conducted on approximately 10,000 acres. During FY 15 and FY 16, five prescribed burns were conducted on approximately 4,500 acres. Generally a 5-year burn rotation is desirable, but some areas benefit from prescribed fire as often as annually or every third year. Restoration of native ecosystems, prairie restoration, may require the use of hot season burns as naturally occurred in this area. The Installation could investigate experimenting with hot season burns during the next 5 years.

Opportunities to conduct prescribed burns are weather-dependent. Ideal parameters for prescribed burning at MCAAP are a temperature of 50–85 ºF, wind speed of 5–15 miles per hour, relative humidity of 25–65 percent or more, fuel moisture of 8–20 percent or more, and a variable atmosphere with no storm fronts. Prescribed burning is generally conducted from January through early-April (during vegetation green-up). However, based on location, current conditions, desired results, and other criteria, burning might be performed outside of these parameters.

The MCAAP Fire Department supports the LMO in prescribed burning with personnel, equipment, and logistical assistance. The hand-held drip torch is the primary ignition system used on the Installation. The LMO prepares a prescribed burn execution form for each prescribed burn performed on MCAAP.

The prescribed burn execution form is the MCAAP site-specific burn plan. Experimental prescribed burns have been conducted on four igloos to monitor effects and determine the potential danger of conducting burns over vegetated igloos. LMO personnel also have developed procedures for conducting prescribed burns around geothermal membrane-covered igloos to prevent any damage to covers or igloo contents. The EMO is notified before a scheduled prescribed burn is initiated and, in turn, notifies the state environmental office of the intended burn.

Realistic long-range scheduling of prescribed burning is not feasible because of the many unpredictable variables that affect burning, including weather, MCAAP Fire Department personnel strength, and competing tasks as well as wildfire and annual burning conditions. A prescribed burn plan must be developed as a flexible, evolutionary document. MCAAP does anticipate, however, prescribed burning of 3,000 acres annually during 2021–2025.

4.13.2 Proposed Management

Project: Fire Management
Justification: AR 350-4, stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Prevent and suppress wildfires; use prescribed burning to sustain or enhance mission capabilities and maintain ecosystem biodiversity and functionality.

Objective 1. Provide natural resources management-related recommendations relative to fire suppression activities and provide support as needed to the MCAAP Fire Department.

Objective 2. Annually update and refine the integrated wildland fire management plan (Appendix F) to meet the needs of MCAAP and revise it every 5 years.

Objective 3. Ensure that the MCAAP community and the general public are aware of fire prevention requirements and educate them on the benefits of prescribed burning as an integral part of the natural ecosystem.

Objective 4. Use prescribed burning to maintain the military mission and enhance MCAAP ecosystems.

Objective 5. Maintain firebreaks to provide for quick access for fire management and facilitate an effective prescribed burning program.

Objective 6. Attend fire management training as recommended by installation wildland fire program manager.

Objective 7. Incorporate and maintain burned areas as a GIS data layer for fire effects monitoring and coordination purposes.

4.14 Petroleum and Mineral Resources Management

4.14.1 Current Management

The current status of the mineral leases on MCAAP is limited to the seven existing wells. One of the wells has a compressor unit and is monitored weekly to prevent or minimize any potential impact to the site from fuel or oil leaking from the compressor unit. While some leakage was a problem in the past, it has been corrected with no impact to the surrounding areas.

The lessee is required to maintain fireguards around each well during drilling or workover operations, which includes clearing and planting rye grass or slender lespedeza as well as brush hogging. The fireguards serve a single purpose: fulfilling the safety requirement of the installation. The fireguards, however, also benefit certain wildlife species (e.g., white-tailed deer, eastern wild turkey, bobwhite quail, and many songbirds) through the planting of annual rye grass, slender lespedeza, and other annual native forbs and grasses. These plantings provide a winter seed source for many bird species as well as cool-season forage for deer and turkey. The fireguards might adversely affect the American burying beetle, but they are necessary and must be maintained to ensure installation safety and mission accomplishment.

No new drilling, mining, or rock quarry activities are being conducted on the installation. Because of explosive safety distances set forth by DoD, drilling of new gas wells is not expected in the future.

4.14.2 Proposed Management

A specific project for petroleum and mineral resources management is not necessary since objectives within this area are included within other projects of this INRMP. However, the following goal and objective are appropriate to include.

Goal. Manage petroleum and mineral resources to sustain or enhance mission capabilities and maintain ecosystem biodiversity and functionality.

Objective. Monitor wells with compressors to ensure that fuel and oil leaks or other problems are detected and repaired.

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SECTION 5.0
NATURAL RESOURCES-RELATED PROGRAMS

This chapter includes programs that are directly related to natural resources management, but are not being implemented solely for that purpose. Some of the programs, such as enforcement and outdoor recreation, are totally or partially the responsibility of organizations other than the LMO.

Programs are described in terms of their status and recent history (Current Management) followed by proposed project(s) (Proposed Management), if appropriate. These projects could be environmental program requirements (section 7.5.4) submissions or submissions through another organization's budget process, primarily O&M (section 7.5.5) on MCAAP to integrate implementation of this INRMP into the budget process.

Projects are described in a goal-objective format to provide concise process descriptions that are compatible with adaptive management analyses and overall INRMP implementation monitoring processes. All goals and objectives are summarized in tabular format in Appendix A.

The Proposed Management section for each project begins with a summary description presented in the following format:

Project: Title
Justification: Participation in regional initiatives, Sikes Act, ESA, AR 200-1, stewardship, etc.
Funding Priority: Proposed or actual budget classification, if appropriate
Project Timing: Dates to be accomplished, by objective (e.g., 2021, 2021–2025, indefinitely, uncertain)
Regulatory Coordination: Agencies with whom coordination is required

5.1 Natural Resources Enforcement

Many aspects of natural resources management require effective environmental law enforcement (e.g., protection of rare or unique species, harvest controls, protection of sensitive areas, water pollution prevention, hunting and fishing recreation).

5.1.1 Current Management

5.1.1.1 History, Authority, and Operations

The MCAAP Commander confers commissions on wardens. MCAAP enforcement personnel are trained professionals. They are fully equipped with modern enforcement tools, including mobile radio units and 4-wheel drive vehicles. MCAAP warden strength has varied between one and two persons. The number of enforcement personnel dropped to one in 1994.

Enforcement operations include patrolling MCAAP and enforcing regulations governing environmental compliance, protection of endangered species, trespassing, hunting, and fishing. Wardens also conduct stakeouts and roadblocks to deter violators and respond to reports of violations, such as poaching and trespass. The job is inherently dangerous as shown by officer mortality rates compared with other police officers nationwide. ODWC wardens and Installation security officers are available to assist MCAAP wardens, if requested.

MCAAP's natural resources enforcement is administered by the chief, LMO, who is a commissioned warden and the primary natural resources enforcement officer on the installation.

MCAAP game wardens coordinate with ODWC wardens to organize surveillance and other specific law enforcement activities. MCAAP wardens also coordinate with security officers who patrol the roads, operate gates, and check locks.

5.1.1.2 Jurisdiction

MCAAP has exclusive jurisdiction where federal commissions are required for officers. Officers with other commissions can enforce laws on MCAAP but must coordinate with officers holding federal commissions to issue citations and adjudicate violators.

MCAAP wardens use the federal magistrate court to adjudicate civilian violators who are issued 1805 citations. Violators of MCAAP regulations are adjudicated by MCAAP administrative actions, such as barring the individual from the installation.

5.1.1.3 Enforcement Emphasis

The primary natural resources enforcement problem for MCAAP is trespass related to illegal hunting, usually associated with deer, turkey, and raccoons. The Installation's reputation for producing trophy deer and abundant turkey and other wildlife could attract illegal hunting activities more than surrounding areas.

The location of some of MCAAP's boundary firebreaks was causing enforcement problems for violations, such as shooting from roads, shooting from vehicles, and trespass. To reduce the violations, some boundary firebreaks were moved further from boundaries to areas with forest or brush between the firebreak and the boundary. This modification shielded the firebreaks and wildlife using the firebreaks from off-plant view and, thus, reduced the associated violations.

While marijuana has been discovered on the Installation in the past, this violation is thought to be uncommon within MCAAP boundaries.

5.1.1.4 Training

The Sikes Act mandates that DoD installations employ adequate numbers of professionally trained natural resources personnel, including law enforcement personnel to implement the INRMP. The act authorizes DoD to enforce all federal environmental laws, including NHPA, Archeological Resources Protection Act (ARPA), Migratory Bird Treaty Act, CWA, and ESA, when violations occur on the installation. DoDI 4715.03 states, "DoD Components shall ensure that sufficient numbers of professionally trained natural resources management personnel and natural resources law enforcement personnel are available and assigned responsibility to manage their installations' natural resources."

Initially, MCAAP wardens received basic law enforcement training through courses sponsored by the National Military Fish and Wildlife Association at various military installations. The association has dropped basic game warden training because of the time required. Currently, the best available option for new wardens is to enroll in the basic law enforcement course at the Federal Law Enforcement Training Center and the USFWS 2-week follow-up course to satisfy the basic training requirement. ODWC enforcement personnel are certified by the Council on Law Enforcement Education and Training.

There is a generally recognized requirement for a minimum of 40 hours of annual refresher training for enforcement officers. Less training opens the employer to liability risks in the event of legally debatable actions by its officers. The National Military Fish and Wildlife Association continues to offer annual training for experienced wardens. This training is 1 week and uses highly qualified instructors, many of whom have national reputations. The course is open to all DoD personnel and is held on various military installations. The chief, LMO generally attends the

National Military Fish and Wildlife Association training every other year. This training, along with annual weapons qualifications in association with Installation security personnel qualifications, is used to ensure wardens remain fully qualified to perform their duties.

5.1.2 Proposed Management

Project: Natural Resources Enforcement
Justification: Maintaining the capability of training lands to support the military mission (Sikes Act); compliance with the ESA, NHPA, and ARPA; stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Ensure legal compliance of military and civilian activities with regard to natural resources on MCAAP.

Objective 1. Maintain a law enforcement program for military and civilian activities that relates to natural resources protection on MCAAP.

Objective 2. Coordinate enforcement activities with other agencies, particularly ODWC and USFWS.

Objective 3. Provide quality annual refresher training to MCAAP game wardens.

5.2 Conservation Awareness

Conservation awareness is instrumental in creating conditions needed to manage natural resources. MCAAP's approach to awareness stresses education, providing military personnel and the public with insights into its natural environment and conservation challenges. The more people know about the Installation's unique natural resources, the more responsibly they act toward them.

Education also promotes awareness of critical environmental projects and the rationale behind them. Activities, such as fish stocking, erosion control, and wildfire suppression, can be accomplished with little conservation awareness effort since Installation personnel, recreationists, and the general public naturally support these easily understood efforts. However, issues such as protecting sensitive areas for little-understood plant and wildlife species, restrictions on military operations, prescribed burning, and permit fees and their uses require effective conservation education to get positive support and, perhaps more importantly, to avoid adverse reactions from various users. A conservation awareness program must be directed to both the Installation's internal and external interests if it is to be effective.

5.2.1 Current Management

5.2.1.1 Use of Media

MCAAP's weekly newsletter, *MCAAP Things to Know*, is the most efficient way for natural resources personnel to access the MCAAP community. This publication is used to explain programs and gain support for their implementation. Articles target a wide range of readers but may be designed to appeal to specific categories of readers. The LMO writes articles for *MCAAP Things to Know* and staff writers also cover natural resources programs. Many articles emphasize regularly recurring items, such as hunting season dates and regulations, fishing tournaments, and hunting harvest summary, but special issues also are covered, such as the case for the prescribed burning program. Other newspapers, such as the *McAlester News-Capital*, often publicize tours and other special events occurring on the Installation.

Annual deer hunts are probably the most publicized aspect of MCAAP's natural resources management program. Aside from local publicity, the ODWC publicizes the hunts statewide through its annual controlled hunt booklets, *Outdoor Oklahoma* magazine, and the weekly Outdoor Oklahoma television show.

MCAAP's natural resources program is seldom the subject of television or radio coverage. The program, however, has been covered several times on the ODWC weekly television show, Outdoor Oklahoma. Special events, such as fishing tournaments and some research projects, attract television and radio coverage. The use of television and radio during the next 5 years will be driven largely by media events on the Installation.

5.2.1.2 Special Events

Wildlife and nature tours are given to scouting groups, public school classes, and civic groups. An average of 1,500 people enjoy these tours annually. Self-guided tours are not allowed on MCAAP because of safety and security considerations. Some of the most popular tours are the August Velvet tours (emphasizing bucks before their antlers have hardened). Another event at MCAAP that has become popular is the annual traditional archery tournament, which has more than 700 participants.

Slides and videos are important media for presentations at MCAAP. The LMO maintains a library of slides for use in awareness programs and has some exceptional wildlife videos to share with tour groups.

5.2.1.3 Hunting and Fishing Awareness

Many of the uses of media and special events previously discussed—particularly the use of newspapers and ODWC publications— are intended to disseminate information on hunting and fishing opportunities. Each hunter on MCAAP is required to attend a pre-hunt safety briefing, which offers safety and natural resources awareness information. The briefing informs hunters about their assigned hunting area, hunting techniques, and game preparation to ensure a positive recreational hunting experience.

The LMO strives to use personal communications with hunters and anglers throughout the year, especially during major seasons, including educating anglers on fish stocking histories; disseminating wildlife checklists and regulations, and answering questions concerning fish and wildlife resources and conservation; and publishing and distributing maps and instructions on hunting and fishing areas, regulations, and procedures. The LMO endorses and supports public education and social activities (e.g., as fishing tournaments); and is continually updating and improving ways to inform users of outdoor opportunities available on the Installation.

5.2.1.4 Watchable Wildlife Program

The Watchable Wildlife program is important to MCAAP. There are many naturally occurring opportunities to observe wildlife in and near MCAAP. The practice of planting wildlife food plots (particularly the plot near the main gate) and cover crops on firebreaks facilitates observation of wildlife. The Watchable Wildlife program could be enhanced with development of a nature trail. MCAAP will investigate developing a trail during the next 5 years.

5.2.1.5 Youth Groups

Youth groups are involved in various wildlife programs on MCAAP. Scouts use Installation projects, particularly nest box construction, to earn their conservation badges. Future projects could include trail construction, preparing and installing interpretive signs, and other activities

associated with developing a nature trail. MCAAP will continue to work with youth groups whenever possible as a good investment in the future.

5.2.2 Proposed Management

Project: Conservation Awareness
Justification: Stewardship
Funding Priority: Class 3
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Provide information to MCAAP internal and external interested communities regarding natural resources and associated management programs at MCAAP.

Objective 1. Improve general program knowledge of all persons associated with the LMO, particularly those who come into regular contact with interested persons.

Objective 2. Provide prepared talks, dependent upon personnel and time availability. Whenever possible, use these opportunities to explain contemporary natural resources issues and management.

Objective 3. Use newspapers, television, and radio to inform the MCAAP and surrounding communities of matters important to the MCAAP natural resources program.

Objective 4. Participate in activities, such as the statewide free fishing day, to promote the LMO image and/or programs.

Objective 5. Pursue interactions between MCAAP and surrounding communities and professional organizations to exchange information and knowledge on environmental subjects.

Objective 6. Investigate development of a nature trail to enhance the Watchable Wildlife program and awareness opportunities on MCAAP.

5.3 Outdoor Recreation

5.3.1 General

MCAAP is a large, relatively undeveloped open space. This open space and outdoor recreation opportunities associated with it are perhaps MCAAP's best natural attributes in terms of community quality of life.

Outdoor recreation enhances the quality of life for military and civilian personnel. As such, Army lands with suitable natural resources are to be managed to provide outdoor recreational opportunities, consistent with the Sikes Act. For the purposes of this INRMP and to be consistent with AR 200-1, "outdoor recreation" is defined as any recreational program, activity, or opportunity that is dependent on the natural environment.

Examples include hunting, horseback riding, picnicking, birdwatching, hiking, and camping. Developed or constructed facilities and activities, such as golf courses, tennis courts, and baseball facilities, are not included.

People and social uses/needs are an integral part of ecosystem management. The outdoor recreation program is based on providing quality experiences while sustaining ecosystem integrity. Activities that have a direct effect on species populations, such as game harvest, will be

monitored for impacts. Special consideration will be given to protecting critical areas (e.g., cultural resources sites, special interest areas) from negative impacts from outdoor recreation.

The history of outdoor recreation on MCAAP is directly related to the history of hunting and fishing on the Installation. Until about 1992, the number of outdoor activities not associated with hunting and fishing was insignificant. MCAAP's outdoor recreation program began to develop at about that time and currently provides recreational opportunities other than hunting and fishing.

Camping has always been a popular pursuit at Murphy's Meadow campground, which is operated and maintained by the Community and Family Activities Directorate. The directorate has built facilities, including boat docks and cabins on Brown Lake, and acquired an extensive assortment of recreational equipment available to rent by MCAAP-associated personnel. The directorate also administers many sporting tournaments, including fishing tournaments on Brown Lake.

5.3.1.1 Military Mission Considerations

MCAAP's military mission has priority over outdoor recreation involving access to the installation. If hunting, fishing, and other outdoor recreational activities are to continue to thrive on MCAAP, the military mission cannot be compromised. If recreational or management activities are not compatible with military activities, the military mission comes first.

The Installation has been producing and storing the ammunition America's troops need to win on battlefields around the world for over half a century while providing opportunities for quality recreational experience for military personnel, their families, civilian employees, and the general public. MCAAP, consistent with its Army leadership role, has shown that these two goals can be achieved simultaneously.

5.3.1.2 Public Access

Public access is a tradition on MCAAP and the installation provides several opportunities for the general public to participate in Installation activities. In maintaining a policy of allowing public access to the greatest extent possible, MCAAP relies on a responsible public to adhere to the restrictions it places on range access.

DoDI 4715.03 states, "The principal purpose of DoD lands, waters, airspace, and coastal resources is to support mission-related activities. All DoD natural resources conservation program activities shall work to guarantee DoD continued access to its land, air, and water resources for realistic military training and testing and to sustain the long-term ecological integrity of the resource base and the ecosystem services it provides, in accordance with [the Sikes Act]."

AR 200-1 states in section 9, Hunting, Fishing, and Trapping, that Army installations are to provide for controlled recreational access where feasible at Army installations containing land and water areas suitable for recreational use.

MCAAP's policies toward public access are within both the spirit and letter of Army and DoD policies. Due to safety and security concerns associated with the military mission, MCAAP restricts general access to the Installation. MCAAP restricts the number of hunting and fishing permits that can be obtained by military personnel, civilian employees, and the general public. For example, for deer hunting, 75 percent of the hunters are chosen from the general public through lottery and 25 percent are Installation personnel. For turkey hunting, 50 percent of the permits are allotted for the general public and 50 percent are allotted for Installation personnel. Fishing is limited to Installation personnel and their guests. The amount of time annually that MCAAP is open to hunting is limited, and hunts are tightly controlled.

Individuals who wish to hunt on the installation need only obtain MCAAP hunting permits after obtaining Oklahoma licenses and appropriate tags. Hunters also are required to attend pre-hunt briefings and safety sessions. Fishermen, except personnel living on the Installation, are required to have the appropriate Oklahoma licenses. Installation fishermen are required to obtain an Installation fishing permit, which is provided free of charge.

5.3.2 Hunting and Fishing

5.3.2.1 Current Management

Records of permit sales and hunting trips are maintained by the LMO. Hunting is strictly regulated and allowed only as controlled hunts for which participants must apply. Interest in hunting and fishing has steadily increased on MCAAP. The average annual number of hunters is about 1,680. The average annual number of anglers is about 250.

The MCAAP hunting season comprises 28 hunting days per year. MCAAP provides an estimated 2,500 person-days of fishing recreation annually. Anglers are monitored by post guards who maintain a log of persons signing in and out.

The MCAAP fishing season and bag limits are identical to those used outside of the Installation with the following exceptions:

- Fishing is allowed only between sunrise and sunset, except on Brown Lake;
- Fishing is not allowed during controlled hunts;
- Brown Lake is catch and release for largemouth bass;
- Reservoirs #1, #2, #3, and #23 have a 14-inch minimum length limit for largemouth bass;
- All other ponds have a 13–16-inch slot limit;
- Trotlines and juglines are prohibited, except on Brown Lake; and

MCAAP hunting seasons and bag limits are significantly different than those used outside of the Installation. The only species hunted on MCAAP are white-tailed deer and turkey. However, feral hog harvest is allowed during other hunts, but few are taken. MCAAP hunts are controlled and hunters must apply to participate in them through the state's controlled hunt application process. Application deadlines are usually in early-May for fall hunts. Hunts available on MCAAP are as follows:

- Five 3-day either-sex, traditional archery (longbow or recurve) deer and turkey hunts occur from early-October through mid-November;
- One 3-day either-sex, physically challenged, traditional archery deer and turkey hunt occur in mid-October;
- One 3-day antlerless-only, shotgun-only youth and employee deer hunt occur in late-November; and
- Three-day turkey hunts occur in mid to late-April.

The bag limit for traditional archery hunters is two deer of either sex and one tom turkey. Shotgun deer hunters are allowed one antlerless deer. The bag limit for the spring turkey hunt is one tom turkey.

Additional hunting restrictions applicable to MCAAP include:

- Hunters drawn for each hunt must attend a mandatory pre-hunt briefing and check-in;

- All hunters must be at least 12 years of age, and hunters under 18 years of age must be accompanied by an adult;
- Turkey hunting permits must be applied for in pairs (two hunters);
- Traditional archery equipment requirements specify that only longbows and recurves (no compound bows) can be used; the minimum bow weight is 40 pounds at 28 inches of draw; and only bare bows with no attachments are legal;
- To participate in the physically challenged archery hunt, applicants must possess a nonambulatory, motor vehicle, or crossbow permit issued by the ODWC, which must be purchased before applying for a controlled hunt. Assistants are allowed to transport hunters to and from the field and/or stands but are not allowed to hunt; and
- Shotgun deer hunters are limited to eight shells per day, slugs only.

5.3.2.1.1 Hunter and Angler Administrative Processes

Military installations, including MCAAP, usually have complex hunter and angler control systems. These are needed to accommodate recreational activities without interference with the military mission and to ensure safe, high-quality recreational experiences.

5.3.2.1.2 Hunting and Fishing Regulations

ODWC issues regulations for all hunters and anglers in Oklahoma, including those hunting and fishing on MCAAP. AR 200-1; MCAAP Regulation 420-5, *Hunting Regulation*; and MCAAP Regulation 420-7, *Fishing Regulation* are primary means of establishing controls on hunting and fishing on MCAAP. In addition, MCAAP has specific regulations for white-tailed deer and fall turkey hunting and spring turkey hunting. Regulations 420-5 and 420-7, and the specific deer and turkey regulations were updated in 2019.

5.3.2.1.3 MCAAP Permits

Individuals must obtain appropriate Installation permits from the LMO to participate in hunting on MCAAP. Permits cost the same to both military and civilian users. Civilian personnel volunteering to assist with administration of annual hunts are not charged hunting fees. Such fees are rendered through services provided. Active duty military personnel assigned to MCAAP and their eligible dependents are not charged a hunting fee. MCAAP permits for deer gun, deer archery, and turkey hunting cost $40.

During 2000, MCAAP auctioned one deer hunting permit apart from the general permits available to the public, which brought $7,165 from the highest bidder. Funds generated from the auctioned permit in 2000 were used, per AR 200-1, only for fish and wildlife management on MCAAP. Any future auctioning of permits would be coordinated with ODWC before implementation.

MCAAP anglers must have an Installation-issued fishing permit and an Oklahoma fishing license as required by the state. The MCAAP fishing permit is free and is used primarily to track the number of anglers and the amount of fishing activity on the Installation.

MCAAP requires permit holders to sign a release form absolving the government, U.S. Army, and the State of Oklahoma from any and all injuries, damages, or death. Parents or legal guardians must sign for minors. This agreement reduces government liability associated with hunting and fishing on the Installation and serves as a reminder to participants that there are inherent dangers to hunting and fishing on MCAAP.

5.3.2.1.4 State Licenses

Hunters and anglers are responsible for obtaining Oklahoma hunting and fishing licenses before they can obtain MCAAP permits. State licenses are not sold by the LMO; however, they can be purchased from MCAAP's MWR Office.

5.3.2.1.5 Check-out and Clearing Procedures

Angler access is monitored by post guards at post 5 (the main gate) and post 14 (C-Tree Road). Personnel accessing Brown Lake sign in and out at post 5. Anglers must sign in and out at post 14 during open post hours and at post 14 during closed post hours. Guards at post 14 maintain a log that identifies the lakes where the anglers will be fishing. When anglers change locations, they are required to call the Guard Dispatch Office with that information.

Fishing is authorized on Installation ponds and lakes open to fishing from sunrise to sunset 7 days a week, except on Brown Lake, where fishing is allowed after sunset. Fishing is not permitted on controlled hunting days, and ponds 4 and 5 and Duck Marsh are closed to fishing.

All personnel hunting on MCAAP must attend a pre-hunt briefing and check-in. Hunters are required to sign in and out daily at the hunt check station in Murphy's Meadow. The LMO maintains a register of individuals with MCAAP hunting permits, including Installation and state permit license numbers. Hunters are assigned specific areas in which to hunt and must stay in those areas unless allowed to move to other areas by the chief, LMO.

MCAAP Regulations 420-5 and 420-7 outline specific requirements for hunters and anglers for check-out and clearing procedures. The checkout procedure used on MCAAP has historically worked well and there are no plans to change it during 2021–2025.

5.3.2.1.6 Hunting and Fishing Maps

MCAAP maps are essential to facilitate hunter and angler use of range areas. MCAAP provides three maps that show deer and fall turkey hunting areas (Figure 3-9), spring turkey hunting areas (Figure 3-10), and fishing lakes and ponds (Figure 3-11). These maps include off-limit areas, major roads, and other features for orientation. MCAAP uses GIS to provide improved maps for hunters and anglers.

5.3.2.1.7 Safety Considerations

MCAAP Regulations 420-5 and 420-7 contain many references to hunting, fishing, and water safety practices and requirements. Hunters must satisfactorily complete a state-certified hunter education course before being authorized to purchase a state-issued or MCAAP hunting permit. In addition, all MCAAP hunters are required to attend a safety briefing prior to their hunt.

5.3.2.1.8 Fishing Events

MCAAP's Children's Fishing Pond (pond #7) is specially designated for children under 16 years of age. This pond is stocked annually with hybrid bluegill. Additionally, LMO personnel feed the fish to help sustain an abundant population and to ensure a high success rate for children who participate in fishing activities.

5.3.2.2 Proposed Management

Project: Hunting and Fishing Programs
Justification: Stewardship
Funding Priority: Class 0
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required except for ODWC regulatory support for hunting and fishing

Goal. Provide opportunities to the MCAAP community and general public for quality, safe, and equitable hunting, fishing, and other outdoor recreation consistent with the needs of the MCAAP military mission.

Objective 1. Follow ODWC season, bag limit, and other regulatory instruments for hunting and fishing, with exceptions for management or safety purposes.

Objective 2. Continue recreation control systems to ensure safe conditions and equitable treatment of users.

Objective 3. Update recreation rules and regulations as needed.

Objective 4. Continue to provide hunting and fishing permits on the Installation.

Objective 5. Periodically evaluate the MCAAP recreation fee schedule.

Objective 6. Continue to ensure that MCAAP recreationists follow safety requirements of the state and the Installation.

Objective 7. Continue to support fishing events on MCAAP.

5.3.3 Other Natural Resources-Oriented Outdoor Recreation

5.3.3.1 Current Management

MCAAP offers natural resources-related recreational activities other than hunting and fishing, including picnicking, camping, boating, and wildlife watching. Generally, the Community and Family Activities Directorate is responsible for these activities.

5.3.3.1.1 Camping and Picnicking

Camping and picnicking are restricted to Murphy's Meadow near Brown Lake since it is the only area on the installation that has been developed for these activities. Campers using the area include most of the hunters, summer visitors, and numerous Boy Scout and Girl Scout groups. Murphy's Meadow also hosts picnics for Installation organizations and other outdoor functions, including large group activities, such as organization days. In addition to the camping area, three cabins and three duplexes located on the shores of Brown Lake are available to rent through the Community and Family Activities Directorate.

5.3.3.1.2 Boating

Boat use is restricted to lakes and ponds identified in MCAAP Fishing Regulation. Boats must meet state safety standards, be properly equipped, and be operated safely at all times. Water sports other than fishing are not allowed on any of the Installation ponds or lakes. Expanded use of MCAAP's surface waters for water sports other than fishing is not anticipated during the next 5 years.

5.3.3.2 Proposed Management

Project: Other Natural Resources-Oriented Outdoor Recreation
Justification: Stewardship
Funding Priority: Class 3
Project Timing: All objectives—ongoing indefinitely
Regulatory Coordination: None required

Goal. Manage outdoor recreation to provide safe and pleasing outdoor experiences consistent with the needs of the MCAAP military mission while maintaining ecosystem integrity and function.

Objective 1. Support the development of facilities that improve use and enjoyment of fishing, hunting, and other natural resources-based recreation.

Objective 2. Promote Murphy's Meadow on the shore of Brown Lake as a high-quality camping and fishing area.

Objective 3. Monitor effects on fisheries and wildlife of increased usage of Murphy's Meadow and Brown Lake.

Objective 4. Continue to ensure that boating safety requirements and motor restrictions are followed.

5.4 Cultural Resources Protection

Cultural resources management at MCAAP is provided in accordance with sections 106 and 110 of the NHPA (16 U.S.C. Section 470, as amended); ARPA (16 U.S.C. Section 470aa-47011); American Indian Religious Freedom Act (42 U.S.C.); NAGPRA (25 U.S.C. Section 3001 et seq.); EO 11593, *Protection and Enhancement of Cultural Environment*; DoD Directive 4710.1, *Archeological and Historic Resources Management* (1984); and AR 200-1.

5.4.1 Current Management

5.4.1.1 General

The Directorate of Engineering and Public Works is responsible for managing MCAAP's cultural resources. The cultural resources manager, an employee of the directorate, is responsible for all aspects of cultural resources management, including coordination with the Oklahoma State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation, Native American tribal organizations, and the public, as appropriate.

MCAAP has an Integrated Cultural Resources Management Plan (ICRMP) (MCAAP 2020).

5.4.1.2 Cultural Resources Inventory

Section 3.4.1, Cultural Resources, describes the status of cultural resources on MCAAP.

5.4.1.3 Native American Consultation and Coordination

Various laws and regulations require MCAAP to consult with Native Americans regarding Army activities on sites within the installation.

- NHPA requires that federal agencies consult with the Advisory Council on Historic Preservation on any proposed action with the potential to affect a property on or eligible for the NRHP, including consultation and coordination with the SHPO and interested parties (e.g., Native Americans).

- ARPA requires that archaeological resources on public and Indian lands be protected. This includes notifying Indian tribes, in advance, of possible harm to sites with religious or cultural importance to them.

- NAGPRA protects the ownership and control of Native American human remains and related cultural items excavated or discovered on federal lands. If human remains are discovered during projects, work must stop, and a reasonable effort must be made to protect the discovery. Appropriate Native American groups must be notified, and requirements of NHPA section 106 and NAGPRA must be followed for excavation and disposition of the remains. NAGPRA also requires a 30-day delay period after the discovery of human remains before project work in the area of the discovery can resume. Work may resume earlier if consultation and agreement occur before the delay period is over.

- The American Indian Religious Freedom Act covers the protection of intangible, ceremonial, or traditional values and concerns not tied to specific cultural properties. MCAAP must establish contact with interested Native American groups during the regular course of the NHPA section 106 process.

- EO 13007, *Indian Sacred Sites*, stipulates that if a federally recognized tribe or representative of an Indian religion identifies a sacred site on MCAAP, the installation commander must enter into consultation with that group or individual to provide access to and ceremonial use of the site and avoid adversely affecting the physical integrity of the site.

- EO 13175, *Consultation and Coordination with Indian Tribal Governments*, states that Native Americans shall have access to DoD sites and resources that are of religious importance or are important to the continuance of their cultures (e.g., areas containing traditionally used plants or hunting areas), consistent with the military mission, appropriate laws (42 U.S.C. 1996, reference (d)) and regulations, and subject to the same safety, security, and resource considerations as the general public.

- DoD American Indian and Alaska Native Policy emphasizes that the relationship between military services and Native American tribes is to be on a government-to-government basis. Consultation and coordination with federally recognized tribes is to be initiated with the heads of the tribal governments. Department of the Army guidance places the responsibility for initiating tribal consultation at the installation commander level.

5.4.1.4 Natural Resources Management Implications

Natural resources management on MCAAP has little potential to affect historic architectural properties. However, natural resources management has the potential to affect archeological sites and cemeteries located outside the cantonment.

The following natural resources management practices have the potential to adversely affect archeological sites and cultural resources:

- Forest openings: Forest management and thinning practices can cause moderate ground disturbance and result in damage to archeological sites and cemeteries.
- Clearing/cultivation: Similar to forest openings, clearing and cultivation activities (e.g., wildlife food plots) can result in adverse impacts to cultural resources through mechanical soil disturbance. Such activities also can lead to erosion of cultural deposits.
- Firebreak maintenance/construction: Construction of new firebreaks and maintenance of existing firebreaks involve significant ground disturbance that can damage archeological sites and promote erosion.
- Erosion control: Projects involving excavation, earth moving, and fill deposition can damage or bury archeological sites. Generally, however, effects to archeological sites from reduced erosion are positive.
- Prescribed burning: Prescribed fire has some potential to affect archeological sites by denuding areas of vegetation and promoting erosion. Fire has a greater potential to adversely impact historic archeological sites with significant surface features.
- Outdoor recreation programs: Public access associated with hunting, fishing, and outdoor recreation activities has limited potential to increase the risk of vandalism to archeological sites.

Even with proper review, natural resources projects still have the potential to affect archeological sites through accidental discovery. The LMO will avoid adverse effects to cultural resources from natural resources management through proper review and planning. Proposed projects will be submitted, as part of standard NEPA review, to the cultural resources manager for approval, determinations of effect, and section 106 consultation, as necessary.

Numerous provisions of this INRMP benefit cultural resources management on MCAAP. These include Soils Management (section 4.3), Wetlands Management (section 4.5.2), Special Interest Area Protection (section 4.8), Natural Resources Enforcement (section 5.1), and NEPA Implementation (section 5.5).

5.4.2 Proposed Management

Project: Cultural Resources Protection
Justification: Compliance with various cultural resources laws and regulations; stewardship
Funding Priority: Class 0
Project Timing: Objective 1—annually; All other objectives—ongoing indefinitely
Regulatory Coordination: SHPO, in some cases

Goal 1. Implement this INRMP in a manner consistent with the protection of cultural resources at MCAAP.

Goal 2. Comply with all laws, regulations, and Army guidance regarding cultural resources on MCAAP.

Objective 1. Annual review of ICRMP for effectiveness.

Objective 2. Implement provisions of the ICRMP that relate to natural resources management.

Objective 3. Consider natural resources projects when planning cultural resources surveys, and use results of cultural resources surveys to plan natural resources projects.

Objective 4. Avoid or mitigate adverse effects to cultural resources from natural resources management through proper review and planning. Submit proposed projects, as part of NEPA review, to the cultural resources manager for approval, determinations of effect, and section 106 consultation, as necessary.

Objective 5. Take the following protective measures upon discovery of sites:

- Cease ground disturbing activities immediately and report to the cultural resources manager upon discovery of potential cultural deposits.
- Consider alternatives for moving the project to another location.
- If remains are determined by the cultural resources manager to be of no cultural significance, do no further investigation and resume the project. Protect the site until it is determined ineligible for the NRHP if remains are determined to be of cultural significance.

Objective 6. Use natural resources techniques and projects to protect cultural resources sites.

5.5 NEPA Implementation

NEPA was created to disclose environmental concerns with human activities and resolve them to the best degree possible. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. NEPA regulations (32 CFR Part 651) require mitigation or full disclosure of damage to the environment. NEPA was not legislated to stop actions. Rather, it was crafted to identify environmental problems, providing an opportunity to resolve them using planning in the early stages of project development.

5.5.1 General

5.5.1.1 Responsibility

The EMO has primary responsibility for NEPA implementation at MCAAP. One person is assigned NEPA support as a primary duty. The individual in this position is not only responsible for ensuring that NEPA documentation is provided for projects, training missions, and other governmental actions, but also spends a considerable amount of time preparing NEPA documentation for organizations on MCAAP. The process of reviewing and preparing NEPA documentation involves direct coordination with the LMO. Coordination also could include other natural resources partners, particularly those listed in chapter 2 of this INRMP.

5.5.1.2 NEPA Documentation

The most common NEPA document prepared for projects that impact natural resources is a REC, which uses one or more categorical exclusions under 32 CFR Part 651.

EAs are required when conditions for a categorical exclusion are not met, which can happen when a large construction project is planned, when the action involves a wide geographic area, or when wetlands or other sensitive plant communities might be involved. Examples include major erosion control projects, use of pesticides, or major range construction. EAs require the Commander's approval, publishing a finding of no significant impact (FONSI), and waiting 30 days for public comment.

If an FONSI is not appropriate, the following options are available:

- Modify the action to remove significant impacts.
- Mitigate significant adverse impacts.
- Drop the action.
- Publish a notice of intent to prepare an EIS.

Jones Technologies, Inc. and Gene Stout and Associates (1999) integrated an EA into the MCAAP 1999 INRMP, and the 2011 INRMP also contained an integrated EA. The NEPA requirement for this iteration of the INRMP is met with a REC (Appendix H).

5.5.1.3 Mitigation

Mitigation is an excellent way to either consider less damaging options or provide a means to off-set damage to the environment and should be considered throughout the NEPA process. Below are five general mitigation tactics:

- Avoidance: Avoid adverse impacts on natural resources by not performing activities that would result in such impacts. Confine construction to areas where no significant impact would occur to natural resources.

- Limitation of action: Reduce the extent of an impact by limiting the degree or magnitude of the action. Minimize impacts of construction projects by arranging timing, location, and magnitude of actions so that they have the least impact on natural resources.

- Restoration of the environment: Restore the environment to its previous condition or better. This could involve reseeding and/or replanting an area with native plants after it has been damaged by construction projects.

- Preservation and maintenance operations: Design the action to reduce adverse environmental effects. This could involve actions such as monitoring and controlling pollution, contamination, disturbance, or erosion caused by construction projects that would impact natural resources.

- Replacement: Replace the resource or environment that will be impacted by construction projects. Replacement can occur in-kind or otherwise, on-site, or at another location. This could involve creation of the same type or better quality habitat for a particular impacted fish or wildlife species or creation of habitat for another species.

Mitigation that is identified in a FONSI is a class 1 “must fund” for environmental purposes. This provides a reliable mechanism to fund mitigation included in NEPA documents.

5.5.2 NEPA and Natural Resources Management

5.5.2.1 Current Management

The LMO, coordinating with the EMO, uses NEPA to ensure that its activities as described in this INRMP are properly planned, coordinated, and documented. It also uses NEPA to identify problems associated with other organization’s projects that affect MCAAP’s natural resources when it has the opportunity to review such projects.

Siting construction projects is perhaps the most basic decision requiring input from natural resources personnel. If this phase is conducted within the cooperative spirit of NEPA, most other environmental problems are generally resolved with relative ease. Decisions such as specific

siting or mission planning should be cooperatively discussed prior to preparing NEPA draft documents.

An important offshoot of proper NEPA implementation is that projects are often enhanced by the effort. Siting is one of the most common examples of project enhancement. When natural resources managers understand mission/project requirements in terms of land features and requirements, they often not only offer more potential site options to mission or project planners, but also offer alternatives to avoid future environmental conflicts.

5.5.2.2 Proposed Management

Project: Implementing NEPA
Justification: Compliance with NEPA and other federal laws affected by individual projects; stewardship
Funding Priority: Class 0
Project Timing: Objective 1—2021; other objectives—ongoing indefinitely
Regulatory Coordination: None

Goal 1. Use NEPA to identify projects and activities on MCAAP that might impact natural resources and work with project planners to resolve issues early in the planning process.

Goal 2. Use NEPA to ensure that this INRMP is documented according to the spirit and letter of NEPA.

Goal 3. Help MCAAP comply with NEPA.

Objective 1. Document effects of implementing this INRMP through a REC.

Objective 2. Reference this INRMP and its associated EA in descriptions of affected environment to reduce verbiage in other NEPA documents.

Objective 3. Classify mitigation as a "must fund" for budgetary purposes.

SECTION 6.0
UNRESOLVED ISSUES

The best way to resolve a natural resources-related issue is not always clear or simple. Challenges to finding it can include the political environment, a lack of scientific information, conflicting agendas, and costs. Recognition of these difficulties and a willingness to work through them, however, will help MCAAP succeed at resolving the identified issues.

6.1 Feral Hogs and other Problem Faunal Species

As discussed in section 4.7.1.2, Fish and Wildlife Population Management, feral hogs have become established on MCAAP and are damaging floral resources. In 1996, the LMO initiated a program to eliminate feral hogs on the Installation. However, due to several factors (e.g., funding, manpower, and difficulty in implementing the program), the elimination program was reduced to a control program. Control programs are long-term commitments and require periodic evaluation to assess their effectiveness and justify their continuation. For a short time, the number of feral hogs on-plant declined, and it appeared that control efforts were holding the population at an acceptable level. Regardless of continued efforts, however, it rebounded to an unacceptable level. Other more effective control options and methods should be explored to continue to maintain the population at an acceptable level and funding must be dedicated to this critical program.

Beavers and coyotes are other species that periodically cause problems on MCAAP. Beavers are particularly troublesome because their activities often are associated with destruction of facilities and alteration of habitats. Beaver control is an ongoing challenge on MCAAP and is conducted on a case-by-case basis. Controlling coyotes on MCAAP is related to deer and turkey populations, as well as owners of land surrounding the plant perceiving the need for control. Control of beavers and coyotes is a long-term, although not necessarily intensive, management project on MCAAP.

6.2 Eastern Red Cedar Control

The eastern red cedar is a significant invasive species occurring on MCAAP, primarily because of its ability to proliferate and invade areas in which fire or other vegetation control has been absent. With MCAAP's vegetation having been so well protected over the years, the species is abundant in much greater numbers than desired. A cutting and prescribed burning program has been implemented on-plant to control eastern red cedars, which is controversial with some groups.

One measure used effectively to reduce the numbers of eastern red cedars, particularly the larger trees, is cutting them down, letting them lie and dry out, and then allowing a prescribed fire to recycle them back into the ecosystem. Seeing them left lying on the ground after being cut and the fact that they need to be controlled at all are difficult for some to grasp. The LMO disseminates to the public educational brochures on the benefits of eastern red cedar control from the Oklahoma State University extension service at every opportunity. As prescribed burning becomes more accepted on the Installation and large eastern red cedars become scarce, this issue should move closer to resolution. It will remain a long-term commitment, however, as the younger trees grow and require control.

Another method of cedar control now used is mulching the trees without cutting them down. This method is effective when the trees are still small. Staff from LMO and Roads and Grounds, as well as contractors, use this method on MCAAP.

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SECTION 7.0
IMPLEMENTING THE INRMP

This INRMP is only as good as MCAAP's capability to implement it. It was prepared with a goal of 100 percent implementation. This section describes the organization, personnel, and funding required to implement the programs described in chapters 4 and 5.

7.1 Organization

The LMO of the Engineering and Public Works Directorate can implement most of this INRMP and fulfill goals and policies established in chapter 1 as well as the more specific goals and objectives in chapters 4 and 5. Other responsible organizations identified in chapter 2 also are capable of implementing their portions of the plan with no organizational changes, although they could decide to make changes during 2021–2025 to improve operational efficiency.

7.2 Personnel

The management and conservation of natural and cultural resources under DoD control, including planning, implementation, and enforcement activities, are inherently governmental functions that shall not be contracted.[1]

7.2.1 INRMP Implementation Staffing and Training

7.2.1.1 Current Management

Staffing required to implement this INRMP at MCAAP include the LMO chief (two federal employees) and a wildlife biologist (an ODWC employee), who assists in implementation of the wildlife management program.

This staffing does not include personnel from the Community and Family Activities Directorate or other personnel within EPWD who have significant roles in implementation of this INRMP. However, volunteers provide an invaluable source of assistance; and contractors might also become a source of on-site assistance in implementing the plan.

MCAAP has a goal of continuously improving the success of natural resources management activities through professional development and information exchange. This will be accomplished by:

- Maintaining staff knowledge of the latest management strategies through training and participation in workshops, research presentations, and other activities of regional and national professional natural resources research and conservation programs; and
- Exchanging information with natural resources experts to ensure maximum benefits of adaptive management and research efforts.

MCAAP plans to send one person to the following annual workshops and professional conferences if schedules and budgets allow:

- National Military Fish and Wildlife Association annual workshop
- National Military Fish and Wildlife Association annual game warden training
- North American Wildlife and Natural Resources conference
- International Erosion Control Association annual conference
- The Wildlife Society conference

[1] DoDI 4715.3, Environmental Conservation Program, 2 May 96.

- Southeastern Association of Fish and Wildlife Agencies annual conference
- Partners in Flight national, regional, and state meetings
- Southwest Region Installation Management Agency training sessions
- Wild Turkey symposium (every 5 years)
- Southeast Deer Study Group
- National Feral Hog conference (every 2 years)

Other conferences/workshops will be evaluated on the degree to which their topics relate to ongoing projects and funding availability. Topics especially useful to MCAAP natural resources personnel include forestry (smoke management and ecological prescribed burning), ecosystem restoration, global positioning system (GPS) and GIS training, and law enforcement.

Some natural resources staff at MCAAP require certification to successfully perform their job duties. Section 5.1, Natural Resources Enforcement, describes required training for enforcement officers; and section 4.11, Pest Management, discusses training required to maintain certification for pesticide applicators.

7.2.1.2 Proposed Management

Project: INRMP Implementation Staffing and Training

Justification: Compliance with Sikes Act (implementation of INRMP) and other federal laws that affect this INRMP, support of the military mission, stewardship

Funding Class: Class 0

Project Timing: All objectives–ongoing indefinitely

Regulatory Coordination: None directly

Goal 1. Provide staffing of natural resource management professionals required to effectively manage natural resources on MCAAP.

Objective 1. Provide staffing for the MCAAP natural resources program to effectively implement this INRMP.

Goal 2. Provide training to natural resources personnel implementing this INRMP.

Objective 1. Encourage LMO personnel to join professional societies and their state/regional chapters as well as be active in them.

Objective 2. Send at least one person to each of the annual workshops or professional conferences discussed in section 7.2.1.1.

Objective 3. Evaluate other conferences/workshops for their usefulness as training tools, and send personnel to those most justified, based on current training needs and those most related to MCAAP activities.

Objective 4. Ensure that LMO personnel obtain the one-time or occasional refresher training needed to fulfill job requirements (e.g., GIS user training, NEPA training, endangered species documentation / consultation training).

Objective 5. Actively participate in training sessions to disseminate knowledge learned at MCAAP.

7.2.2 External Assistance

7.2.2.1 Current Management

The demands of managing natural resources program on MCAAP have resulted in the need for outside assistance. The Installation has used its partnerships in a variety of ways, but especially to provide additional support for wildlife research and management, and erosion control. The growth of environmental compliance requirements in recent years has increased the need for specialized external assistance in other areas, including on-the-ground personnel support.

Volunteers

Volunteers are a time-honored source of personnel assistance at MCAAP. Some volunteers assist MCAAP with individual projects or for only a short time (e.g., youth working on scout projects or hunters supporting habitat improvement). However, MCAAP has a group of volunteers who are incredibly dedicated and long-lived. The "white hats," as they are called, are a group of about 25 individuals who assist with a variety of duties from administration of the annual deer and turkey hunts and officiating at kids' fishing derbies to installing fish structure in ponds and helping with fish and wildlife surveys. The white hats take great pride in their accomplishments in— and are extremely important to—the natural resources program. Without their assistance, many projects would be seriously hindered. MCAAP will continue to foster this relationship during the next 5 years.

Other Agency Assistance

MCAAP recognizes the importance of cooperating with federal and state agencies. Sections 2.3, 2.4, and 2.8 identify other agencies and organizations with whom MCAAP has cooperatively worked in recent years. During 2021–2025, MCAAP will continue working with state and federal agencies—particularly with this INRMP's signatory partners, USFWS and ODWC—in implementing various aspects of the plan.

University Assistance

Universities are an excellent source of research assistance. MCAAP has primarily worked with Oklahoma State University in recent years for help with specialized needs. The University of Oklahoma and other universities also will be considered as sources of assistance in implementing this INRMP during 2021–2025.

Other Support

Contractors can expand MCAAP's access to a wide range of specialties and fields, and their support could be used on a variety of projects in the next 5 years. During that time, contractor and other sources of support will be evaluated on a case-by-case basis.

7.2.2.2 Proposed Management

There is no requirement for external assistance to be used on a specific project because objectives within this area are included within other projects of this INRMP. However, the goal and objectives below are appropriate to list.

Goal. Provide external specialized skills, personnel, and resources to support the MCAAP natural resources program.

Objective 1. Implement external support projects, which are described in more detail in appropriate sections of this INRMP.

Objective 2. Use volunteers for personnel assistance.

Objective 3. Use state and federal agencies, particularly INRMP signatory partners, USFWS and ODWC, to assist with implementation of this INRMP.

Objective 4. Use universities to assist with implementing this INRMP.

Objective 5. Use contractors to assist with implementing this INRMP.

7.3 Data Storage, Retrieval, and Analysis

The capability to store, retrieve, and analyze data is central to professional management of natural resources, and it is essential to implementing the adaptive management aspect of ecosystem management. MCAAP is committed to providing efficient, cost-effective systems for data storage and analysis.

7.3.1 Current Management

Microcomputer System

Microcomputers are essential to the routine operation of efficient natural resources management programs. The volume of data is too substantial to manage without computers, and routine administrative tasks are accomplished considerably more efficiently with them.

The LMO has microcomputer equipment available to its employees, including a quality personal computer with a peripheral printer, which is used primarily to store fauna data. This system has no major requirements beyond normal upgrades and replacement of hardware and software.

Geographic Information System

A GIS system enables users to manipulate spatial data (e.g., maps, aerial photos, satellite images) in a manner similar to the way in which a data management program enables users to analyze and present mathematical data. Data can be purchased and converted into most software formats, or it can be either scanned or digitized directly from maps or aerial photographs. A GIS system can analyze different map layers to show the relationship of one map layer to another.

MCAAP has a GIS system that includes layers for natural resources. The system is maintained and updated through the Directorate of Engineering and Public Works.

Remote Imagery

MCAAP has aerial imagery of the plant dating back to 1962 as well as aerial photographs taken as recently as 2015. Maps have been regularly updated at MCAAP since the Installation was first developed.

7.3.2 Proposed Management

Project: Data Storage, Retrieval, and Analysis

Justification: Sikes Act (implementation of INRMP) and other federal laws affected by this INRMP, support of the military mission, stewardship

Funding Priority: Class 0

Project Timing: All objectives—ongoing indefinitely

Regulatory Coordination: None

Goal. Store, analyze, and use data in an efficient, cost-effective manner.

Objective 1. Upgrade microcomputer hardware and software as required during the next 5 years.

Objective 2. Develop or obtain databases needed to support the MCAAP natural resources program.

Objective 3. Consolidate all baseline data into a current, usable database.

Objective 4. Create user-friendly interfaces to enable a wider use of GIS databases specific to needs of Installation users.

Objective 5. Regularly replace or upgrade GIS and imagery hardware and software to maintain the capability to use developing GIS technology.

Objective 6. Require all spatially related data to be stored on, or accessible to, the GIS system.

Objective 7. Use remote imagery for improved decision making for military activities, environmental management, and natural resources management and protection.

7.4 Project/Program Summary

Projects, goals, and objectives within this INRMP can be used to monitor the effectiveness of natural resources management at MCAAP. Appendix A lists projects, goals, and objectives in the order in which they appear in the plan. Goals and objectives are abbreviated from chapters 4, 5, and 7.

7.5 Implementation Funding Options

Natural resources management relies on a variety of funding mechanisms, some of which are self-generating and all of which have different application rules. This section provides general discussions about different sources of funding to implement this INRMP. As noted, not all of the sources are currently being used by MCAAP.

7.5.1 Forestry Funds

Forestry funds are generated from the sale of forest products. Individual installations can be reimbursed for approved forest management expenses. Forty percent of excess revenue produced by an installation is provided to the state. The remainder is deposited into the DoD Forest Reserve Account, which funds approved natural resources projects at the installation. Approved projects include timber management, reforestation, timber stand improvement, inventories, fire protection, construction and maintenance of timber area access roads, purchase of forestry equipment, disease and insect control, planning (including compliance with laws), marking, inspections, sales preparations, personnel training, and sales. AR 200-1 outlines collection and expenditure systems. MCAAP does not generate forestry funds.

7.5.2 Sikes Act Funds

Sikes Act funds are collected from the sale of hunting and fishing licenses. They are authorized by the Sikes Act and regulated via AR 200-1, chapter 6. The funds can be used only for the protection, conservation, and management of fish and wildlife on the installation from which they were collected. They have no year-end (i.e., unobligated funds carry over to the next year on 1 October). MCAAP will generate about $64,000 annually for fish and wildlife management from the sale of licenses during 2021–2025. Army policy encourages installations to be self-sufficient with regard to managing game populations on military lands. MCAAP will, from time to time,

examine options to increase Sikes Act income to maintain the quality of its hunting and fishing program.

Projects anticipated to be funded with Sikes Act funds are listed in Table 7-1.

Table 7-1.
Sikes Act Funds Projects*

Project	INRMP Section	FY 21	FY 22	FY 23	FY 24	FY 25	Totals
Fish and Wildlife Management (game management portions)	4.6.2, 4.7.2	$65	$65	$65	$65	$65	$325
Totals		$65	$65	$65	$65	$65	$325

Note:
* Funding in thousands of dollars.

7.5.3 Agricultural Funds

Agricultural funds are derived from agricultural leases on installations. They are centrally controlled at Department of Army and major command levels with no requirement that they must be spent where they were generated. AR 200-1 outlines procedures for collection and spending these funds, which are primarily intended to offset costs of maintaining agricultural leases. They also are, however, available for preparing and implementing INRMPs. These are the broadest use funds available exclusively to natural resources managers. MCAAP agricultural leases generate about $70,000 annually in conservation services on the Installation in lieu of payment, and an additional $10,000–$20,000 cash bid, which is put into the DoD reimbursable account. Installations may request money from this account for specific projects, and the funds are awarded based on a set of parameters set forth by AMC Headquarters.

7.5.4 Environmental Program Requirements

The Environmental Program Requirements (EPR) report provides the primary means for identifying the current and projected environmental requirements and resources needed to execute the MCAAP natural resources program. The EPR report satisfies the Army's reporting requirements as specified in EO 12088, Office of Management and Budget Circular A-11, and other federal directives. The report is used for a variety of purposes, including planning, programming, budgeting, and forecasting costs; documenting past accomplishments and expenditures; tracking project execution and monitoring performance; refining and validating requirements for the budget year; and supporting the program objective memorandum for out-year requirements.

Environmental funds are a special subcategory of operations and maintenance (O&M) funds. They are set aside by the DoD for environmental purposes but are still subject to restrictions of O&M funds. Compliance with laws is the key to getting environmental funding. Environmental funds are most commonly used for projects that return the installation to compliance with federal or state laws, especially if noncompliance is accompanied by notices of violation or other enforcement agency actions.

"Must fund" classifications include mitigation identified within findings of no significant impact and items required within federal facilities compliance agreements. This INRMP is a federal facilities requirement agreement, and some of its projects and programs are used to mitigate various military activities. In addition, 1997 amendments to the Sikes Act require implementation of INRMPs, which makes implementing this INRMP a funding priority.

Table 7-2 lists projects for which environmental funding is anticipated for implementing this INRMP.

Table 7-2.
Environmental Funds Projects[a]

Project	INRMP Section	EPR #[b]	Fund Class[c]	FY 21	FY 22	FY 23	FY 24	FY 25	Totals
Ecosystem Management Coordination	4.2.1.2	N/A	0	Funded within INRMP Implementation Staffing/Training project					
Integrated Natural Resources Management Planning	4.2.2.2	TBD	0	Funded within INRMP Implementation Staffing/ Training project				$35	$35
Soils Management	4.3.2	TBD	0	$10	$10	$10	$10	$10	$50
Water Resources Management	4.4.2	N/A	0	Funded within EMO programs					
Habitat Management	4.6.2	TBD	0	$10	$20	$10	$10	$10	$60
Fish and Wildlife Management	4.7.2	N/A	0	Funded within INRMP Implementation Staffing/ Training project					
Federal-listed Species Management	4.8.1.2	N/A	0	Funded within INRMP Implementation Staffing/ Training project					
Nonfederal-listed Sensitive Species Management	4.9.2	N/A	3	0[d]	0[d]	0[d]	0[d]	0[d]	0[d]
Agricultural Outlease Management	4.10.1.2	N/A	N/A	Funded within INRMP Implementation Staffing/ Training project					
Pest Management Support	4.11.1.2	N/A	0	Funded within INRMP Implementation Staffing/ Training project					
Grounds Management Support	4.12.1.2	N/A	0	Funded within INRMP Implementation Staffing/ Training project					
Fire Management	4.13.1.2	N/A	0	Funded within INRMP Implementation Staffing/ Training project					
Natural Resources Enforcement	5.1.2	N/A	0	Funded within INRMP Implementation Staffing/ Training project					
Conservation Awareness	5.2.2	N/A	3	Funded within INRMP Implementation Staffing/ Training project					
Hunting and Fishing Programs	5.3.2.2	N/A	0	Funded within INRMP Implementation Staffing/ Training project					
Other Natural Resources Outdoor Recreation	5.3.3.2	N/A	3	Funded within INRMP Implementation Staffing/ Training project					
Cultural Resources Protection	5.4.2	N/A	0	Funded within EMO programs					
Use of NEPA	5.5.2.2	N/A	0	Funded within EMO programs					
INRMP Implementation Staffing/Training	7.2.1.2	N/A	0	Funded within MCAAP O&M funds (see Section 7.5.5)					
Data Storage, Retrieval, and Analysis	7.3.2	N/A	0	Funded within MCAAP O&M funds					
Totals				$20	$30	$20	$20	$55	$145

Notes:
a Funding in thousands of dollars.
b Projects indicating funding within INRMP Implementation Staffing/Training project are funded completely or in part by O&M funds, and in some cases portions are funded via Sikes Act or Agricultural funds.
c Class 0 = Recurring requirements necessary to manage and monitor environmental programs.
Class 1 (Must Fund) = Nonrecurring projects and activities at facilities that are out of compliance. Includes projects and activities necessary to meet specified deadlines and requirements in the year funds are requested.
Class 2 (Must Fund) = Nonrecurring projects and activities at facilities in compliance at the present time but for which future specified deadlines and requirements are established.
Class 3 (Other Environmental) = Nonrecurring projects and activities that are not required by statute/regulation or do not have deadlines but that are needed to address overall environmental goals and objectives and to sustain environmental stewardship.
TBD = To be developed.
d Funding needs would increase if these species were discovered or a known species status changed.

7.5.5 Operations and Maintenance Funds

Many projects within this INRMP are either partially or fully funded with O&M funds, through the Public Works Directorate. These funds are used for the salary of the chief, LMO. For cost estimation purposes, annual costs of $270,000 are included from O&M funds for implementing this INRMP, primarily for LMO salaries. Additionally, $150,000 ($30,000 annually) of O&M funds are used to reduce fuel load and control invasive species. O&M funds also can be used for other maintenance projects during the next 5 years. O&M funding also is used for some administrative supplies, furniture, building maintenance, prescribed burning support, and firebreak maintenance. These funds are not included in the figure above.

7.5.6 Other Funding

Portions of the outdoor recreation program not directly involved with hunting and fishing are funded through the nonappropriated fund and are not included in the costs for this INRMP.

7.6 INRMP Implementation Costs

Table 7-3 is a summary of funding avenues and dollars required for implementation of this INRMP.

Table 7-3.
INRMP Implementation Costs*

Type Funds Anticipated	INRMP Section	FY 21	FY 22	FY 23	FY 24	FY 25	Totals
Forestry**	7.5.1	$0	$0	$0	$0	$0	$0
Sikes Act	7.5.2	$65	$65	$65	$65	$65	$325
Agriculture	7.5.3	$20	$20	$20	$20	$20	$100
O&M	7.5.5	$270	$270	$270	$270	$270	$1,350
Other**	7.5.6	$0	$0	$0	$0	$0	$0
Totals		$355	$355	$355	$355	$355	$1,775

Notes:
* Funding in thousands of dollars.
** Retained as a funding option during 2021–2025.

Thus, total 5-year funding to implement this INRMP will be $1,775,000.

7.7 Command Support

Command support is essential to implementing this INRMP, especially since many of the natural resources management projects within the next 5 years require command support. This plan has the support of the MCAAP Commander and other personnel in command positions who are needed to implement this INRMP. The command is dedicated to maintaining and improving the

military mission at MCAAP as well as to implementing this INRMP as required by the Sikes Act and other federal laws, which is a component of the mission.

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SECTION 8.0
CONCLUSIONS

8.1 INRMP Summary

This document reflects the commitment set forth by the Army to conserve, protect, and enhance the natural resources necessary to sustain the military mission on MCAAP. The primary purpose and objective of this document is to present an INRMP that MCAAP can implement and that will guide the Plant in meeting mission requirements, achieving natural resource management goals, and complying with environmental policies and regulations. The INRMP includes a comprehensive description, evaluation, and assessment of environmental conditions and natural resources on the installation.

This INRMP is the final plan that will direct the natural resources management program at MCAAP from 2021 through 2025. An ecosystem approach was used to develop management projects for each resource area. Implementing these management projects will maintain, protect, and enhance the ecological integrity of military lands and biological communities inhabiting them. In addition, natural resources management measures described in this plan will protect MCAAP ecosystems and their components from unacceptable damage or degradation and identify and restore previously degraded habitats.

8.2 NEPA Findings and Conclusions

The proposed action to implement the INRMP for MCAAP was analyzed by comparing planned activities in the 2021–2025 time frame to activities planned or conducted in the previous planning period of 2016–2020. Findings indicate that very little change in natural resources management on MCAAP is expected over the next 5 years. The affected environment would not be expected to be significantly or adversely impacted by continued natural resources management. Additionally, no significant cumulative effects would be expected.

Based on this assessment, a Record of Environmental Consideration (REC) is appropriate for fulfilling the NEPA requirements of this INRMP update. The REC for this document is located in Appendix H.

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SECTION 9.0
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SECTION 13.0
ACRONYMS

°F	Degrees Fahrenheit
AAFES	Army and Air Force Exchange Service
AEC	Army Environmental Center
AMC	Army Materiel Command
ANS	Aquatic nuisance species
AR	Army regulation
ARPA	Archaeological Resources Protection Act
CAA	Clean Air Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDI	Department of Defense instruction
EA	Environmental assessment
EIS	Environmental impact statement
EMO	Environmental Management Office
EO	Executive order
EPA	U.S. Environmental Protection Agency
EPR	Environmental program requirements
ESA	Endangered Species Act
ESMP	Endangered species management plan
FONSI	Finding of no significant impact
GIS	Geographic information system
GPD	Gallons per day
gpm	Gallons per minute
GPS	Global positioning system
IAFWA	International Association of Fish and Wildlife Agencies
ICRMP	Integrated cultural resources management plan
INRMP	Integrated natural resources management plan
IPaC	Information for Planning and Conservation
IPM	Integrated pest management
LMO	Land Management Office
MCAAP	McAlester Army Ammunition Plant
MOU	Memorandum of understanding
NAGPRA	Native American Graves Protection and Repatriation Act
NAVSEA	Naval Surface Warfare Center
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	Operations and maintenance
ODEQ	Oklahoma Department of Environmental Quality
ODWC	Oklahoma Department of Wildlife Conservation
ONHI	Oklahoma Natural Heritage Inventory
OPDES	Oklahoma Pollutant Discharge Elimination System
PLS	Planning level survey

REC	Record of Environmental Consideration
SAIA	Sikes Act Improvement Act
SHPO	State Historic Preservation Office
TNT	2,4,6-trinitrotoluene
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USADAC	U.S. Army Defense Ammunition Center
USADACS	U.S. Army Defense Ammunition Center and School
USFWS	U.S. Fish and Wildlife Service

APPENDIX A
LIST OF INRMP GOALS AND OBJECTIVES

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
4.2.1	**Ecosystem Management Coordination**						
	1. Use coordinated planning to manage natural resources to sustain military mission capability						
	1. Coordinate natural resources planning with planning for the sustainment of the military mission	X					
	2. Promote and participate in regional planning for natural resources conservation at scales larger than MCAAP						
	1. Continue to coordinate with and support regional planning and programs	X					
	2. Continue to coordinate with and support military regional planning and programs	X					
4.2.2	**Integrated Natural Resources Management Planning**						
	1. Use coordinated planning to fully integrate the natural resources program at MCAAP						
	1. Internally review this INRMP annually using project goals and objectives to guide reviews; revise projects and budgets as required; coordinate significant changes with the USFWS and ODWC	X					
	2. Update the INRMP at least every five years or when major changes are made to the natural resources program; coordinate this update with the USFWS and ODWC						X
4.3	**Soils Management**						
	1. Use soil parameters to manage military activities, protect soil stability, restore training lands, and conserve wildlife habitat						
	2. Repair damaged soils and use soil parameters to manage military activities, protect soil stability, restore training lands, and conserve wildlife habitat						
	3. Eliminate and/or minimize soil contamination and take necessary remediation efforts in areas previously contaminated						
	1. Use improvement of vegetative cover and installation of supporting engineering as the primary means to prevent soil erosion	X					
	2. Ensure that the Grounds and Structure Team maintains and upgrades roads and firebreaks and that the agricultural lessee maintains additional firebreaks	X					
	3. Implement the Magazine Protection Plan regarding vegetation management on igloos	X					
	4. Monitor sediment control and containment measures on sites used to support open burn/open demolition activities	X					
	5. Manage borrow sites using revegetation, use of terraces and other structures, etc. to control erosion	X					
	6. Use soil inventory data to make decisions regarding land use, rehabilitation options, and wildlife habitat management options	X					
	7. Assist the Environmental Management Office in its responsibility in monitoring pollution levels and pollution control, and the oversight of several ongoing and anticipated projects to remediate areas of previous contamination	X					

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
4.4	**Water Resources Management**						
	1. Protect surface water quality at MCAAP						
	1. Use site-specific water testing for natural resources programs, such as erosion control and pond management	X					
	2. Use water quality data to make decisions regarding land use, restoration options, and fish and wildlife habitat management options	X					
	3. Control or eliminate runoff and erosion that could affect surface waters	X					
	4. Consider nonpoint source pollution abatement in construction, operations, and land management plans and activities	X					
4.6	**Habitat Management**						
	1. Inventory MCAAP floral resources and monitor species or communities that are indicators of ecosystem integrity, capability of lands to support military missions, status of sensitive species or communities, and other special interests						
	1. Update the flora inventory as new species are found through field observations, site-specific surveys, sensitive plant species surveys, and other projects	X					
	2. If plants that are federal-listed are found on MCAAP, develop an inventory/monitoring program for these species	X					
	3. Periodically update the vegetation map	X					
	2. Manage wetlands to ensure "no net loss" per Executive Order 11990						
	1. Maintain a database on wetland resources at MCAAP	X					
	2. Use site-specific surveys to evaluate wetland resources if potential wetland impacts are proposed	X					
	3. Use the environmental review process to protect wetlands	X					
	4. Provide certified jurisdictional wetland delineations (and permit application, if necessary) if a project is planned in a suspected wetland	X					
	5. Maintain wetlands quality through active management (e.g., prescribed burning), if necessary	X					
	3. Manage wildlife species habitats based on conservation needs, distribution and threats, population trends, importance of areas to species, potential for population and/or habitat management, and human interests						
	1. Install and maintain nesting/roosting structures using volunteers and Scout groups	X					
	2. Provide wildlife food through plantings associated with the agricultural lease program and planting of annual ryegrass on fire breaks and other disturbed areas	X					
	3. Develop and maintain wildlife openings	X					
	4. Control eastern red cedar through cutting and burning	X					
	5. Continue use of the skid steer for cutting undesirable tree species.	X					
	6. Maintain riparian habitats currently found on MCAAP, and explore the feasibility of riparian habitat restoration.	X					

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
	4. Maintain and enhance the natural diversity of native aquatic communities on MCAAP						
	1. Consider borrow sites as they are closed for conversion to ponds	X					
	2. Stabilize eroding shorelines of the island in Brown Lake			X			
	3. Use eastern red cedar trees to enhance structural diversity in lakes and ponds	X					
	4. Restock grass carp as needed to control common aquatic weeds	X					
	5. Eliminate the introduction of any ANS through education and periodic inspections	X					
4.7	**Fish and Wildlife Management**						
	1. Inventory MCAAP faunal resources and regularly monitor species that are indicators of ecosystem integrity and other special interests						
	1. Perform white-tailed deer census, collect harvest data at check stations, and conduct supplemental census	X					
	2. Monitor Wild Turkey populations	X					
	3. Perform small mammal (including bats), bird, fish (non-game), and terrestrial invertebrate surveys as time and funding becomes available.	X					
	4. Perform fish population data collection	X					
	5. Investigate performing periodic creel surveys	X					
	6. Monitor other species through incidental observations for abundance and general health	X					
	2. Maintain fish and wildlife populations at optimal levels in accordance with species priorities, population ecology, population health considerations, and habitat capacities						
	1. Use established hunting seasons, procedures, methods, etc. to maintain white-tailed deer and Turkey populations at or slightly below carrying capacities	X					
	2. Investigate the feasibility of options other than traditional archery for management of deer at MCAAP	X					
	3. Maintain small game and furbearers within habitat carrying capacities and provide migratory birds a refuge during migration	X					
	4. Manage fisheries resources to maintain a harvestable surplus	X					
	5. Investigate developing a fisheries management plan	X					
	6. Use recreational harvest to manage game fish populations	X					
	7. Annually stock catfish to support heavy recreational fishing use	X					
	3. Eradicate/minimize feral hogs on MCAAP						
	1. Continue control efforts of feral hog	X					
	2. Investigate and incorporate, as appropriate, control options/methods into Installation control efforts to more effectively control the feral hog population	X					

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
4.8.1	**Federal-listed Species Management**						
	1. At a minimum, sustain residential or migratory populations of endangered, threatened, or special status species and their habitats at current levels, with the long-term goal of conserving listed species and their habitats in accord with specific Recovery Plans and the Endangered Species Act						
	1. Implement requirements of the Endangered Species Act, as stated by AR 200-1	X					
	2. Implement management requirements of the Endangered Species Management Plan (Starry 2002)	X					
	3. Implement survey, inspection, and monitoring requirements of the Endangered Species Management Plan (Starry 2002)	X					
	4. Maintain records from American burying beetle surveys and reports	X					
	5. If species that are federal-listed are found on MCAAP or if species already known on MCAAP become federal-listed, consult with the USFWS and develop an inventory/ monitoring program and management plan for these species	X					
4.8.2	**Other Sensitive Species Management**						
	1. Monitor and manage nonfederal-listed, special status plant and animal species on MCAAP						
	1. Consider state-protected species in all MCAAP actions	X					
	2. Use actions designed for federal-listed species to protect or manage other sensitive species	X					
4.10	**Agricultural Outleases**						
	1. Provide opportunities for agricultural use of MCAAP when consistent with the military mission and native ecosystem functionality						
	1. Include planning and NEPA analysis in agricultural outlease decisions	X					
	2. Manage and protect land resources while maximizing land use and providing an economic resource to the community through agricultural outleases	X					
4.11	**Pest Management**						
	1. Control those plant and animal species that affect natural resources management (e.g., reduce ecosystem functionality, displace native species) or directly affect the military mission on MCAAP						
	1. Maintain an updated Installation Pest Management Plan	X					
	2. Emphasize integrated pest management techniques to reduce the use of pesticides	X					
	3. Ensure pesticide applicators are fully certified	X					
	4. Control nuisance wildlife as needed to protect facilities, infrastructure, and to maintain the military mission	X					
	5. Obtain appropriate permits for the control of nuisance wildlife	X					
	6. Prevent the introduction of and control invasive species, per Executive Order 13112, Invasive Species	X					
4.12	**Cantonment Area Management**						
	1. Provide support to maintain an aesthetically pleasing cantonment landscape that preserves natural ecosystem functions						
	1. Provide professional advice to assist the grounds landscaping and maintenance program toward the use of native species	X					

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
	2. Manage natural resources occurring within the cantonment area to meet appropriate natural resources objectives	X					
	3. Implement requirements listed in the 1994 White House Memorandum	X					
4.13	**Fire Management**						
	1. Prevent and suppress wildfires; utilize prescribed burning to sustain or enhance mission capabilities and maintain ecosystem biodiversity and functionality						
	1. Provide natural resources management-related recommendations relative to fire suppression activities and provide support as needed to the Fire and Emergency Services Division	X					
	2. Annually update and refine the Integrated Wildland Fire Management Plan to meet the needs of MCAAP and perform revisions every five years						X
	3. Ensure that the MCAAP community and the general public are aware of fire prevention requirements and educate them on the benefits of prescribed burning as an integral part of the natural ecosystem	X					
	4. Use prescribed burning to maintain the military mission and enhance MCAAP ecosystems	X					
	5. Maintain firebreaks to provide for quick access for fire management and facilitate an effective prescribed burning program	X					
	6. Attend fire management training	X					
	7. Incorporate and maintain burned areas as a GIS data layer for fire effects monitoring and coordination purposes	X					
4.14	**Petroleum and Mineral Resources Management**						
	1. Manage petroleum and mineral resources to sustain or enhance mission capabilities and maintain ecosystem biodiversity and functionality						
	1. Monitor wells with compressors to ensure fuel and oil leaks or other problems are detected and repaired	X					
5.1	**Natural Resources Enforcement**						
	1. Ensure legal compliance of military and civilian activities with regard to natural resources on MCAAP						
	1. Maintain a law enforcement program for military and civilian activities that relates to natural resources protection on MCAAP	X					
	2. Coordinate enforcement activities with other agencies, particularly ODWC and the USFWS	X					
	3. Provide quality annual refresher training to MCAAP game wardens	X					
5.2	**Conservation Awareness**						
	1. Provide information to MCAAP and external interested communities regarding natural resources and associated management programs at MCAAP						
	1. Improve the general program knowledge of all persons associated with the LMO, particularly those who come into regular contact with interested persons	X					
	2. Provide prepared talks	X					

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
	3. Use newspapers, television, and radio to inform the MCAAP and surrounding community of matters important to the MCAAP natural resources program	X					
	4. Participate in activities, such as the state-wide free fishing day, to promote the LMO image and/or programs	X					
	5. Pursue interactions between MCAAP and surrounding communities and professional organizations to exchange information and knowledge on environmental subjects	X					
	6. Investigate development of a nature trail to enhance watchable wildlife and awareness opportunities on MCAAP	X					
5.3.2	**Hunting and Fishing**						
	1. Provide opportunities to the MCAAP community and general public for quality, safe, and equitable hunting, fishing, and other outdoor recreation, consistent with needs of the MCAAP military mission						
	1. Follow ODWC season, bag limit, and other regulatory instruments for hunting and fishing, with exceptions for management or safety purposes	X					
	2. Continue recreation control systems to ensure safe conditions and equitable treatment of users	X					
	3. Update recreation rules and regulations	X					
	4. Continue to provide hunting and fishing permits on the Installation	X					
	5. Periodically evaluate the MCAAP recreation fee schedule	X					
	6. Continue to ensure MCAAP recreationists follow safety requirements of the state and the Installation	X					
	7. Continue to support fishing events on MCAAP	X					
5.3.3	**Other Natural Resources-Oriented Outdoor Recreation**						
	1. Manage outdoor recreation to provide safe and pleasing outdoor experiences consistent with the needs of the MCAAP military mission while maintaining ecosystem integrity and function						
	1. Support the development of facilities that improve use and enjoyment of fishing, hunting, and other natural resources-based recreation	X					
	2. Promote Murphy's Meadow as a high quality camping and fishing area	X					
	3. Monitor effects on fisheries and wildlife from increased usage of Murphy's Meadow and Brown Lake	X					
	4. Continue to ensure boating safety requirements and motor restrictions are followed	X					
5.4	**Cultural Resources Protection**						
	1. Implement this INRMP in a manner consistent with the protection of cultural resources						
	2. Comply with all laws, regulations, and Army guidance regarding cultural resources						
	1. Update the Integrated Cultural Resources Management Plan		X				
	2. Implement provisions of the Integrated Cultural Resources Management Plan that relate to natural resources management	X					
	3. Consider natural resources projects when planning cultural resources surveys and use results of cultural resources surveys to plan natural resources projects	X					

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
	4. Avoid or mitigate adverse effects to cultural resources from natural resources	X					
	5. Take protective measures upon discovery of sites	X					
	6. Use natural resources techniques and projects to protect cultural resources sites	X					
5.5	**NEPA Implementation**						
	1. Use NEPA to identify projects and activities on MCAAP that might impact natural resources and work with project planners to resolve issues early in the planning process						
	2. Use NEPA to ensure this INRMP is documented according to the spirit and letter of NEPA						
	3. Help MCAAP comply with NEPA						
	1. Document effects of implementing this INRMP through a REC		X				
	2. Reference this INRMP and its associated EA in descriptions of affected environment to reduce verbiage in other NEPA documents	X					
	3. Classify mitigation as a "must fund" for budgetary purposes	X					
7.2.1	**INRMP Implementation Staffing and Training**						
	1. Provide staffing of natural resource management professionals required to effectively manage natural resources on MCAAP (Department of Army 1995)						
	1. Provide staffing for the MCAAP natural resources program to effectively implement this INRMP	X					
	2. Provide training to natural resources personnel implementing this INRMP						
	1. Encourage LMO personnel to join professional societies and their state/regional chapters as well as be active in them	X					
	2. Send at least one person to each of the annual workshops or professional conferences	X					
	3. Evaluate other conferences/workshops for their usefulness as training tools, and send personnel to those most justified, based on current training needs and those most related to MCAAP activities	X					
	4. Ensure that LMO personnel obtain the one-time or occasional refresher training needed to fulfill job requirements	X					
	5. Actively participate in training sessions to disseminate knowledge learned at MCAAP	X					
7.2.2	**External Assistance**						
	1. Provide external specialized skills, personnel, and resources to support the MCAAP natural resources program						
	1. Implement external support projects	X					
	2. Use volunteers for personnel assistance	X					
	3. Use state and federal agencies, particularly INRMP signatory partners, the USFWS and ODWC to assist with implementation of this INRMP	X					
	4. Use universities to assist with implementation of this INRMP	X					
	5. Use contractors to assist with implementation of this INRMP	X					

Section	Projects/Goals/Objectives*	Implementation Year					
		Ongoing	21	22	23	24	25
7.3	**Data Storage, Retrieval, and Analysis**						
	1. Store, analyze, and use data in an efficient, cost-effective manner						
	1. Upgrade microcomputer hardware and software	X					
	2. Develop or obtain databases needed to support the MCAAP natural resources program	X					
	3. Consolidate all baseline data into a current usable database	X					
	4. Create user-friendly interfaces to enable a wider use of GIS databases specific to needs of Installation users	X					
	5. Regularly replace or upgrade GIS and imagery hardware and software to maintain the capability to use developing GIS technology	X					
	6. Require all spatially related data be stored on, or accessible to, the GIS	X					
	7. Use remote imagery for improved decision-making for military activities, environmental management, and natural resources management and protection	X					

* Project title (in **bold**) follows section number; goal(s) appear in ***bold/italics***; objectives are numbered consecutively following goals. Goals and objectives are condensed from sections 4–7.

APPENDIX B
REGULATORY INSTRUMENTS THAT AFFECT NATURAL RESOURCES MANAGEMENT ON MCALESTER ARMY AMMUNITION PLANT

Below is a list of the most significant federal laws and regulations and other regulatory instruments that may govern implementation of this Integrated Natural Resources Management Plan.

Federal Laws

American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996, P.L. 95-341)

Americans with Disabilities Act of 1990 (42 U.S.C. 12101, P.L. 101-336)

Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469 et seq., P.L. 93-291)

Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-11, P.L. 96-95)

Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d, P.L. 86-70)

Clean Air Act of 1970 (42 U.S.C. 7401-7661, P.L. 95-95)

Conservation and Rehabilitation Program on Military and Public Lands (P.L. 93-452)

Conservation Programs on Military Reservations (P.L. 90-465)

Endangered Species Act of 1973 (16 U.S.C. 1531-1544, P.L. 93-205, as amended)

Erosion Protection Act (33 U.S.C. 426e-426h)

Federal Facilities Compliance Act of 1992 (42 U.S.C. 6961, P.L. 102-386, as amended)

Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136 et seq.)

Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701, P.L. 94-579)

Federal Water Pollution Control Act Amendments of 1972 (Clean Water Act) (33 U.S.C. 1251 et seq.)

Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901, P.L. 96-366)

Fish and Wildlife Coordination Act (16 U.S.C. 661-667e, P.L. 85-624)

Fish and Wildlife Conservation and Natural Resource Management Programs on Military Reservation (P.L. 96-561) (amends P.L. 86-797 [Sikes Act])

Hunting, Fishing and Trapping on Military Lands (an update to the Military Construction Authorization Act) (10 U.S.C. 2665)

Migratory Bird Conservation Act (16 U.S.C. 715 et seq., Chapter 257, 45 Stat 1222)

Migratory Bird Treaty Act (16 U.S.C. 703 et seq., P.L. 65-186)

Mineral Leasing Act of 1920 (30 U.S.C. 181 et seq.)

Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.)

National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq., P.L. 91-190)

National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq., P.L. 89-665)

Non-game Act (P.L. 93-366)

Noxious Plant Control Act (P.L. 90-583)

Outdoor Recreation on Federal Lands (16 U.S.C. 4601{1})

Plant Protection Act of 2000 (replaces Federal Noxious Weed Act of 1973 [P.L. 93-629])

Sikes Act of 1960 (16 U.S.C. 670a-670o, P.L. 105-85)

Timber Sales on Military Lands [An update of the Military Construction Authorization Act] (10 U.S.C. 2665)

Watershed Protection and Flood Prevention Act (16 U.S.C. 1001, P.L. 92419)

Executive Orders (EO) and Presidential Memoranda

EO 11593, *Protection and Enhancement of the Cultural Environment* (13 May 1971)

EO 11988, *Floodplain Management* (24 May 1977)

EO 11989, *Off-road Vehicles on Public Lands* (24 May 1977)

EO 11990, *Protection of Wetlands* (24 May 1977)

EO 11991, *Relating to Protection and Enhancement of Environmental Quality* (24 May 1977)

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations* (11 February 1994)

EO 12962, *Recreational Fisheries* (7 June 1995)

EO 13007, *Indian Sacred Sites* (24 May 1996)

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (21 April 1997)

EO 13112, *Invasive Species* (3 February 1999)

EO 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000)

EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (10 January 2001)

EO 13296, *Amendments to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks* (18 April 2003)

EO 13514, *Focused on Federal Leadership in Environmental, Energy, and Economic Performance* (5 October 2009)

EO 13653, *Preparing the United States for the Impacts of Climate Change* (1 November 2013)

EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* (30 January 2015)

EO 13693, *Planning for Federal Sustainability in the Next Decade* (19 March 2015)

Presidential Memorandum, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds* (26 April 1994)

Presidential Memorandum, *Government-to-Government Relations with Native American Tribal Governments* (29 April 1994)

Department of Defense (DoD) Directives/Instructions

DoD Instruction 4150.07, *DoD Pest Management Program* (29 May 2008)

DoD Instruction 4710.02. *DoD Interactions with Federally-Recognized Tribes* (14 September 2006)

DoD Instruction 4715.03, *Natural Resources Conservation Program* (18 March 2011)

American Indian and Alaska Native Policy, Department of Defense (20 October 1998)

Army Regulations (AR)

AR 200-1, *Environmental Protection and Enhancement* (13 December 2007)

AR 215-1, *Military Morale, Welfare, and Recreation Programs and Nonappropriated Fund Instrumentalities* (24 September 2010)

AR 350-19, *The Army Sustainable Range Program* (30 August 2005)

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APPENDIX C
ITEMS OF COOPERATION BETWEEN THE U.S. FISH AND WILDLIFE SERVICE, OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION, AND MCALESTER ARMY AMMUNITION PLANT, OKLAHOMA

PURPOSE: The purpose of this document is to specifically list items to be provided by the Oklahoma Department of Wildlife Conservation (ODWC), U.S. Fish and Wildlife Service (USFWS), and McAlester Army Ammunition Plant (MCAAP) for cooperative implementation of the MCAAP Integrated Natural Resources Management Plan. Items not specifically listed will generally be the responsibility of MCAAP unless the other agencies agree to assist with their implementation.

AUTHORITY: In accordance with the authority contained in Title 10, U.S. Code, Section 2671, and Title 16, U.S. Code, Section 670a, the Department of Defense, Department of Interior, and the State of Oklahoma, through their duly designated representatives whose signatures appear on the MCAAP Integrated Natural Resources Management Plan, approve the Integrated Natural Resources Management Plan and the below specific items of cooperation among the three agencies.

MUTUAL AGREEMENT:

X Persons hunting or fishing the lands or waters of MCAAP shall be required to obtain special MCAAP hunting or fishing permits, unless exempt by MCAAP regulations. MCAAP reserves the right to charge for these permits. Any funds derived from the sale of these permits will be used exclusively for the implementation of the MCAAP Integrated Natural Resources Management Plan in accordance with Army regulations and the Sikes Act. Fees charged shall be established by the Plant in accordance with Army regulations. Persons guilty of violating the requirement for these special permits may be prosecuted under 10 USC 2671(c).

X Persons hunting or fishing the lands of MCAAP must purchase state licenses, tags, and stamps as required by ODWC, unless exempt by ODWC regulations. ODWC agrees that resident military personnel stationed outside of Oklahoma on authorized leave are exempt from a hunting and fishing license.

X All hunting and fishing on MCAAP will be in accordance with federal and state fish and game laws.

X Representatives of ODWC and USFWS will be admitted to the Plant at reasonable times, subject to requirements of military necessity and security. Such personnel may use U.S. Army transportation on a nonreimbursable basis for wildlife related functions on MCAAP provided such transportation is available without detriment to the military mission.

X ODWC and USFWS shall furnish technical assistance for development and implementation of professionally sound natural resources programs on MCAAP provided funding for such support is available.

X MCAAP shall furnish assistance and facilities to ODWC and/or USFWS for mutually agreed upon natural resources research projects. It shall be the policy of the Commander, MCAAP to encourage and support research conducted by the participating agencies. To this end, suitable land areas, animals, facilities, and personnel may be made available at the Commander's

discretion, when requested, providing the proposed studies are compatible with, and in no way limit, accomplishment of the military mission.

X No exotic species of fish or wildlife will be introduced on MCAAP lands without prior written approval of the Army, ODWC, and the USFWS.

X ODWC shall establish season and bag limits for harvest of game species on MCAAP. MCAAP may make special requests for such regulations according to procedures established by ODWC. Requests for regulations not in accordance with those established statewide will be based on data specific to MCAAP or designed to meet MCAAP's military mission needs.

X Hunting and fishing on MCAAP will be authorized and controlled by the Commander in accordance with locally published Plant regulations promulgated in compliance with applicable federal and state laws, Army regulations, military requirements, and the Integrated Natural Resources Management Plan.

X MCAAP will operate biological check stations to collect data on harvested deer and turkey. ODWC may collect additional data on fish or wildlife resources at MCAAP with approval of MCAAP for access to military lands.

X Public access for hunting and fishing is approved under a system of controls established by MCAAP in cooperation with ODWC. Quotas on the number of hunters permitted on a daily or seasonal basis for reasons of safety will not be instituted prior to consultation with ODWC. Hunting and fishing will be allowed only on those areas where there is no conflict with military mission activities and no unreasonable safety hazard to military personnel and dependents, Army civilian employees, or the public. Certain areas will be closed to hunting and fishing, including but not limited to production areas.

X MCAAP has exclusive jurisdiction with regard to law enforcement. Oklahoma laws are operable on MCAAP as federal laws. State and federal laws will be enforced by enforcement personnel with federal commissions. Agents of ODWC must have federal commissions to enforce state laws on MCAAP. Enforcement will be a joint responsibility of MCAAP, ODWC, and the USFWS. USFWS will assist with enforcement of federal laws as requested by MCAAP and as feasible given funding and personnel limitations.

X MCAAP agrees to cooperate with USFWS and ODWC for management of any threatened or endangered species residing on the Plant. Such efforts will be in compliance with federal and state laws and applicable Army regulations.

X ODWC and USFWS will provide technical and professional advice on matters concerning wildlife and fish management when necessary. The ODWC will provide technical wildlife and fisheries assistance on a non-reimbursable basis, except in specific mutually agreeable instances. The ODWC will provide an on-site Wildlife Technician to assist the ODWC Biologist and MCAAP in the implementation of the Integrated Natural Resources Management Plan. Assistance from the USFWS will be provided within funding and personnel limitations.

X MCAAP has the option to directly transfer funds to the ODWC or USFWS for implementation of this Integrated Natural Resources Management Plan.

X It is understood that implementation of this INRMP requires certain latitude with regard to professional decisions. However, MCAAP agrees that any land-use change which significantly impacts natural resources must include modification of this INRMP in addition to any other environmental compliance requirements.

LIMITATIONS:

The military mission of MCAAP supersedes natural resources management and associated recreational activities; and, such activities must in all instances be compatible with the military mission. However, where there is conflict between the military mission and provisions of the Endangered Species Act, the Sikes Act, or any other law associated with natural resources conservation, such conflicts will be resolved according to statutory requirements.

REQUIRED REFERENCES:

- Nothing contained in this agreement shall modify any rights granted by treaty to any Native American tribe or to members thereof.

X The possession of a special permit for hunting migratory game birds will not relieve the permittees of the requirements of the Migratory Bird Stamp Act, as amended.

X This INRMP is a Federal Facilities Compliance Agreement.

X As required by the Sikes Act, the following agreements are made:

1) This MCAAP Integrated Natural Resources Management Plan is the planning document required by the Sikes Act, as amended. This Plan contains those items specifically required by law. In the event the Sikes Act is amended after this INRMP is signed, this plan will be amended to conform with the new requirements within the Sikes Act if needed.

2) This plan will be reviewed by ODWC, USFWS, and MCAAP on a regular basis, but not less often than every 5 years.

3) No land or forest products from land on MCAAP will be sold under Section 2665 (a) or (b), Title 10 USC and no land will be leased on MCAAP under Section 2667 of such Title 10 unless the effects of such sales or leases are compatible with the purposes of the Integrated Natural Resources Management Plan.

4) With regard to the implementation and enforcement of the MCAAP Integrated Natural Resources Management Plan, neither Office of Management and Budget Circular A-76 nor any successor circular thereto applies to the procurement of services that are necessary for that implementation and enforcement, and priority shall be given to the entering into of contracts for the procurement of such implementation and enforcement services with Federal and State agencies having responsibility for the conservation or management of fish or wildlife.

5) The MCAAP Integrated Natural Resources Management Plan is not, nor will be treated as, a cooperative agreement to which chapter 63 of title 31, United States Code applies.

6) This Integrated Natural Resources Management Plan will become effective upon the date subscribed by the last signature and shall continue in full force for a period of five years or until terminated by written notice to the other parties by any of the parties signing this agreement. This agreement may be amended or revised by agreement between the parties hereto. Action to amend or revise may originate with any of the other participating agencies.

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APPENDIX D
FAUNA KNOWN TO OCCUR ON MCAAP

Common Name	Scientific Name
Mammals	
White-tailed deer	*Odocoileus virginianus*
Beaver	*Castor canadensis*
Muskrat	*Onadtra zibethicus*
River otter	*Lutra canadensis*
Badger	*Taxidea taxus*
Raccoon	*Procyon lotor*
Eastern gray squirrel	*Sciurus carolinensis*
Eastern fox squirrel	*Sciurus niger*
Flying squirrel	*Galucomys volans*
Eastern cottontail	*Sylvilagus floridanus*
Swamp rabbit	*Sylvilagus aquaticus*
Gray fox	*Urocyon cinereoargenteus*
Red fox	*Vulpes fulva*
Coyote	*Canis latrans*
Bobcat	*Lynx rufus*
Skunk	*Mephitis mephitis*
Opossum	*Didelphis marsupialis*
Mink	*Mustela vison*
Pocket gopher	*Geomys bursarius*
White-footed mouse	*Peromyscus leucopus*
Armadillo	*Dasypus novemicintus*
Cotton rat	*Rattus sp.*
Feral dog	*Canis familiaris*
Feral cat	*Felis domestica*
Feral hog	*Sus scrofa*
Birds	
Anhinga	*Anhinga anhinga*
Pied-billed grebe	*Podilymbus podiceps*
White pelican	*Pelecanus erythrorhynchos*
Double-crested cormorant	*Phalacrocorax auritus*
Wood duck	*Aix sponsa*
Pintail	*Anas acuta*

Common Name	Scientific Name
Green-winged teal	*Anas carolinensis*
Blue-winged teal	*Anas discors*
Mallard	*Anas platyrhynchos*
Black duck	*Anas rubripes*
Gadwall	*Anas strepera*
White-fronted goose	*Anser albifrons*
Lasser scaup	*Aythya affinis*
Redhead	*Aythya americana*
Ring-necked duck	*Aythya collaris*
Greater scaup	*Aythya marila nearctica*
Canvasback	*Aythya valisineria*
Snow goose	*Chen hyperborea*
Blue goose	*Chen carulescens*
American widgeon	*Anas americana*
Shoveler	*Spatula clypeata*
Bufflehead	*Glaucionetta albcola*
Hooded merganser	*Lophodytes cucullatus*
Common merganser	*Mergus merganser*
Canada goose	*Branta canadensis*
Turkey vulture	*Cathartes aura*
Black vulture	*Coragypsatratus*
Red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	*Buteo swainsoni*
Harlan's hawk	*Buteo harlani*
Sharp-shinned hawk	*Accipiter striatus velox*
Rough-legged hawk	*Buteo lagopus*
Harris hawk	*Parabuteo unicinctus*
Northern harrier	*Circus cyaneus*
Sparrow hawk	*Falco sparverius*
Merlin	*Falco columbarius*
Osprey	*Pandion haliactus*
Bald eagle	*Haliaeetus leucocephalus*
Golden eagle	*Aquila chrysaetos canadensis*
Wild turkey	*Meleagris gallopavo*
Northern bobwhite	*Colinus virginianus*
Great white heron	*Casmerodius albus*
Snowy egret	*Egretta thula*

Common Name	Scientific Name
Great blue heron	*Ardea herodias*
Green-backed heron	*Butorides striatus*
Black-crowned night heron	*Nycticorax nycticorax*
Yellow-crowned night heron	*Nycticorax violaceus*
Common egret	*Casmerodius albus egretta*
American bittern	*Butamrus lentiginosus*
Lesser bittern	*Ixobrychus exilis exilis*
Sandhill crane	*Grus canadensis*
Virginia rail	*Rallus limicola limicola*
Sora	*Porzana carolina*
American coot	*Fulica americana*
Common gallinule	*Gallinula chloropus cachinnans*
American woodcock	*Scolopax minor*
American avocet	*Recurvirostra americana*
Willett	*Captrophorus semipalmutus*
Greater yellowlegs	*Totanus melanoleucus*
Sandpiper	*Erolia melanotos*
Purple finch	*Carpodacus purpurpeus*
American goldfinch	*Carduelis trinstis*
House finch	*Carpodacus mexicanus*
Dickcissel	*Spiza Americana*
Upland plover	*Bartramia longicanda*
Killdeer	*Charadrius vociferus*
Snipe	*Capella gallinaga*
Spotted sandpiper	*Actitis macularia*
Herring gull	*Larus argentatus*
Black tern	*Sterna hirundo hirundo*
Mourning dove	*Zenaida macroura*
Greater roadrunner	*Geococcyx californianus*
Yellow-billed cuckoo	*Coccyzus americanus*
Screech owl	*Otus asio*
Short-eared owl	*Asio flammeus*
Great horned owl	*Bubo virginianus*
Snowy owl	*Nyctea scandiaca*
Barred owl	*Strix varia*
Barn owl	*Tyto alba*
Burrowing owl	*Athene cunicularia*

Common Name	Scientific Name
Poor-will	*Phalaenoptilus nuttallii*
Whip-poor-will	*Caprimulqus vociferus*
Chuck-will's widow	*Caprimulgus carolinensis*
Common nighthawk	*Chordeiles minor*
Chimney swift	*Chaetura pelagica*
Ruby-throated hummingbird	*Archilochus colubris*
Belted kingfisher	*Ceryle alcyon*
Northern flicker	*Colaptes auratus*
Pileated woodpecker	*Dryocopus pileatus*
Downy woodpecker	*Picoides pubescens*
Hairy woodpecker	*Picoides villosus*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-headed woodpecker	*Melanerpes erythrocepholus*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Scissor-tailed flycatcher	*Tyrannus forficatus*
Least flycatcher	*Empidonax minimus*
Acadian flycatcher	*Empidonax virescens*
Eastern phoebe	*Sayornis phoebe*
Eastern wood pewee	*Contopus virens*
Indigo bunting	*Passerina cyanea*
Painted bunting	*Passerina ciris*
Hermit thrush	*Hylocichla guttata faxoni*
Northern cardinal	*Cardinalis cardinalis*
Blue grosbeak	*Guiraca caerulea*
Slate-colored junco	*Junco hyemalis*
Gray catbird	*Dumetella carolinensis*
Black and white warbler	*Miviotilta varia*
Prothonotary warbler	*Protonataria citrea*
Purple martin	*Progne subis*
Spotted towhee	*Pipilo maculatus arcticus*
Lark sparrow	*Chondestes grammacus*
White-crowned sparrow	*Zonotrichia leucophrys*
Barn sparrow	*Passer domesticus*
Field sparrow	*Spizella pusilla*
Harris' sparrow	*Zonotrichia quepula*
House sparrow	*Passer domesticus*
Fox sparrow	*Passerella iliaca*

Common Name	Scientific Name
Savannah sparrow	*Passerculus sandwichensis*
Tree sparrow	*Spizella arborca*
Chipping sparrow	*Spizella passerina*
White-throated sparrow	*Zonotrichia albicollis*
Lincoln's sparrow	*Melospiza lincolnii*
Song sparrow	*Melospiza melodia*
Chestnut-collared long spur	*Calcarius ornatus*
Blue-gray gnatcatcher	*Polioptila caerulea*
Eastern kingbird	*Tyrannus tyrannus*
Horned lark	*Eremphila alpestris*
American tree swallow	*Tachycineta bicolor*
Bank swallow	*Riparia riparia*
Rough-winged swallow	*Stelgidopteryx ruficollis*
Cliff swallow	*Petrochelidon pyrrhonota*
Barn swallow	*Hirundo rustica*
Blue jay	*Cyanocitta cristata*
American crow	*Corvus brachyrhynchos*
Common grackle	*Quiscalus quiscula*
Carolina chickadee	*Parus carolinensis*
Tufted titmouse	*Parus bicolor*
Winter wren	*Troglodytes troglodytes*
Carolina wren	*Thryothorus ludovicianus*
House wren	*Troglodytes aedon*
Northern mockingbird	*Mimus polyglottos*
Brown thrasher	*Toxostoma rufum*
American robin	*Turdus migratorius*
Red-winged blackbird	*Agelanius phoeniceus*
Brewer's blackbird	*Euphagus cyanocephalus*
Eastern bluebird	*Sialia sialis*
Summer tanager	*Piranga rubra*
Scarlet tanager	*Piranga olivacea*
Loggerhead shrike	*Lanius ludovicianus*
European starling	*Sturnus vulgaris*
Bell's vireo	*Vireo bellii*
Yellow-throated vireo	*Vireo flavifrons*
Red-eyed vireo	*Vireo olvaceus*
White-eyed vireo	*Vireo griseus*

Common Name	Scientific Name
Philadelphia vireo	*Vireo philadelphicus*
Yellow warbler	*Dendroica petcchia*
Kentucky warbler	*Oporornis formosus*
Common yellowthroat	*Geothlypis trichas*
Yellow-breasted chat	*Icteria virens*
Eastern meadowlark	*Sturnells magna*
Rusty blackbird	*Euphagus carolinus*
Brewer's blackbird	*Euphagus cyanocephalus*
Brown-headed cowbird	*Molothrus ater*
Amphibians	
Blanchard's cricket frog	*Acris crepitans blanchardi*
American toad	*Bufo americanus*
Red-spotted toad	*Bufo punctatus*
Gray tree frog	*Hyla versicolor*
Red River mudpuppy	*Necturus maculosus louisianensis*
Streckers chorus frog	*Pseudacris strckeri*
Bullfrog	*Rana catesbeiana*
Green frog	*Rana clamitans melanota*
Southern leopard frog	*Rana utricularia*
Reptiles	
Green anole	*Anolis carolinensis*
Eastern collared lizard	*Crotaphytus collaris*
Fence lizard	*Sceloporus undulates*
Texas horned lizard	*Phrynosoma cornutum*
Racerunner	*Cnemidophorus sexlineatus*
Ground skink	*Scincella lateralis*
Southern coal skink	*Eumeces anthracinus*
Five-lined skink	*Eumeces fasciatus*
Broadhead skink	*Eumeces laticeps*
Southern prairie skink	*Eumeces septentrionalis*
Western slender glass lizard	*Ophisaurus attenuatus*
Western cottonmouth	*Agkistrodon piscivorous*
Texas spotted whiptail	*Cnemidophorus gularis gularis*
Southern black racer	*Columber constrictor priapus*
Texas rat snake	*Elaphe obsolete lindheimeri*
Eastern hognose snake	*Heterodon platyrhinos*
Eastern coachwhip	*Masticophis flagellum flagellum*

Common Name	Scientific Name
Yellow-bellied water snake	*Nerodia fasciata*
Western worm snake	*Carphophis amoenus*
Ringneck snake	*Diadophis punctatus*
Flathead snake	*Tantilla gracilis*
Plains blackhead snake	*Tantilla nigriceps*
Texas night snake	*Hypsiglena torquata*
Ground snake	*Sonora semiannulata*
Rough green snake	*Opheodrys aestivus*
Coachwhip	*Masticophis flagellum*
Racer	*Columber constrictor*
Great plains rat snake	*Elaphe guttata*
Prairie kingsnake	*Lampropeltis calligaster*
Speckled kingsnake	*Lampropeltis getulus*
Milk snake	*Lampropeltis triangulum*
Northern scarlet snake	*Cemophora coccinea*
Brown snake	*Storeria dekayi*
Northern redbelly snake	*Storeria occipitomaculata*
Rough earth snake	*Virginia striatula*
Western earth snake	*Virginia valeriae*
Lined snake	*Tropidoclonion lineatum*
Western ribbon snake	*Thamnophis proximus*
Common garter snake	*Thamnophis sirtalis*
Graham's crayfish snake	*Regina grahamii*
Diamondback water snake	*Nerodia rhombifera*
Plain-bellied water snake	*Nerodia erythrogaser*
Midland water snake	*Nerodia sipedon*
Copperhead	*Agkistrodon contortrix*
Western pygmy rattlesnake	*Sistrurus miliarius*
Timber rattlesnake	*Crotalus horridus*
Western diamondback rattlesnake	*Crotalus atrox*
Common snapping turtle	*Chelydra serpentine*
Alligator snapping turtle	*Macroclemys temminckii*
Stinkpot	*Sternotherus odoratus*
Mississippi mud turtle	*Kinosternon subrubrum*
Razorback musk turtle	*Sternotherus carinatus*
Mississippi map turtle	*Graptemys kohnii*

Common Name	Scientific Name
Ouachita map turtle	*Graptemys pseudogeograhica*
Missouri cooter	*Pseudemys floridana*
Red-eared turtle	*Trachemys (Pswudemys) scripta*
Eastern box turtle	*Terrapene carolina carolina*
Three-toed box turtle	*Terrapene carolina triunguis*
Ornate box turtle	*Terrapenne ornate*
Midland smooth softshell	*Trionyx muticus*
Spiny softshell	*Trionyx spiniferus*
Fish	
American eel	*Anguilla rostrati*
Drum	*Asladinotus grunnien*
Smallmouth buffalo	*Carpiodes carpio*
Carp	*Cyprnius carpio*
Gizzard shad	*Dorosoma cedidianum*
Mosquitofish	*Gambusia affinis*
Bigmouth buffalo	*Ictioleus bubalus*
Blue catfish	*Ictalurus furcatus*
Yellow bullhead	*Ictalurus natalis*
Shortnose gar	*Lepisosteidal platostomus*
Spotted gar	*Lepisosteus oculatus*
Longnose gar	*Lepisosteus osseus*
Green sunfish	*Lepomis cyanellus*
Warmouth	*Lepomis gulosus*
Bluegill	*Lepomis macrochirus*
Largemouth bass	*Micropterus salmoides*
Golden shiner	*Notemigonus crysoleucas*
White crappie	*Pomoxis annularis*
Black crappie	*Pomoxis nigromaculatus*
Flathead catfish	*Pylodictis olivaris*
Highland Stoneroller	*Campostoma spadiceum*
Red Shiner	*Cyprinella lutrensis*
Redfin Shiner	*Lythrurus umbratlilis*
Bluntnose minnow	*Pimephales notatus*
Fathead minnow	*Pimephales promelas*
Bullhead minnow	*Pimephales vigilax*
Spotted sucker	*Minytrema melanops*
Black bullhead	*Ameiurus melas*

Common Name	Scientific Name
Freckled madtom	*Noturus nocturnus*
Pirate Perch	*Aphredoderus sayanus*
Blackstripe Topminnow	*Fundulus notatus*
Blackspotted Topminnow	*Fundulus olivaceus*
Western Mosquitofish	*Gambusia affinis*
Brook Silverside	*Labidesthes sicculus*
Orangespotted sunfish	*Lepomis humilis*
Bluntnose darter	*Etheostoma chlorosomum*
Slough darter	*Etheostoma gracile*
Least darter	*Etheostoma microperca*
Orangebelly darter	*Etheostoma radiosum*
Redfin darter	*Etheostoma whipplei*
Logperch	*Percina caprodes*
Dusky darter	*Percina sciera*
Insects	
American burying beetle	*Nicrophorus americanas*

APPENDIX E

List of Threatened and Endangered Species That May Occur on MCAAP

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
Phone: (918) 581-7458 Fax: (918) 581-7467
http://www.fws.gov/southwest/es/Oklahoma/

In Reply Refer To: August 24, 2021
Consultation Code: 02EKOK00-2021-SLI-2604
Event Code: 02EKOK00-2021-E-07510
Project Name: Integrated Natural Resources Management Plan (INRMP) Revision

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Non-federal entities conducting activities that may result in take of listed species should consider seeking coverage under section 10 of the ESA, either through development of a Habitat Conservation Plan (HCP) or, by becoming a signatory to the General Conservation Plan (GCP) currently under development for the American burying beetle. Each of these mechanisms provides the means for obtaining a permit and coverage for incidental take of listed species during otherwise lawful activities.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit through our Project Review step-wise process http://www.fws.gov/southwest/es/oklahoma/OKESFO%20Permit%20Home.htm.

Attachment(s):

- Official Species List

- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

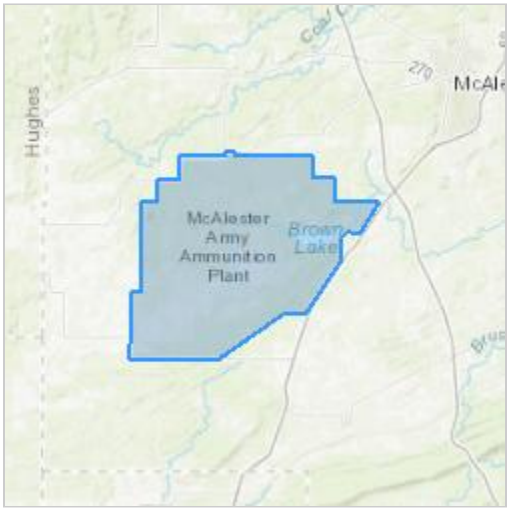
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
(918) 581-7458

Project Summary

Consultation Code: 02EKOK00-2021-SLI-2604
Event Code: 02EKOK00-2021-E-07510
Project Name: Integrated Natural Resources Management Plan (INRMP) Revision
Project Type: LAND - MANAGEMENT PLANS
Project Description: Generate official species list for inclusion into revision of MCAAP's INRMP

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.820011699999995,-95.934705799863,14z



Counties: Pittsburg County, Oklahoma

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

Insects

NAME	STATUS
American Burying Beetle *Nicrophorus americanus* Population: Wherever found, except where listed as an experimental population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/66	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20

NAME	BREEDING SEASON
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

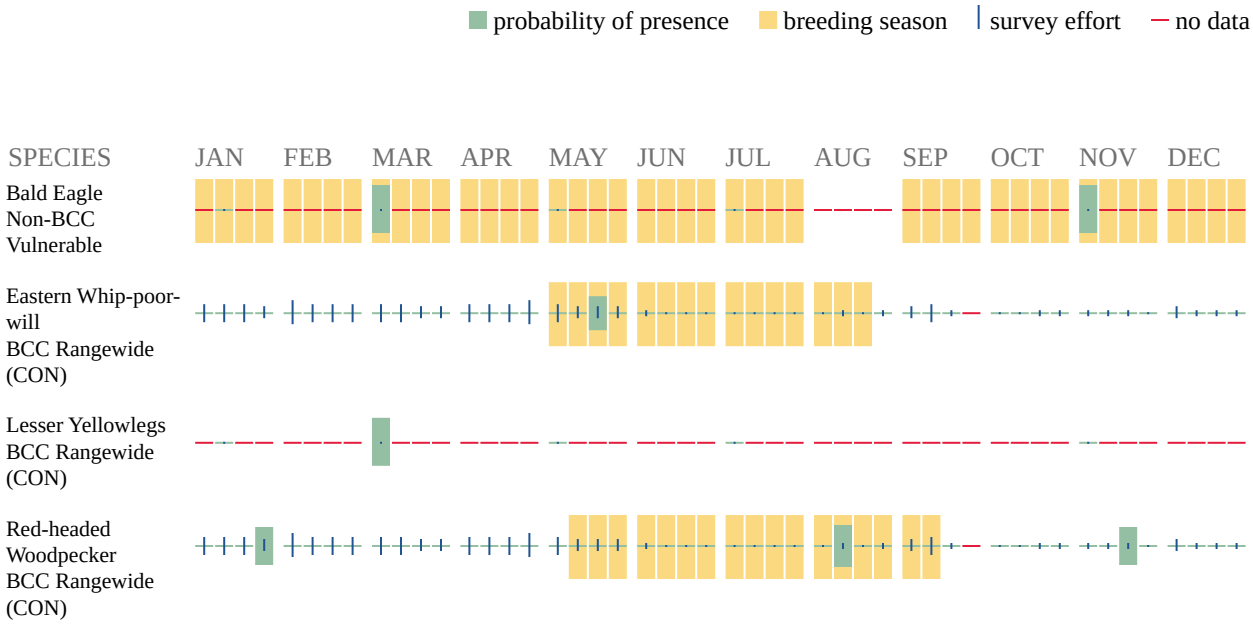
Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of

certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

APPENDIX F
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN MCALESTER ARMY AMMUNITION PLANT, OKLAHOMA

This McAlester Army Ammunition Plant (MCAAP) Integrated Wildland Fire Management Plan uses guidance and format presented in the Army Integrated Wildland Fire Management Plan Template, with exceptions as needed for MCAAP conditions. It is intended to be an integral part of the Integrated Natural Resources Management Plan. This Integrated Wildland Fire Management Plan has been integrated with other environmental plans, particularly the Integrated Cultural Resources Management Plan.

1. Goals and Objectives

Goal. Provide wildland fire suppression support that prevents wildland fires from escaping the Installation, minimizes damage to the environment, and ensures no threat to human life.

Objective 1. Provide a system that ensures timely notification of wildfires. Educating military personnel and civilians who use MCAAP on prompt notification and proper information of wildfires is critical.

Objective 2. Use fire regulations (MCAAP Reg. 420-1) to prevent wildfires from occurring.

Objective 3. Maintain fuel loads at levels appropriate for the prevention of major wildfires. Prescribed burns are conducted on a 5 year rotation with some areas burned every third year and others annually. Regular burning promotes the native ecosystem, prairie and crosstimber, and controls fuels in heavily vegetated areas resulting in lower intensity wildfires.

Objective 4. Comply with smoke management and air quality requirements regarding wildland fires.

Objective 5. Cooperate with MCAAP and other agencies for wildland fire management.

Objective 6. Provide for firefighter and public safety with regard to wildland fire management.

Objective 7. Use wildland fire management to support the military mission on MCAAP.

Objective 8. Ensure wildland fire management is consistent with objectives of natural and cultural resources management and their compliance requirements on MCAAP.

Objective 9. Identify funding requirements for implementation of this Integrated Wildland Fire Management Plan.

2. Organizational Structure and Responsibilities

The MCAAP Fire Department is responsible for fire protection and suppression on MCAAP. The Land Management Office (LMO) is responsible for planning and initiating prescribed burns and supports the MCAAP Fire Department, as necessary, with regard to wildfires on MCAAP.

Ammunition production and storage facilities on MCAAP provide additional challenges to wildfire suppression and prescribed burning. MCAAP Fire Department personnel will respond to wildfires; if assistance is required, the LMO may be contacted.

If LMO personnel happen to be the first to arrive on the scene of a wildfire, they will serve as Incident Commander on that fire unless superseded by a more qualified individual. The Incident Commander communicates to the appropriate organization the precise location and intensity of the fire and whether additional equipment and personnel are needed. Decisions on suppression techniques will be made by the Incident Commander.

3. Interagency Cooperation and Mutual Aid Agreements

MCAAP has established mutual aid agreements with the city of McAlester Fire Department and with the Emergency Management Agency, a county organization. Mutual aid from surrounding area volunteer fire departments is available to MCAAP through the Emergency Management Agency agreement.

4. Smoke Management and Air Quality

Smoke management and air quality are integral parts of each Prescribed Burn Execution Form, which are prepared for each prescribed burn planned on MCAAP. The Prescribed Burn Execution Form is the MCAAP site specific burn plan.

5. Safety and Emergency Operations

The on-site Incident Commander will ensure all safety precautions are taken. Except in the event of a threat to human life, no wildfire situation will require placing a firefighter or equipment in extreme danger. All efforts are to be made that military and civilian personnel are not in any danger from the wildfire. Firefighters must wear all necessary protective equipment.

6. Risk Assessment Decision Analysis Processes

The Installation Wildland Fire Program Manager (IWFPM) will review the Fire Weather issued by the National Weather Service. Prescribed burns will be conducted within the parameters set forth below:

- a temperature outside of the 50-85^0 F range,
- a wind speed outside of the 5-15 mph range,
- a relative humidity outside of the 25-65% range,
- a fuel moisture outside of the 8-20% range,
- an atmosphere with eminent storm fronts, and
- inadequate personnel or equipment are available to manage the prescribed burn.

However, the IWFPM may allow prescribed burning operations outside of the above stated parameters based on the location of the planned burn, the conditions of the area to be burned and the conditions of the surrounding areas, the desired results, etc. MCAAP Fire Department support and concurrence must be obtained regarding such decisions.

7. Wildland Fire History

The MCAAP Fire Department has a database (2001 to present) of all wildland fire incidents occurring on the Installation. This information is maintained and available from the MCAAP Fire Department.

8. Natural and Cultural Resource Considerations

Known cultural resources sites are protected; some are signed; and natural resources sensitive areas are well known. Personnel will avoid these areas when maintaining and constructing firebreaks or any other soil-disturbing activities.

Regular prescribed burning benefits the prairie and cross timber ecosystems by removing midstory, allowing native vegetation to proliferate. It also controls invasive species, such as winged elm and eastern red cedar.

9. Mission Considerations

MCAAP provides facilities for the production and storage of ammunition and a range of military training opportunities. Downtime for production, storage operations, or training from wildfires is not desirable. This plan provides for timely wildfire response with minimal impact to these activities. The prescribed

burn program allows for good vegetation management, invasive species control, and less intense wildfires.

10. Wildland Fuel Factors

In 1996 the Installation implemented a 5-year burn cycle that minimizes the excessive build-up of fuel loads. Areas with higher fuel loadings are burned on a 3-year cycle or even annually depending on factors, such as location of the burn, conditions of the area to be burned, conditions of areas surrounding the planned burn, desired results, etc. About 3,000 acres are prescribe burned annually.

11. Monitoring Requirements

Each wildfire and prescribed burn produces a different set of monitoring requirements. Several factors affect monitoring required, such as size, location, weather, mission operations, safety, fire behavior, and resources available. Fires are evaluated by the IWFPM. Evaluations are used to determine the extent of damage to resources in the case of wildfire. Prescribed burns are evaluated to determine if objectives were attained and to ensure desired results in future burns.

12. Public Relations

Interaction with the public is performed by the Public Affairs Office. If a wildfire situation requires public notification, the information will be forwarded to the command staff. The command staff will be informed of all prescribed burns and wildfires. Information will be made available for persons working on the Installation through the *MCAAP Things You Should Know*, an installation-based weekly newsletter. The Environmental Management Office is notified before a scheduled prescribed burn is initiated. The Environmental Management Office, in turn, notifies the Oklahoma Environmental Office of the intended prescribed burn. Off-post agencies, such as local installation contacts, local law enforcement agencies, and 911 dispatcher, will be directly contacted.

13. Funding Requirements

Funding for wildfire suppression and for prescribed burns will be directly supported by the Installation through Operations and Maintenance funds.

14. Personnel Training and Certification Standards and Records

Records of training and experience for LMO personnel will be maintained by the IWFPM. Records of training and experience for MCAAP Fire Department personnel will be maintained by the MCAAP Fire Department. Records will be periodically reviewed to ensure personnel are current in all aspects of training requirements.

15. Physical Fitness Standards

The physical fitness standards for prescribed burning and wildfire suppression performed by LMO personnel are met through the annual medical exam administered through Occupational Health. Documentation of the annual medical exam shall be placed in the employees' official personnel folders, as well as documented on the fire qualification card, known as the red card. LMO personnel performing prescribed burns and wildfire suppression are required to be red-carded, which includes meeting a standard of physical fitness.

Staffing Requirements

Required staffing necessary for wildland fire management is the current MCAAP Fire Department staff plus the Chief LMO and the LMO wildlife technician for prescribed burning. These positions are necessary to provide adequate protection to military and civilian personnel and natural resources on MCAAP.

Training Requirements

MCAAP will provide a means for each employee to maintain training levels and encourage use of new technology through Internet access and personal contacts. The LMO will explore new equipment ideas and remain open-minded regarding their procurement and use.

APPENDIX G

LETTERS TO AND COMMENTS FROM AGENCIES AND TRIBES

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DEPARTMENT OF THE ARMY
MCALESTER ARMY AMMUNITION PLANT
1 C TREE ROAD
MCALESTER OK 74501-9002

REPLY TO
ATTENTION OF

May 11, 2021

Directorate of Engineering and Public Works

SUBJECT: Updates to the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025 – McAlester Army Ammunition Plant – McAlester, OK.

Mr. Robert Cast
Caddo Indian Tribe
Tribal Historic Preservation Office
P.O. Box 487
Binger, OK 73009

Mr. Cast:

McAlester Army Ammunition Plant (MCAAP) has completed updates on the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025. The Sikes Act - section 101(a)(2) – specifies that preparation of the INRMP be conducted in cooperation with the U.S. Fish and Wildlife Service, along with the Oklahoma Department of Wildlife Conservation. The INRMP is MCAAP's natural resources management plan for the next five years.

The final draft of this document is available for your review and comment.

If you would like to review the document, please contact Ryan Toby, MCAAP Land Manager, by phone at 918-420-6611 or via email at ryan.toby.civ@mail.mil. He will ensure that the document is sent to you via email for your review and comments.

MCAAP is interested in any input from the Caddo Indian Tribe regarding MCAAP's natural resources plan. Please let us know of any suggested revisions or additions, or if you feel a meeting is warranted to discuss this update and/or MCAAP's natural resources management plan effort.

Please feel free to contact Mr. Toby via phone or email to coordinate a meeting. We look forward to hearing from you.

Sincerely,

Steven W. Cox,
Director of Engineering and Public Works

DEPARTMENT OF THE ARMY
MCALESTER ARMY AMMUNITION PLANT
1 C TREE ROAD
MCALESTER OK 74501-9002

REPLY TO
ATTENTION OF

May 11, 2021

Directorate of Engineering and Public Works

SUBJECT: Updates to the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025 – McAlester Army Ammunition Plant – McAlester, OK.

Gary McAdams,
Tribal Historic Preservation Officer
Wichita and Affiliated Tribes
P.O. Box 7
Anadarko, OK 73005

Mr. McAdams:

McAlester Army Ammunition Plant (MCAAP) has completed updates on the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025. The Sikes Act - section 101(a)(2) – specifies that preparation of the INRMP be conducted in cooperation with the U.S. Fish and Wildlife Service, along with the Oklahoma Department of Wildlife Conservation. The INRMP is MCAAP's natural resources management plan for the next five years.

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If you would like to review the document, please contact Ryan Toby, MCAAP Land Manager, by phone at 918-420-6611 or via email at ryan.toby.civ@mail.mil. He will ensure that the document is sent to you via email for your review and comments.

MCAAP is interested in any input from the Wichita and Affiliated Tribes regarding MCAAP's natural resources plan. Please let us know of any suggested revisions or additions, or if you feel a meeting is warranted to discuss this update and/or MCAAP's natural resources management plan effort.

Please feel free to contact Mr. Toby via phone or email to coordinate a meeting. We look forward to hearing from you.

Sincerely,

Steven W. Cox,
Director of Engineering and Public Works

DEPARTMENT OF THE ARMY
MCALESTER ARMY AMMUNITION PLANT
1 C TREE ROAD
MCALESTER OK 74501-9002

REPLY TO
ATTENTION OF

May 11, 2021

Directorate of Engineering and Public Works

SUBJECT: Updates to the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025 – McAlester Army Ammunition Plant – McAlester, OK.

Tamara Francis-Fourkiller, Chairman
Caddo Indian Tribe
Cultural Preservation Office
P.O. Box 487
Binger, OK 73009

Ms. Francis-Fourkiller:

McAlester Army Ammunition Plant (MCAAP) has completed updates on the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025. The Sikes Act - section 101(a)(2) – specifies that preparation of the INRMP be conducted in cooperation with the U.S. Fish and Wildlife Service, along with the Oklahoma Department of Wildlife Conservation. The INRMP is MCAAP's natural resources management plan for the next five years.

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If you would like to review the document, please contact Ryan Toby, MCAAP Land Manager, by phone at 918-420-6611 or via email at ryan.toby.civ@mail.mil. He will ensure that the document is sent to you via email for your review and comments.

MCAAP is interested in any input from the Caddo Indian Tribe regarding MCAAP's natural resources plan. Please let us know of any suggested revisions or additions, or if you feel a meeting is warranted to discuss this update and/or MCAAP's natural resources management plan effort.

Please feel free to contact Mr. Toby via phone or email to coordinate a meeting. We look forward to hearing from you.

Sincerely,

Steven W. Cox,
Director of Engineering and Public Works

DEPARTMENT OF THE ARMY
MCALESTER army AMMUNITION PLANT
1 C TREE ROAD
MCALESTER OK 74501-9002

REPLY TO
ATTENTION OF

May 11, 2021

Directorate of Engineering and Public Works

SUBJECT: Updates to the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025 – McAlester Army Ammunition Plant – McAlester, OK.

Everett Brandy,
Tribal Historical Preservation Office
Quapaw Tribe of Indians of Oklahoma
P.O. Box 765
Quapaw, OK 74363

Mr. Brandy:

McAlester Army Ammunition Plant (MCAAP) has completed updates on the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025. The Sikes Act - section 101(a)(2) – specifies that preparation of the INRMP be conducted in cooperation with the U.S. Fish and Wildlife Service, along with the Oklahoma Department of Wildlife Conservation. The INRMP is MCAAP's natural resources management plan for the next five years.

The final draft of this document is available for your review and comment.

If you would like to review the document, please contact Ryan Toby, MCAAP Land Manager, by phone at 918-420-6611 or via email at ryan.toby.civ@mail.mil. He will ensure that the document is sent to you via email for your review and comments.

MCAAP is interested in any input from the Quapaw Tribe regarding MCAAP's natural resources plan. Please let us know of any suggested revisions or additions, or if you feel a meeting is warranted to discuss this update and/or MCAAP's natural resources management plan effort.

Please feel free to contact Mr. Toby via phone or email to coordinate a meeting. We look forward to hearing from you.

Sincerely,

Steven W. Cox,
Director of Engineering and Public Works

DEPARTMENT OF THE ARMY
MCALESTER ARMY AMMUNITION PLANT
1 C TREE ROAD
MCALESTER OK 74501-9002

REPLY TO
ATTENTION OF

May 11, 2021

Directorate of Engineering and Public Works

SUBJECT: Updates to the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025 – McAlester Army Ammunition Plant – McAlester, OK.

Gary Batton, Chief
Choctaw Nation of Oklahoma
P.O. Box 1210 – 6th and Locust Street
Durant, OK 74702-1210

Chief Batton:

McAlester Army Ammunition Plant (MCAAP) has completed updates on the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025. The Sikes Act - section 101(a)(2) – specifies that preparation of the INRMP be conducted in cooperation with the U.S. Fish and Wildlife Service, along with the Oklahoma Department of Wildlife Conservation. The INRMP is MCAAP's natural resources management plan for the next five years.

The final draft of this document is available for your review and comment.

If you would like to review the document, please contact Ryan Toby, MCAAP Land Manager, by phone at 918-420-6611 or via email at ryan.toby.civ@mail.mil. He will ensure that the document is sent to you via email for your review and comments.

MCAAP is interested in any input from the Choctaw Nation regarding MCAAP's natural resources plan. Please let us know of any suggested revisions or additions, or if you feel a meeting is warranted to discuss this update and/or MCAAP's natural resources management plan effort.

Please feel free to contact Mr. Toby via phone or email to coordinate a meeting. We look forward to hearing from you.

Sincerely,

Steven W. Cox,
Director of Engineering and Public Works

DEPARTMENT OF THE ARMY
MCALESTER army AMMUNITION PLANT
1 C TREE ROAD
MCALESTER OK 74501-9002

REPLY TO
ATTENTION OF

May 11, 2021

Directorate of Engineering and Public Works

SUBJECT: Updates to the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025 – McAlester Army Ammunition Plant – McAlester, OK.

Bill Anoatubby, Governor
Chickasaw Nation of Oklahoma
Tribal Historic Preservation Office
P.O. Box 1548
Ada, OK 74821

Governor Anoatubby:

McAlester Army Ammunition Plant (MCAAP) has completed updates on the *Integrated Natural Resources Management Plan (INRMP)* for 2021-2025. The Sikes Act - section 101(a)(2) – specifies that preparation of the INRMP be conducted in cooperation with the U.S. Fish and Wildlife Service, along with the Oklahoma Department of Wildlife Conservation. The INRMP is MCAAP's natural resources management plan for the next five years.

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If you would like to review the document, please contact Ryan Toby, MCAAP Land Manager, by phone at 918-420-6611 or via email at ryan.toby.civ@mail.mil. He will ensure that the document is sent to you via email for your review and comments.

MCAAP is interested in any input from the Chickasaw Nation regarding MCAAP's natural resources plan. Please let us know of any suggested revisions or additions, or if you feel a meeting is warranted to discuss this update and/or MCAAP's natural resources management plan effort.

Please feel free to contact Mr. Toby via phone or email to coordinate a meeting. We look forward to hearing from you.

Sincerely,

Steven W. Cox,
Director of Engineering and Public Works

APPENDIX H

Record of Environmental Consideration (REC)

Record of Environmental Consideration (REC)

TO: Traci McMurtrey

FROM: Sherry Connor

Project title: Update of the Integrated Natural Resource Management Plan (INRMP) for McAlester Army Ammunition Plant (MCAAP).

Description of Proposed Action: This action covers the preparation for the update of the Integrated Natural Resource Management Plan (INRMP) for McAlester Army Ammunition Plant (MCAAP). This update reflects that implementation and current activities conducted at MCAAP.

This Integrated Natural Resources Management Plan (INRMP) guides implementation of the natural resources program on McAlester Army Ammunition Plant, Oklahoma (MCAAP) from 2021 through 2025.

The program conserves MCAAP's land and natural resources and helps ensure compliance with environmental laws and regulations. The INRMP also helps ensure the maintenance of quality lands to accomplish MCAAP's critical military mission on a sustained basis.

Preparation and implementation of this INRMP are required by the Sikes Act (Title 16 of the United States Code [U.S.C.] section 670 *et seq.*), Department of Defense Instruction 4715.03 (*Natural Resources Conservation Program*), Army Regulation (AR) 200-1 (*Environmental Protection and Enhancement*), and Army Memorandum (21 March 1997), *Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and Integrated Natural Resources Management Plan (INRMP).*

This INRMP was prepared using Army Memorandum (25 May 2006) *Guidance for Implementation of the Sikes Act Improvement Act.*

This INRMP helps MCAAP comply with other federal and state laws, most notably laws associated with environmental documentation, wetlands, endangered species, and wildlife management in general.

Compliance requirements at least partially affecting implementation of the INRMP are listed in section 1.5, *Compliance Requirements* and Appendix B. This plan describes how MCAAP will implement provisions of AR 200-1 and local regulations, principally MCAAP regulations 420-5 (*Hunting Regulation*) and 420-7 (*Fishing Regulation*).

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires disclosure of environmental impacts created by proposed major federal actions. AR 200-1 outlines NEPA compliance requirements of proposed Army actions. This document incorporates this requirement by integrating into this single document the installation's INRMP and the associated NEPA analysis—in this case, a record of environmental consideration—for implementing the INRMP.

Sikes Act Improvement Act

The Sikes Act, as amended according to the Sikes Act Improvement Act of 1997, states, The Secretary of Defense shall carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation under the jurisdiction of the Secretary. Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program to provide for the conservation and rehabilitation of natural resources on military installations; the sustainable multipurpose Army requirements relating to development and approval of INRMPs are outlined in Army Regulation (AR) 200-1, Army Facilities Management.

The INRMP will provide the basis and criteria for protecting and enhancing natural resources using landscape and ecosystem perspectives, consistent with the military mission. The INRMP applies to organizations internal and external to MCAAP that are involved with or interested in the management or use of MCAAP natural resources and lands. This application includes directorates, reserve component units, private groups, and individuals. This INRMP is a component of the MCAAP Master Plan.

The Sikes Act [16 USC 670 a (b)(1)] requires that INRMPs include:

- fish and wildlife management, land management, forest management, and wildlife-oriented recreation;
- fish and wildlife habitat enhancement or modifications;
- wetland protection, enhancement, and restoration where necessary for support of fish, wildlife, or plants;
- integration of, and consistency among, the various activities conducted under the INRMP;
- establishment of specific natural resources management goals and objectives and time frames for proposed actions;

- sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources;
- public access to the military installation that is necessary or appropriate for sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources, subject to requirements necessary to ensure safety and military security;
- enforcement of applicable natural resource laws;
- no net loss in the capability of military installation lands to support the military mission of the installation;
- regular review of this INRMP and its effects, not less often than every five years;
- provisions for spending hunting and fishing permit fees exclusively for the protection, conservation, and management of fish and wildlife, including habitat improvement, and related activities in accordance with the INRMP;
- exemption from procurement of services under Office of Management and Budget Circular A-76 and any of its successor circulars; and
- priority for contracts involving implementation of this INRMP to state and federal agencies having responsibility for conservation of fish and wildlife.

This INRMP includes these items if they are applicable to natural resources management and land use at MCAAP.

Endangered Species Act

This INRMP has the signatory approval of the U.S. Fish and Wildlife Service (USFWS). This signature approval includes agreement that the INRMP complies with the Endangered Species Act. Review of the INRMP is informal consultation with regard to the Endangered Species Act.

The INRMP will provide the basis and criteria for protecting and enhancing natural resources using landscape and ecosystem perspectives, consistent with the military mission. The INRMP applies to organizations internal and external to MCAAP that are involved with or interested in the management or use of MCAAP natural resources and lands. This application includes directorates, reserve component units, private groups, and individuals.

Anticipated Date and/ or Duration of Proposed Action: August 2021 to August 2025.

Reason for Using Record of Environmental Consideration: The proposed action has not been segmented, no extraordinary circumstances exist and all screening criteria

are met per 32 CFR 651.29. The MCAAP Environmental Checklist has been completed for this Record of Environmental Consideration. The proposed action is categorically excluded under 32 CFR Part 651, appendix B, and (b) (3).

Preparation of regulations, procedures, manuals, and other guidance documents that implement, without substantive change, the applicable HQDA or other federal agency regulations, procedures, manuals, and other guidance documents that have been environmentally evaluated (subject to previous NEPA review).

McAlester Army Ammunition Plant have successfully implemented and have updated the Integrated Natural Resource Management Plan. The INRMP provides the basis for the conservation and protection of natural resources. It will help reduce vegetation loss and soil erosion. It will reduce the potential for environmental pollution. It will provide biodiversity conservation. Plan implementation will increase overall knowledge of the operation of MCAAP ecosystems through surveys and research.

Date: 6-29-2021

Sherry Connor, JMMC-DE
Chief Business and Planning
Directorate of Engineering
Action Proponent

Date: 7-7-2021

Traci McMurtrey, JMMC-EM
Environmental Management Office
NEPA Program Manager

Checklist for Record of Environmental Consideration (REC) for the update of Integrated Natural Resource Management Plan (INRMP) for McAlester Army Ammunition Plant (MCAAP).

1. Historical Perspective

General

Construction began in 1942 and MCAAP was established on May 20, 1943. Originally a Naval facility designated the McAlester Navy Ammunition Depot, it was one of two ammunition production facilities constructed by the Navy Bureau of Yards and Docks in 1942, the other being located near Hastings, Nebraska. More than 2,000 buildings were constructed at the plant, the majority of which were ammunition storage facilities. During World War II the depot employed more than 8,000 people and produced 325,000 tons of ammunition (Geo-Marine, 1996). Military personnel strength peaked at 1,468 in 1944 and civilian employee strength peaked at 8,630 in 1945 (Woodside, 1947).

Following World War II employment declined significantly, but production continued during the Cold War with particularly intensive activity during the Korean War and Vietnam Conflict. Civilian employment fell to an all-time low of 610 in 1958. During Desert Shield and Desert Storm actions, MCAAP hired 200 additional employees and produced naval bombs (Geo-Marine, 1996).

MCAAP now employs 1,668 people who are assigned to ammunition production, storage, and demilitarization operations and various support functions. MCAAP is actively seeking alternatives to open burning and open detonation of obsolete ammunition.

As the Department of Defense's largest explosive storage facility, MCAAP is a major ammunition storage site for all branches of the Armed Forces. MCAAP's 2,436 storage magazines have nearly nine million square feet of covered explosives storage space.

2. Land Acquisition

MCAAP is comprised of 45,000 acres of federally-owned land (with an easement over a few more acres) within Pittsburg County, Oklahoma. When Pearl Harbor was bombed in 1941, Hawthorne, Nevada was the nation's only Naval Ammunition Depot to support the Pacific Fleet. However, the Navy had started building an ammunition depot at Crane, Indiana to support the Atlantic Fleet and was actively seeking sites for at least three other inland depots. A group of prominent citizens in McAlester formed a task force to secure one of the depots for McAlester. With the aid of U.S. Senator Elmer Thomas and Congressman Wilbur Cartwright, the task force convinced the Navy to consider McAlester as a depot site. On June 10, 1942 the Navy announced that it had chosen McAlester as a site for an ammunition depot. Land for the plant was purchased in 1942 (Public Affairs Office, 1998).

3. INRMP Organization

a. Has the activity/process previously been conducted at the installation? (42 USC 4321).

Yes, this is within MCAAPs standard scope of work. The INRMP is organized in distinct categories;

- Section 1 describes general relationships between natural resources management and the overall MCAAP mission. It lists compliance requirements, describes the natural resources management philosophy as a whole, describes regional programs, and provides a summary of the NEPA process and alternatives used to develop the EA portion of this INRMP.
- Section 2 identifies responsible parties and their roles in implementation of this INRMP.
- Section 3 describes the affected environment (physical, biological, and human) at MCAAP, including a description of the military mission and land management units.
- Section 4 describes natural resources programs within the responsibility of the Environmental Office at MCAAP, using specific project descriptions.
- Section 5 describes programs directly related to natural resources, using specific project descriptions, some of which are under the responsibility of other MCAAP organizations.
- Section 6 identifies unresolved issues.
- Section 7 provides means used for implementing this INRMP, including organization, personnel, external assistance, data analysis, project summary, funding, and command support.
- Section 8 provides a conclusion to the EA.
- References documents all sources referenced in this INRMP.
- Agencies and Persons Consulted identifies local, state, and federal agencies and individuals consulted by the preparers of this INRMP for their expertise.
- Plan Preparers identifies individuals, with their qualifications, who prepared this document.
- The Distribution List identifies all agencies, organizations, and individuals to whom copies of this INRMP were sent.
- The Acronyms section lists all acronyms used and their meaning.
- Appendices contain information or data relevant to natural resources management on MCAAP.
- For those who are primarily interested in natural resources projects planned for 2021-2025, they are described in sections 4, 5, and 7; summarized for budget purposes in sections 7.5, *Implementation Funding Options*, and 7.6, *INRMP Implementation Costs*, and summarized by project with abbreviated goals and objectives in Appendix A.

b. Will the activity/process require preparation of an Environmental Assessment? Environmental Impact Statement? Does a Categorical Exclusion as identified in (32 CFR Part 651) adequately cover the projected use? Explain.

Categorical Exclusion; the action has not been segmented and no exceptional circumstances exist. A Record of Environmental Consideration was prepared.

5.. ENVIRONMENTAL PROGRAM:

a. What effect will the proposed activity/process have on the current Environmental Programs?
Research of proposed scope of documented program. Known cultural resources sites are protected and natural resources sensitive areas are well known. Personnel will avoid these areas when maintaining and constructing firebreaks or any other soil-disturbing activities. Regular prescribed burning benefits the prairie and cross timber ecosystems by removing midstory, allowing native vegetation to proliferate. The program controls invasive species, such as eastern red cedar and feral hogs.

b. What requirements of Environmental Management System (EMS) is the contractor responsible for following?
MCAAP Environmental Management System (EMS) is certified conformant to ISO14001:2015 standard. EMS includes fence to fence activities of tenants, contractors, and visitors.

6.. Natural Resources:

a. Is there any threatened/endangered species found at MCAAP?
American burying beetles are found in the soil and leaf litter of a variety of habitats on MCAAP. Soil and leaf litter disturbance could adversely affect American burying beetles by crushing, displacing, and/or separating adults from broods. Activities that potentially could affect the American burying beetle on the Plant include creating and maintaining firebreaks, food plots, hay cutting, brush hogging for wildlife openings, and prescribed burning. While firebreaks may affect the American burying beetle, they must be maintained for Installation safety and mission. Firebreaks also comprise a small fraction of the Plant's land. Food plots, hay cutting, and brush hogging would be expected to have minimal, if any, impact on American burying beetles. Based on informal consultation with USFWS, prescribed burning during summer has minimal impact to the beetles. Food plots affect a much smaller area and hay cutting and brush hogging are much slower actions that have a smaller area of disturbance than prescribed burning. Also, brush hogging for wildlife openings occurs at a height of 12-14 inches. Timing of bush control occurs between August and October, mostly after the American burying beetle active period, and the duff and litter layer are not severely impacted. MCAAP surveys indicate an upward trend in the American burying beetle population, indicating normal management practices are not having a negative impact that is not overcome with long-term benefits from these practices.

b. Are project sites surveyed for the presence of American Burying Beetle?
Project sites are evaluated for the presence of the American burying beetle prior to significant ground disturbance, if required by the USFWS. MCAAP continues to minimize or avoid any adverse effects on the American burying beetle and its habitat.

7.. SAFETY/INDUSTRIAL HYGIENE:

Are there safety and health impacts?
Integrated Natural Resource Management shall comply with the all applicable OSHA, Army, State and MCAAP rules, regulations, codes, plans, and practices.