Final

Description of the Proposed Action and Alternatives

for the Programmatic Environmental Assessment Addressing Upgrade of the Stormwater Drainage System

Kirtland Air Force Base, New Mexico

November

2017

ACRONYMS AND ABBREVIATIONS

ABW	Air Base Wing
AFB	Air Force Base
AFGSC	Air Force Global Strike Command
AMAFCA	Albuquerque Metropolitan Arroyo Flood Control Authority
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DoD	Department of Defense
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
NEPA	National Environmental Policy Act
NOA	Notice of Availability
PEA	Programmatic Environmental Assessment
SNL	Sandia National Laboratories
US	United States
USAF	United States Air Force
USFS	United States Forest Service

Cover Sheet

Final Description of the Proposed Action and Alternatives for the Programmatic Environmental Assessment Addressing Upgrade of the Stormwater Drainage System at Kirtland Air Force Base, New Mexico

Responsible Agencies: United States Air Force (USAF), Air Force Global Strike Command, 377th Air Base Wing

Affected Location: Kirtland Air Force Base (AFB), New Mexico

Report Designation: Final Description of the Proposed Action and Alternatives for a Programmatic Environmental Assessment (PEA)

Abstract: The USAF proposes to develop, upgrade, and maintain stormwater drainage systems and conduct arroyo repair and damage-avoiding measures at Kirtland AFB. The purpose of the Proposed Action is to meet current standards and reduce flooding and standing water issues that occur on the installation. The Proposed Action is needed because existing drainage facilities have deteriorated and clogged to the point where extensive work is needed to reestablish an effective stormwater drainage system. Ditches, culverts, and pipes have sedimented and retention basins are eroded and sedimented. Standing stormwater created by clogged ditches and flat ground surfaces poses hazards to traffic and undermines roads, parking lots, and foundations. Outdoor storage areas require berms and retention structures to control stormwater runoff. Revegetation and other measures are needed to control discharges of suspended solids. Outlet structures are nonexistent, causing erosion to arroyos during storms. Arroyo work is required to repair erosion damage and reduce the potential for additional damage in the future.

Under the No Action Alternative, Kirtland AFB would take no action. Kirtland AFB would not develop, upgrade, and maintain stormwater drainage systems or conduct arroyo repairs. Stormwater drainage problems would worsen as existing facilities silt up and deteriorate further; damage to roads, parking lots, and foundations would increase, requiring costly repairs and worsening traffic hazards during heavy rains; and erosion of the arroyos on the installation would continue.

This Description of the Proposed Action and Alternatives will become Sections 1 and 2 of the PEA, which will analyze the potential environmental impacts associated with the Proposed Action and alternatives, including the No Action Alternative, and aid in determining whether a Finding of No Significant Impact can be prepared or an Environmental Impact Statement is required.

Written comments and inquiries regarding this document should be directed by mail to the Kirtland AFB National Environmental Policy Act Program Manager, 377 MSG/CEIEC, 2050 Wyoming Boulevard SE, Suite 116, Kirtland AFB, New Mexico 87117-5270, or by email to *KirtlandNEPA@us.af.mil*.

Final

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

FOR THE

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT ADDRESSING UPGRADE OF THE STORMWATER DRAINAGE SYSTEM AT KIRTLAND AIR FORCE BASE, NEW MEXICO

UNITED STATES AIR FORCE

Kirtland Air Force Base, New Mexico

NOVEMBER 2017

Table of Contents

Acronyms and Abbreviations ..... Inside Front Cover

Cover Sheet

1. Purpose of and Need for the Proposed Action 1-1

1.1 INTRODUCTION 1-1

1.2 PROJECT LOCATION AND KIRTLAND AFB BACKGROUND 1-1

1.3 PURPOSE AND NEED 1-4

1.4 SCOPE OF THE PROGRAMMATIC ENVIRONMENTAL ASSESSMENT 1-5

1.4.1 NEPA Compliance Requirements 1-5

1.4.2 Intergovernmental and Stakeholder Coordination 1-6

1.4.3 Public and Agency Review of Draft PEA 1-7

1.5 COOPERATING AGENCIES 1-7

2. Proposed Action and Alternatives 2-1

2.1 PROPOSED ACTION 2-1

2.1.1 Description of Activities Associated with the Proposed Action 2-1

2.2 SELECTION STANDARDS 2-3

2.3 NO ACTION ALTERNATIVE 2-4

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS 2-4

2.5 COMPARATIVE SUMMARY OF IMPACTS 2-5

3. References 3-1

Figures

1-1. Kirtland AFB Vicinity Map with Land Ownership and Withdrawn Areas 1-2
2-1. Stormwater Drainage Systems and Arroyos on Kirtland AFB 2-2

Tables

1-1. Kirtland AFB Land Ownership 1-1
2-1. Summary of Potential Impacts..... 2-5

Appendix

A: Agency Coordination and Public Involvement

1. Purpose of and Need for the Proposed Action

1.1 Introduction

The United States Air Force (USAF) proposes to develop, upgrade, and maintain stormwater drainage systems and conduct arroyo repair and damage-avoiding measures at Kirtland Air Force Base (AFB), New Mexico. This Description of the Proposed Action and Alternatives will become Sections 1 and 2 of the Programmatic Environmental Assessment (PEA), which will evaluate the potential environmental impacts resulting from the Proposed Action and No Action Alternative.

The PEA will be prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code § 4321 et seq.) and the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] §§ 1500–1508). The USAF is also required to consider the USAF NEPA-implementing regulations, 32 CFR § 989, as amended.

1.2 Project Location and Kirtland AFB Background

Kirtland AFB is in Bernalillo County, southeast of the city of Albuquerque, New Mexico (see **Figure 1-1**). The installation encompasses 51,585 acres with elevations that range from 5,200 to almost 8,000 feet above mean sea level. The Manzanita Mountains on its eastern boundary rise to over 10,000 feet (KAFB 2012a). The land within the installation is owned by a variety of entities (see **Table 1-1**). The northwest portion of Kirtland AFB is developed. The remaining portion of the installation is relatively undeveloped and is used for training and testing missions.

Table 1-1. Kirtland AFB Land Ownership

Kirtland AFB Lands	Acres
USAF Fee Owned	25,612
United States Forest Service (USFS) withdrawn to the Department of Defense (DoD)	15,891
Bureau of Land Management (BLM) withdrawn to DoD	2,549
USAF Total	**44,052**
Department of Energy (DOE) Fee Owned	2,938
USFS withdrawn to DOE	4,595
DOE Total	**7,533**
GRAND TOTAL	**51,585**

Source: KAFB 2012b

Surrounding land uses adjacent to Kirtland AFB include the USFS Cibola National Forest to the northeast and east; the Isleta Pueblo Reservation to the south; Bernalillo County developments to the southwest; residential and business areas of the city of Albuquerque to the west and north; and the Albuquerque International Sunport, hereafter referred to as the Sunport, directly to the northwest.

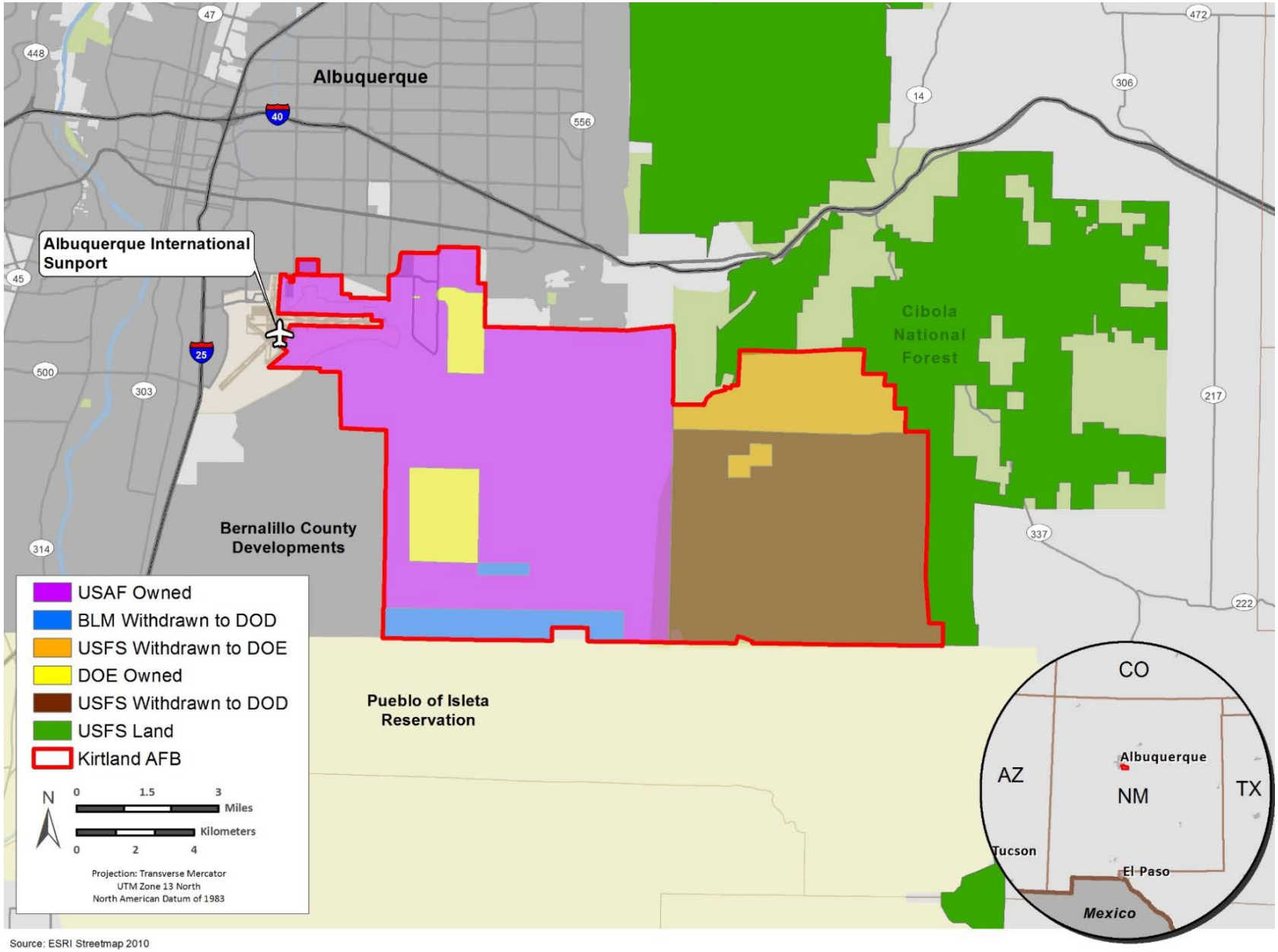

Figure 1-1. Kirtland AFB Vicinity Map with Land Ownership and Withdrawn Areas

Kirtland AFB was established in the late 1930s as a training installation for the United States (US) Army Air Corps. In January 1941, construction of the Albuquerque Army Air Base began with permanent barracks, warehouses, and a chapel. On 1 April 1941, a single B-18 bomber arrived marking the official opening of Albuquerque Army Air Base. Troops soon followed and the installation grew rapidly with the involvement of the United States in World War II. The installation served as a training site for aircrews for many of the country's bomber aircraft, including the B-17, B-18, B-24, and B-29.

In February 1942, Albuquerque Army Air Base was renamed Kirtland Army Air Field in honor of Colonel Roy C. Kirtland, one of the Army's earliest aviation pioneers. In 1942, the US Army Air Corps established a training depot for aircraft support and logistics to the east of Kirtland Army Air Field, near the original private airport, Oxnard Field. The depot became known as Sandia Base. With the completion of the ground crew training program in 1943, Sandia Base was used as a convalescent center for wounded aircrew members, and then as a storage and dismantling facility for war-weary and surplus aircraft as the war ended.

The war years at Kirtland Army Air Field continued to be filled with distinguished records of training entire flight crews for the B-17 and B-24 bombers, and the installation's three schools of advanced flying, bombardier training, and the multi-engine school operated at full capacity. In February 1945, Kirtland Army Air Field participated in training combat crews for the B-29 Super Fortress, which eventually brought an end to the hostilities with Japan by dropping the first atomic bombs on Hiroshima and Nagasaki.

In July 1945, the Los Alamos Laboratory Z-Division was formed to manage the engineering design, production, assembly, and field testing of non-nuclear components of nuclear bombs. In September 1945, the Z-Division transferred its field-testing group to Sandia Base along with staff from the Army Air Corps' 509th Composite Group at Wendover Air Base in Utah to do weapon assembly. The Atomic Energy Commission (now DOE) was created by the US Congress in 1946 as a civilian organization, withdrawing control from the military, with control of atomic energy to include nuclear research and development. In 1948, under the Atomic Energy Commission, the Z-Division was renamed Sandia Laboratory (now Sandia National Laboratories [SNL]) and became a separate branch from the Los Alamos Laboratory. Both labs were born out of America's World War II atomic bomb development effort, the Manhattan Project. Although several military and civilian organizations occupied Sandia Base during this time, the history of the installation is intimately tied to the history of SNL. The US Congress designated Sandia Laboratory as a National Laboratory in 1979.

In February 1946, Kirtland Army Air Field was placed under the Air Materiel Command and its flying and training activities terminated. Its new mission entailed flight test activities for Sandia Laboratory, development of aircraft modifications for weapons delivery, and characterizing nuclear weapon ballistics. In 1947, the US Army Air Corps became the USAF, and Kirtland Army Air Field was renamed Kirtland AFB. In 1949, the USAF established its own Special Weapons Center and testing laboratory at Kirtland Field near Sandia Base, which eventually became Phillips Laboratory and subsequently the Air Force Weapons Laboratory (now the Air Force Research Laboratory). A majority of the test and evaluation activities were conducted on a 46,000-acre tract in the Manzano Mountains, referred to as the New Mexico Proving Ground, on

the southern portion of the installation, which includes USFS lands withdrawn for DoD and DOE research, testing, and development activities. The establishment of these activities at Kirtland AFB was considered ideal due to its proximity to the Los Alamos Laboratory and Sandia Base.

The late 1940s and 1950s were expansion years as both Kirtland AFB and Sandia Base played increasing roles in the nation's defense efforts. New buildings, hangars, and the east-west runway, which is now owned by the city of Albuquerque, were constructed. During this period, air defense, weather, and atomic test squadrons operated from Kirtland AFB, and personnel from both installations took part in 12 nuclear test series conducted by the Atomic Energy Commission in Nevada and the Pacific. In 1958, efforts were underway between the United States and the Soviet Union to agree on a moratorium for atmospheric nuclear testing. The anticipated limitations on determining weapons effects inspired efforts by the Special Weapons Center and Sandia Laboratory to develop methods of simulating nuclear effects with non-nuclear techniques. The Limited Nuclear Test Ban Treaty was signed with the Soviet Union in late 1962, prohibiting nuclear testing in the atmosphere and space, as well as under water.

In 1971, Kirtland AFB and its adjoining military neighbors to the east, Sandia and Manzano Army Bases, were merged to form what is known as Kirtland AFB. On 1 January 1993, Kirtland AFB changed hands to the newly formed Air Force Materiel Command where it remained until 1 October 2015, when it was transferred to the Air Force Global Strike Command (AFGSC). Kirtland AFB is located adjacent to the Sunport, which is a joint-use civilian airport with runways serving civilian, military, and other government aircraft. Under the terms of a joint-use lease, the 377th Air Base Wing (ABW) provides fire protection (including crash and rescue) for the Sunport.

Kirtland AFB is the sixth largest installation in the USAF. It is operated by 377 ABW, a unit of AFGSC's 20th Air Force and the host unit at Kirtland AFB. Missions at Kirtland AFB fall into four major categories: research, development, and testing; readiness and training; munitions maintenance; and support to installation operations for more than 100 mission partners. The primary mission of 377 ABW is to execute nuclear, readiness, and support operations for American airpower. Kirtland AFB is a center for research, development, and testing of nonconventional weapons, space and missile technology, laser warfare and much more. Organizations involved in these activities include the Air Force Nuclear Weapons Center, Air Force Operational Test and Evaluation Center, Space and Missile Systems Center, Air Force Inspection Agency, Air Force Safety Center, Air Force Research Laboratory, DOE, and SNL.

In addition, 377 ABW ensures readiness and training of airmen for worldwide duty and operates the airfield for present and future USAF operations, prepares personnel to deploy worldwide on a moment's notice, and keeps the installation secure. Mission partners involved in these activities include the 58th Special Operations Wing, 150th Special Operations Wing (New Mexico Air National Guard), and the USAF Pararescue School.

1.3 Purpose and Need

The purpose of the Proposed Action is to upgrade stormwater drainage systems on Kirtland AFB to meet current standards, reduce flooding and standing water issues, and address erosion and sedimentation issues that occur on the installation.

The Proposed Action is needed because existing stormwater drainage facilities on Kirtland AFB have deteriorated to the point where extensive work is needed to reestablish an effective stormwater drainage system. Ditches, culverts, and pipes have sedimented and retention basins are eroded and sedimented. Standing stormwater created by clogged ditches and flat ground surfaces poses hazards to traffic and undermines roads, parking lots, and foundations. Outdoor storage areas require berms and retention structures to control stormwater runoff. Revegetation and other measures are needed to control discharges of suspended solids. Outlet structures are nonexistent, causing erosion of arroyos during storms. Arroyo work is required to repair erosion damage and reduce the potential for additional damage in the future.

1.4 Scope of the Programmatic Environmental Assessment

The scope of the PEA will include the actions proposed; alternatives considered; a description of the existing environment; and direct, indirect, and cumulative impacts. The scope of the Proposed Action and the range of alternatives to be considered are presented in **Section 2**. The USAF NEPA-implementing regulations, 32 CFR § 989 (as amended), require consideration of the No Action Alternative, which will be analyzed to provide the baseline against which the environmental impacts of implementing the range of alternatives addressed can be compared. The PEA will identify appropriate measures that are not already included in the Proposed Action or alternatives in order to avoid, minimize, or reduce adverse environmental impacts.

The PEA will be organized into six sections and TBD appendices. **Section 1** will state the purpose, need, scope, and public involvement efforts for the Proposed Action. **Section 2** will contain a detailed description of the Proposed Action and the alternatives considered. **Section 3** will describe the existing conditions of the potentially affected environment and identify the direct and indirect environmental consequences of implementing all reasonable alternatives. **Section 4** will identify cumulative impacts, including irreversible and irretrievable commitment of resources. **Section 5** will list the references used to support the analyses. **Section 6** will provide the names of those persons involved in the preparation of the PEA.

The PEA will identify the environmental impacts of the Proposed Action and No Action Alternative on affected resource areas. Per CEQ regulations (40 CFR § 1501.7[a][3]), only those resource areas that apply to the Proposed Action and alternatives will be analyzed. The following resource areas will be analyzed and discussed for potential impacts from implementation of the Proposed Action: Airspace Management, Noise, Land Use, Visual Resources, Air Quality, Water Resources, Geological Resources, Biological Resources, Cultural Resources, Infrastructure, Hazardous Materials and Wastes, Safety, and Socioeconomics and Environmental Justice.

1.4.1 NEPA Compliance Requirements

NEPA is a federal law requiring the analysis of potential environmental impacts associated with proposed federal actions before the actions are taken. The intent of NEPA is to make decisions informed by potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the CEQ, which is responsible for ensuring federal agency compliance with NEPA. CEQ regulations mandate all federal agencies use a prescribed approach to environmental impact analysis. The approach includes an evaluation of the potential

environmental consequences associated with a proposed action and considers alternative courses of action.

The process for implementing NEPA is outlined in 40 CFR §§ 1500–1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. These CEQ regulations specify that an Environmental Assessment (EA) be prepared to determine whether a Finding of No Significant Impact (FONSI) is appropriate or if preparation of an Environmental Impact Statement (EIS) is necessary. An EA considers the effects (direct, indirect, and cumulative) of a proposed action on the human environment. It uses a systematic, interdisciplinary approach to evaluate a proposed action and possible alternatives and must disclose all considerations to the public. An EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

Because the PEA will include the evaluation of actions proposed to occur within a 100-year floodplain, a Finding of No Practicable Alternative (FONPA) and approval from Headquarters AFGSC will be required. In accordance with 32 CFR § 989 and Executive Order (EO) 11988, Floodplain Management, because the proposed arroyo damage repair and damage-avoiding measures would occur within a 100-year floodplain, a FONPA must accompany the FONSI to discuss why no other practicable alternatives exist to avoid impacts. Impacts would be reduced to the maximum extent practicable through project design and implementation of environmental protection measures. In addition, appropriate permits would be obtained from applicable regulatory agencies to address impacts and determine potential mitigation, if required.

USAF regulations under 32 CFR § 989 provide procedures for environmental impact analysis for the USAF to comply with NEPA and CEQ NEPA regulations. Air Force Policy Directive 32-70, Environmental Quality, states the USAF will comply with applicable federal, state, and local environmental laws and regulations, including NEPA. If significant impacts are predicted under NEPA, the USAF would decide whether to conduct mitigation to reduce impacts below the level of significance, prepare an EIS, or abandon the Proposed Action. The PEA would also be used to guide the USAF in implementing the Proposed Action in a manner consistent with USAF standards for environmental stewardship should the Proposed Action be approved for implementation.

1.4.2 Intergovernmental and Stakeholder Coordination

NEPA requirements help ensure environmental information is made available to the public during the decision-making process and prior to an action's implementation. A premise of NEPA is that the quality of federal decisions will be enhanced if the public is involved in the planning process. EO 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416, requires federal agencies to provide opportunities for consultation by elected officials of state and local governments that would be directly affected by a federal proposal. In compliance with NEPA, Kirtland AFB will notify relevant stakeholders about the Proposed Action and alternatives (see **Appendix A** for stakeholder coordination materials). The notification process will provide these stakeholders the opportunity to cooperate with Kirtland AFB and provide comments on the Proposed Action and alternatives.

EO 13175, Consultation and Coordination with Indian Tribal Governments, directs federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. Consistent with that EO; DoD Instruction 4710.02, DoD Interactions with Federally-Recognized Tribes; and Air Force Instruction 90-2002, Air Force Interactions with Federally-Recognized Tribes, federally recognized tribes that are historically affiliated with the Kirtland AFB geographic region will be invited to consult on all proposed undertakings that potentially affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the intergovernmental coordination process, and it requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Kirtland AFB point-of-contact for Native American tribes is the Installation Commander. The Native American tribal governments to be coordinated or consulted with regarding the Proposed Action will be listed in **Appendix A** along with all USAF correspondence. Comments received from the various stakeholders and Native American tribes will be considered during preparation of the PEA and included in **Appendix A**.

Scoping letters will be provided to relevant federal, state, and local agencies and Native American tribes notifying them that the USAF is preparing a PEA to evaluate the proposal to develop, upgrade, and maintain stormwater drainage systems and conduct arroyo repair and damage-avoiding measures at Kirtland AFB. The agencies and tribes will be requested to provide information regarding impacts of the Proposed Action on the natural environment or other environmental aspects that they feel should be included and considered in the preparation of the PEA.

1.4.3 Public and Agency Review of Draft PEA

A Notice of Availability (NOA) for the Draft PEA will be published in the *Albuquerque Journal* announcing the availability of the Draft PEA. The publication of the NOA will initiate a 30-day review period. A copy of the Draft PEA will be made available for review at the San Pedro Public Library at 5600 Trumbull Avenue SE, Albuquerque, NM 87108. A copy of the Draft PEA will also be made available for review online at *http://www.kirtland.af.mil* under the Environment Information tab. At the closing of the public review period, applicable comments from the general public and interagency and intergovernmental coordination/consultation will be incorporated into the analysis of potential environmental impacts performed as part of the PEA, where applicable, and included in **Appendix A** of the Final PEA.

1.5 Cooperating Agencies

In accordance with CEQ regulations (40 CFR § 1508.5), a cooperating agency may be any federal agency that has jurisdiction by law or special expertise with respect to environmental impacts expected from a proposal. An agency's jurisdiction by law (40 CFR § 1508.15) refers to an agency's authority to approve, veto, or finance all or part of a proposal. An agency's special expertise (40 CFR § 1508.26) refers to its statutory responsibility, agency mission, or program experience. Responsibilities of a cooperating agency (40 CFR § 1501.6b) include early participation in the NEPA process; developing information and preparing portions of the PEA for which the cooperating agency has special expertise, at the request of the lead agency; and providing staff support to enhance the lead agency's interdisciplinary capability. The USAF will

request the participation of the Albuquerque Bernalillo County Water Utility Authority, Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), DOE, Federal Emergency Management Agency, and US Army Corps of Engineers in the preparation of the PEA.

2. Proposed Action and Alternatives

As discussed in **Section 1.1**, the NEPA process provides for an evaluation of potential environmental consequences associated with a proposed action and considers alternative courses of action. Reasonable alternatives must satisfy the purpose of and need for the Proposed Action, as defined in **Section 1.3**. In addition, CEQ guidance recommends the inclusion of a No Action Alternative against which potential impacts would be compared. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in detail in accordance with USAF NEPA-implementing regulations (32 CFR § 989, as amended).

2.1 Proposed Action

The USAF is proposing to develop, upgrade, and maintain stormwater drainage systems and conduct arroyo repair and damage-avoiding measures at Kirtland AFB. **Figure 2-1** presents the current stormwater drainage system and arroyos on the installation. Stormwater drainage system activities would include developing stormwater systems where none exist, upgrading and repairing existing systems, and future maintenance. These activities could include excavating existing retention basins and culverts/gullies; constructing berms; constructing and repairing gutters, curbs, and other drainage infrastructure; and clearing drainage pipes. Arroyo repair activities could include restabilizing, excavating, filling, and lining arroyo banks and constructing and repairing box culverts, bank protection, and grade control structures to assist in stabilizing the arroyo bed.

2.1.1 Description of Activities Associated with the Proposed Action

Stormwater Drainage Systems. Development of new stormwater drainage systems and upgrade of existing systems would include ditching/trenching; installation of reinforced concrete pipe, vegetation, environmentally-friendly soil stabilizers, rip-rap, and gabion structures; and construction of drop inlets, flow control structures, and retention structures. Ditching/trenching would require use of a backhoe or trencher to excavate a linear trench to install a pipe or other infrastructure. Trench lining, using reinforcement technologies such as trench boxes, would stabilize the trench during excavation and installation of pipes and other infrastructure. Pipes would be settled in the trench and surrounded with bedding material. Reinforced concrete pipe, using wire for reinforcement, could be installed to assist in routing water flow.

Culverts, fully enclosed structures that run underneath a road to allow water to flow from one side of the road to another, would be installed, which would require excavation of the road. In order to prevent erosion, vegetation would be planted, environmentally-friendly soil stabilizers would be applied, or rip-rap, consisting of loose stone, would be used to form a foundation for breakwater or other structures. Gabion structures, consisting of a wire mesh cage filled with cobble or small boulder material, could be used to dissipate energy from flowing water and provide bed protection or bank stabilization.

A drop inlet is an access point to underground storm drains. It is usually precast concrete with a grate between the gutter and the inlet to keep debris out of the storm sewer lines. Installation of drop inlets would accompany construction of gutters and require excavation and storm drains to be present. Flow control structures are designed to control stormwater runoff. These structures

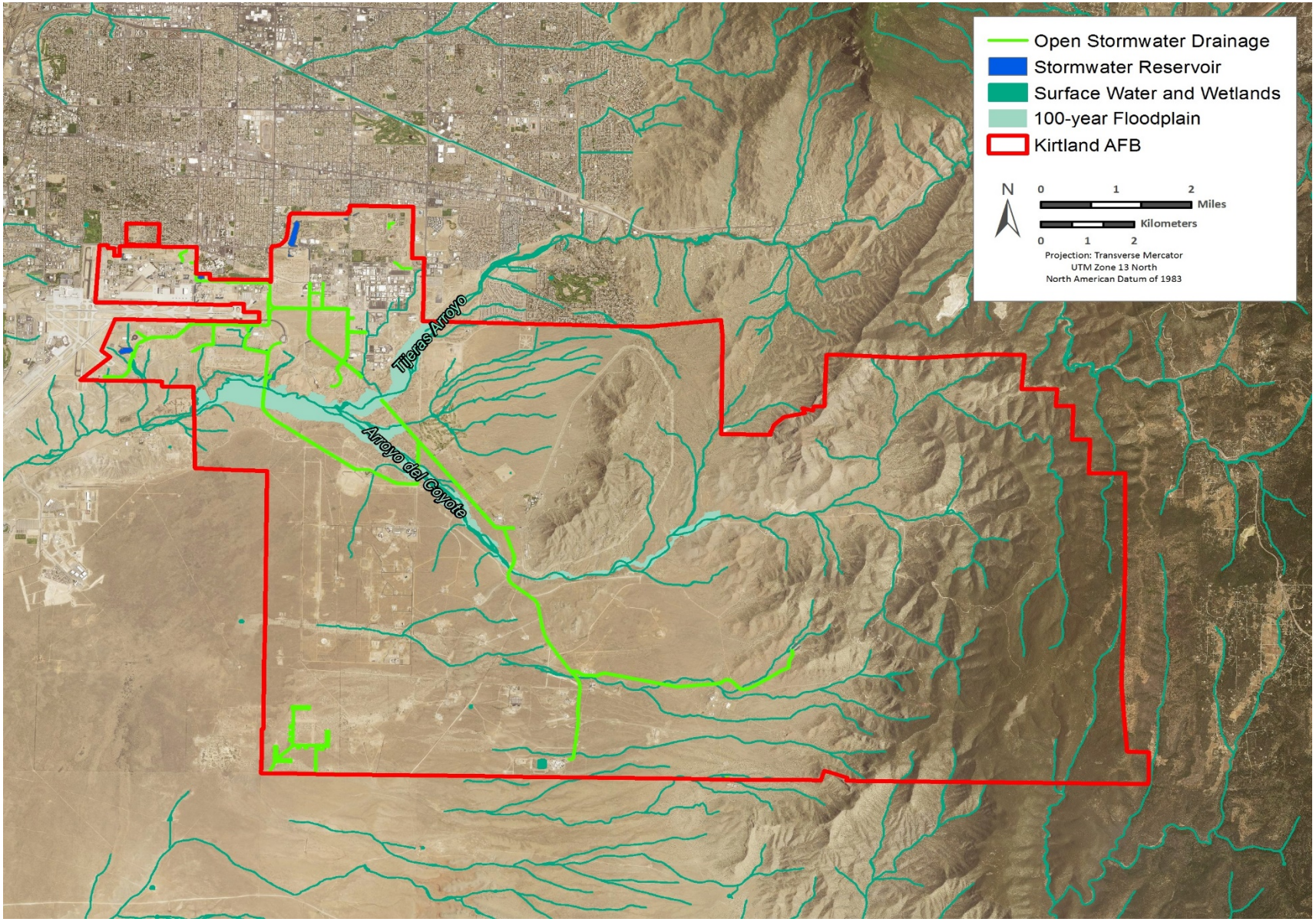

Figure 2-1. Stormwater Drainage Systems and Arroyos on Kirtland AFB

trap sediment, slow water flow, and can be used to redirect water around problem areas. Retention structures are lined, excavated areas for water to collect when it drains. Outlet structures are usually constructed of concrete with metal grates that lead from detention and retention basins into the storm sewer or other destination. Together, these structures reduce the amount of sediment going to the storm sewer and manage stormwater flow.

Maintenance activities would include cleaning, excavating, regrading, filling, and backfilling. Debris would be cleaned from existing stormwater drains and drainage infrastructure by snaking, water blasting, or using hand tools or other equipment. Excessive soil would be removed by excavating, and regrading would be conducted to change the elevation of an area to direct water flow and allow for better drainage away from structures. Filling consists of filling an area that has been impacted by erosion and backfilling consists of refilling an excavated area with the material that was taken out during excavation or with other material if specified. Excavating, regrading, filling, and backfilling would require the use of a backhoe or other heavy equipment.

Arroyo Repair. Arroyo repair activities could include restabilizing, excavating, filling, and lining arroyo banks and constructing and repairing box culverts, bank protection, and grade control structures to assist in stabilizing the arroyo bed and banks. Gabion structures and rip-rap could be used to dissipate energy from flowing water and as grade control structures to provide the arroyo bed and banks with stabilization and protection. Box culverts, typically precast or cast in place concrete structures, could be constructed to improve the flow of floodwater resulting in improved water quality because less erosion and sedimentation would occur during a flood event.

The various portions of the stormwater drainage system on the installation are owned and maintained by either Kirtland AFB or AMAFCA. Both organizations would continue to coordinate activities in order to ensure neither negatively impacts the other's activities or systems. It is assumed that up to 3 acres of land would typically be disturbed annually by activities associated with the Proposed Action. However, it is conservatively assumed that up to 10 acres of land could be disturbed annually if the installation and AMAFCA were to conduct stormwater drainage or arroyo repair activities at the same time.

2.2 Selection Standards

In accordance with 32 CFR § 989.8(c), the development of selection standards is an effective mechanism for the identification, comparison, and evaluation of reasonable alternatives. The following selection standards were developed to be consistent with the purpose of and need for the Proposed Action and to address pertinent mission, environmental, safety, and health factors. The following selection standards will be used to identify reasonable alternatives for analysis in the PEA:

- Enable Kirtland AFB to reduce flooding and standing water issues, reestablish an effective stormwater drainage system, and reduce damaging erosion to arroyos.
- Be compatible with the mission and training at the installation. Stormwater drainage system development may not adversely impact installation testing and training activities.
- Be compatible with future development needs identified in the 2016 Installation Development Plan.

- Result in no adverse impacts on adjacent communities and properties.
- Meet current criteria/scope specified in:
    - Air Force Manual 32-1084, *Facilities Requirements*
    - EO 13693, *Planning for Federal Sustainability in the Next Decade*
    - EO 11988, *Floodplain Management*
    - EO 13807, *Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure*
    - Section 438 of the Energy Independence and Security Act of 2007.
- Meet current standards and optimize stormwater flow on the installation.
- Meet or exceed erosion and sediment control requirements of the National Pollutant Discharge Elimination System Construction General Permit Regulation (40 CFR § 122).
- Be compatible with the activities identified in the Tijeras Arroyo Management Plan prepared by AMAFCA (AMAFCA 2017).
- Avoid environmental resources such as protected plant or animal species habitat or known cultural resources.
- Consider Bird/Wildlife Aircraft Strike Hazard concerns by reducing the potential for standing water adjacent to the runways.

2.3 No Action Alternative

Under the No Action Alternative, Kirtland AFB would not develop, upgrade, and maintain stormwater drainage systems or conduct arroyo repairs. Stormwater drainage problems would worsen as existing facilities silt up and deteriorate further; damage to roads, parking lots, and foundations would increase, requiring costly repairs and worsening traffic hazards during heavy rains; and erosion of the arroyos on the installation would continue. Severe deterioration could negatively impact the ability to execute mission and training activities.

The No Action Alternative would not meet the purpose of and need for the Proposed Action as described in **Section 1.3**; however, the USAF Environmental Impact Analysis Process (32 CFR § 989.8[d]) requires consideration of the No Action Alternative. In addition, CEQ guidance recommends inclusion of the No Action Alternative in an EA to assess any environmental consequences that may occur if the Proposed Action is not implemented. Therefore, this alternative will be carried forward for detailed analysis in the PEA. The No Action Alternative also serves as a baseline against which the Proposed Action can be compared.

2.4 Alternatives Considered but Eliminated from Detailed Analysis

No practical alternatives to the Proposed Action were identified due to the programmatic nature of the PEA. Alternatives, such as performing the proposed activities on only a portion of the installation, performing only the stormwater drainage system activities, or performing only the

proposed arroyo repair activities, were not considered viable alternatives because they would not fully meet the purpose and need of the Proposed Action or satisfy the selection standards.

2.5 Comparative Summary of Impacts

Table 2-1 presents a summary of the impacts anticipated under the Proposed Action and the No Action Alternative.

Table 2-1. Summary of Potential Impacts

Affected Resource	Proposed Action	No Action Alternative
Airspace Management		
Noise		
Land Use		
Visual Resources		
Air Quality		
Water Resources		
Geological Resources		
Biological Resources		
Cultural Resources		
Infrastructure		
Hazardous Materials and Wastes		
Safety		
Socioeconomics and Environmental Justice		

<Preparer's Note: Resource areas will be analyzed and could be eliminated from detailed analysis in the Preliminary Draft PEA. Summary of potential impacts will be complete in the Preliminary Draft PEA.>

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3. References

AMAFCA 2017 Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA). 2017. *Final Draft Tijeras Arroyo Facility Management Plan*. June 2017.

KAFB 2012a Kirtland Air Force Base (KAFB). 2012. *Integrated Natural Resources Management Plan For Kirtland Air Force Base* (*Final Year Revision - October 2012)*.

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Agency Coordination and Public Involvement

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