



**ENVIRONMENTAL ASSESSMENT
IMPACT AREA A EXPANSION
U.S. ARMY GARRISON
YUMA PROVING GROUND**

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Prepared for
U.S. Army Garrison Yuma Proving Ground
Environmental Sciences Division
Yuma, Arizona 85365



Finding of No Significant Impact

Impact Area A Expansion

U.S. Army Garrison

Yuma Proving Ground, Arizona

The U.S. Army Garrison (USAG) Yuma Proving Ground (YPG) prepared the attached environmental assessment (EA), hereby incorporated by reference, to identify and evaluate potential environmental impacts associated with the expansion and operation of Impact Area A (Proposed Action). The Proposed Action would add approximately 920 acres of land to expand the current Impact Area A to provide additional areas for testing at YPG. Within this boundary, approximately 336 acres would be further designated for static detonation tests, including four static detonation pads (approximately 17.5 acres each). The Proposed Action is needed to reduce range use conflicts, reduce scheduling conflicts, and reduce test delays due to lack of available impact areas while increasing test throughput to meet national defense needs. Currently, Impact Area A contains limited acreage to support YPG's expanding testing requirements. With the expansion of the impact area, additional acreage would be available to support the expanding mission requirements, and allow for future, developmental testing to occur. The EA was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40, USC, Parts 1500 through 1508); Department of Defense (DOD) Directive 4715.9 Environmental Planning and Analysis; and Environmental Analysis of Army Actions (CFR Title 32, Part 651).

In preparation of the EA, no alternatives other than those presented in the EA, were determined to satisfy the purpose and need of the Proposed Action. No other alternatives were identified for the impact area expansion. Therefore, only the No Action Alternative and the Proposed Action were carried forward for analysis.

Description of the Proposed Action

The Proposed Action involves adding approximately 920 acres of land to expand the current Impact Area A to provide additional areas for testing at YPG. Within this boundary approximately 336 acres would be further designated for static detonation tests, including four static detonation pads (approximately 17.5 acres each). The proposed expansion area is within an area of historical munitions contamination identified in the Final Range Wide Environmental Impact Statement (See Figure 3 in the EA; Gutierrez-Palmenberg, Inc. and Jason Associates Corporation 2001). The Proposed Action would expand the existing designated impact areas in the Kofa Region into areas already contaminated by activities that occurred in the past within the existing Kofa Firing Range.

The proposed expansion of the impact area would include the same use and capabilities currently conducted in Impact Area A. The primary uses of the area include surface and buried munition detonations, fragmentation recovery, fuel burns (slow and fast cook-offs), and small and large caliber projectile impacts. The proposed expansion of the current facilities would primarily benefit USAG YPG by enabling it to properly and adequately conduct ammunition hazard classification and insensitive munition testing as well as other surface/subsurface/buried explosive ordnance blast testing.

Within the expansion project area, there would be four proposed detonation pads along with access trails. These locations would be cleared (dragged) over a three- to five-year period in order to facilitate open air, static detonation utilization. The static detonation test areas would provide specific amenities

such as fragment dispersal and target damage assessment. In these locations, explosive charges would be set up and manually detonated in place. Fragments would be collected after detonation, or threat targets (e.g., mannequins, cargo trucks, pickup trucks, etc.) would be set up to detonate munitions in order to assess damage to the targets.

An access trail would be established to each pad. In some locations, the trail would have to cross washes, and some areas along the crossing would have to be improved to allow safe transition to the other side. If washes are crossed to get to the gravel detonation pads, their profile would be maintained to allow the natural water flow. If necessary, vegetation removal within the washes would be done by trimming to near ground level without mechanical dragging or grading. Because desert washes represent the best habitat for many native species, munitions testing would avoid desert washes. Standard mitigation measures would be implemented, as appropriate, to eliminate or avoid adverse impacts to resources during site preparation activities and continued operations.

No Action Alternative

There would be no expansion of the impact area under the No Action Alternative and YPG would continue to operate as it currently does. If Impact Area A is not expanded, current restrictions and limitation usage would continue, and surface danger zones from adjacent tests would overlap, restricting uses by these programs.

Environmental Consequences

The EA evaluated potential impacts on the following resources: Air Quality, Biological Resources (Vegetation and Wildlife), Cultural Resources, Environmental Justice and Protection of Children, Geology and Geography, Hazardous Materials and Waste, Health and Safety, Land Use and Recreation, Noise, Socioeconomic Values, Soil Resources, Water Resources, Utilities and Infrastructure, and Visual and Aesthetic Resources. After the initial evaluation, Environmental Justice and Protection of Children, Geology and Geography, Hazardous Materials and Waste, Health and Safety, Land Use and Recreation, Noise, Socioeconomic Values, and Visual and Aesthetic Resources were eliminated from further analysis because the potential for impacts to these resources was determined to be nonexistent, unlikely, or negligible. As a result, the scope of environmental analysis focused on the resources listed below because they were determined to be potentially affected in connection with the Proposed Action.

Summary of Impacts

As summarized below, the Proposed Action will result in less than significant impacts, individually and cumulatively, to the resources analyzed in the EA.

Air Quality

Overall, the levels of construction and operational emission increases would result in less than a significant impact to the local and regional baseline emissions. Dust emissions from the site would be localized and increases in air pollutants at YPG would not be anticipated partly due to good dispersal by strong winds and lack of topographic features to inhibit dispersal. Dust emissions would be minimized as needed with appropriate best management practices (BMPs) and dust abatement measures to prevent potential deterioration of air quality. The project area is currently in attainment for all National Ambient Air Quality Standards (NAAQS) and the Proposed Action is not anticipated to impact air quality exceedances in any nonattainment area.

Biological Resources

Implementation of the Proposed Action would result in disturbance of vegetation, wildlife, and wildlife habitat. Construction of the Proposed Action would disturb approximately 70 acres of partially disturbed Sonoran desert scrub habitat for creation of the detonation pads. Other proposed activities would also lead to disturbance of small areas. To avoid spread of invasive species, vehicles would be inspected and cleaned subsequent to working in or traveling through weed infested areas. Overall, leveling activities would result in short-term impacts to wildlife and long-term impacts to vegetation and associated habitat. Some common species may be displaced from the immediate project area to adjacent habitat of a similar type. The affected area does not contain high value habitat; therefore, impacts to vegetation and wildlife as a result of implementation of the Proposed Action would be less than significant. Ecologic processes would not be damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired. There would be no extirpation of a regional or local species.

Cultural Resources

The proposed expanded impact area is within an area previously contaminated with unexploded ordnance from activities dating back to World War II. This poses a danger to life and limb and the area cannot be subjected to archaeological survey. Resumed use of previously used areas of Kofa Region may have unknown but possible impacts on any historic properties that may exist within the proposed expansion area. Review procedures have been implemented for this project in accordance with 36 CFR 800. The review has established that there would be no effect (Goslin, Personal Communication, 2019), based on the Programmatic Agreement between the Arizona State Historic Preservation Office and the Advisory Council on Historic Preservation (2016). If any unanticipated discoveries of archaeological remains are made, all activities in the area of the discovery would be stopped, and the YPG Cultural Resources Manager would be notified immediately in accordance with the Native American Graves Protection and Repatriation Act and Standard Operating Procedure 9 in the Integrated Cultural Resources Management Plan (Versar Inc. 2016).

Soil Resources

Short-term impacts to soils would occur from use of heavy equipment to prepare the access trails and detonation pads; creation of the four detonation pads would result in approximately 70 acres of disturbance. The majority of potential long-term disturbances would occur from ground-disturbing activities such as ordnance impacts, which would result in fugitive dust as well. The disturbed area would be subject to wind and water erosion, but there would be no substantial increase in wind or water erosion of soils, either on or off the site, and erosion would decrease over time as loose soils are consolidated. The impacts would be temporary and could be reduced by using standard BMPs that would be implemented to minimize erosion around the disturbed area during construction. Under the Proposed Action, test activities would be planned such that they do not target the wash channels that cross the Kofa Region. Disturbances to soils would be minimized by use of proper construction techniques and implementation of BMPs during construction. A construction Stormwater Pollution Prevention Plan (SWPPP) would be implemented during construction to reduce potential impacts. Overall, the levels of construction and operational impacts to soils would be less than significant.

Water Resources

There are no perennial lakes, streams, mountain springs, or wetlands within the boundaries of YPG, nor are there any permanent surface water developments or natural water holes found on or near the proposed expansion area. Surface water does not represent a viable pathway for migration of munitions constituents of concern (MCOs) off the range complex (USACHPPM 2007); the combination of low

precipitation and high evaporation prevents surface water build-up and/or infiltration into the soil, minimizing the risk of surface water contamination from the Proposed Action. Based on the depth to groundwater in the expansion area, the lack of rainfall (average 3.5-inches annually), and the high rate of evaporation (more than 100-inches annually), the Proposed Action is not anticipated to impact groundwater. Test activities would be planned such that they do not target the wash channels and other appropriate BMPs, such as compliance with measures in the SWPPP and topping with aggregate base course (ABC) material to stabilize soils and minimize erosion from stormwater runoff, would reduce the potential for impacts to water resources. The Proposed Action is expected to have negligible, less than significant impacts on water resources.

Public Participation

Fifty-two scoping letters were mailed to interested parties on July 24, 2019, announcing the preparation of this EA and soliciting comments and concerns from interested stakeholders, agencies, and tribal governments on the proposed project. Two comments were received during the scoping period.

The USAG YPG published a public notice in the Yuma Sun on March 1, 2020 announcing the availability of the EA and Draft Finding of No Significant Impact (FNSI) for review and comment. The EA and Draft FNSI were made available on USAG YPG's public website at <https://ypg-environmental.com/nepa>. Three responses were received during the 30-day public review period. Two of the letters did not identify any concerns or issues with the project. The third comment letter was from the Arizona Department of Environmental Quality (ADEQ), who had questions about the analysis of impacts to air quality and hazardous wastes.

Specifically, ADEQ stated that it was not clear whether the proposed expansion and operation of Impact Area A in YPG would affect the results of the previous air quality analysis. YPG is in the process of completing an updated air model of all its test activities and operations. The model will include analysis for the current test operations and activities at Impact Area A. Given that the Proposed Action in the EA does not include any new test operations or activities, YPG does not expect any substantial differences to the air quality analysis used to determine operational limits specified in the Munitions Treatment Facility (MTF) permit. YPG is also in the process of updating the air quality impact analysis that determined those operational limits.

ADEQ also stated that the EA does not discuss the impact that Area A expansion would have on operations of MTF or concerning contaminant transport to MTF. They expressed concern about the maximum payload of the detonations and the maximum distance that fragments could travel. In reference to the request for maximum payload of detonations and maximum fragment distance, the largest round could be an 8" projectile, with approximately 37 pounds of explosive. That size round would equate to a fragment distance of approximately 3,290 feet. However, any test operation and/or activity that would result in fragments entering the MTF has already been accounted for in the waste profile associated with the MTF permit. If future test operations and activities would potentially result in new contaminants entering the MTF, the waste profile for the MTF would be updated to include these new contaminants in the permit. In addition, it should be noted that the new detonation circles associated with the Proposed Action would be located further away from the MTF than the current detonation circle. The current detonation circles are approximately 2,200 feet from the MTF and the proposed detonation circles are approximately 3,400 feet from the MTF.

The FNSI was updated to address the comments from the ADEQ. No changes were made to the EA in response to any comments from the public.

Conclusion

Based on the analysis presented in the EA for expanding and operating Impact Area A on USAG YPG, no significant environmental impacts are anticipated as a result of implementing the project as described under the Proposed Action. Therefore, preparation of an Environmental Impact Statement is not required and a FNSI is the appropriate decision document to conclude the NEPA process.

I have read and concur with the findings and analyses documented in the EA and hereby approve the FNSI.

Ronny J. James
Acting Garrison Manager

Date

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List of Acronyms

ABC	Aggregate base course
ADEQ	Arizona Department of Environmental Quality
AR	Army Regulation
AZGFD	Arizona Game and Fish Department
BLM	Bureau of Land Management
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CH ₄	Methane
CO	Carbon monoxide
CO ₂	Carbon dioxide
CO ₂ -e	CO ₂ equivalent
dBA	A-weighted decibel
DOD	Department of Defense
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FNSI	Finding of No Significant Impact
GHG	Greenhouse gas
HAP	Hazardous air pollutant
HFC	Hydrofluorocarbon
HMA	Herd Management Area
µg/m ³	micrograms per cubic meter
MCOC	Munitions constituents of concern
MOU	Memorandum of Understanding
MTF	Munitions Treatment Facility
N ₂ O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NF ₃	Nitrogen trifluoride
NHPA	National Historic Preservation Act
NO ₂	Nitrogen dioxide

NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
NZ	Noise Zone
O ₃	Ozone
Pb	Lead
PFC	Perfluorocarbon
PM	Particulate matter
PM _{2.5}	Particulate matter up to 2.5 microns in diameter
PM ₁₀	Particulate matter up to 10 microns in diameter
ppb	parts per billion
ppm	parts per million
SF	Sulfur hexafluoride
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	Sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USAG	United States Army Garrison
USDI	United States Department of the Interior
USFWS	U.S. Fish and Wildlife Service
YPG	Yuma Proving Ground

1 Purpose of and Need for Action

1.1 Introduction

The primary mission of the United States Army Garrison (USAG) Yuma Proving Ground (YPG) is to serve as a major research, development, testing, and evaluation facility for the Department of Defense (DOD). YPG provides a flexible, responsive, innovative, and diverse set of testing capabilities and services in a desert environment in order to meet the current and future needs of the U.S. Armed Forces.

The USAG YPG is proposing to expand the existing Impact Area A at YPG, which was authorized in the Impact Areas Expansion Environmental Assessment. YPG has initiated this Environmental Assessment (EA) per the National Environmental Policy Act of 1969 (NEPA; 42 USC 4321 et seq.), to evaluate and document the potential for direct, indirect, and cumulative effects to the natural and human environment that could result from the Army's Proposed Action of expanding Impact Area A, as described in detail in Chapter 2.

The analysis in this EA is tiered to the Impact Areas Expansion Environmental Assessment (YPG 2010) and the Programmatic Environmental Impact Statement for Activities and Operations at Yuma Proving Ground, Arizona (YPG 2016), and has been prepared to support the decision-making process pursuant to the requirements of NEPA and Army Regulation (AR) 200-2, *Environmental Analysis of Army Actions* (32 CFR Part 651) and AR 200-1, *Environmental Protection and Enhancement* (32 CFR Part 650). Tiering allows for incorporation by reference of information in previous NEPA analyses in order to minimize redundant analysis (40 CFR 1508.28). Tiering allows subsequent documents to focus on the issues germane to the site-specific actions by referring to other readily available documents that cover similar issues. Subsequent EAs that are tiered to previous analyses need only summarize issues discussed in the original analysis and concentrate on the issues specific to the subsequent action.

1.2 Project Location and Background

YPG is a Major Range and Test Facility that serves as the Army's center for desert natural environment testing for mine, countermine, demolition, artillery, equipment and armament, target acquisition, vehicles, a variety of munitions, personnel, and supply parachute systems, aviation weapons and sensors, and specialized equipment. YPG encompasses approximately 1,309 square miles (838,174 acres) of the Sonoran Desert in Yuma and La Paz counties in southwestern Arizona and is located approximately 25 miles northeast of the City of Yuma, Arizona (Figure 1). YPG is surrounded primarily by federal land reserved either as Bureau of Land Management (BLM) or National Wildlife Refuge (NWR) land.

YPG is subdivided into three geographic and functional areas: the Laguna Region; the Cibola Region; and the Kofa Region. The existing Impact Area A is located on land designated as Range/Open Land within the Kofa Region, which includes the East Arm portion of YPG (Figure 1). The Kofa Region is primarily used for direct and indirect firing of artillery and other weapons and munitions test activities such as deployed mines, Improved Conventional Munitions, instrumented projectiles, Electromagnetic Guns, and Counter Electronic Warfare (YPG 2017). The Kofa Region contains mainly industrial and range land uses, but also includes professional uses, most of which are at the western edge along the Kofa Firing Front.

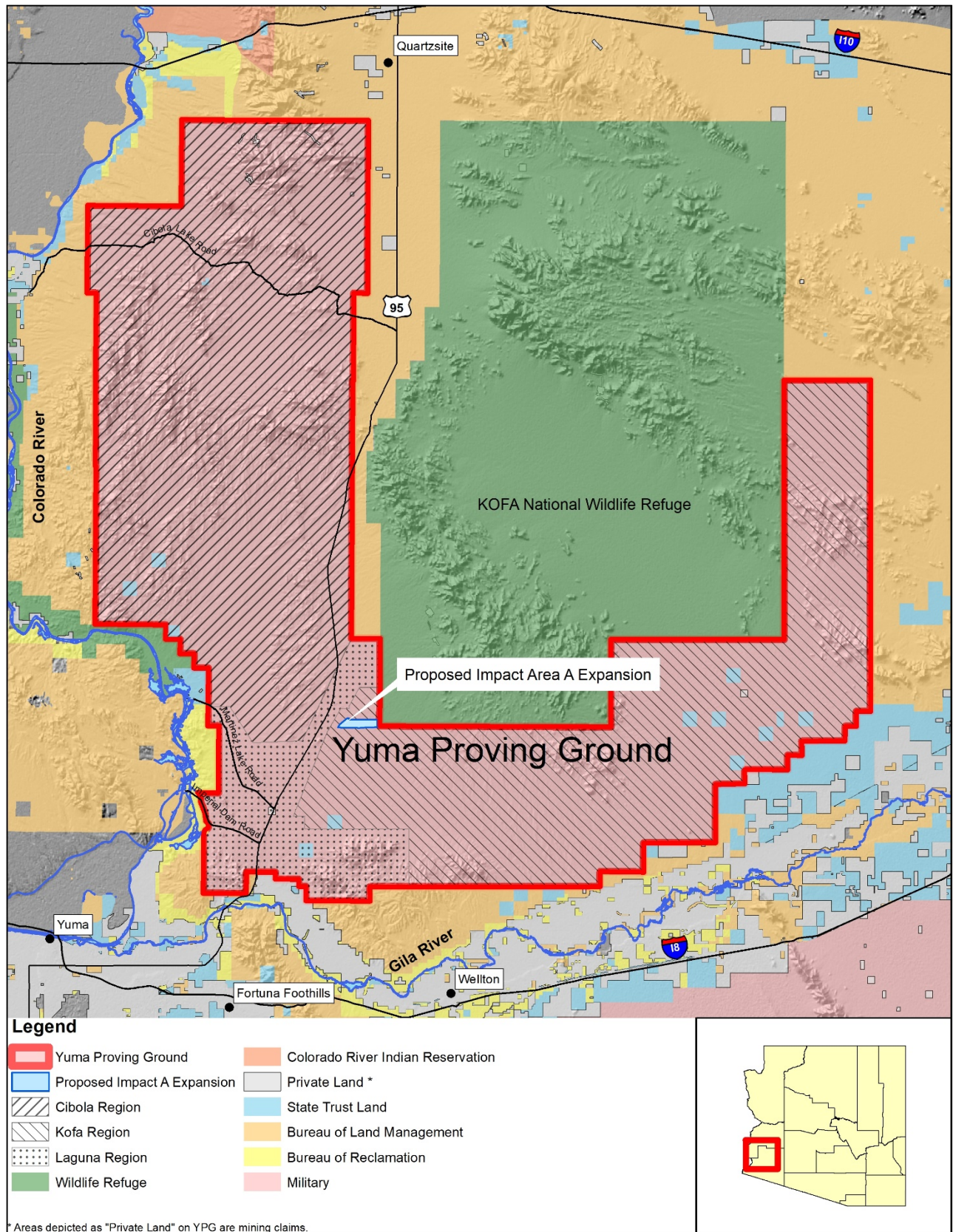


Figure 1. General Location

Impact Area A is an existing multi-purpose, multi-use impact area located north of North Boundary Road near the intersection of Firing Front Road and North Boundary Road. The Final Range Wide Environmental Impact Statement (Gutierrez-Palmenberg, Inc. and Jason Associates Corporation 2001) discussed impact areas within the Kofa Region and the Impact Areas Expansion Environmental Assessment discussed the designation of Impact Area A (YPG 2010). Impact Area A's location consists primarily of flat terrain allowing for good observation of direct and indirect fire impacts. Existing roads provide access to the site. The existing impact area encompasses approximately 2,870 acres, and the expanded area would encompass an additional approximately 920 acres for a total of 3,790 acres.

Tests conducted at Impact Area A support Army, Navy, Air Force, and Marine Corps munition testing requirements for Lot Acceptance, Stockpile Reliability, Insensitive Munitions, and Final Hazard Classification tests. The types of testing currently supported by Impact Area A include: static detonation/activation or operation of high explosive warheads, mines, networked munitions, anti-vehicle effect munitions, anti-personnel effect munitions, surveillance/sensor systems, demolition charges, cratering charges, subsurface/buried explosive charges, indirect and direct fire weapon systems as well as ordnance for various ground-to-ground, air-to-ground, ground-to-air, and air-to-air systems. Munitions being tested at the site include, but are not limited to, high explosive, illumination, obscurant, non-lethal, and inert warheads. Ballistic munitions include, but are not limited to, small arms, mines, networked munitions, anti-vehicle effects, anti-personnel effects, demolition charges, cratering charges, subsurface/buried explosive charges, aerial guided/unguided bombs, mortars, artillery, and tank. These munitions may range in size from 5.56mm to 203mm. Fin-stabilized munitions include, but are not limited to, foreign and U.S. rockets, and guided missiles ranging in size from 20mm up to 240mm with warheads weighing up to 2,000 pounds. Specialized munitions such as Dual Purpose Improved Conventional Munitions, cluster munitions, flares, illumination, chaff, etc. could also be fired or dispensed during testing.

The expansion would allow for high explosive detonation, long term (days) monitoring of radio-linked (networked) munitions with long range (up to 2,000 meters) line-of-sight separation, as well as for Unmanned Aircraft Systems overflights to observe stationary targets, and other requirements as needed. These types of testing are included in the Final Programmatic Environmental Impact Statement for Activities and Operations at Yuma Proving Ground, Arizona (USACE 2015).

1.3 Purpose of and Need the Proposed Action

The Proposed Action is needed to reduce range use conflicts, reduce scheduling conflicts, and reduce test delays due to lack of available impact areas while increasing test throughput to meet national defense needs. Currently, Impact Area A exhibits limited acreage to support YPG's expanding testing requirements. With expansion of the impact area, additional acreage would be available to support the expanding mission requirements, and allow for future, developmental testing to occur. The proposed expansion would continue to support the same types of testing as currently occur in the existing Impact Area A, as described in Section 1.2. The proposed expansion of the existing area would primarily benefit USAG YPG by enabling it to properly and adequately conduct ammunition hazard classification and insensitive munition testing as well as other surface/subsurface/buried explosive ordnance blast testing.

1.4 Agency and Public Participation

The scoping process is described as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). Direction for public participation opportunities with respect to this EA and decision making on the Proposed Action is provided by 32 CFR Part 651 and AR 200-2. The public scoping process begins the

NEPA process by gathering comments and documenting important issues and concerns to be addressed in an analysis. The U.S. Army believes that consideration of the views and information of all interested persons promotes open communication and enables better decision making. All agencies, organizations, and members of the public having a potential interest in the Proposed Action are urged to participate in the decision-making process.

Fifty-two scoping letters were mailed to interested parties on July 24, 2019, including letters submitted to potentially interested tribal governments (a list of tribal representatives and others who were contacted is included in Section 4.1). Two comments were received during the scoping period, which ran from July 24 to August 23, 2019. The completed EA, along with the Draft Finding of No Significant Impact (FNSI), was made available to the public for comment between March 1, 2020 and March 31, 2020. Three responses were received during this comment period. No substantive changes were made to the EA as a result of the comments received.

1.5 Scope of the Environmental Analysis and Decision to be Made

This EA was prepared in accordance with NEPA, Council on Environmental Quality (CEQ) Regulations at 40 CFR Parts 1500-1508, 32 CFR Part 651, and AR 200-2. It analyzes the direct, indirect, and cumulative effects of the Proposed Action and the No Action Alternative. A discussion of the affected environment and the potential impacts to the physical, natural, and human environment is provided.

YPG determined that the Proposed Action could potentially affect the resources listed below; therefore, the focus of the analysis in this EA is on these resource areas:

- Air Quality;
- Biological Resources (Vegetation and Wildlife);
- Cultural Resources;
- Soil Resources; and
- Water Resources.

The following environmental resources were not evaluated in detail because the Proposed Action would either not impact the resource or would result in negligible impacts. A brief rationale is provided explaining why these resources were dismissed from further analysis.

- **Environmental Justice and Protection of Children:** Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to analyze potential impacts to minority and low-income populations, including human health and environmental effects, resulting from their activities. The goal of Executive Order 12898 is to ensure activities that affect human health and the environment do not discriminate against minority or low-income populations. Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires that federal agencies evaluate environmental health or safety risks that could disproportionately affect children. The Proposed Action would occur within YPG, on land that is restricted from the public. Only authorized personnel would be allowed in the project area. Activities proposed would not disproportionately affect minority or low-income populations, and/or children through substantial degradation of air quality, water quality, or exposure to hazardous materials, substances, or waste.
- **Geology and Geography:** YPG is situated in the basin and range physiographic province. The original high mountains have been worn down by wind and water erosion, and the basins were filled to present levels by erosional sediments from mountain ranges. The mountain ranges

within and surrounding YPG are composed of igneous rocks (formed from molten rock), including extrusive (volcanic rock), and intrusive (granite and related crystalline rocks); sedimentary rocks (cemented and consolidated sediments), and metamorphic rocks (changed by heat and pressure). The basins or lowlands between mountain ranges are composed of alluvium, which is typically sand, silt, and clay layers. The scale of activities associated with the Proposed Action cannot reasonably be expected to affect these large-scale resource areas; therefore, they were not carried forward for detailed analysis.

- **Hazardous Materials and Waste:** Munitions residue does not appear to be accumulating in soil, air, groundwater, plants, or animals at the Kofa Region as a result of munitions testing (USACHPPM 1999; GCE 2006). Detected metals are found at naturally occurring regional background levels. Use of regulated substances as a result of the Proposed Action would be limited to fuel consumption from vehicle use, operation of generators, and firing of munitions, and would be managed in accordance with applicable guidance and regulations.
- **Health and Safety:** Construction activities would create short-term increased safety risks to workers. During construction, workers would have the potential for accidents as a result of routine job exposure to heavy equipment. Construction workers would also be exposed to elevated noise levels from construction equipment. Workers would use appropriate protection and comply with appropriate safety standards. YPG protocols related to safety during testing would be implemented to protect testing staff. Testing activities within the project area would be controlled and monitored. Less than significant intermittent impacts to health and safety would be expected during construction activities and operations.
- **Land Use and Recreation:** Land within the boundary of YPG is composed of withdrawn public land and a small quantity of non-public land designated for use by the Department of the Army for military purposes and devoted to functions that are compatible with the current mission of the installation (YPG 2017). Because the land base of YPG is dedicated to military testing and evaluation, most of the land is reserved for firing ranges, impact areas, drop zones, mobility test courses, and other mission-related support facilities. Large open areas with associated safety and buffer areas are required for many of these activities and facilities; thus, there are vast open spaces at YPG with scattered developed areas. Implementation of the Proposed Action is aligned with intended land use and consistent with YPG management goals. The impact area is in a location that is closed to the public and thus recreation activities are restricted because land within YPG is regulated to the extent necessary to safeguard public health and safety, to provide for national security and the military mission of YPG, and to preserve environmental quality and other natural and cultural resource values. The area would remain inaccessible to the general public, and the expansion would not affect recreational opportunities that are available at YPG or on surrounding lands. No change in recreation or land use for the installation would occur under the Proposed Action.
- **Socioeconomic Values:** The Proposed Action does not represent a new major military program or a major expansion of existing military programs or infrastructure that could induce additional growth of the local and regional economy. The Proposed Action takes place entirely on YPG lands and would not have potential impacts associated with income, employment, conflicts with county and local plans, population growth, displacement of persons and businesses, or community disruption.

- **Utilities and Infrastructure:** The Proposed Action would not result in short-term or long-term impacts to traffic levels and patterns. With the exception of an expanded impact area on YPG, the Impact Area A Expansion project would use existing operational areas and roads on YPG. Infrastructure would be limited to construction of detonation pads and access trails on the expanded impact area. Mobile generators would provide power for support equipment at the impact area. No permanent utilities would be required for the proposed activities. Thus, no adverse impacts to installation utilities and infrastructure are anticipated.
- **Visual and Aesthetic Resources:** A portion of the project area is already used for testing and has been previously disturbed. Due to the lack of population or development, it would be unlikely for the public to perceive a change in testing at the site of the Proposed Action. The Proposed Action would not obstruct, damage, dominate, or substantially modify a scenic view from public viewing areas and would not have a substantial adverse effect on a scenic vista. Negligible impacts to aesthetics or visual resources would be expected as a result of the Proposed Action.
- **Noise:** AR 200-1, Chapter 7, Environmental Protection and Enhancement, includes regulations to reduce noise impacts and establishes an Environmental Noise Management Program. YPG Installation Compatible Use Zones have been established based on the level of noise exposure in three types of areas. Noise zone (NZ) I has the least noise exposure and NZ III has the greatest exposure. Installation Compatible Use Zones are used to prevent land use incompatibilities as a result of placing noise-sensitive activities in high-noise exposure areas (YPG 2011). The Installation Operational Noise Management Plan describes the current noise environment and predicts future conditions through computer modeling (USAPHC 2011). Noise contour maps indicate that all Zone II and III areas are contained within the bounds of the installation except for one small location in a remote portion of the Kofa NWR (USAPHC 2011).

Short-term impacts from noise would occur during construction; however, the increase in noise would be negligible for personnel not associated with construction activities. There are no sensitive receptors within the vicinity of the project area that would perceive an increase in noise. Heavy equipment used for construction would generate noise levels ranging from approximately 70 to 90 A-weighted decibel (dBA) at a range of 50 to 100 feet depending on the type of equipment (Tipler 1976). Construction personnel would wear appropriate hearing protection and follow U.S. Army noise regulations (AR 200-1). Noise impacts during operation of the impact area would be intermittent and similar to current ongoing testing activities. Noise levels at testing areas would adhere to acoustical limits established by DOD standards, as described in AR 40-5 and associated noise level compatibility guidelines (Gutierrez-Palmenberg, Inc. and Jason Associates Corporation 2001). According to the guidelines used to assess noise and land use compatibility, the overall noise impact of YPG's current activities would be characterized as minimal due to the remote nature of the proving ground. Noise impacts from the Proposed Action would be intermittent and less than significant.

2 Description of the Proposed Action and Alternatives

This chapter describes in detail the Proposed Action as well as the No Action Alternative. The No Action Alternative is analyzed to provide a baseline against which to compare the potential environmental consequences of the Proposed Action. This chapter also describes any alternatives that were considered but eliminated from detailed analysis, along with the rationale for their elimination (Section 2.3).

2.1 No Action Alternative

There would be no expansion of impact areas under the No Action Alternative and YPG would continue to operate as it currently does (including the tests described in Section 1.2). The existing Impact Area is shown below (Photos 1, 2, and 3). If Impact Area A is not expanded, current restrictions and limitation usage would continue, surface danger zones from adjacent tests would overlap, restricting uses by these programs. This alternative is considered in the environmental consequences analysis to provide a baseline for comparing effects of the Proposed Action on current environmental conditions.



Photo 1. Existing Test Location within Impact Area A.



Photo 2. Existing Test Location within Impact Area A.



Photo 3. Existing Test Location within Impact Area A.

2.2 Description of the Proposed Action

The Proposed Action involves adding approximately 920 acres of land to expand the existing Impact Area A to provide additional areas for testing at YPG. The expanded area would encompass approximately 3,790 acres of land. Within this boundary approximately 336 acres would be further designated for static detonation tests, including four static detonation pads (approximately 17.5 acres each). The location of the proposed Impact Area A and static detonation test expansion area is shown in Figure 2. The proposed expansion is within an area of historical munitions contamination identified in the Final Range Wide Environmental Impact Statement (Figure 3; Gutierrez-Palmenberg, Inc. and Jason Associates Corporation 2001).

The proposed expansion of the impact area would include the same use and capabilities currently conducted in Impact Area A, as described in Section 1.2. The primary uses of the area include surface and buried munition detonations, fragmentation recovery, fuel burns (slow and fast cook-offs), and small and large caliber projectile impacts. The area is primarily flat, which allows for good observation of these types of activities. The proposed expansion of the current facilities would primarily benefit USAG YPG by enabling it to properly and adequately conduct ammunition hazard classification and insensitive munition testing as well as other surface/subsurface/buried explosive ordnance blast testing.

Within the expansion project area, there would be four proposed detonation pads along with access trails. These locations would have a diameter of 300 meters and be prepared (leveled and topped with aggregate base course (ABC) material) over a three- to five-year period in order to facilitate open air, static detonation utilization. The static detonation test areas would provide specific amenities such as fragment dispersal and target damage assessment. In these locations, explosive charges would be set up and manually detonated in place. Fragments would be collected after detonation, or threat targets (e.g., mannequins, cargo trucks, pickup trucks, etc.) would be set up to detonate munitions in order to assess damage to the targets. Approximately 50 percent of tests would require recovery of fragments. Personnel would systematically walk the area flagging located fragments. Their position would be recorded with GPS, and they would be recovered to take additional physical measurements (dimensions and weight). Fragments would then be properly disposed of.

The surface/subsurface/buried explosive detonations would require a hole to be dug using an auger or backhoe to place the explosive charge for detonation. After detonation, the created holes/craters would require backfilling using the ejected soil material. Graders and/or Bobcat/backhoe-type soil movers would be used to fill in the hole/crater, and the area would be leveled or tapered to adjacent ground elevations. The detonation areas would be maintained free of vegetation to allow unobstructed camera views from 360 degrees around the center point. Multiple targets could be placed at various locations within a 100-meter radius of the center point of the detonation pads.

An access trail would be established to each pad. In some locations, the trail would have to cross washes, and some areas along the crossing would have to be improved to allow safe transition to the other side. If washes are crossed to get to the gravel detonation areas, their profile would be maintained to allow natural water flow. If necessary, vegetation removal within the washes would be done by trimming to near ground level without mechanical dragging or grading. Because desert washes represent the best habitat for most native species, munitions testing would avoid these areas. Other standard mitigation measures and best management practices (BMPs) would be implemented, as appropriate to eliminate or avoid adverse impacts to biological resources during site preparation activities and continued operations.

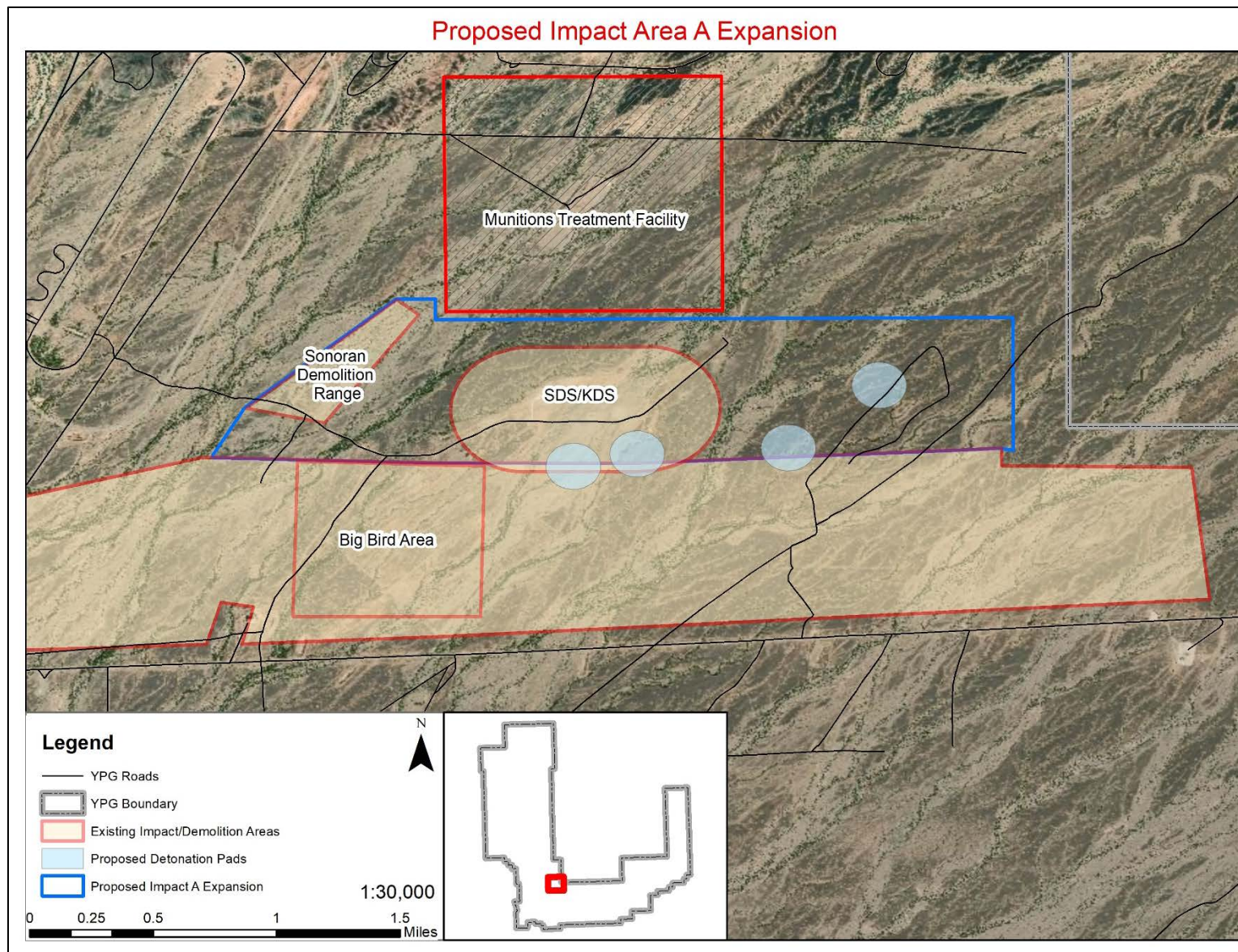


Figure 2. Proposed Impact Area A Expansion

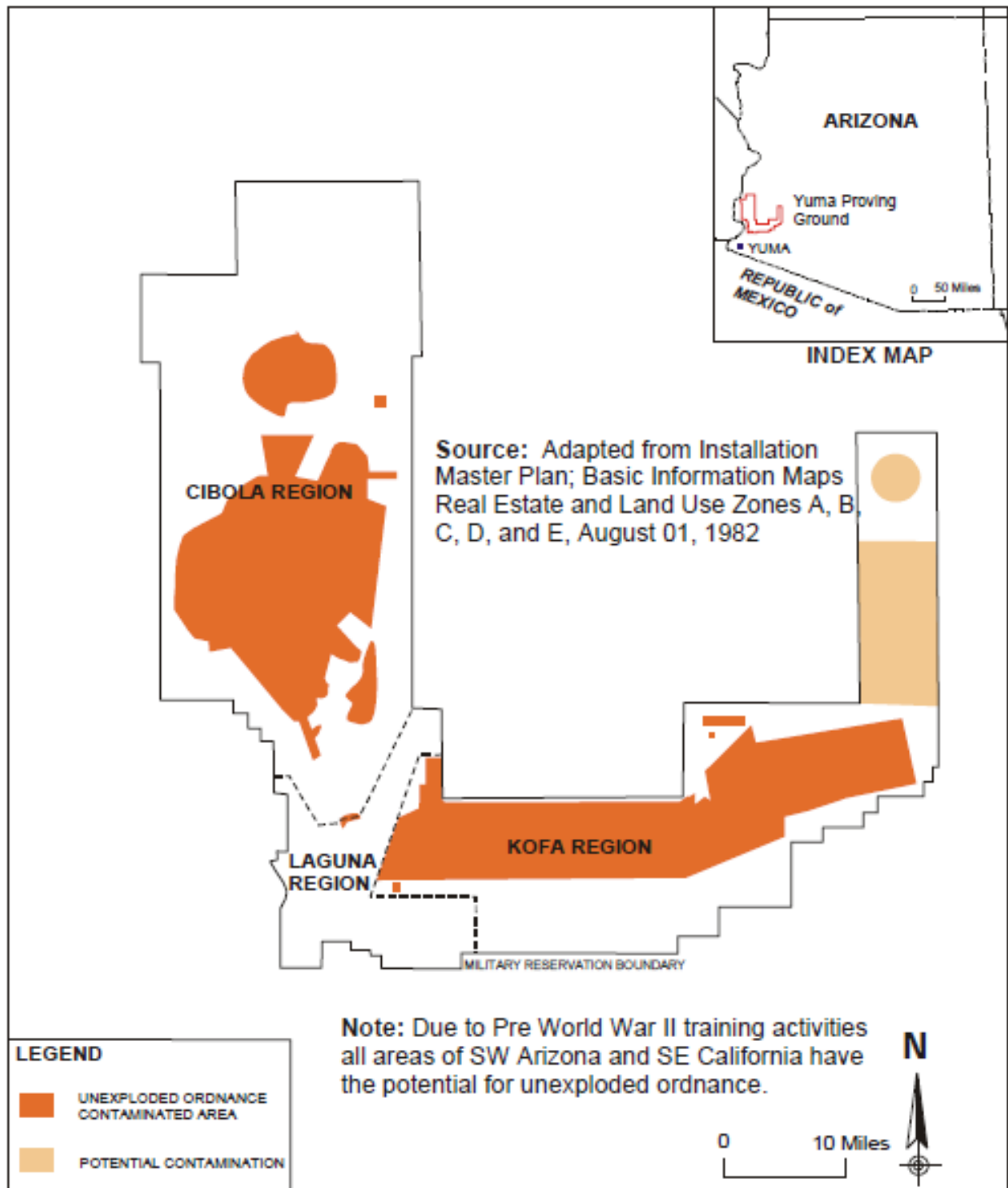


Figure 3. Areas of Known and Potential Unexploded Ordnance Contamination

2.2.1 Construction Details

Expansion of Impact Area A would include site preparation and grading of the proposed detonation pads and access trails. The following construction and preparation activities may occur at some or all of the detonation pad test areas depending on existing topographical and access conditions:

- Limited leveling of discrete areas for placement of targets and instrumentation (clearing and leveling of the entire newly expanded impact area is not required);
- Test positions would be maintained by removal of most vegetation (except navigational waterways) around each area;
- Establishing access trails within the impact area to target positions, as needed;
- Digging explosive charge pre-placement holes and backfilling of soil material ejected from detonation from subsurface/buried explosive charges;
- Setup of stationary or moving targets as needed on a test-by-test basis; and
- Setup of cameras, equipment, and instrumentation.

Where required, ABC material would be installed within the proposed detonation pads. ABC material would be delivered by trucks, and a grader would be used to level the ground and spread the material. A water truck would be used, if necessary, to water roadways during construction. In the locations where the detonation pads are constructed, clearing of small brush would occur to maintain a cleared test area for remote camera viewing, and to allow ground recovery of fragmentation from the detonations. Some grading would be required to provide established routes to designated areas in the expanded impact area. If necessary, some ABC material may be added to portions of the access trails where appropriate to minimize erosion and degradation.

Construction in the expansion area would present common construction hazards and impacts. All construction work on the site would occur within established guidelines and procedures to ensure that appropriate safety precautions are followed to prevent accidents and injuries.

2.3 Alternatives Considered but Not Carried Forward

During the planning process, one additional alternative was considered to meet the purpose and need for the Proposed Action. This proposal included a smaller sized expansion, but it was determined to be of insufficient size to place the four proposed static detonation pads. This proposal encompassed approximately 300 acres of area not currently designated as impact area. This alternative was eliminated because this limited expansion would not meet the need of future test requirements.

3 Affected Environment and Environmental Effects

This chapter presents the affected environment and environmental consequences for implementation of the Proposed Action. The affected environment represents the baseline conditions against which the effects that may result from the Proposed Action are evaluated under each alternative. A number of resources were not carried forward for further analysis because the potential for environmental impacts to these resources was determined to be nonexistent, unlikely, or negligible (see Section 1.5); therefore, the analysis is focused on the resource areas where an impact is more likely to occur.

In addition to a description of the affected resources, this chapter presents an analysis of the direct, indirect, and cumulative impacts to the human and natural environment likely to result from implementation of the alternatives described in Chapter 2. Environmental effects can be direct, indirect, or cumulative and short-term or long-term. Direct effects are those that are caused by the action and occur at the same time and place. Indirect effects are the reasonably foreseeable consequences of the action but occur later in time or are further removed in distance from the direct effects. Cumulative effects result from the incremental effect of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

The description of the Proposed Action includes all known mitigation measures, and it is assumed that the Proposed Action would be implemented as described, using accepted guidelines, standard operating procedures, and BMPs intended to reduce potential impacts.

3.1 Air Quality

3.1.1 Affected Environment

The Clean Air Act identified and established the National Ambient Air Quality Standards (NAAQS) for a number of criteria pollutants, as well as National Emission Standards for Hazardous Air Pollutants (NESHAPs), to protect human health and the environment and to sustain healthy air resources. The ADEQ is the regulating and enforcing agency for Arizona air quality standards and has adopted the Federal standards (<http://www.epa.gov/air/criteria.html>).

3.1.1.1 Criteria Pollutants and the National Ambient Air Quality Standards

The criteria pollutants include carbon monoxide (CO), ozone (O₃), lead (Pb), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and suspended particulate matter (PM). Two size classes of PM emissions are regulated, including particulates up to 10 microns in diameter (PM₁₀) and particulates up to 2.5 microns in diameter (PM_{2.5}). The NAAQS represent maximum concentration levels of air pollution that are considered safe for public health and the environment (See Table 1; EPA 2019). If the NAAQS for a particular criteria pollutant has been exceeded in a region, a status of "nonattainment" is identified for that pollutant. When a nonattainment area is reclassified to attainment, it is designated as a "maintenance area," indicating the requirement to establish and enforce a plan to maintain attainment of the standard. If the NAAQS have not been exceeded in a region, it is classified as "attainment" or "unclassified."

Table 1. National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	NAAQS*
Carbon Monoxide (CO)	1-hour	35 ppm
	8-hour	9 ppm
Lead (Pb)	3-month Rolling	0.15 µg/m ³
Nitrogen Dioxide (NO ₂)	1-hour	100 ppb
	Annual	53 ppb
Ozone (O ₃)	8-hour	0.070 ppm
Particulate Matter – Fine (PM ₁₀)	24-hour	150 µg/m ³
Particulate Matter – Respirable (PM _{2.5})	24-hour	35 µg/m ³
	Annual	15 µg/m ³
Sulfur Dioxide (SO ₂)	1-hour	0.075 ppm
	3-hour	0.5 ppm

*parts per million (ppm); parts per billion (ppb); micrograms per cubic meter (µg/m³)

YPG is located within Yuma and La Paz Counties. Yuma County is in attainment for all criteria pollutants with the exception of PM₁₀ and O₃. The ADEQ, in conjunction with the Environmental Protection Agency (EPA), designated portions of Yuma County as a moderate nonattainment area for the 24-hour standard of PM₁₀. The Yuma PM₁₀ Nonattainment Area is located in the southwestern part of Yuma County comprising about 456 square miles or 300,000 acres. The nonattainment area is in the following townships (40 CFR § 81.303):

- T7S- R21W, R22W
- T8S-R21W, R22W, R23W, R24W
- T9S-R21W, R22W, R23W, R24W, R25W
- T10S-R21W, R22W, R23W, R24W, R25W.

Mobile emission sources, such as vehicular and agricultural equipment emissions, and blowing dust are the primary contributors to PM₁₀ emissions in this region. A State Implementation Plan (SIP) revision was submitted in 1991, and a supplement was submitted in 1994 adopting a range of PM₁₀ control measures and demonstrating attainment with the NAAQS. Data indicate that the entire county has moved into attainment with the 24-hour PM₁₀ standard; however, EPA has not approved the ADEQ Yuma County PM₁₀ Maintenance Plan (ADEQ 2006), and this area remains classified as nonattainment. A small portion of YPG is located within the Yuma PM₁₀ nonattainment area; however, the project area is not located within the nonattainment area. Additionally, the project area does not encompass the portion of Yuma County that is in non-attainment for O₃.

General Conformity Rule

The Clean Air Act, Section 176(c), states that a federal agency cannot issue a permit for, or support an activity within, a nonattainment or maintenance area unless the agency determines it will conform to the most recent EPA-approved SIP. A conformity analysis must clearly demonstrate that federal projects will not:

- Cause or contribute to any new violation of a NAAQS.
- Increase the frequency or severity of any existing violation.
- Interfere with provisions in the applicable SIP for compliance with the NAAQS.

General Conformity de minimis rates are specified in 40 CFR 93.153. A conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area caused by the federal action

would equal or exceed the de minimis rates. 40 CFR 93.150-160 contains general conformity requirements that currently apply to federal agency related activities, except transportation projects, in the Yuma Moderate PM₁₀ Nonattainment Area. The regulations are intended to ensure federal actions are consistent with state and local air quality planning. The project area is north of the nonattainment area; therefore, emissions from the expansion project are exempt from the General Conformity Rule.

3.1.1.2 Hazardous Air Pollutants

Hazardous air pollutants (HAPs), also known as toxic air pollutants or air toxics, include a group of 187 pollutants identified by the EPA as having the potential to cause cancer or other serious health effects such as reproductive effects, birth defects, or adverse environmental and ecological effects. These are generally associated with solvents and chemicals used in industrial processes, and usually emitted in much lower quantities than the criteria pollutants. There are no federal ambient air quality standards for HAPs; however, the State of Arizona has a HAP program that requires specified minor sources of HAPs and all major sources of HAPs to provide controls or perform a risk management analysis (the equivalent of a Resource Conservation and Recovery Act risk assessment) to demonstrate that control is not necessary. Federal NESHAP requirements are limited to categorical stationary source operations. YPG is presently a minor source of HAP emissions and the proposed activities do not fall into any of the regulated categorical activities. The relevance of the standards lies within the development of emission factors by the EPA to assess these requirements for protection of the public health from acute and chronic toxins.

3.1.1.3 Greenhouse Gases

Greenhouse gases (GHGs) have the tendency to affect the earth's atmospheric temperature through physical processes involving both light and thermal energy. Among the most prominent GHGs associated with human activities are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), which are byproducts of fuel combustion (i.e., gasoline, diesel, coal, natural gas, and wood). Other pollutants that are considered GHGs, but that are much less prevalent in the atmosphere, include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃). In recent years, GHG emissions from human activity have become a focus of concern and scrutiny as these relate to climate change. GHGs are addressed in terms of "CO₂ equivalent" (CO₂-e)¹. There are currently no Federal air quality standards for GHG emissions.

3.1.2 Environmental Consequences

Impacts would be considered significant if the alternative results in:

- Long term emissions that would equal or exceed the General Conformity de minimis rates specified in 40 C.F.R. 93.153.

3.1.2.1 No Action Alternative

Under the No Action Alternative, current air quality conditions would not change. Impact Area A would continue to operate as is, without any changes. There would be no new air emissions associated with construction, and operational emissions would not change from current levels.

¹ Greenhouse Gases are typically presented as CO₂ Equivalent = (1 × Carbon Dioxide emissions) + (25 × Methane emissions) + (298 × Nitrous Oxide emissions). The three main greenhouse gases are carbon dioxide, methane, and nitrous oxide. Methane and nitrous oxide have a 25 and 298 times higher, respective, global warming potential than carbon dioxide. The other four GHGs have very high global warming potentials, but these are generally countered by much lower levels of emissions.

3.1.2.2 Proposed Action

The impacts of the Proposed Action are evaluated in terms of the change in air emissions that would be caused by the project. Impacts would occur in the project area due to both construction and operational activities at the expanded Impact Area A. These impacts would occur at different times and would be of different durations. Air emissions from construction activities are considered a temporary or short-term impact since these would be associated with a one-time construction event related to grading portions of the project area for the static detonation pads and where needed to create access trails. Air emissions from operational activities would also be temporary and sporadic, primarily associated with recurring activities that would continue for the foreseeable future.

Construction activities would result in temporary and short-term emission increases and would primarily result from fuel combustion for construction power equipment used for grading, as well as from fugitive dust emissions. Construction activities that would generate emissions include construction vehicle traffic (e.g., commuting workers, haul trucks, etc.), off-road equipment, and fugitive dust. Exhaust from the construction vehicles and off-road equipment would include the pollutants CO, NO_x, PM_{2.5}, PM₁₀, SO₂, and CO₂. Fugitive dust emissions would be generated from site-grading activities.

Construction BMPs would be utilized during construction to reduce or eliminate fugitive dust emissions. The following BMPs may be implemented as necessary to reduce disturbance of particulate matter, including emissions caused by strong winds as well as machinery and trucks disturbing soils in the project area:

- Minimize land disturbance; and
- Suppress dust on traveled paths through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust entering ambient air.

Operational activities that would generate emissions include munitions testing within the impact area as well as vehicle travel to and from the area. The inherent isolation of impact areas through the development of safety zones ensures that non-persistent pollutants would not be transported offsite in the air in significant concentrations. This postulation is valid for short-term activities that are not analogous to persistent industrial type activity, such as munitions testing, and has been verified by a study performed in 1999 by the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM). Non-persistent pollutants would include most organic constituents that undergo chemical transformation during atmospheric dispersion, except those that are considered photochemically reactive and ozone precursors. However, the anticipated quantities of photochemically reactive constituents are not anticipated to significantly impact the ozone standard at this remote location.

Persistent pollutants include those elemental and stable molecular configurations of toxic metals including lead, antimony, arsenic beryllium, cadmium, chromium, cobalt, manganese, mercury, nickel, phosphorous, and selenium. The fate of persistent pollutants is the continual accumulation within the soils through particulate deposition. Persistent pollutants accumulate in soils over time and the quantity and accumulation within an impact area depends on how long the impact area is used and the type and amounts of ordnance used. The frequency of disturbed soils allows for a greater range of dispersion through windblown dust and determines the spread of contaminants.

The EPA has developed (draft) emission factors for 91 pollutants from the detonation of munitions in conjunction with the Army Environmental Command Bang Box Studies for over 161 munitions. These studies can be used to estimate the amounts of persistent toxins released. Determination of the effect on the area of impact beyond the immediate target impact area is beyond the scope of this study. The spread of the geoaccumulation of toxins over a period of decades is anticipated to maintain a relatively

low concentration of these persistent toxins and the isolation of YPG provides a buffer to the public at large.

Overall, the levels of construction and operational emission increases would result in less than a significant impact to the local and regional baseline emissions. Dust emissions from the site would be localized and increases in air pollutants at YPG would not be anticipated partly due to good dispersal by strong winds and lack of topographic features to inhibit dispersal. Dust emissions would be minimized as needed with appropriate BMPs and dust abatement measures to prevent potential deterioration of air quality. The project area is currently in attainment for all NAAQS and the Proposed Action is not anticipated to impact air quality exceedances in the PM₁₀ nonattainment area. Because the project area is located outside of designated maintenance and nonattainment areas, a General Conformity analysis is not required.

3.1.3 Mitigation and Monitoring

Munitions are constantly being developed to be more effective and less toxic. Mitigation is not an option and monitoring is impractical. However, sensitive areas may be identified, and the effects of these persistent toxins addressed and/or assessed as deemed necessary by other areas of environmental expertise.

3.2 Biological Resources

YPG is located in the arid Lower Colorado River subdivision of the Sonoran Desert. The area is characterized by broad, flat valleys and low mountain ranges with barren rock that support many plant and animal species native to the Sonoran Desert (YPG 2017). The landforms and habitats found at YPG support more than 320 species of plants, 33 species of reptiles and amphibians, and 47 species of mammals native to the Sonoran Desert. One hundred thirty-seven native bird species have been documented on the installation, of which approximately 50 breed on YPG. Detailed information on plant communities, xeroriparian plant communities, and wildlife species on the installation can be found in the Final Range Wide Environmental Impact Statement (YPG 2001) and the Integrated Natural Resources Management Plan (YPG 2017). The affected environment for biological resources is described below for the following two resources: Vegetation and Wildlife.

3.2.1 Affected Environment

3.2.1.1 Vegetation

A survey of the project area was completed on October 2, 2019 (Steward 2019). The area associated with Impact Area A supports an arid landscape comprised of sparse stands of vegetation consisting of desert scrub dominated by creosote bush-white bursage plant communities, cacti, few trees, sparse annual forbs, and mixed grasses. Some areas associated with xeroriparian zones are created by overland flows that are concentrated in micro channels and washes that enhance soil moisture recharge along the watercourses. The increased moisture results in greater plant biomass and diversity.

Most of the proposed expansion area is relatively flat and has been previously disturbed from operation and testing in the area. Non-native, invasive plant species are present in the area such as Mediterranean grass (*Schismus barbatus*) and Sahara mustard (*Brassica tournefortii*). Flat areas between washes have some intact desert pavement with scattered creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) vegetation communities. Saguaro (*Carnegiea gigantea*), cholla (*Opuntia* sp.), brittlebrush (*Encelia* sp.), ocotillo (*Fouquieria splendens*), and other native species also occur in the area.

Washes dissect the flat plains and support less drought-tolerant plants. Areas along washes and similar places typically have more diverse vegetation communities within the overall creosotebush-white bursage communities. There are xeroriparian communities located along the desert washes which have dense vegetation often dominated by paloverde (*Parkinsonia* sp.), ironwood (*Olneya tesota*), mesquite (*Prosopis* sp.), catclaw acacia (*Acacia greggii*), and smoketree (*Psoralea arguta*) as well as other typical desert species. One wash in the project area was surveyed; the wash represents a typical Colorado Desert wash woodland, dominated by paloverde, with some ironwood in the northern portion (there is less ironwood in the southern portion where there is previous surface disturbance and secondary growth is now present). The physical structure of the wash was fairly sprawling and mostly lacked steep caliche banks (Steward 2019).

Special Status Plants

No plants with protection under the Endangered Species Act (ESA) are known to occur on YPG, with the possible exception of the endangered Nichol's Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*). However, this species is not known to occur within 10 km of the project area. The only native plant species protected under Arizona's Native Plant Law (Arizona Revised Statutes, Title 3) identified in the project area is the Saguaro cactus (*Carnegiea gigantea*). Any saguaros present in the vicinity would be avoided, to the extent practical.

3.2.1.2 Wildlife

Wildlife on YPG is typical of the Sonoran desert scrub habitat. Common wildlife species in this habitat usually have physical and behavioral adaptations to survive the extreme hot and dry conditions, in addition to many being nocturnal to avoid the hot daytime temperatures. Wildlife that may occur in the project area include a variety of species that may be present throughout YPG. Areas with larger trees and dense vegetation typically support greater populations of wildlife due to forage availability and security cover, and therefore more wildlife are likely to be found in these areas rather than the flatter areas where vegetation is relatively sparse.

Common species associated with habitats present on YPG include coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenteus*), mule deer (*Odocoileus hemionus*), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), round-tailed ground squirrel (*Spermophilus tereticaudus*), roadrunner (*Geococcyx californianus*), mourning dove (*Zenaidura macroura*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), Gambel's quail (*Callipepla gambelii*), and mockingbird (*Mimus polyglottos*). The most commonly occurring reptile species at YPG include the side-blotched lizard (*Uta stansburiana*), desert horned lizard (*Phrynosoma platyrhinos*), western whiptail (*Aspidocelis tigris*), sidewinder snake (*Crotalus cerastes*), western diamondback rattlesnake (*Crotalus atrox*), kingsnake (*Lampropeltis getula*), and western shovel-nosed snake (*Chionactis occipitalis*). Amphibian species known to occur on YPG include red-spotted toad (*Anaxyrus punctatus*), Couch's spadefoot (*Scaphiopus couchii*), and Sonoran desert toad (*Incilius alvarius*) (YPG 2017). Of these species that are found on YPG, the project area is primarily used by small mammals and reptiles and common bird species. A survey of the project area was completed on October 2, 2019; wildlife observed included verdin (*Auriparus flaviceps*), Gambel's quail, black-tailed gnatcatcher (*Poliophtila melanura*), western whiptail, side-blotched lizard, mule deer, and black-tailed jackrabbit (Steward 2019).

Of the habitat types present on YPG and in the project area specifically, the washes provide one of the more important habitat types for wildlife because of the relatively dense vegetation that grows in these areas. These wash woodlands are important for nesting and foraging for native birds and also provide

important habitat for numerous migratory birds. Bats may also forage along the wash vegetation. These washes also provide shade and movement corridors for mule deer and other mammals.

Wild Horses and Burros

Both wild horses and burros (*Equus caballus* and *E. asinus*, respectively) are found on YPG. These species are managed by the BLM under the Wild and Free Roaming Horse and Burro Act of 1971, Public Law 92-195, and Cooperative Management Agreement updated in September 1989. Management is guided by the Yuma Field Office Approved Resource Management Plan (BLM 2010). Historically the Cibola-Trigo Herd Management Area (HMA) included lands in both Cibola and Kofa regions of YPG. However, since the completion of the 2010 BLM Yuma Field Office Resource Management Plan, measures have been implemented to remove horses and burros from the Kofa Region keeping them within the newly altered HMA boundaries, which eliminated portions of the HMA east of Highway 95 and north of Interstate 10 (BLM 2010). There are two small herds scattered throughout the area, the Gould Wash Herd and the Castle Dome Wash Herd. The Gould Wash Herd predominately roams on BLM-administered lands with some use on YPG. The Castle Dome Wash Herd predominately roams on YPG with a little use on BLM and Imperial NWR lands. Although the project area is not within the HMA, wild horses and burros may be present in this area and wild burros were observed during the survey of the project area in October 2019 (Steward 2019).

3.2.1.3 Special Status Wildlife Species

This section discusses species of concern and threatened and endangered species listed under the ESA.

Wildlife Species of Concern

Table 2 lists wildlife species of concern that may occur in or within 5 miles of the project area (Arizona Game and Fish Department [AZGFD] 2019). Species with potential to occur in the project area based on habitat are discussed briefly; those determined to be unlikely to occur in the project area based on habitat features are listed in Table 2, but are not discussed further.

Table 2. Wildlife species of concern with the potential to occur within five miles of the project area.

Common Name Scientific Name	Habitat	Occurrence in Project Area
Amphibians		
Sonoran Desert Toad <i>Incilius alvarius</i>	Ranges from arid mesquite/creosotebush lowlands and arid grasslands to oak/sycamore/walnut groves in mountain canyons. Often near permanent water but also found near temporary water or far from water.	Unlikely
Birds		
Arizona Bell's Vireo <i>Vireo bellii arizonae</i>	Lowland riparian areas, containing willows and mesquite. Can also utilize a mixed plant community of honey mesquite and saltcedar.	Unlikely
Gila Woodpecker <i>Melanerpes uropygialis</i>	Deserts, riverside groves. Found in groves of cottonwoods and other trees along rivers and streams at low elevations. Can also be found along washes with well-developed woody vegetation. Nests in holes in giant saguaro cactus.	Possible
Gilded Flicker <i>Colaptes chrysoides</i>	Strongly associated with, but not completely restricted to, giant cactus forests of southwestern deserts. Digs holes in saguaro cactus. They occur in the vicinity but	Unlikely

Common Name Scientific Name	Habitat	Occurrence in Project Area
	would be rare in the project area because of their dependence on saguaro cavities.	
Golden Eagle <i>Aquila chrysaetos</i>	Typically absent from true deserts like the Sonoran Desert, but may nest in chaparral and oak woodlands, oak savannas and grasslands amongst low rolling hills with diverse vegetation. Common near open spaces that provide hunting habitat and near cliffs or other high places that supply nesting sites.	Unlikely
LeConte's Thrasher <i>Toxostoma lecontei</i>	Desert flats with scattered low shrubs, especially in areas of sparse saltbush, or on creosote bush flats in some areas; mainly where there are a few slightly larger mesquites or cholla cactus.	Possible
Lincoln's Sparrow <i>Melospiza lincolni</i>	Willow and alder thickets, muskeg, brushy bogs. In winter, thickets, weeds, bushes. Breeds in northern and mountainous areas in dense low vegetation near water, such as streamside willow groves, bushy edges of bogs, brushy clearings in wet coniferous forest.	Unlikely
Mammals		
Harris' Antelope Squirrel <i>Ammospermophilus harrisi</i>	Rocky desert habitats that contain cactus and shrubs. Inhabit valleys, canyons, and river bottoms and favor areas with dense vegetation.	Possible
Brazilian Free-tailed Bat <i>Tadarida brasiliensis</i>	Found in forests and chaparral. Use a variety of different roost sites, including caves and man-made structures, such as bridges and attics. Caves with large rooms and high ceilings are the primary roosting habitats, although roosts also occur in hollow trees.	Unlikely
California Leaf-nosed Bat <i>Macrotus californicus</i>	Sonoran desert scrub; roosts in abandoned mines.	Possible
Cave Myotis <i>Myotis velifer</i>	Desert scrub of creosote, brittlebush, paloverde, and cacti. Roosts in caves, tunnels, and mineshafts and under bridges.	Possible
Greater Western Bonneted Bat <i>Eumops perotis californicus</i>	Arid and semiarid, rocky canyon country habitats; roosts in crevices and shallow caves on the sides of cliffs and rock walls.	Unlikely
Kit Fox <i>Vulpes macrotis</i>	Arid regions, such as desert scrub, chaparral, and grasslands. Common habitats are saltbrush and sagebrush.	Possible
Desert Bighorn Sheep <i>Ovis canadensis nelson</i>	Dry, desert mountain ranges with sparse vegetation.	Unlikely on site, but occupy nearby mountain ranges
Little Pocket Mouse <i>Perognathus longimembris</i>	Arid and semiarid habitats with grasses, sagebrush, and other scrubby vegetation. Preferred habitats include desert riparian, desert scrub, desert wash, coastal scrub, and sagebrush.	Possible

Common Name Scientific Name	Habitat	Occurrence in Project Area
Pocketed Free-tailed Bat <i>Nyctinomops femorosaccus</i>	Arid and semiarid, rocky canyon country habitats; roosts in crevices and shallow caves on the sides of cliffs and rock walls.	Unlikely
Pale Townsend's Big-eared Bat <i>Corynorhinus townsendii pallescens</i>	Desert scrub of creosote, brittlebush, paloverde, and cacti. Roosts in caves, tunnels, and mineshafts.	Possible
Spotted Bat <i>Euderma maculatum</i>	Forage in many different habitats, especially in arid or Ponderosa Pine forests, and marshlands. Roost in small cracks found in cliffs and stony outcrops.	Unlikely
Western Yellow Bat <i>Lasiurus xanthinus</i>	Roosts in trees such as Fremont's cottonwood, Arizona sycamore, and <i>Arizona white oak</i> . Uses the dead fronds that encircle palm trees as a roosting site, if available.	Unlikely
Yuma Myotis <i>Myotis yumanensis</i>	Wide variety of upland and lowland habitats, including riparian, desert scrub, moist woodlands, and forests. Prefer cliffs and rocky walls near water.	Unlikely
Reptiles		
Gila Monster <i>Heloderma suspectum</i>	Desert hillsides and slopes, canyons, gullies, and washes with rock substrates, and occasionally in rock piles.	Unlikely
Sonoran Desert Tortoise - Sonoran population <i>Gopherus morafkai</i>	Rocky slopes and bajadas of desert scrub, most often in paloverde-mixed cacti associations.	Possible, but very rare in this habitat

Habitat for a number of these species of concern is present within the project area for at least a portion of the year. Bird species that may be present include Gila woodpecker and LeConte's thrasher. These species may nest in the area or may migrate through the area. Mammals that may be present include kit fox, Harris' antelope squirrel, and little pocket mouse. These species may be present throughout the year or may pass through the area. California leaf-nosed bat, cave myotis, and pale Townsend's big-eared bat may also use the area for foraging.

Sonoran desert tortoise is known to be present in the vicinity; however, the project area does not exhibit typical habitat characteristics for Sonoran desert tortoise. It is possible that tortoise may venture into the site, but the area generally lacks adequate burrows or rock shelters for consistent occupation. In 2016, a tortoise was captured and radio-tagged by AZGFD in the Middle Mountains over 8 miles from the project location. This individual was found again east of Castle Dome Road within 2 miles of the project area and was equipped with a fresh transmitter at that time. AZGFD personnel made subsequent attempts to track this tortoise with radio telemetry during the 2017 field season with no success (Rubke and Leavitt 2017). Long distance movements by tortoise have been well documented; the reasoning behind these movements is not entirely understood, but hypotheses include: mate-seeking by males, nesting site selection, movement in response to adverse environmental conditions, and movement to hibernacula (Gibbons 1986). Long-distance movements have also been recorded in translocated tortoises after their release into a new area (Field et al. 2007). Based on the flat, gravelly terrain, and lack of shelter features, this area is likely poor habitat for Sonoran desert tortoise. It is possible for individual tortoises to pass through the area as evidenced by the marked tortoise found nearby at Castle Dome Heliport in 2017.

Threatened and Endangered Species

A formal species list of threatened and endangered species that may occur within the expansion area was requested from the U.S. Fish and Wildlife Service (USFWS), Arizona Ecological Services Field Office, on November 6, 2019 (Consultation Code 02EAAZ00-2020-SLI-0108). There are four wildlife species identified as potentially occurring within or in close proximity to the project area (Table 3). There was no critical habitat identified within the project area.

Table 3. Federally listed species with potential to occur in the project area

Common Name	Scientific Name	Status
Sonoran Pronghorn	<i>Antilocapra americana sonoriensis</i>	Experimental, Non-Essential
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened
Yuma Clapper Rail	<i>Rallus longirostris yumanensis</i>	Endangered
Razorback Sucker	<i>Xyrauchen texanus</i>	Endangered

The western population of yellow-billed cuckoo is listed as a threatened species by the USFWS (79 FR 59991) and critical habitat has been designated along the Colorado River north of the border with Mexico (79 FR 71373). This species uses wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, and dense thickets along streams and marshes. Suitable habitat is present along the Colorado River and associated wetlands west of YPG, but this species has not been identified within the installation. There are no wetlands or associated shrublands on YPG that would support yellow-billed cuckoo, including within the project area. The washes in the project area are small and narrow and would not provide adequate foraging area for this species.

Yuma clapper rail is listed as endangered under the ESA (32 FR 4001). There is no critical habitat within Yuma County for this species. Yuma clapper rail is typically found in freshwater marshes with water greater than 12 inches deep and dense to moderately dense stands of cattail (*Typha* spp.), bulrush (*Scirpus* spp.), and other emergent plants. There is no suitable wetland habitat for this species on YPG (YPG 2017). The project area falls outside of any marsh land habitat.

Razorback sucker is listed as endangered under the ESA (56 FR 54957) and the Colorado River upstream of Imperial Dam has been designated as critical habitat for the species (59 FR 13374). Habitat for this species consists of riverine and lacustrine areas, including backwaters. Naturally occurring waters on YPG are ephemeral and do not provide adequate and sustainable fisheries habitat. There are no intermittent or perennial waterways within the project area or connections to waterways that could result in impacts to individuals or populations.

Sonoran pronghorn is considered a Nonessential, Experimental Population under Section 10(j) of the ESA (76 FR 25593). An active captive breeding program is in place to aid in the reestablishment of Sonoran pronghorn populations within the reintroduction management unit where individuals born in captivity are released into the unit. Since 2013, the USFWS has released pronghorn from the captive breeding pens onto the Kofa NWR, and pronghorn from the experimental population have been observed in portions of the Kofa Region of YPG.

Within its current range, the Sonoran pronghorn generally prefers creosote bush-bursage, paloverde mixed cacti, and ephemeral wash habitats. As of December 2019, the nearest pronghorn have been east of the Castle Dome Mountains within King Valley on Kofa NWR over 17 miles north and east. Pronghorn

have been observed approximately 16 miles north along highway 95 between Mile Marker 71 and 86. As pronghorn numbers continue to increase, the occupied range is likely to expand. It is possible the pronghorn could occupy this area in the future.

The project area is located within the Arizona Reintroduction Management Unit. There is no requirement for consultation or conferencing under section 7 of the ESA on DOD lands because the released animals are part of a population that, by definition, is not essential to the continued survival of the species. The boundary for the project area is approximately 0.25 miles west of the Kofa NWR boundary. Pronghorn occurring within Kofa NWR are treated as a threatened species. The USFWS issued Biological Opinion 02EAAZ00-2014-F-0161 for activities and operations at YPG (USFWS 2014). This Biological Opinion addresses direct and indirect impacts on pronghorn on the refuge resulting from YPG test activity. The only requirement on DOD lands is to report to USFWS if incidental take occurs within one of the designated population areas because of military operations (YPG 2017).

3.2.2 Environmental Consequences

Impacts to biological resources would be considered significant if the following conditions occur:

- A regional or local species is extirpated.
- Impact would interfere with threatened or endangered species recovery.
- Ecologic processes are damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired.
- Habitat necessary for all or part of the life cycle of a species is lost as a result of the action alternative (e.g., lambing areas, migratory corridors, or wildlife watering areas).

3.2.2.1 No Action Alternative

Under the No Action Alternative, Impact Area A would not be expanded and there would be no changes to vegetation or wildlife habitat. No new impacts to biological resources would occur under this alternative. Vegetation and wildlife in the project area would continue to be affected by existing testing.

3.2.2.2 Proposed Action

Implementation of the Proposed Action would result in disturbance of vegetation, wildlife, and wildlife habitat. Human presence, regardless of activity, is often enough to disturb wildlife or cause them to avoid areas. Construction of the Proposed Action would disturb approximately 70 acres of partially disturbed Sonoran desert scrub habitat for creation of the detonation pads. Other activities described in Chapter 2 would also lead to disturbance of small areas. This area mainly provides habitat for common vegetation and wildlife species known to occur on YPG. Both the vegetation and wildlife found in the project area are ubiquitous on the base. Implementation of the Proposed Action would result in the removal of common vegetation in the detonation pads, and wildlife present within the proposed expansion area (primarily small mammals) would be displaced, likely dispersing to nearby, undisturbed areas.

Expansion of Impact Area A would include site preparation and grading of the proposed detonation pads and access trails. Where required, ABC material would be installed within the proposed detonation pads. ABC material would be delivered by trucks, and a grader would be used to level the ground and spread the material. The surface/subsurface/buried explosive detonations would require a hole to be dug using an auger or backhoe to place the explosive charge for detonation. After detonation, the created holes/craters would require backfilling using the ejected soil material. Graders and/or

Bobcat/backhoe type soil movers would be used to fill in the hole/crate, and the area would be leveled or tapered to adjacent ground elevations.

Implementation of these activities would likely displace larger wildlife, such as mule deer and coyote, and smaller animals and birds from the project area during construction. Impacts to wildlife could include disruptions in normal behavior such as feeding, breeding, or predation. Mobile animals such as mule deer, foxes, and birds can avoid the activities. Smaller, less mobile species, such as lizards and snakes, may become injured or killed by vehicles or equipment operating in the project area. In the long term, habitat would be impacted in the project area; there is similar habitat surrounding the project area that could be used by wildlife displaced during construction and testing. Washes would be avoided during construction to preserve natural stormwater flow regimes and native flora and fauna. Munitions testing would also avoid washes because these areas represent the best habitat for most native species. If necessary, any tree trimming or other vegetation removal would occur outside of migratory bird breeding season.

Munitions testing creates both noise and disturbance. The type of static detonation testing proposed already occurs on the existing impact area, and while the Proposed Action would add additional detonation pads for use, the general area is already subject to this type of impact. Noise and physical impacts may damage vegetation, including saguaro, and could result in reproductive failure of nesting birds. Testing activities could displace wildlife in the area. Munitions testing may disturb biological soil crusts, which may affect recolonization by native plants and colonization by annual weeds (Belnap et al. 2001). In wet years it is possible that large stands of invasive weeds, particularly grasses, may be present that may create a risk of fire. The risk of fire would not increase beyond that already present from current testing.

Overall, construction activities would result in short-term impacts to wildlife and long-term impacts to vegetation and associated habitat. Impacts to vegetation and wildlife as a result of implementation of the Proposed Action would be less than significant. No habitat necessary for all or part of the life cycle of a species would be lost as a result of the project. Ecologic processes would not be damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired. There would be no extirpation of a regional or local species.

Effects to Wildlife Species of Concern

There is the potential for wildlife species of concern to occur within habitat types in the project area or in close proximity to the project area (Table 2). Bird species that may be present include Gila woodpecker and LeConte's thrasher. Mammals that may be present include kit fox, Harris' antelope squirrel, little pocket mouse, California leaf-nosed bat, and pale Townsend's big-eared bat. These species may use habitat in the project area for hunting or may be residents of the area. They could be disturbed by project construction activities as well as testing. Continued munitions testing would result in noise and physical disturbance that could impact species by interfering with foraging, resting, and reproduction. Adult individuals may abandon the immediate area of human activities, including abandonment of young.

Although there are no current data indicating presence of desert bighorn sheep in the project area, nearby mountains provide suitable habitat. Expansion of the impact area would contribute to disturbance and human activity already occurring with the movement corridor for sheep passing through the area, but would not block movement through this area. The potential for impacts would be minor because sheep are unlikely to be in the area given the distance to the mountain range.

Sonoran desert tortoise is known to be present in the vicinity and may be present in the project area. A Sonoran desert tortoise was found east of Castle Dome Road within 2 miles of the project area. A survey of the project area was completed and no species were present. Prior to ground-disturbing activities, surveys for and relocation of tortoises would be performed within the project area to avoid potential impacts.

No habitat necessary for all or part of the life cycle of a species would be lost as a result of the project. Ecologic processes would not be damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired. There would be no extirpation of a regional or local species.

Effects to Threatened and Endangered Wildlife Species

No federally-listed endangered, threatened, proposed, or candidate species are known to occur in the project area. Any impacts under the Proposed Action would be similar to those under the No Action Alternative. Determinations of effect for the four listed species identified as potentially occurring near the project area are listed in Table 4.

Table 4. Determination of Effects to Federally Listed Species

Species	Determination of Effect
Sonoran Pronghorn	May Effect, covered in Biological Opinion 02EAAZ00-2014-F-0161 (USFWS 2014)
Yellow-billed Cuckoo	No Effect
Yuma Clapper Rail	No Effect
Razorback Sucker	No Effect

Currently, Sonoran pronghorn are unlikely to be present in the project area, however it is possible that they could occupy the area in the future as the population increases with recovery efforts and they continue to expand their range. The Proposed Action is within the non-essential, experimental population area; therefore, Section 7 consultation is not required for actions affecting pronghorn on military lands. For the purpose of consultation, pronghorn on the nearby Kofa NWR are treated as a threatened species, thus consultation would be required for any effect to pronghorn on the refuge. The Proposed Action would involve some clearing and grading activity, as well as ongoing testing operations at Impact Area A. Adverse effects to Sonoran pronghorn on Kofa NWR from YPG activities include visual and auditory disturbance by munitions being detonated near the refuge boundary, or human and vehicular presence near the boundary of the refuge. Wildfire may also directly or indirectly affect Sonoran pronghorn on the refuge in the event that wildfire encroaches from YPG onto the refuge. The Proposed Action supports static detonation testing that provides a controlled setting for munitions detonation. Detonation would be confined to the cleared area which eliminates the risk of munitions detonating in sensitive habitat or dense vegetation for wildland fire. No impacts are anticipated that were not already addressed in the Biological Opinion for YPG (USFWS 2014).

Habitat that could be disturbed is common in the area and not suitable for nesting by yellow-billed cuckoo. All leveling activity would occur during daylight hours and is anticipated to happen outside the breeding season for yellow-billed cuckoo (May 15 to September 30) and other breeding birds; however, if any clearing of vegetation must occur during this period, the area would be inspected by a biologist for

nesting birds prior to initiating work. Noise from testing activities in the expanded area would cause impacts similar to those currently occurring.

Because habitat for Yuma clapper rail consists of freshwater marshes and stands of emergent plants that are not present in the project area, it is unlikely that there would be any effects to this species from the Proposed Action.

Similarly, because there is no habitat for razorback sucker in the project area, the Proposed Action would not result in any effects to this species.

Based on the analysis in this EA, the Proposed Action would not interfere with threatened or endangered species recovery. No habitat necessary for all or part of the life cycle of a species would be lost as a result of the project. Ecologic processes would not be damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired. There would be no extirpation of a regional or local species.

3.2.3 Mitigation and Monitoring

Biological resources would be managed under the Integrated Natural Resources Management Plan and all applicable environmental laws. The intent of the Integrated Natural Resources Management Plan is to manage military installation lands to support the military mission and provide sustainable populations of biological resources. The following standard mitigation measures would be implemented, as appropriate to eliminate or avoid adverse impacts to biological resources during site preparation activities and continued testing.

- To the extent practical, avoid or minimize removal or trimming of trees during the breeding and migrating season (March 15th to September 30th).
- If any clearing of vegetation must occur during breeding season, the area would be inspected by a biologist for nesting birds prior to initiating work.
- Limit vehicle use to existing roads and facilities, to the greatest extent practicable.
- Avoid plants listed in the Arizona Plant Law to the greatest extent possible, and, when feasible, protect in situ or remove and plant elsewhere if construction activities will result in death of vegetation.
- Inspect and clean vehicles subsequent to working in or traveling through weed-infested areas.
- Monitor and remove invasive species in accordance with the Integrated Pest Management Plan.

There is a signed Memorandum of Understanding (MOU) between the United States Department of the Interior (USDI), USFWS, BLM, and the DOD YPG, concerning management of wildland fires (USDI 2006). Because of the wildfire risk posed by certain non-native, invasive species, particularly buffelgrass (*Pennisetum ciliare*), aggressive control efforts will be aimed at this species. Mitigation for increased fire risk associated with invasive plants involves increased awareness of fire starts when fuel loads are high, such as after wet winters. Firefighting resources should be in place and rapid notification of fire management personnel would occur when there are fire starts.

There are no scientifically well-tested protocols for re-establishing biological soil crusts in the Sonoran Desert. No mitigation for damage to biological soil crusts in impact areas is proposed.

3.3 Cultural Resources

Cultural resources consist of prehistoric and historic districts, sites, buildings, structures, objects, artifacts, or other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. In particular, cultural resources include

historic properties as defined in the National Historic Preservation Act (NHPA; 54 U.S.C. 300101 et seq.); cultural items as defined in the Native American Graves Protection and Repatriation Act (25 U.S.C. sections 3001-3013); archaeological resources as defined in the Archaeological Resources Protection Act (16 U.S.C. sections 470aa-470mm); and sacred sites as defined in Executive Order 13007, *Indian Sacred Sites*, May 24, 1996.

Section 106 of the NHPA requires that federal agencies with jurisdiction over a proposed federal project take into account the effect of an undertaking on historic properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and afford the State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation an opportunity to comment with regard to the undertaking. The statute also requires consultation with Native American Tribes that claim cultural affiliation to the area. Cultural resources at YPG are managed in accordance with the YPG Integrated Cultural Resources Management Plan, Fiscal Years 2017-2021 (Versar Inc. 2016) and the Programmatic Agreement between the Arizona SHPO and the Advisory Council on Historic Preservation (2016).

3.3.1 Affected Environment

Background

Native American occupation of the region dates back at least 10,000 years, although artifacts attributed to early occupation are relatively rare in the general region. The typical settlement pattern appears to have been one of small nomadic bands inhabiting the valley floors along major watercourses (Stone 1991). Floodplain horticulture, ceramics, and the bow and arrow were introduced during the Patayan Period (A.D. 150-1500). The regional population appears to have expanded dramatically at this time, occupying the Lower Colorado River basin and the lower reaches of the Gila River, as well as the peripheral desert regions (Waters 1982). Site types typical of the area include trails, rock shrines, and habitation sites that have rock rings, rock piles, clearings in the desert pavement, and artifact scatters (McGuire 1982). Determining the age of prehistoric sites is often difficult in this region of the southwest.

The Quechan, Cocopah, Halchidhoma, Maricopa, Yavapai, and other Yuman language family groups occupied the lower Colorado and Gila River valleys at the time of European arrival to the area. The Quechan primarily occupied the Lower Colorado River Valley and surrounding region. The Yavapai typically occupied areas to the north and east, while the Cocopah occupied regions immediately to the south, including the Colorado River Delta. Pima, Maricopa, and Tohono O'odham (Papago) occupied the regions to the east and southeast (Ortiz 1979).

Spanish exploration of the Lower Colorado River area began in 1540, and in the following century, settlement of the colonial frontier quickly engendered increased conflict and movement among the tribes in the area, although the only permanent Spanish settlement in the area was the mission on the California side of the Yuma Crossing, established in 1780 and abandoned after it was attacked by the Yumans in 1781 (Trafzer 1980). Little of historical significance happened in the YPG area between 1781 and the early 1800s when American trappers began filtering into the area. Euroamerican activity in the area increased after the U.S. took over the territory in 1848 and the California Gold Rush of 1849. The Army camp established in 1850 at Yuma Crossing became permanent in 1852 and remained active until 1883. River steamboats and the railroad provided shipping and commerce to the area. Agriculture, an important part of the Yuma economy in the late 19th century, expanded dramatically in the early 20th century.

In 1942, the U.S. Army established training camps and began formal testing in the area. Following the departure of General George Patton and his division in 1943, Camp Laguna was established and modeled after Patton's Camp Young. That same year the Yuma Test Branch began operations in the

Imperial Dam area. The Yuma Test Branch was deactivated in 1950 after the conclusion of World War II and reactivated as the Yuma Test Station in 1951 in response to the onset of the Korean War (Dosh and Marmaduke 1995). The test station ultimately became a major desert environmental test center, was reassigned to the U.S. Army Materiel Command in 1962, and in 1963 was renamed the Yuma Proving Ground (Hoffman 1984).

Site-specific Resource Information

The Area of Potential Effect – the geographic area within which a proposed action may directly or indirectly affect cultural resources – for this project is the boundaries of the proposed expansion area. The Kofa Region has been heavily used for munitions testing since the early 1950s and was used for World War II troop training as well. Most of the project area associated with the Proposed Action has not been subjected to archaeological survey due to unexploded ordnance contamination and the associated danger. The proposed expanded impact area occurs entirely within an impact area covered by a 1992 Memorandum of Agreement between the Department of the Army, the Advisory Council on Historic Preservation, and the Arizona State Historic Preservation Officer allowing lowered levels of survey or no survey at all to avoid undue danger of injury to survey personnel. However, cultural resource surveys have been conducted on lands around the expanded impact area (YPG 2010). Prehistoric sites are common on the volcanic plain south of the impact area. Most of the recorded sites in the vicinity are trail segments, cleared circles, rock rings, and artifact scatters with flaked stone. Many prehistoric sites in the region are located on terraces above river floodplains and are surface manifestations with few diagnostic artifacts that can be dated to a specific prehistoric period. Historic sites tend to occupy transportation corridors along river valleys, between mountain ranges, and over mountain passes, and are relatively scarce near the proposed impact area (YPG 2010).

3.3.2 Environmental Consequences

Impacts to cultural resources are considered significant if the following conditions occur:

- Prehistoric and historic sites eligible for the NRHP are adversely affected.
- Native American religious or other cultural activity areas are adversely impacted.

3.3.2.1 No Action Alternative

Under the No Action Alternative, YPG would continue to conduct munitions testing within the existing boundary of Impact Area A. Past use of the area for munitions testing may have had effects on historic properties that may be present within the existing impact area.

3.3.2.2 Proposed Action

The proposed expanded impact area is within an area previously contaminated with unexploded ordnance from activities dating back to World War II. This poses a danger to life and limb and cannot be subjected to archaeological survey. Resumed use of previously used areas of Kofa Region may have unknown but possible impacts on any historic properties that may exist within the proposed impact area. Review procedures have been implemented for this project in accordance with 36 CFR 800. The review has established that there would be no effect (Goslin, Personal Communication, 2019), based on the Programmatic Agreement between the Arizona SHPO and the Advisory Council on Historic Preservation (2016). If any unanticipated discoveries of archaeological remains are made, all activities in the area of the discovery would be stopped, and the YPG Cultural Resources Manager would be notified immediately in accordance with the Native American Graves Protection and Repatriation Act and Standard Operating Procedure 9 in the Integrated Cultural Resources Management Plan (Versar Inc. 2016).

3.3.3 Mitigation and Monitoring

Section 106 of the NHPA (36 CFR Part 800) requires Federal agencies to take into account the effects of their activities and programs on historic properties that are eligible or considered eligible for listing on the NRHP, and provide the Advisory Council on Historic Preservation with a reasonable opportunity to comment with regard to such undertakings. Unanticipated discoveries of archeological remains may occur even in areas that have been previously surveyed.

In case of an unanticipated discovery, all activities in the area of the find would be stopped, and the YPG Cultural Resources Manager would be notified immediately. These resources would be managed in accordance with 36 CFR 800. The YPG Cultural Resources Manager would assess the significance of the discovered resources in accordance with the NRHP-evaluation criteria and would make appropriate recommendations.

3.4 Soil Resources

3.4.1 Affected Environment

The surface soils of YPG have been classified as aridic and hyperthermic with lithic and typic torriorthents on the hills and mountains. The majority of soils at YPG have been characterized as ranging from extremely gravelly or cobbly sand, to very fine, sandy loam. Soil depth ranges from moderately deep in alluvial basins to very shallow in the mountain regions where bedrock is often exposed (Cochran 1991).

Soils encountered in the expanded impact area include Riverbend-Carizzo Complex and Cristobal-Gunsight Complex. Cristobal-Gunsight soils are found on side slopes of fan terraces and slightly elevated uplands between and adjacent to drainageways. The available water capacity of these soils is very low, surface runoff is moderate, and the permeability is moderate to moderately slow. The risk of water erosion is slight and the risk of wind erosion is very slight. The Riverbend-Carrizo soils are found on numerous landforms including active wash channels, benches and banks within the wash floodplain, and fan terraces. The complex consists of very deep, excessively drained soils, with rapid permeability, and very low or low runoff (Cochran 1991). The Kofa Region was heavily used for munitions testing since the early 1950s and was previously used for World War II troop training as well, and the impact area is located within the boundary of the area of historic munitions contamination.

The plant community associated with these soils is mainly creosotebush, white bursage, brittlebush, range ratany, paloverde, ironwood, and cactus. The Cristobal soil complex is poorly suited for wildlife habitat, while the Riverbend soil complex provides better wildlife habitat. Biological soil crusts are widespread on YPG, including in the Kofa Region. These crusts help control soil erosion by wind and water, contribute to nutrients for plant growth, and may help exclude some invasive plants.

3.4.2 Environmental Consequences

Impacts to soil resources are considered significant if the following conditions occur:

- Activities result in severe soil erosion;
- Soil subsidence occurs over large areas; and
- Permanent contamination of soil occurs that would restrict future land use.

3.4.2.1 No Action Alternative

Under the No Action Alternative, no changes to project area soils would occur and there would be no effect to soil resources beyond those currently occurring from use of the impact area. There would be

no increase to the size of the currently designated impact area. The impact to soil would continue to be individual impacts that are relatively small and isolated but have cumulatively impacted relatively large areas of the Kofa Region. The designated impact area is located within the boundary of the area of historic munitions contamination, that is, an area that has already been impacted by ordnance such that there would be no change in status quo under the No Action Alternative.

3.4.2.2 Proposed Action

The proposed expansion area is situated in a relatively flat area. Soils in this area reflect previous disturbances from vehicular traffic and mission usage and historic munitions contamination (Gutierrez-Palmenberg, Inc. and Jason Associates Corporation 2001). Short-term impacts to soils would occur from the use of heavy equipment to prepare the access trails and detonation pads; creation of the four detonation pads would result in approximately 70 acres of disturbance, including grading the desert pavement surface in some areas and exposing the light and powdery material below.

The majority of potential long-term disturbances would occur from ground-disturbing activities such as ordnance impacts. Additional impacts would occur because the surface/subsurface/buried explosive detonations would require a hole to be dug using an auger or backhoe to place the explosive charge for detonation. After detonation, the created holes/craters would require backfilling using the ejected soil material. Graders and/or Bobcat/backhoe type soil movers would be used to fill in the hole/crater, and the area would be leveled or tapered to adjacent ground elevations. These impacts would, for the most part, be relatively small and would not result in severe erosion, soil subsidence over large areas, nor permanent contamination of the soil.

The disturbed area would be subject to wind and water erosion. With the removal of desert pavement in the four detonation pad areas, there could be an increase in wind erosion, as the soil beneath is very light and powdery. If necessary, some ABC material may be added to portions of the pads and access trails where appropriate to minimize erosion and degradation. Overall, there would be no substantial increase in wind or water erosion of soils, either on or off the site, and erosion would decrease over time as loose soils are consolidated. The impacts would be temporary and could be reduced by using standard BMPs identified in the Stormwater Pollution Prevention Plan (SWPPP) and other YPG plans that would be implemented to minimize erosion around the disturbed area during construction.

3.4.3 Mitigation and Monitoring

Disturbance of soil during site preparation would be limited to the greatest extent practicable and would be contained within the designated project area. Proposed construction would result in disturbance of surface area greater than 1 acre and would be subject to ADEQ Construction General Permit requirements. The development of a SWPPP and coverage under the ADEQ Construction General Permit would be completed prior to the start of any construction activity. Temporary BMPs would be used during the construction phases, as identified in the SWPPP, to prevent run-on and run-off at the site. Appropriate post-construction stormwater controls would be implemented to minimize the potential for increased runoff and erosion. Stormwater control features that would be identified in the SWPPP and constructed on site would reduce the possibility of offsite impacts from water-based erosion during preparation and use of the area. If necessary, some ABC material may be added to portions of the access trails where appropriate to minimize erosion and degradation. Impacts within washes represent the biggest hazard for increasing the amount or rate of soil erosion in the project area. Test proponents are not allowed to target the wash areas when designing a test program. The following measures would be implemented during site preparation and operations to avoid or minimize potential impacts to soil resources.

- Disturbance of soil will be kept to the minimum necessary for operational purposes and will be confined to the delineated boundaries for the site to the greatest extent practical;
- Erosion control procedures and techniques will be used to avoid or minimize potential for severe erosion to occur;
- Vehicle and equipment traffic will use designated access routes; and
- A water truck would be used, if necessary, to water roadways during construction.

3.5 Water Resources

3.5.1 Affected Environment

YPG is within the Colorado/Lower Gila watershed. Surface drainage from western portions of YPG flows toward the Colorado River; similarly, drainage from the central and eastern portions flow toward the Gila River. Neither river is located within the YPG boundaries.

These two rivers replenish groundwater for the Yuma region. Based on water levels collected from the production wells located in the Kofa Region, depth to water ranges from more than 150 feet below the ground surface near the eastern boundary of YPG to greater than 800 feet in the central portion of Kofa Region to more than 200 feet at the Kofa Region administrative area. The isotopic composition and general chemistry from 15 groundwater wells across YPG were investigated in 2019 to determine the age of groundwater and better understand the origin, flow, and recharge of the aquifer system beneath YPG (NWRC 2019). The results of the investigation were used to evaluate the potential for contaminant migration from past and/or present surface activities at YPG to local groundwater supplies in the subsurface. Based on historical and recent depth to groundwater data, all wells sampled in this study penetrate into the deeper water table aquifer, and is confined only in some areas of YPG, not all areas of YPG. The great depth to groundwater in most areas, low precipitation, and high evaporation rates are all great assets in preventing the migration of possible surface contaminants to the subsurface. There are several wells located downgradient of the proposed expansion area, but no groundwater wells located within the proposed impact area expansion and no wells are planned as part of the Proposed Action. Groundwater wells supply water for potable and non-potable uses to three separate public water distribution systems serving each of the main complexes. Water supplies are considered ample for both current and future use (YPG 2017).

There are no perennial lakes, streams, mountain springs, or wetlands within the boundaries of YPG, nor are there any permanent surface water developments or natural water holes found on or near the proposed expansion area. However, there are numerous ephemeral stream courses, or washes, that originate on, or cross, the installation, and the expansion area is crossed by many small ephemeral washes. Desert washes are regulated as Waters of the U.S. under Section 404 of the Clean Water Act. These washes may be steep, stable, narrow channels in higher elevations, grading to wide, meandering, braided drainages in the surrounding plains. These desert washes are dry most of the year, which is characteristic of the low rates of precipitation and high evapotranspiration rates of the Sonoran Desert; only after significant rainfall events do these washes carry surface drainage from the area towards the Gila River to the south and towards the Colorado River to the west. The runoff from YPG typically is of good quality, but the volume is minimal, and the volume of water conveyed to the two rivers is barely perceptible (Gutierrez-Palmenberg, Inc. and Jason Associates Corporation 2001).

Small side washes traverse the project area, but no jurisdictional drainages were observed. These desert washes provide habitats of high relative diversity and biomass compared to surrounding areas, and they serve as movement corridors as well as browse and cover sources for wildlife.

3.5.2 Environmental Consequences

Impacts to water resources are considered significant if one or more of the following significance criteria are met:

- Surface water is contaminated by stormwater runoff to levels above Federal or State water quality standards;
- "Waters of the U.S." are degraded by actions that exceed limits authorized under the Clean Water Act, as amended;
- Groundwater is depleted to the degree that subsidence causes fissures to form; and
- Groundwater quality is degraded below Clean Water Act standards.

3.5.2.1 No Action Alternative

Under the No Action Alternative, Impact Area A would not be expanded. There would be no effect to water resources including groundwater.

3.5.2.2 Proposed Action

There are minor erosional features in, and near, the project area that drain to the surrounding area. Due to the relatively flat topography of the project area, post-construction stormwater runoff would be allowed to flow to the natural drainages to the north and west of the site. Sediment in stormwater runoff may be increased by impacting the soil surface, plant cover, or the natural drainage system. Soil surfaces that lose their protective rock and vegetative cover can increase stormwater runoff velocity and promote accelerated erosion. This action could lead to higher sediment yields entering drainage systems, causing siltation and increased flooding. The Water Program Manager would be consulted to ensure that all appropriate BMPs are included in the contract as requirements and the contractor would be required to comply with all required BMPs contained in the SWPPP.

When the washes are flowing, there is the possibility that they could transport munitions constituents of concern (MCOC) out of the area. MCOCs are defined as munitions constituents that have the potential to migrate from a source area to a receptor (human or ecological) in sufficient quantity to cause an unacceptable risk to human health or the environment (DOD Instruction 4715.14, 30 November 2005). A 1999 United States Army Center for Health Promotion and Preventive Medicine (USACHPPM) study investigated the possibility of transport of MCOCs off of the range complex. During this investigation, a total of 239 soil and sediment (from washes) samples were collected. These samples were collected from biased locations intended to clearly indicate whether or not MCOCs were present in site soil or were migrating off site in the washes. The study concluded that MCOCs were not present at significant levels in site soil, and were not migrating off site via the desert wash pathway. Based on the results of this investigation, surface water does not represent a viable pathway for migration of MCOCs off the range complex (USACHPPM 2007). The combination of low precipitation and high evaporation prevents surface water build-up and/or infiltration into the soil, minimizing the risk of surface water contamination from the Proposed Action.

Depth to groundwater at the installation varies dependent upon geology, location, and thickness of basin alluvium. Based on the depth to water in the expansion area, the lack of rainfall (average 3.5 inches annually), and the high rate of evaporation (more than 100 inches annually), the migration of possible surface contaminants to the subsurface under the Proposed Action is not likely.

3.5.3 Mitigation and Monitoring

Major desert washes are considered "Waters of the United States," and are regulated under Section 404 of the Clean Water Act. Dredging or filling of these washes requires a permit from the US Army Corps of Engineers Office. Wash profiles would not be affected under the Proposed Action in order to preserve natural stormwater flow regimes and native flora and fauna. Test activities would be planned such that they do not target the wash channels. If an observer reports an impact in a wash during testing, any additional rounds fired during that test would be redirected to areas outside of the washes. However, due to the nature of testing projectiles, potential impacts inside of ephemeral washes would be authorized by Section 404 of the Clean Water Act, Nationwide Permit No. 18.

3.6 Cumulative Effects

Cumulative impacts on environmental resources result from incremental impacts of an action, when combined with other past, present, and reasonably foreseeable future projects in the area. A cumulative impact is an impact induced by a proposed action that, when added to the effects of other past, present, and reasonably foreseeable future actions, results in an incremental effect on the resource. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, State, and local) or individuals (40 CFR 1508.7). While a single project may have negligible to minor impacts, when it is considered together with other projects on the installation, the effect may be collectively significant.

CEQ guidelines state that cumulative effects analyses should be limited to effects that can be evaluated meaningfully by decision-makers. These guidelines further state that the area to use in defining the cumulative impacts geographical boundary should extend to the point at which the resource is no longer affected significantly (CEQ 1997). For the purpose of this analysis, a geographic boundary of 1 mile was evaluated to determine the area for consideration for projects that could reasonably be expected to contribute to cumulative impacts when considered in conjunction with the Proposed Action.

3.6.1 Other Past, Present, and Reasonably Foreseeable Future Actions

The potential for other past, present, and reasonably foreseeable future actions to interact with the Proposed Action to create cumulative effects varies among the different resource areas. Each resource considered in this EA is analyzed in terms of its ability to accommodate additional effects of the Proposed Action in combination with past, present, or reasonably foreseeable future projects. Projects or actions with the potential to contribute to cumulative effects in the cumulative impacts analysis area include the existing use of Impact Area A and other mission activities occurring within the cumulative impacts boundary such as vehicle use on existing roads.

3.6.2 Cumulative Impact Analysis

Air Quality

Construction activities would have short-term minor impacts on the air quality of YPG, and there would be a long-term negligible incremental addition of emissions from testing in the expanded impact area. Ongoing and future activities in the cumulative impacts analysis area would result in similar types of effects to air quality. Ongoing military activities at YPG have the potential to affect air quality. The Proposed Action and other planned actions would conform to the SIP and would not be regionally significant. BMPs would be implemented to minimize dust generation, as appropriate. Neither the Proposed Action nor the other past, present, or planned future actions would contribute to long-term impacts on air quality, because there would be no significant increase in traffic or operational emissions

and activities would be intermittent and/or temporary (construction). Any contribution to cumulative impacts would be expected to be minor or less. Therefore, no significant cumulative impacts on air quality are anticipated.

Biological Resources

The Proposed Action in combination with ongoing and future activities in the cumulative impacts analysis area are not expected to significantly affect biological resources. Ongoing activity within the existing impact area and use of area roads generates noise and human disturbance and alters wildlife habitat. Wildlife movement patterns are altered through wildlife avoidance of existing roads and wildlife mortality may occur through vehicle collisions. Future ongoing activities have the potential to disturb habitat and wildlife. The cumulative impacts of incremental vegetation and habitat loss from ongoing and future activities would be minor. Because the amount of clearing would be small relative to the amount of habitat available on YPG and surrounding lands, any indirect cumulative impacts to species present in the area as a result of habitat loss would be minor. No significant incremental impacts to special status species from vegetation clearing or habitat loss would be anticipated. Any potential impacts to threatened, endangered, or other species of concern would require consultation with the USFWS and potential mitigation. Therefore, no significant cumulative impacts to any biological resources would be anticipated.

Cultural Resources

As the proposed expanded impact area is within an area previously contaminated with unexploded ordnance and cannot be subjected to archaeological survey, use of the previously used area of Kofa Region may have unknown, but possible impacts on historic properties that may exist within the proposed impact area. No known historic properties would be impacted by the Proposed Action. However, cultural resources do exist within the YPG, so other actions could potentially affect these resources. All federal agencies, including the Army, are subject to the requirements of the NHPA; therefore, all currently proposed and future actions are required to comply with this act for both known resources and previously unknown resources. This would protect cultural resources within the boundary of YPG, reducing the potential for cumulative effects on cultural resources.

Soil Resources

Implementation of the Proposed Action would likely result in minor impacts to soils. Impacts to soils from construction activities would occur during site preparation; however, with appropriate planning and the use of mitigation measures, direct and indirect impacts to soils would be anticipated to be minor. The Proposed Action could incrementally add to other projects on YPG that create soils disturbance and lead to minor cumulative impacts to soils. Continued implementation of BMPs for all projects and activities on YPG would reduce the potential for severe soil impacts and for incremental interaction with other on-post projects. Therefore, no significant cumulative impacts would be expected.

Water Resources

The Proposed Action is expected to have negligible, less than significant impacts on water resources. None of the past, present, or planned activities in the cumulative impacts analysis area would result in significant impacts to water resources. Therefore, no significant cumulative impacts to water resources would be anticipated.

3.7 Conclusions

This EA has analyzed the potential for environmental impacts from the proposed Impact Area A Expansion to each applicable resource area. Based on the evaluation in this EA, it was determined that impacts to air quality, biological resources, cultural resources, soil resources, and water resources could result from implementation of the Proposed Action. As discussed in the EA, implementing the Proposed Action would result in less than significant impacts on these resources. The potential for adverse impacts would be minimized by implementation of mitigation measures and BMPs described in the analysis. All aspects of the Proposed Action would follow applicable plans, policies, and procedures and standard BMPs would be implemented to reduce or prevent undesirable effects resulting from the project. Based on the analysis presented in this EA, no significant adverse impacts would be expected as a result of implementation of the Proposed Action including all applicable mitigation measures. Therefore, preparation of an Environmental Impact Statement is not required, and a FNSI is recommended.

4 Coordination and Preparation

This chapter lists the preparers, reviewers, and agencies and groups or persons who were contacted during development of this EA. Copies of correspondence to and from agencies, tribes, and persons contacted during the preparation of the EA are included in the administrative record.

4.1 Contacts

The following tribes, agencies, and organizations were contacted during scoping:

Tribal Representatives

- Ak-Chin Indian Community
- Chemehuevi Indian Tribe
- Cocopah Indian Tribe
- Colorado River Indian Tribes
- Fort McDowell Yavapai Nation
- Fort Mojave Indian Tribe
- Gila River Indian Community
- Hopi Tribe
- Quechan Indian Tribe
- Salt River Pima-Maricopa Indian Community
- San Carlos Apache Tribe
- Tohono O'odham Nation
- Yavapai-Apache Nation
- Yavapai-Prescott Indian Tribe

Federal Agencies

- Bureau of Indian Affairs
- Bureau of Land Management
- Marine Corps Air Station Yuma
- U.S. Bureau of Reclamation, Yuma Area Office
- U.S. Customs and Border Protection
- U.S. Fish and Wildlife Service
- U.S. Department of Agriculture Natural Resources Conservation Service
- U.S. Environmental Protection Agency

State Agencies

- Arizona Department of Agriculture
- Arizona Department of Environmental Quality
- Arizona Department of Transportation
- Arizona Game and Fish Department

Local Agencies

- City of Yuma
- La Paz County
- Yuma County
- Yuma Chamber of Commerce
- Western Arizona Council of Governments

Private Entities

- Arizona Deer Association
- Arizona Desert Bighorn Sheep Society
- Arizona Historical Society
- Arizona Wilderness Coalition
- Greater Yuma Economic Development Corp.
- Sierra Club, Grand Canyon Chapter
- Yuma Audubon Society
- Yuma County Chamber of Commerce
- Yuma Metropolitan Planning Organization
- Yuma Valley Rod and Gun Club
- Center for Biological Diversity

4.2 Preparers

This EA was prepared by North Wind Resource Consulting. Individuals who assisted with development of the EA are listed below.

Name	Title
Kim Maloney	Program Manager
Steven W. Dilks	Project Scientist
Andrew Blatchford	Archivist
Jace Fahnstock	Botanist
Kelly Green	NEPA Specialist
Scott Webster	Wildlife Biologist

4.3 Reviewers

The following individuals from U.S. Army Garrison, Yuma Proving Ground were instrumental in review of this EA.

Name	Title
Sergio Obregon	NEPA & SDWA Program Manager, Environmental Sciences Division
Stephen Patane	Team Leader, Mines, Countermine, & Demolitions
Patrick Metts	Environmental Protection Specialist, Environmental Sciences Division
Erin Goslin	Archaeologist, Environmental Sciences Division
Daniel Steward	Wildlife Biologist, Environmental Sciences Division
Steve Flores	Chief Artillery and Mines Branch, Munitions and Weapons Division
David Lewis	Sustainable Range Program, Mission Environmental Officer
Brian Hoon	Air Quality Specialist, Environmental Sciences Division
Dusti Rinehart	Stormwater/Spill Management, Environmental Sciences Division

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