TARGET FIELD TESTING IMPACT AREAS
ENVIRONMENTAL ASSESSMENT
U.S. ARMY GARRISON
YUMA PROVING GROUND

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

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ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
APE	Area of Potential Effect
Army	U.S. Army
AZDEQ	Arizona Department of Environmental Quality
AZGFD	Arizona Game and Fish Department
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
HEL	High Energy Laser
HPM	High-Powered Microwave
INRMP	Integrated Natural Resource Management Plan
IPaC	Information for Planning and Conservation
km	kilometer
MCOC	Munitions Constituents of Concern
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
OB/OD	Open Burn/Open Detonation
RCRA	Resource Conservation and Recovery Act
RDT&E	Research, Development, Testing, and Evaluation
RMP	Resource Management Plan
SDZ	Surface Danger Zone
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
UAS	Unmanned Aerial System
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USACE	U.S. Army Corps of Engineers
USAG	United States Army Garrison

USC	United States Code
USFWS	U.S. Fish & Wildlife Service
UXO	Unexploded Ordnance
WHA	Wildlife Habitat Area
YFO	Yuma Field Office
YPG	Yuma Proving Ground

1 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction and Regulatory Authority

The United States Army Garrison (USAG) Yuma Proving Ground (YPG) has developed this Environmental Assessment (EA) to analyze the impacts that could result from expanding Impact Area C west approximately 30 acres at GP 10 and the designation of a Research, Development, Testing, and Evaluation (RDT&E) impact area within the Self-Propelled Howitzer (SPH) Area at Gun Position 4221Z. The USAG YPG is a major RDT&E 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 to meet the current and future needs of the U.S. Armed Forces. The proposed expansion of Impact Area Charlie and the development of the two RDT&E impact areas in the SPH Area would accommodate the needs of artillery fuse lot acceptance testing and the hypersonic weapons program.

This EA was initiated in compliance with the National Environmental Policy Act of 1969 (NEPA; Title 42 of the United States Code [USC] § 4321 et seq.) to evaluate and document the potential for effects to the natural and human environment that could result from the Army's Proposed Action of establishing the East Arm Impact Areas, as described in detail in Chapter 2. This EA has been prepared per the Council on Environmental Quality (CEQ) NEPA implementing regulation (40 Code of Federal Regulations [CFR] Parts 1500-1508) and the Army's NEPA-implementing regulation (32 CFR 651, Environmental Analysis of Army Actions). In July 2020, the CEQ issued a final rule to update its regulations for federal agencies to implement NEPA. This final rule comprehensively updates, modernizes, and clarifies the regulations to facilitate more efficient, effective, and timely NEPA reviews. The changes went into effect on September 14, 2020; therefore, this analysis has been completed in accordance with the updated rule.

1.2 Background

YPG is in the southwestern corner of Arizona, near the California-Arizona border (Figure 1). The Colorado River is located to the west of the installation and the Gila River is to the south. The installation lies approximately 23 miles northeast of the city of Yuma and is in both La Paz and Yuma counties. YPG occupies about 1,300 square miles and extends approximately 60 miles north to south and 50 miles east to west. YPG is a general-purpose facility with over 50 years of experience testing weapon systems of all types and sizes. The facility conducts tests on medium and long-range artillery, aircraft target acquisition equipment and armament, tracked and wheeled vehicles, a variety of munitions, and personnel and supply parachute systems. Testing programs are conducted for all U.S. military services, friendly nations, and private industry. YPG is the Army's center for desert natural environment testing. YPG boasts the infrastructure for fully and realistically testing all weapons systems in the ground combat arena.

1.3 Purpose of the Proposed Action

The Army relies on YPG's advanced artillery test capability to develop, mature, and field any and all artillery ammunition and weapons. YPG purposes to provide support for current and future developments in hypersonic weapons testing by Lawrence Livermore National Laboratory (LLNL) and other Department of Defense (DoD) services. Testing of the warhead of the LLNL hypersonic weapon systems require detonation at short distances, approximately 600 feet from the end of the muzzle. The DoD has limited facilities that can accommodate this type of testing.

YPG would use existing specialized stationary gun mounts located at GP 10 near impact area Charlie, and GP 4221Z in the SPH area to facilitate this new test requirement. These gun mounts were previously used for indirect fire testing and are located just outside the existing artillery impact areas on YPG. The short detonation distance for this testing would result in munitions impact and debris outside current impact areas. YPG would expand impact area Charlie near GP 10 by 30 acres and establish a 225-acre impact area near GP 4221Z to accommodate this type of test. (Figures 2 and 3)

1.4 Need for the Proposed Action

This action is needed to meet Current and future demands in ammunition production and developments in

hypersonic warhead testing. A new impact area in the SPH Area and expansion of Impact Area Charlie are needed to support the testing of DoD weapon and munitions technologies that meet the testing mission of YPG.

1.5 Scope of the Environmental Analysis

YPG has identified the following resources that are present in the project vicinity, or that potentially could be affected by the Proposed Action, to be considered in the EA. A complete list of resources or uses that were considered are included in Chapter 3.

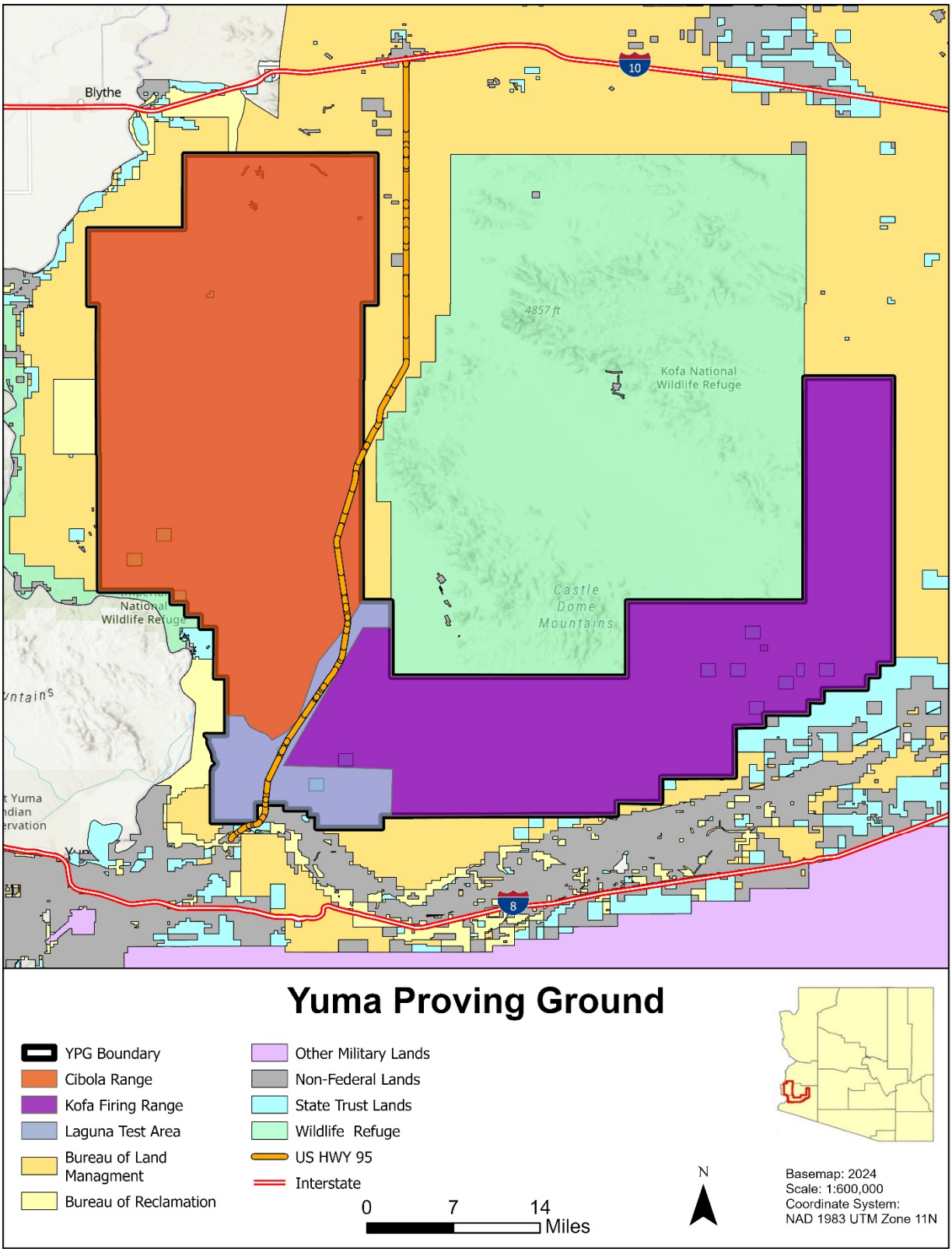


Figure 1. YPG Location.

1.6 Public Involvement and Agency and Tribal Coordination

YPG invites public participation in the proposed federal action through the NEPA process. YPG notified interested parties of the project on September 15, 2024 including letters submitted to potentially interested persons; organizations; federal, state, and local agencies; and tribal governments to inform and solicit input from the interested public and stakeholders (a list of individuals, groups, and tribal representatives who were contacted is included in Section 4.1). The Army believes that consideration of all interested persons' views and information provided promotes open communication and enables better decision making. All agencies, Tribes, organizations, and members of the public having a potential interest in the Proposed Action are urged to participate in the decision-making process by providing comments about important issues and concerns that should be considered in the analysis.

Additional detail will be added here after outreach occurs.

1.7 Decision to be Made

Based on the results of the NEPA analysis, the Army Authorized Officer will determine if the action would have significant effects; if so, an EIS would be prepared. If the action would not have significant effects, a Finding of No Significant Impact (FONSI) would be prepared, consistent with the regulations for implementing the procedural provisions of NEPA (40 CFR 1500-1508), and other relevant laws, regulations, or directives. The Authorized Officer will decide whether to select the Proposed Action, an alternative to the Proposed Action, or to take no action at all.

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

This chapter describes in detail the Proposed Action and the No Action Alternative. The No Action Alternative is analyzed to provide a baseline against which to compare the Proposed Action's potential environmental consequences.

2.2 Proposed Action

Under the Proposed Action YPG proposes to expand Impact Area Charlie at GP 10 by approximately 30 acres and develop a 200-acre impact area in the SPH Area at GP4221Z.

2.2.1 GP 4221Z

GP 4221Z would be used to support development of hypersonic warhead testing by LLNL and other DoD services. The proposed impact area would start approximately 100 feet from the end of the muzzle at 4221Z and would expand in a cone shaped formation and encompass approximately 225 acres (Figure 2).

Testing would include non-high explosive and high explosive hypersonic warheads. An earthen berm would be placed a safe distance beyond the target field to stop/catch any part of the warhead from traveling any further in the event of detonation failure. The stop berm would be approximately 15 feet high, 45 feet wide and 45 feet thick. Targets would be placed during test events and high-speed cameras would be placed alongside the projected spray cone inside the proposed impact area.

2.2.3 GP 10

GP 10 would be used to support development of hypersonic warhead testing by KLLNL and other DOD

and encompass the entire platform. The northern corner of the proposed expansion would not extend beyond Firing Front Road. The proposed expansion would be approximately 30 acres.

Testing would include non-high explosive and high explosive hypersonic warheads. An earthen berm would be placed a safe distance beyond the target field to stop/catch any part of the warhead from traveling any further in the event of detonation failure. The stop berm would be approximately 15 feet high, 45 feet wide and 45 feet thick. Targets would be placed during test events and high-speed cameras would be placed alongside the projected spray cone inside the proposed impact area.

2.2.4 Borrow Pits

To support the construction of earthen berms at both GPs 10, and 4221Z, a borrow pit, approximately 10 acres in size would be established south of Pole Line Road across from the access road to GP 4221Z (Figure 2). The proposed area is previously disturbed and would be converted to an official borrow pit following the installation's site approval process. Existing approved borrow pits, i.e. the Howard Cantonment Area Pit, the Ocotillo Pit, and the 6th Street Pit, may also be used in construction of the earthen berms.

Figure 2: Proposed Impact Area at GP 4221Z

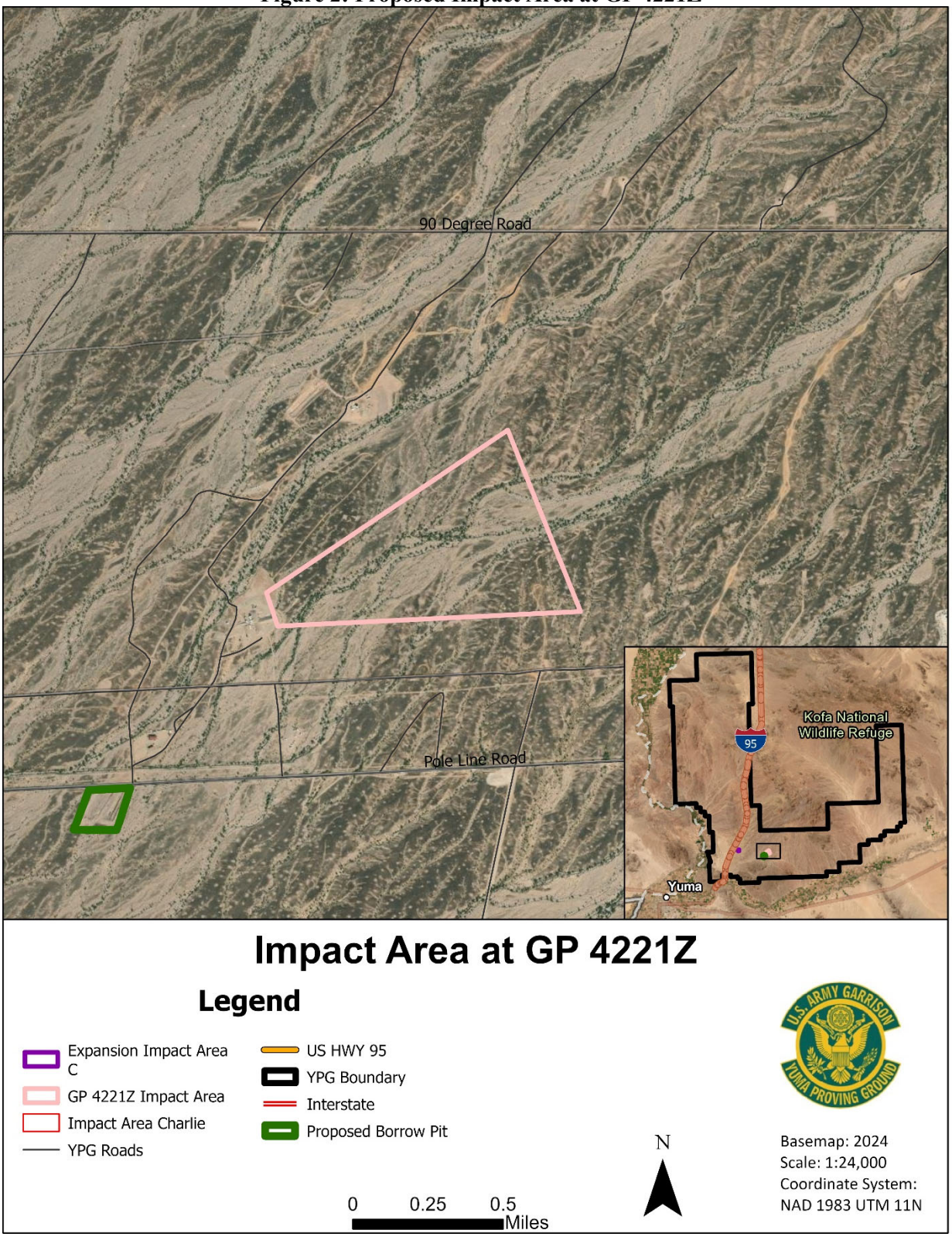
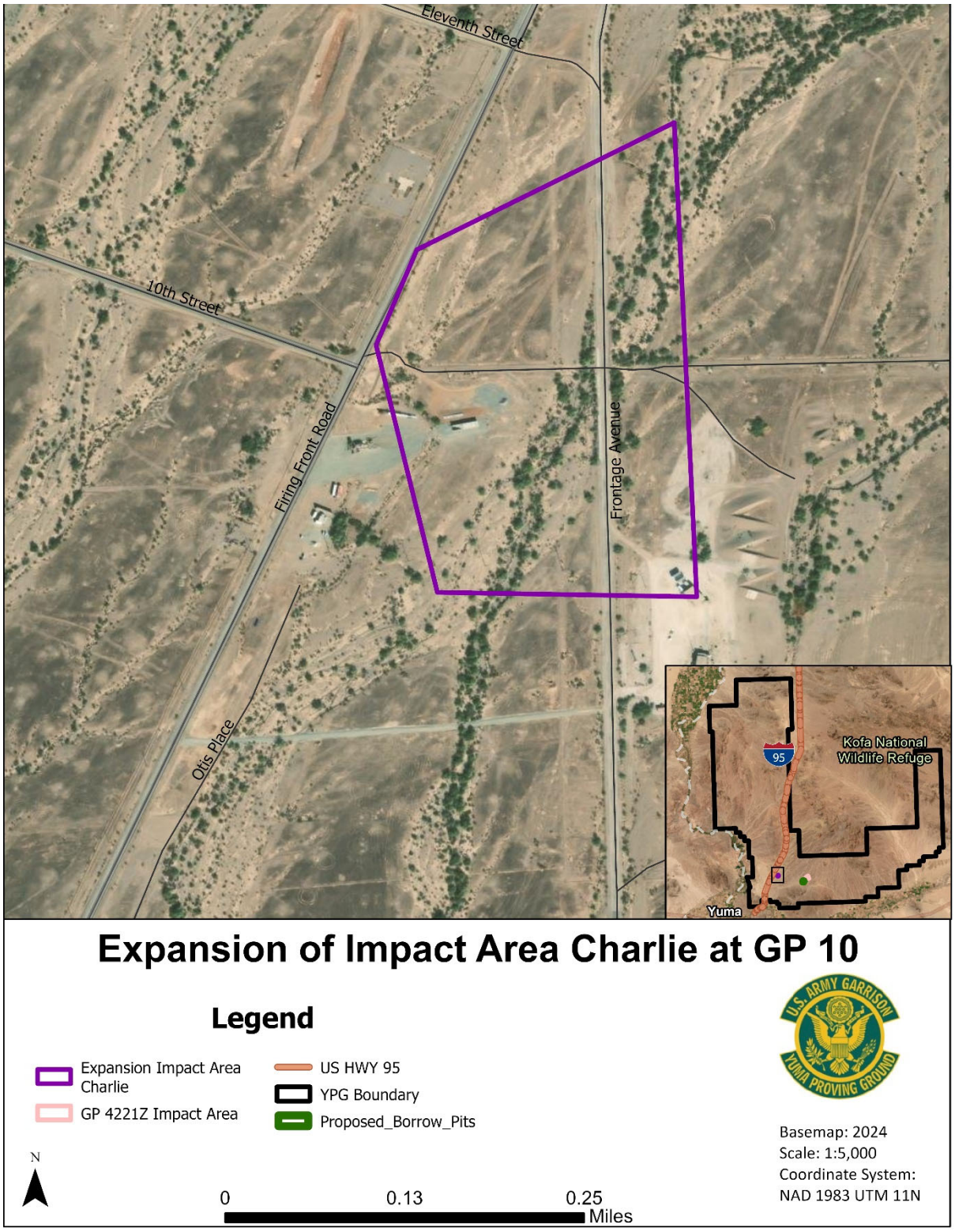


Figure 3. Expansion of Impact Area Charlie



2.2.5 Design Measures, BMPs, and Mitigation Measures

Design measures are included in the Proposed Action to reduce the potential for adverse effects on safety and natural and cultural resources. These include features of the Proposed Action that were developed by YPG, as well as activities that are anticipated to occur before and during project construction and throughout operation and maintenance of the project. These measures are described in Chapter 3, as applicable, under specific resources. Compliance with listed design features would be required for the implementation of the Proposed Action.

2.3 No Action Alternative

There would be no extension of Impact Area C and no designation of new impact areas in the SPH Area under the No Action Alternative, and YPG would continue to operate as it currently does. Without the extension of Impact Area Charlie and designation of these new impact areas, YPG would fail to meet the future testing needs of the DoD.

2.4 Alternatives Not Carried Forward for Further Analysis

During the development of alternatives for the Target Fielding Testing YPG determined that the following alternatives did not meet the purpose and need of the Proposed Action and the alternatives were not carried forward for further evaluation.

2.4.1 Relocate the Gun Platforms at the Proposed Gun Positions

GP 10 and 4221Z have pre-existing permanent facilities including specialized gun mounts that serve other testing missions for YPG. To relocate those facilities closer to existing impact areas to serve the purpose of the proposed action would preclude their use for other testing missions. In addition, to physically move these gun mounts would require specialized equipment as they weigh as much as 83 tons. YPG does not possess this specialized equipment and the cost to contract this effort would not be financially feasible. As a result, this alternative was not carried forward for further analysis.

3 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

This chapter presents the affected environment and environmental consequences related to 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. Of the resources considered, ten 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 3.1); therefore, the analysis is focused on the resource areas where there were potential impacts. In addition to a description of the affected resources, this chapter presents an analysis of the potential impacts to the human and natural environment likely to result from implementation of the alternatives described in Chapter 2. The description of the Proposed Action includes all known mitigation measures, and it assumes that the Proposed Action would be implemented as described, using accepted guidelines, standard operating procedures, and best management practices (BMPs) intended to reduce potential impacts.

3.1 Resources and Uses Considered

Table 1 outlines the resources considered by YPG, indicates whether the Proposed Action has the potential to result in a change in each, relative to existing conditions, and provides the rationale for eliminating or carrying each resource forward for further analysis. Those resources or uses determined not to be present, or that are present but would not be affected by the Proposed Action need not be evaluated in detail or discussed further. Only those resources identified as present in the project area and that may be affected are carried forward in the document if there are issues which necessitate a detailed analysis. A brief rationale is provided explaining why some resources were dismissed from further analysis. Resources and resource uses that were determined to warrant detailed analysis are analyzed in sections 3.2 through 3.8.

Table 1. Resources and Rationale for Elimination or Detailed Analysis.

RESOURCE/ USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE
Air Quality	Yes	No	Under the Clean Air Act, the U.S. Environmental Protection Agency has established the National Ambient Air Quality Standards (NAAQS) for six common air pollutants referred to as the "criteria pollutants." These include carbon monoxide, lead, ozone, nitrogen dioxide, sulfur dioxide, and particulate matter, which is presented in terms of particulate matter less than or equal to 10 micrometers in diameter and particulate matter less than or equal to 2.5 micrometers in diameter. These are the most common pollutants associated with human activities and natural events. The NAAQS represent maximum concentration levels of air pollution that are considered safe for public health and the environment. The project area currently is in attainment for all NAAQS. Construction activities would result in temporary and short-term emission increases and would primarily result from fuel combustion for equipment used for preparing the impact area, as well as from fugitive dust emissions. Construction BMPs would be utilized during construction to reduce or eliminate fugitive dust emissions. Air emissions from operational activities would also be temporary and sporadic, associated with testing activities. Operational activities that would generate emissions include munitions testing within the impact area as well as vehicle travel to and from the area. Each event would require the mobilization of operations personnel, motor vehicles, off-road power equipment, observation personnel, and ordnance detonations (both projectile launches and targets). The inherent isolation of an impact area 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; 1999). Similar emissions from activities at YPG have been evaluated under a conformity review analysis and compared to the conformity de minimis thresholds and regional emission levels. Air emissions have been estimated by applying U.S. Environmental Protection Agency emission factors to the various construction and operational activities. Total annual emissions have been shown to be well below the respective de minimis thresholds for similar activities at YPG. All emissions would be emitted either directly or indirectly within NAAQS attainment areas and the Proposed Action would have an insignificant impact to air quality in Yuma County. Overall, the levels of construction and operational emission increases would result in a negligible increase in local and regional baseline emissions; therefore, this resource is not carried forward for detailed analysis.

Cultural Resources	Yes	Yes	Impacts to Cultural Resources are analyzed in Section 3.3.
Environmental Justice	No	No	Executive Order (EO) 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 EO 12898 is to ensure activities that affect human health and the environment do not discriminate against minority or low-income populations. EO 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 remote land that is restricted from the public. Only authorized personnel would be allowed in the impact areas. 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. Therefore, this resource is not carried forward for detailed analysis.
Farmlands – Prime/Unique	No	No	The Farmland Protection Policy Act protects prime or unique farmlands from unnecessary and irreversible conversion to non-agricultural uses. YPG does not contain prime farmlands and there were no prime or unique farmlands This resource is not carried forward for detailed analysis.
Floodplains	No	No	EO 11988, *Floodplain Management*, restricts federal agencies from constructing in a floodplain. No construction or other modification of a floodplain area is proposed. This resource is not carried forward for analysis.
Hazardous Materials and Wastes	Yes	Yes	Impacts to Hazardous Materials and Wastes are analyzed in Section 3.4.
Health and Safety	Yes	Yes	Impacts to Health and Safety are analyzed in Section 3.5.
Land Use and Recreation	Yes	No	The proposed impact areas are on existing military ranges and are subject to routine safety exclusion for YPG personnel. These areas are not available for public access due to the nature of the military testing in the area and safety. There would be no change to the use of the area and this element will not be carried forward for analysis.
Livestock Grazing	No	No	No livestock grazing is authorized on YPG. This element is not carried forward for analysis.
Noise	Yes	No	Noise levels would increase temporarily when personnel are in the area preparing for tests and during testing. Personnel would wear appropriate hearing protection and follow Army noise regulations (Army Regulation 200-1). Noise impacts during operation of the impact areas would be intermittent and similar to current ongoing testing activities at YPG. Noise levels at the impact areas would adhere to acoustical limits established by DoD standards, as described in Army Regulation 40-5 and associated noise level compatibility guidelines (Gutierrez-Palmenberg, Inc. & Jason Associates Corp. 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. There are no sensitive receptors within the vicinity of the impact areas that would perceive an increase in noise. Noise impacts from the Proposed Action would be intermittent and minor; therefore, this issue is not carried forward for detailed analysis.

Socioeconomic Values	No	No	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 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.
Soil Resources	Yes	No	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, including those in the project area, 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 in the NIA and associated observation areas are dominated by two different soil map units. Soil Map Unit 265-Hickiwan-Gunsight Complex, 3 to 30 percent slopes covers over 50 percent of the area associated with the NIA and the associated observation areas. Soil Map Unit 350 – Gunsight-Cristobal complex, dry, 1 to 10 percent slopes covers approximately 20 percent of the NIA and associated observation areas. The remaining area is composed of six other soil units. Both dominant soils that occur in the NIA are a deep, somewhat excessively drained soil that occurs on fan remnants and are derived from a mixed fan alluvium. The available water capacity for all soil units within the project area is very low, surface runoff is moderate. The risk of water erosion is slight, and the risk of wind erosion is very slight. All of the features associated with the SIA and the associated instrumentation areas except for one observation point are dominated by Soils Map Unit 607 - Gunsight, Guvo and Hickiwam soils, dry, 2 to 35 percent slopes. These soils are described as deep, somewhat excessively drained soils that are derived from mixed fan alluvium or mixed slope alluvium over residuum weathered from calcareous conglomerate that occur on fan remnants and fan piedonts. The available water capacity for all soil units within the project area is very low, surface runoff is moderate. The risk of water erosion is slight, and the risk of wind erosion is very slight. The one observation point that is not on soils associated with map unit 607 occurs on Soils Map Unit 350 – Gunsight-Cristobal complex, dry, 1 to 10 percent slopes. These soils are a deep, well drained to somewhat excessively drained soil, which occur on fan remnants and are derived from a mixed fan alluvium. Soil disturbance would occur in the proposed impact areas and along access roads. The proposed staging areas are currently un-vegetated gravel uplands, so no soil stabilization is anticipated. Permanent impacts would be associated with construction of the instrumentation areas. Vegetation cover could be removed in the areas of soil disturbance and soil compaction. The potential for soil erosion would be limited by the relatively flat topography and small amount of ground disturbance anticipated. Impacts to local soils by activities would be minor and mostly temporary in nature; therefore, this resource is dismissed from detailed analysis.
Transportation Infrastructure	Yes	Yes	Impacts to Transportation Infrastructure are analyzed in Section 3.6.
Vegetation	Yes	Yes	Impacts to Vegetation are analyzed in Section 3.2.

Visual Resources	Yes	No	Due to the lack of population or development, it would be unlikely for the public to perceive a change from development and use of the impact areas. 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. Vehicles, facilities, and operations in the area would be visible, but are similar to what already occur in the surrounding area. There would be no change to the characteristic landscape. This resource is eliminated from detailed analysis.
Water Resources, including Wetlands	Yes	No	There are no surface water sources on or near the project area. The only surface water on YPG is located in natural "rock tanks", manmade wildlife waters, or manmade ponds for industrial water needs. All of these water sources are located many miles outside the project area. There are no wetlands on YPG. Desert ephemeral washes are a prevalent feature of the landscape and surface hydrology of YPG and surrounding BLM lands. They are produced by localized high intensity thunderstorms resulting in rapid surface runoff and flash floods. In the general vicinity of the proposed action, these washes drain south-southeast into the Gila River. These washes are dry most of the year as a result of infrequent rainfall, characteristic of Sonoran Desert precipitation patterns. Average rainfall for YPG is 3.5 inches per year, and the pan evaporation rate is 107 inches per year (YPG 2017). The combination of low precipitation and high evaporation reduces surface water build-up and/or infiltration into the soil minimizing the risk of surface water contamination from actions occurring at YPG. The proposed action would not alter any washes or result in additional runoff or any changes to water availably or demand. This resource is eliminated from detailed analysis.
Wild Horse and Burros	Yes	No	Wild horses and burros are protected by the Wild Free-Roaming Horse and Burro Act of 1971 (P.L. 92-195), as amended by FLPMA and the Public Rangelands Improvement Act of 1978 (P.L. 95-514). BLM is the managing agency responsible for protecting these animals and their habitat on BLM-administered public lands. YPG provides habitat for horses and burros and coordinates with BLM for their management as identified in YPG's INRMP and BLM's Resource Management Plan. The proposed action is located outside the Cibola-Trigo Herd Management Area. Horses and burros are addressed under biological resources.
Wildlife	Yes	Yes	Impacts to Wildlife are analyzed in Section 3.2.

3.2 Biological Resources

3.2.1 Affected Environment

3.2.1.1 Vegetation

Vegetation across YPG and surrounding lands is in the Lower Colorado Valley Subdivision of the Sonoran Desert, the largest and most arid portion of the desert. The terrain consists of broad, flat valleys covered by a network of desert washes, and scattered mountain ranges of almost barren rock. Due to the extreme aridity of this region, vegetation is sparse and consists of drought-tolerant species of shrubs, grasses, and cacti. In open valleys, creosote bush (*Larrea tridentata*) is dominant, occurring in widespread stands, or mixed with combinations of ocotillo (*Fouquieria splendens*), teddy bear cholla (*Cylindropuntia bigelovii*), bursage (*Ambrosia* spp.), and paloverde (*Parkinsonia* spp.) (Turner and Brown 1994; Shreve

and Wiggins 1964). Big galleta grass (*Pleuraphis rigida*) communities along with foothill paloverde trees (*Parkinsonia microphylla*), honey mesquite trees (*Prosopis glandulosa*), or bursage (*Ambrosia deltoidea*) are dominant in areas where more sand has accumulated. Desert washes can support less drought-tolerant trees and shrubs including blue paloverde (*Parkinsonia florida*), ironwood (*Olneya tesota*), smoke tree (*Psorothamnus spinosus*), mesquite (*Prosopis* spp.), and catclaw acacia (*Acacia greggii*). Foothills and mountains provide habitat for mixed shrubs such as brittlebush (*Enceliia farinosa*) in combination with other plants such as saguaro cactus (*Carnegiea gigantea).*

The project area is situated on desert pavement crossed with desert washes and creosote-bursage-paloverde- ironwood (YPG 2023). Biological soil crusts are widespread on YPG, including in the Kofa Region, and surrounding lands. These crusts help control soil erosion by wind and water, contribute to nutrients for plant growth, and may help exclude some invasive plants.

The immediate vicinity of the existing gun positions and proposed impact areas is heavily disturbed from ongoing testing. Disturbances include vehicle access for setting instrumentation and blast impacts from the muzzle of artillery fired from the position.

The proposed project is/are located within the Kofa Range of YPG. A variety of other projects and activities take place in this region such as automotive testing, ground combat systems testing, drop zones, sensor testing, and impact areas. All existing projects have been analyzed under NEPA and no effects with the potential to contribute to substantial cumulative effects have been identified. All future activities would be subject to NEPA analysis to ensure environmental compliance with federal and state laws and regulations in addition to YPG's Integrated Natural Resource Management Plan (INRMP).

Invasive, Non-native Plant Species

Invasive, non-native plants (both noxious and invasive weeds) constitute a threat to biodiversity on YPG.Plants of concern in the YPG area include buffelgrass (Pennisetum ciliare), Athel tamarisk, (Tamarix aphylla), salt cedar (Tamarix spp. and/or hybrids), common Mediterranean grass and Arabian schismus (Schismus barbatus and arabica, respectively), Sahara mustard (Brassica tournefortii), and several other species. YPG monitors and treats invasive plants in accordance with the INRMP and Integrated Pest Management Plan (IPMP).

Sensitive Plant Species

Native Plants in Arizona are protected by the Arizona Native Plant Law (3.A.A.C. 3 Article 11). Under this statute many native plants including, but not limited to, agave, cacti, and ocotillo may be protected from destruction or salvage. Private and state agencies must provide a notice of intent to the Arizona Department of Agriculture to destroy or remove protected native plants. Federal agencies are not required to file notice of intent for removing protected plant species; however, if those plants are being transported outside federal lands, then specific permits or tags would be required for salvage.

Only one federally endangered plant species has been identified within YPG boundaries. The Nichol's Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*) is a small, barrel cactus that is found on limestone-derived soils on alluvial fans or inclined terraces and saddles at elevations of approximately 3,200 to 3,800 feet. The cactus was documented on YPG land in 1995; however, subsequent surveys to relocate the cactus have been unsuccessful. The 1995 detection is believed to be an error due to lack of suitable habitat and the inability to relocate the cactus. In addition, Nichol's Turk's head cactus is not believed to be present near the proposed action because the nearest confirmed location is in the Waterman Mountains in Pima County, over 100 miles away from the project area (Rebman 1996).

3.2.1.2 Wildlife

Wildlife with the potential to occur within the vicinity of the project area are predominantly associated with Sonoran Desert scrub habitats. Mammal, reptile, and bird species typical of Sonoran Desert scrub habitat likely to be found within or near the project area include:

- **Mammals:** Mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), desert bighorn sheep (*Ovis canadensis*), badger (*Taxidea taxus*), kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), rock pocket mouse (*Chaetodipus intermedius*), Merriam's kangaroo rat (*Dipodomys merriami*), blacktailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), woodrat (*Neotoma* spp.), round-tailed ground squirrel (*Spermophilus tereticaudus*), and multiple bat species.
- **Reptiles:** Western whiptail (*Aspidoscelis tigris*), side-blotched lizard (*Uta stansburiana*), sidewinder rattlesnake (*Crotalus cerastes*), western diamondback rattlesnake (*Crotalus atrox*), coachwhip (*Coluber flagellum*), and western shovel-nosed snake (*Chionactis occipitalis*).
- **Birds:** A wide variety of bird species are found in the region, many of which are migratory birds that may breed or winter in other locations. Common birds in the region include ash-throated flycatcher (*Myiarchus cinerascens*), Audubon's warbler (*Setophaga coronate*), black-tailed gnatcatcher (*Polioptila melanura*), blackthroated sparrow (*Amphispiza bilineata*), Brewer's sparrow (*Spizella breweri*), Eurasian collared dove (*Strepropelia decaocto*), Gambel's quail (*Callipepla gambelii*), LeConte's thrasher (*Toxostoma lecontei*), loggerhead shrike (*Lanius ludovicianus*), northern rough-winged swallow (*Stelgidopteryx serripennis*), phainopepla (*Phainopepla nitens*) and red-tailed hawk (*Buteo jamaicensis*).

Special Status Wildlife Species

Special status wildlife species are subject to regulations under the authority of federal and state agencies. Special status species include those species that are listed by the USFWS as federal endangered, threatened, proposed, or candidate species under the ESA, Section 4, as amended, and those that are ranked as Species of Greatest Conservation Need (SGCN) 1 and 2 listed by Arizona Game and Fish Department (AZGFD). Each of these categories are listed below.

Federally Listed Wildlife

A review for potential occupancy by federally listed wildlife species was performed for the Kofa Range. The list of species considered was derived from the USFWS Information for Planning and Conservation (IPaC) system February 27, 2024 (USFWS 2024), Project Code: 2024-0054894. This information provided a basis for species that might be present in the vicinity of the project area. The federally listed species identified as potentially occurring in the project area are described in Appendix B. The following section describes those species with suitable habitat present within or adjacent to the project area.

Federally listed species in or near the project area include the federally endangered Sonoran pronghorn (*Antilocapra americana sonoriensis*) and candidate species, monarch butterfly (*Danaus plexippus*).

The IPAC list also included three listed bird species found along the Colorado River to the west and/or the Gila River to the south. These include the endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus),* the threatened western population of Yellow-billed Cuckoo *(Coccyzus americanus),* and endangered Yuma Ridgway's Rail (*Rallus obsoletus yumanensis)*. The project area is between approximately 8 and 11 miles from any potential wetland or riparian habitat that could support these species so there would be no effect since the species and its habitat are not present.

Sonoran Pronghorn. The Sonoran pronghorn is a federally endangered subspecies of the pronghorn that inhabits a variety of Sonoran Desert habitats. Sonoran pronghorn have been released from pens in King Valley on the nearby Kofa NWR as part of a captive breeding program to increase the Sonoran pronghorn population. To facilitate conservation efforts, the US Fish and Wildlife Service designated a nonessential, experimental population for Sonoran pronghorn occurring within a defined area bounded by Interstate 10 to the north and Interstate 8 to the south. (Federal Register Vol. 76, pages 25593–25611). Protections for those species designated as "nonessential, experimental" under Rule 10(j) of the ESA are relaxed including the take prohibitions and consultation requirements of the ESA, easing regulatory burden associated with endangered species.

Pronghorn rely on detecting and fleeing from predators. As such, this species prefers flat to gently rolling terrain with open sightlines. Pronghorn are typically nomadic, requiring large expanses of contiguous habitat to survive. Since the Kofa pronghorn population has been established, there are now over 150 pronghorn occupying the refuge, portions of YPG's Kofa Range, and surrounding BLM lands. Pronghorn occupy the King Valley approximately 18 miles east of the proposed impact areas. While pronghorn have not been observed near the project area, as the population of pronghorn continue to increase, it is likely that pronghorn will occur in additional areas in the future. Native habitat associated with the project area represents potentially suitable habitat for Sonoran pronghorn.

Monarch Butterfly. The monarch butterfly (*Danaus plexippus*) was listed as a candidate species on December 27, 2020. In many regions where monarchs are present, monarchs breed year-round. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.). There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs long distances and last for over two months. In early spring (February-March), surviving monarchs break diapause and mate at the overwintering sites before dispersing. The same individuals that undertook the initial southward migration begin flying back through the breeding grounds and their offspring start the cycle of generational migration over again (USFWS 2021).

Lower deserts of Arizona see more breeding monarchs in the fall, especially during September, than in spring. During the time of the spring migration in late March through June, there are small numbers of breeding monarchs migrating through the lower deserts. They leave the lower deserts by mid-May to mid-June, as temperatures soar over 100°F (Morris et al. 2015). Milkweed and flowering plants are needed for monarch habitat. Adult monarchs feed on the nectar of many flowers, but they only breed where there is milkweed. The project area is on the eastern edge of seasonal migratory corridor and marginally suitable habitat is present within the project area; milkweed populations primarily occur in the vicinitiy of the project area.

Species of Greatest Conservation Need

A report was generated for the project on February 27, 2024 (Project ID HGIS-21369), using the AZGFD Online Environmental Review Tool (AZGFD 2023). The information was assessed to identify SGCN or other special status species that have the potential to occur within or adjacent to the project area. This data is used to identify design features that can be incorporated into the Proposed Action to lessen or eliminate any potential impacts to individuals caused by the actions being proposed. The potential presence of each species was determined by the ecology and habitat requirements of each special status species and the type of actions being proposed were analyzed to determine the potential effects of the project on individuals.

The Online Environmental Review Tool Report showed that there is the potential for 32 SGCN classified as AZGFD Tier 1 or 2, to occur within or have suitable habitat within or adjacent to the project area. The list of SGCN for Arizona was categorized into tiers reflecting AZGFD's management commitments and priorities; tiers are as follows:

Tier 1 – Deemed vulnerable (scored "1") in at least one of the seven categories AND matches at least one of the following:

- Federally listed as endangered or threatened under the Endangered Species Act (ESA).
- Recently removed from ESA and currently requires post-delisting monitoring.Specifically covered under a signed conservation agreement, CCA, or a CCAA, or a Conservation Strategy

and Assessment or Strategic Conservation Plan.

- Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2 – Deemed vulnerable (scored "1") in at least one of the seven categories above but matched none of the additional criteria for Tier 1.

Tier 3 – Species with unknown status in at least one of the seven categories but do not rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status would be re-evaluated. The identified SGCN are identified in the Arizona Environmental Online Review Tool Reporting Appendix B. Some of these species are listed as potentially occurring in broad geographic areas; however, when analyzed at the scale of the project area, habitat present within or adjacent to the project area is marginally suitable or not present at all. Three SGCN Tier 1 species and 21 SGCN Tier 2 species have been documented as potentially having suitable habitat within the vicinity of the project area based on the online mapping tool provided by AZGFD (AZGFD 2024).

The report in Appendix B identifies 21 Tier 2 bird species, 16 Tier 2 mammal species (six of which are bats), and 1 Tier 2 reptile species with the potential to occur within proximity of the project area. The bird species that have the potential to occur within the project area are migratory bird species that are discussed in a subsection below.

Mexican desert bighorn sheep (*Ovis canadensis Mexicana*) occur in the surrounding area but would likely only occur in the project area as occasionally moving through. Other mammal species such as Kit fox, Harris' antelope squirrel, and Bailey's pocket mouse (*Chaetodiopdus baileyi*) typically inhabit desert shrub communities similar to those found within and surrounding the project area and may be present. Suitable foraging and roosting habitat can also be found within the project area for the bat species listed in Appendix B: Yuma myotis (*Myotis yumanensis*), cave myotis (Myotis velfer), western yellow bat (Lasiurus ludvocanus), , pocketed free-tailed bat (*Nyctinomops femorosaccus*), California leaf-nosed bat (*Macrotus californicus*), and Brazilian (or Mexican) free-tailed bat (*Tadarida brasiliensis*). There is no suitable rocky structure, crevases or mines near the proposed impact areas that would serve as roosting areas. Due to the lack of water present it is anticipated that use of the area is limited for some of these species.

Sonoran Desert tortoise, and. Gila monster occur in rocky areas or washes that are present in the region. These species have been documented approximately 10 miles of the project area. Sonoran Desert tortoise most commonly inhabit rocky (predominantly granitic rock), steep slopes and bajadas and paloverde-mixed cacti associations. The distribution of Sonoran Desert tortoise on YPG is patchy, with typical occupancy limited to rocky hillsides and washes where adequate shelter can be found, and their movements are typical of the species throughout its range. They have been documented with 5 miles of the project area near the Middle Mountains and Highway 95. Low lying habitat present within the proposed impact areas is not identified as containing probable or modeled Sonoran Desert tortoise habitat (YPG 2023). Gila Monster have been encountered in the mountains 10 miles east of the project area and modeled habitat is not present near the proposed impact areas.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 and the Bald and Golden Eagle Protection Act of 1940. The MBTA prohibits taking (i.e., harming, harassing, or pursuing), killing, possessing, transporting, or importing migratory birds, their eggs, parts, and nests except when specifically authorized by the U.S. Department of the Interior. Species protected by the Act include most native, non-game species. Violations of the MBTA associated with projects often occur as a result of destruction of active nests. Federal law prohibits the destruction of a nest that is occupied with eggs, nestlings, or young birds that are still dependent on the nest for survival.

A number of species of migratory birds have the potential to use the project area. Use of habitat within the project area could include nesting, wintering, foraging, and transient use, although habitat for some species is marginal. See appendix B for the list of AZGFD SGCN Tier 2 bird species with potential to occur in the project area. Several of these bird species are identified by US Fish and Wildlife Service as Birds of Conservation Concern. These include gilded flicker (*Colaptes chrysoides*), Gila woodpecker (*Melanerpes uropygialis*), Le Conte's thrasher (*Toxostoma lecontei*), Bendire's thrasher (Toxostoma bendirei), and ferruginous hawk (*Buteo regalis*), and golden eagle (*Aquila chrysaetos).* Both the intermittent wash habitat and scrub/shrub habitats associated with the Sonoran Desert ecosystem are commonly used for foraging and nesting by these and other migratory bird species. The gilded flicker and Gila woodpecker rely heavily on large cacti and trees such as saguaro cactus for nesting while Le Conte's thrasher often uses shrubs and trees such as creosote, mesquite, and ocotillo for foraging and nesting. Perch sites and or trees substantial enough to support large raptor nests are limited within and adjacent to the proposed impact areas. Ferruginous hawk could migrate through the area however foraging would be limited in the sparce desert habitat.

Eagles are protected by the Bald and Golden Eagle Protection Act. Golden eagles have been observed on YPG and possible nesting areas are located on steep rocky cliffs in the Muggins, Castle Dome and Trigo Mountains. It is possible they can fly over the area while foraging or migrating, however this is a very rare occurrence.

Wild Horses and Burros

Wild Horses and Burros are managed by BLM under the Wild and Free Roaming Horse and Burro Act of 1971. YPG provides habitat for horses and burros and coordinates with BLM for their management as identified in YPG's INRMP and BLM's Resource Management Plan. The Project area is outside the Cibola-Trigo Herd Management Area (BLM 2010). Wild Horses and Burros have been observed near the project area and their tracks and scat have been observed on site.

3.2.2 Environmental Consequences

3.2.2.1 No Action Alternative

Under the No Action Alternative, there would be no extension of Impact Area C and no designation of a new impact area in the SPH Area. Thus, there would be no impacts to vegetation resources that are not already occurring in current testing and training activities within the project area. Likewise, there would be no disturbances to wildlife or wildlife habitat beyond what is already occurring within the project area. The No Action Alternative would result in no change from the existing conditions of vegetation and wildlife resources. Other activities at YPG would continue under previously authorized programs and existing conditions would continue with the potential for continued impacts associated with public access and recreational use. Thus, potential impacts to vegetation and wildlife associated with on-going training and testing missions would remain.

3.2.2.2 Proposed Action

Vegetation

The proposed impact areas are located adjacent to existing gun positions in which vegetation has already been impacted by ongoing military testing. The proposed action would result in additional disturbance for construction of the stop-berm at the end of the new impact area. Instrumentation and targets in front of the muzzle would be placed in locations already impacted by muzzle blast and instrumentation. These impacts would be localized and minimal.

Wildlife including SGCN and Migratory Birds

The location of the proposed action is already in use for military testing. The proposed impact areas are adjacent to existing gun positions that are currently subject to disturbance from setting instrumentation,

noise, and explosive blast from the muzzle of artillery systems tested at these locations. There would be no reduction in habitat or new hazards to wildlife that are not already present in the area.

The proposed short-range testing would concentrate human activity near the gun position and result in larger and mobile wildlife such as mule deer, coyotes, and foxes to avoid the area. The proposed impact areas are relatively flat with no rocky outcropping, caleche caves or other shelter areas for Sonoran Desert tortoise so its value as habitat for tortoise is very limited. There is little vegetation near the gun position so there is limited nesting and foraging area for migratory birds, so impacts are expected to be minimal.

Bat species may continue to forage in the area however due to the lack of nearby water or dense vegetation, foraging in this area is somewhat limited for most species. There is no rocky or vegetative structure that is suitable for roosting bats at the proposed impact areas.

Wild Horses and Burros are likely to occupy the proposed project area, especially when forage conditions are favorable after rainy periods. Impacts to horses and burros are similar to that for other large wildlife species as animals would be temporarily displaced by human activity in the area. The proposed impact area would not alter forage or water available for horses and burros.

Federally Listed Wildlife

Sonoran Pronghorn – The project area is located within the nonessential experimental population (or 10(j)) range of the Sonoran pronghorn, and therefore, for Section 7 consultation purposes, the population of Sonoran pronghorn on YPG is treated as a species proposed to be listed (Federal Register Vol. 76, pages 25593–25611). On the Kofa National Wildlife Refuge, pronghorn are treated as a threatened species.

The proposed project is small in relation to the existing impact areas and the gun positions are already in use for other testing. The additional impact areas would not result in additional impacts to pronghorn beyond what already occur on those sites. Kofa National Wildlife Refuge is located several miles from the proposed impact areas therefore the project would have no affect on Sonoran pronghorn on the refuge.

Monarch Butterfly – The Proposed Action would have minimal impact on vegetation including milkweed or flowering plants used by monarchs due to their dispersed nature and lack of known dense milkweed populations within the project area. Impacts would be limited to target or instrumentation placement and munitions impact at the target area and recovery of rounds or debris. Surface disturbance would be very small in relation to the vast expanse of surrounding desert habitat. No herbicide or insecticide application is proposed for operation of the impact areas. Potential breeding and forage habitat would continue to be present in the project area as well as in the surrounding region to support Monarch migration through the area.

Avoidance, Minimization, and Mitigation Measures

- Bio-1: All ground personnel would be briefed on the Sonoran pronghorn and Sonoran Desert tortoise. The briefings would cover the status of the species, life history, the importance of reducing impacts to the species, and any mitigation measures the users must comply with while on the range and protocol if species is encountered.
- Bio-2: All vehicles are restricted to designated roads except as required by Explosive Ordnance Disposal, maintenance, emergency response, and environmental sciences personnel including authorized contractors while conducting required mission support activities. Vehicles would stay within pre-existing Explosive Ordnance Disposal clearance areas and adhere to posted speed limits.

- Bio-3: Minimize surface disturbance and restore the area to the previous condition when restoration is practicable. Areas of new construction, staging or other disturbance should be clearly marked. All workers should strictly limit their activities and vehicles to marked areas.
- Bio-4: Dispose all discarded matter (including but not limited to human waste, trash, garbage, and chemicals) in a manner consistent with federal and State of Arizona regulations. Maintain work sites in a sanitary condition.
- Bio-5: Place temporary containment such as drip pans under vehicles or stationary equipment from which hazardous materials may be spilled or leaked.
- Bio-6: Dispose of hazardous or toxic materials in a manner consistent with federal and State of Arizona guidelines.
- Bio-7: Implement applicable management measures for biological resources pursuant to YPG INRMP.
- Bio-8: Project features that might trap or entangle wildlife, such as open trenches, pits, open pipes, etc. should be covered or modified to prevent entrapment. If any hole must remain unattended, then earthen ramps must be incorporated for wildlife escape. Workers must check any excavation for trapped wildlife before backfilling.
- Bio-9: Implement the 2014 Final Incident Response Protocol for Sonoran Pronghorn, which includes: a) notifying USFWS and other appropriate parties as outlined in the protocol as soon as possible if Sonoran pronghorn are observed on YPG that are injured, sick or dead; and b) coordinating range access for USFWS and AZGFD as appropriate for capture of sick or injured pronghorn, as well as recovery of dead individuals if necessary. Coordination will involve adherence to range safety and security procedures.
- Bio-10: Avoid placing activities in proximity to artificial water sources (suitable for Sonoran pronghorn) to the extent that such action is consistent with the military mission.
- Bio-11: YPG will adhere to the terms of the MOU between the Kofa NWR, Imperial NWR, BLM, and YPG which provides procedures and guidance for cooperation and collaboration on wildland fire issues. This includes notifying interagency dispatch of any wildfire on YPG lands.

3.3 Cultural Resources

3.3.1 Affected Environment

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 and properties of traditional religious and cultural importance as defined in the NHPA.

Section 106 of the NHPA (54 USC 306108) requires that federal agencies with jurisdiction over a proposed federal project consider 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 Officer (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 *Programmatic Agreement Among the United States Army Garrison, Yuma Proving Ground, the Arizona State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Operations, Maintenance, and Development of Yuma Proving Ground, Arizona* (PA; 2014) and the USAG YPG Integrated Cultural Resources Management Plan, Fiscal Years 2017-2021 (ICRMP; Versar Inc. 2016 [in revision]).

To comply with Section 106 of the NHPA, the project was reviewed per Stipulation II of the PA and included a records search conducted on March 18, 2024, to identify previously recorded cultural resources within 1 mile of the proposed project area. Eleven archaeological surveys have been conducted within a 1-mile radius of the proposed project area (Breen 2005; Carpenter and Dosh 2008; Demaagd and Macnider 2000; Dosh 1994, 2008; Harris 2022; James 2006; Marmaduke and Dosh 1994; Moreno et al. 1997; Tyree 2015; Wegener and Bischoff 2002). One, a 5-acre negative survey (Harris 2022), is located within the APE at GP10, and another (Carpenter and Dosh 2008), entirely covers the proposed borrow pit. The Carpenter and Dosh (2008) survey is included in PA Attachment G (Lands No Longer Requiring Cultural Resources Survey) and Harris (2022), as a negative survey with completed tribal consultation, is also considered an adequate survey.

No archaeological sites are recorded within the proposed project area. Eleven archaeological sites have been previously recorded within a 1-mile radius of GP10 and the proposed borrow site. These sites include two roads (AZ X:3:684(ASM) and AZ X:3:706(ASM)); a historic powerline (AZ L:12:15(ASM)); a ceramic scatter and cleared area (AZ X:3:375; three trail segments (AZ X:3:376, AZ X:3:377(ASM), and AZ X:3:378(ASM); and four cleared areas (AZ X:3:515(ASM) through AZ X:3:517(ASM),). All eleven sites have been determined not eligible for listing on the NRHP in consultation with the SHPO (SHPO-2001-2855(8584); SHPO-2004-1999(22618); SHPO-2009-1380(41052), SHPO 2015-1051 (127461), SHP0-2013-0955(115444), and SHPO-2019-0541(147683)). No archaeological sites have been recorded within a 1-mile radius of GP 4221Z.

Fifteen post-Cold War era buildings and structures constructed between 1990 and 2014 are located at the 4221Z facility and one partially overlaps the proposed GP 10 IA. None of these 16 buildings/structures require NRHP evaluation as they are less than 45 years of age. GP 10, constructed in 1952, has been determined not eligible for listing on the NRHP in consultation with the SHPO (SHPO-2012-0901(107935)).

3.3.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no expansion of Impact Area C and no designation of a new impact area in the SPH Area. Therefore, there would be no impacts to cultural resources from the No Action Alternative.

Proposed Action Under the Proposed Action YPG proposes to expand Impact Area Charlie at GP 10 by approximately 30 acres and designate a 225-acre impact area in the SPH Area at GP 4221Z. The expansion areas are the geographic area within which a proposed action may directly or indirectly affect historic properties and are considered the area of potential effects (APE) for this undertaking. Sediment used to construct the stop berms would be obtained from a new borrow pit of 10 acres or previously established borrow pits.

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 areas occur adjacent to impact areas and entirely within an area contaminated with 105 and 155 howitzer rounds and improved conventional munitions (artillery delivered M42/M46 grenades). The immediate vicinity of the existing gun positions and proposed impact areas is heavily disturbed from ongoing testing. Disturbances include vehicle access for setting instrumentation and blast impacts of artillery fired from the muzzle at the gun position.

Review of the proposed project under the PA requires determining if the undertaking is exempted (Stipulation II.A); if a cultural resource survey is required (Stipulation II.B); and evaluating the effects

of the undertaking (Stipulation II.C). Based on this review, the undertaking is not an exempted undertaking (PA Attachment H) as it involves a change in land use. Cultural resource surveys are not required (Stipulation II.B.2) as all proposed project areas are located in areas which do not require additional survey per Attachment H of the PA: in ordnance contaminated areas; dedicated impact areas; heavily disturbed areas (previously used borrow area); or established borrow pits.

Resumed use of previously used areas of Kofa Region may have unknown but possible effects on any historic properties that may exist within the proposed impact areas although no known historic properties would be impacted by the Proposed Action. The review has established that there would be no adverse effect to historic properties based on implementation of the avoidance, minimization, and mitigation measures outlined below. The SHPO and Tribes are being consulted regarding the effect determination per Stipulation II.C of the PA concurrently with public review of this EA.

Avoidance, Minimization, and Mitigation Measures

To avoid disturbance to historic properties, the following measures would be taken.

- Cultural-1: Equipment and vehicles will use existing roads or marked routes to access project sites.
- Cultural-2: Grading and smoothing of surface soils (if required) will be confined to the delineated boundaries for the impact area.
- Cultural-3: In the event that previously unreported cultural resources are encountered during ground disturbing activities, all work must cease immediately within 20 meters of the discovery until the YPG cultural resources manager or archeologist has documented the discovery and evaluated its eligibility for the NRHP in consultation with the SHPO and Tribes, as appropriate. Work must not resume in this area without approval of the YPG cultural resources manager or archeologist.
- Cultural-4: If human remains are encountered during ground-disturbing activities, all work must immediately cease within 20 meters of the discovery. The SHPO and appropriate Tribes must be notified of the discovery within 24 hours following YPG protocol. All discoveries will be treated in accordance with the Native American Graves Protection and Repatriation Act as it applies to federal lands and protocols set forth in the USAG YPG ICRMP, and work must not resume in this area without proper authorization.

3.4 Hazardous Materials and Wastes

3.4.1 Affected Environment

Hazardous materials are broadly defined as materials of general use containing clearly hazardous properties in commercial, military, or industrial applications. In general, these materials pose hazards to human health or the environment due to quantity and concentration, or physical and chemical characteristics. Hazardous constituents are defined as hazardous materials present at low concentrations in a generally non-hazardous matrix, such that their hazardous properties do not produce acute effects. Component hazardous materials are considered hazardous constituents. Components that contain hazardous constituents include propellants, batteries, flares, igniters, jet fuel, diesel fuel, hydraulic fluid, and explosive warheads. Each of these may potentially affect human health and the environment through direct contact with water, soil, or air.

A hazardous waste may be solid, liquid, semi-solid, or contain gaseous material that alone or in combination may: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed, or otherwise managed. Section 6901 of the Resource Conservation and Recovery Act (RCRA) regulates hazardous

waste management.

The rules and regulations regarding the management of military munitions hazards and military munitions waste differ from those regulating other wastes. The Military Munitions Rule (promulgated in *Federal Register* Volume 62, Number 29, Pages 6621-6657), defines when military munitions become waste and how these waste military munitions are to be managed. Military munitions are not a solid waste when used for their intended purposes, which include use in training military personnel in the recovery, collection, and on-range destruction of UXO and munitions fragments during range clearance activities. Used or fired munitions are classified as solid waste when managed off-range or recovered, collected, and subsequently buried or placed in a landfill on the range. In both cases, once the used or fired munition is a solid waste, it potentially is subject to regulation as a hazardous waste.

Use of hazardous materials at dispersed locations, such as manned and tactical ranges, generally is limited to petroleum, oils, and lubricants; however, latex paints used in the construction and repair of simulated targets also are potentially hazardous.

Munitions Constituents of Concern: Munitions constituents of concern (MCOC) are hazardous constituents associated with munitions. Expended munitions such as artillery rounds, obscurants, bombs, missiles, targets, pyrotechnics, flares, as well as small, medium, and large munitions could release contaminants to the environment upon use or leach small amounts of toxic substances as they explode and decompose. MCOC are found in the explosive, propellant, and pyrotechnic elements of munitions. MCOC also may leak from munitions that do not detonate on impact as intended. Most MCOC are located within firing ranges, training ranges, and air-to-ground targeting ranges. Propellants are a potential source of MCOC at gun positions. MCOC associated with each munitions class are summarized below:

- Small Caliber Munitions: Lead is the primary potential MCOC. Other metals, including antimony, copper, and zinc, are MCOC. Nitroglycerin, a component of solid propellant for small caliber munitions is considered a potential MCOC.
- Medium and Large Caliber Munitions: High explosives used in these munitions may result in the release of trinitrotoluene and cyclotetramethylenetetranitramine. The propellants for these munitions may contain 2,4-dinitrotoluene, 2,6- dinitrotoluene, and nitroglycerin.
- Pyrotechnics and Obscurants: Perchlorate compounds are the primary MCOC associated with pyrotechnics. White phosphorous frequently is used as an incendiary and smoke-screening agent in training areas.
- Other Munitions: Pentaerythritol tetranitrate is a component of detonation cord and could be a potential MCOC at ranges where demolition training is performed. Additionally, the explosive components used in some of these munitions may result in the release of trinitrotoluene and cyclotetramethylenetetranitramine.

In addition to the hazardous constituents from energetic chemicals, other hazardous constituents may leach from solid components of munitions such as munitions, targets, and small arms ammunition. These hazardous constituents may include carbon, manganese, phosphorus, sulfur, copper, nickel, chromium, molybdenum, vanadium, columbium, or titanium.

MCOC within YPG are routinely assessed pursuant to DoD Directive 4715.11 (DoD Instruction 4715.11). The Directive requires evaluation of MCOC sources, potential for off-range migration (i.e., wind erosion, surface flows, and ground water plumes), potential human and ecological receptors, and whether such release poses an unacceptable risk to human health or the environment.

Portions of YPG have historically been used as firing ranges starting in 1942. Both the volume of expended munitions decomposing within the range and the amounts of MCOC in the environment have gradually increased over time. Concentrations of some substances in sediments surrounding the expended

material also may increase over time.

Due to the presence of operating ranges throughout YPG, the entirety of YPG is a potential source of MCOC. Weapons testing occurs within both the Kofa and Cibola regions of YPG, but the majority of munitions testing occurs within the Kofa Region. Munitions use includes small, medium, and large caliber ammunition; mines; linked and unlinked ammunition; high explosive and ball munitions; pyrotechnics and obscurants; and the potential for aircraft-launched weapons.

Though spent munitions are present within various firing ranges, off-range migration of MCOC is considered unlikely due to the lack of ephemeral surface waters, depth to groundwater (several hundred to over a thousand feet deep), a low annual precipitation (less than 4 inches), and an extremely high evapotranspiration rate (YPG 2017). These factors limit surface water flow off-range and/or recharge into the underlying aquifer, which preclude groundwater from being affected by range activities. Past soil and water sampling as well as periodic evaluations pursuant to DoD Instruction 4715.11 including the 2015 reevaluation of MCOC concluded insufficient evidence of MCOC migration off-range (EA Engineering, Science, and Technology, Inc., 2015). Thus, no complete MCOC exposure pathways to off-installation human and ecological potential exist in the vicinity of YPG.

3.4.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no expansion of Impact Area C and no designation of new impact areas in the SPH Area. Therefore, there would be no impacts to hazardous materials and waste from the No Action Alternative.

Proposed Action

Under the Proposed Action YPG proposes to expand Impact Area Charlie at GP 10 by approximately 30 acres and designate a 225-acre impact area in the SPH Area at GP 4221Z.

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. Use of vehicles and supporting equipment such as generators may result in spills or leaks of petroleum, oil, and/or lubricants. Leaks and spills of petroleum, oils, and lubricants would be minimized through implementation of BMPs such as: placement of drip pans under parked vehicles and generators; establishment of a designated refueling area, if necessary; or providing secondary containment for non-mobile containers larger than 55 gallons. Transport, use, storage, and disposal of these and other hazardous materials would be managed in compliance with applicable range rules. Solid waste would be stored in containers and transported to an approved landfill.

Various munitions mentioned in Section 2.1 would be fired into the new impact areas. Spent munitions and potential sources of MCOC therefore would increase in these locations. All MCOC including UXO, residue or fragments would be limited to YPG lands within the impact area. Migration of MCOC off-range at sufficient concentrations and amounts to affect human and environmental receptors would remain unlikely based on MCOC assessments conducted pursuant to DoD Instruction 4715.11. Based on the above, the Proposed Action would not result in increased and long-term exposure of human and environmental receptors to hazardous materials, MCOC, and wastes.

3.5 Health and Safety

3.5.1 Affected Environment

Military operations and weapons testing on YPG pose some level of hazard to both airspace and ground users by their very nature. YPG operates ranges for testing and training where the types of spent munitions include artillery shells, mines, rockets, bombs, missiles, and projectiles. As a result, UXO represents a ground-based hazard. There is the potential for the presence of UXO within the proposed impact areas due to historical uses of YPG for testing and training.

Numerous unpaved roads traverse the ranges creating driving hazards such as flat tires and vehicle

breakdowns. Hazards associated with use of military air space include mid-air collisions; collisions with manmade structures or terrain, weather-related accidents, mechanical failure, pilot error, or bird-aircraft collisions.

Standard protocols are followed on YPG to avoid and minimize safety hazards, including the following:

- Public access to lands managed by YPG is prohibited except in designated areas.
- Locked gates, fencing, and warning signs serve to limit inadvertent entry by unauthorized military personnel or members of the public.
- Public access, where allowed, is controlled through a permitting system and range safety training is required prior to entry.
- Access to and movement within active ranges must be authorized by the respective range management operations on the installation. Range safety training is required for authorized personnel.
- All military operations on active ranges are coordinated through YPG Range Control.

In addition, YPG implements specific safety protocols for military operations including:

- YPG Standing Operating Procedure for Range Operations YPG-RO-P-1000 (April 2016) prescribes general range control procedures, instructions, and information necessary for safe conduct of all types of test operations, demonstrations, training, and ground and airspace utilization at YPG.
- YPG Regulation 385-1 (June 2014) provides specific guidance for all safety programs at YPG and applies to all personnel working and living at YPG to include military, civilian, contractor, tenant personnel, and dependents.
- Army Regulation 385-63 (January 2012) prescribes Army-wide range safety policies and responsibilities for firing ammunition, lasers, guided missiles, and rockets and provides guidance for the application of risk management in range operations.

Military activities such as the use of explosive ordnance, equipment operation, and maintenance can be a wildfire risk. In this region of the Sonoran Desert, wildfires are typically small due to the low density of vegetation. During wet years, there is an increase in vegetation that can carry wildfire. In 2005, the King Valley Fire burned 3,000 acres on YPG and 26,000 acres on Kofa NWR (YPG 2015). The size was attributed to the heavy winter rains that year. Other than the King Valley Fire, there have been approximately 25 small wildfire events on YPG that burned a total of 170 acres from 2003 to 2015 (YPG 2015).

3.5.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no expansion of Impact Area C and no designation of a new impact area in the SPH Area. Therefore, there would be no substantial increases in health and safety risks for public and military personnel.

Proposed Action

Expansion of Impact Area C and designation of a impact area at GP 4221Z may create short-term increased safety risks to workers. Workers would have the potential for accidents as a result of routine job exposure to heavy equipment during construction of the stopping berms. Workers would be exposed to elevated noise levels from construction equipment. Workers would use appropriate protection and comply with appropriate safety standards to minimize potential impacts.

Once established, use the impact areas would present common testing hazards. All tests would be scheduled in advance with the range operations to ensure that tests do not coincide with other military

operations within the same area. Furthermore, observers and technicians within an impact area would be located outside the SDZ or otherwise under adequate protective cover. 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. With implementation of these measures, less than significant intermittent impacts to health and safety would be expected during construction activities and subsequent operation of the impact areas.

Avoidance, Minimization, and Mitigation Measures

- Safety-1: Implement safety protocols pursuant to YPG Standing Operating Procedure for Range Operations YPY-RO-P-1000; YPG Regulation 385-1; and Army Regulation 385-63.
- Safety-2: Coordinate all scheduled tests with YPG Range Control.
- Safety-3: Any activity that may generate fire must be coordinated through the YPG fire department to receive the appropriate monitoring and notification.

3.6 Transportation Infrastructure

3.6.1 Affected Environment

U.S. Highway 95 is the main route serving YPG. It traverses the installation between the Kofa and Cibola ranges. Facilities on YPG are linked by an internal network of maintained paved and gravel roads. Numerous unimproved roads and trails occur throughout more remote areas of the installation. Road access within YPG is limited because of security constraints and hazardous conditions due to the test mission. Personnel access is controlled using security registration, checkpoints, range control monitoring, guard posting, signs, and fences. Public access restriction signs are placed along public thoroughfares.

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no expansion of Impact Area C and no designation of a new impact area in the SPH Area. Therefore, there would no impacts the YPG transportation infrastructure.

Proposed Action

Under the proposed action, Impact Area Charlie would be expanded west across Firing Front Road towards GP 10. During test events at GP 10, sections of Firing Front Road that fall within the expanded area of Impact Area Charlie would be temporarily closed. Furthermore, the following measures would be followed during all test events:

Avoidance, Minimization, and Mitigation Measures

- Implement safety protocols pursuant to YPG Standing Operating Procedure for Range Operations YPY-RO-P-1000; YPG Regulation 385-1; and Army Regulation 385-63.
- Any activity that may generate fire must be coordinated through the YPG fire department to receive the appropriate monitoring and notification.

3.6.3 Environmental Consequences

No Action

Under the No Action Alternative, there would be no expansion of Impact Area C and no designation of a new impact area in the SPH Area. There would be no effect to surface water, groundwater, or wetlands.

Proposed Action

Avoidance, Minimization, and Mitigation Measures

- Water-1: Construction stockpiles would be protected from wind and water erosion.
- Water-2: All lightweight target materials or debris would be removed immediately after test events.

- Water-3: Prepare a Storm Water Pollution Prevention Plan and implement BMPs therein.
- Water-4: Proximity to wildlife waters would be avoided for target placement.
- Water-5: AZGFD would be granted access for maintenance of wildlife waters.
- Water-6: Implement good housekeeping measures, including no servicing vehicles on-site; collecting litter and debris daily; storing materials in an orderly manner in proper containers; using appropriate spill prevention procedures; using original containers with the original manufacturers label; and following manufacturer recommendations for proper use and disposal.

4 COORDINATION AND PREPARATION

Native American Tribes, agencies, or organizations contacted during scoping are listed below.

TRIBE/AGENCY/ORGANIZATION	
Ak-Chin Indian Community	Natural Resources Conservation District
Arizona Department of Agriculture	Pueblo of Zuni
Arizona Department of Environmental Quality	San Carlos Apache Tribe
Arizona Department of Transportation	Salt River Pima-Maricopa Indian Community
Arizona Deer Association	Sierra Club
Arizona Desert Bighorn Sheep Society	Tohono O'odham Nation
Arizona Game and Fish Department	U.S. Army Corps of Engineers
Arizona Historical Society	U.S. Bureau of Indian Affairs
Arizona Wilderness Coalition	U.S. Bureau of Land Management
Center for Biological Diversity	U.S. Bureau of Reclamation
Chemehuevi Indian Tribe	U.S. Customs and Border Protection
City of Yuma	U.S. Environmental Protection Agency
Cocopah Indian Tribe	U.S. Fish and Wildlife Service
Colorado River Indian Tribes	Western Arizona Council of Governments
Fort McDowell Yavapai Nation	Yavapai-Apache Nation
Fort Yuma-Quechan Indian Tribe	Yavapai-Prescott Indian Tribe
Greater Yuma Economic Development Corp	Yuma Audubon Society
Hopi Tribe	Yuma Chamber of Commerce
La Paz County	Yuma County
Marine Corps Air Station Yuma	Yuma County Chamber of Commerce
Mescalero Apache Tribe	Yuma Metropolitan Planning Organization
Moapa Band of Paiute Indians	Yuma Valley Rod and Gun Club

REFERENCES

Arizona Department of Environmental Quality (AZDEQ). 2020. Navigable Waters Protection Rule Screening flow chart (https://static.azdeq.gov/wqd/swp/screeningtoolkit_flowchart.png).

Arizona Game and Fish Department (AZGFD). 2022. Online Environmental Review Tool Report. Project ID HGIS-15007. , March 14, 2022.

AZGFD. 2014. Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects.

Belnap, J., J.H. Kaltenecker, R. Rosentreter, J. Williams, S. Leonard, and D. Eldridge. 2001. Biological Soil Crusts: Ecology and Management. U.S. Department of the Interior, Technical Reference 1730-2. 110 pp.

Breen, Judith. 2005. *A Cultural Resources Survey of 1,016 Acres for the Airborne Detection Range, Yuma Proving Ground, Yuma County, Arizona*. [YPG-R-132]

Brown, D.E. (editor). 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City.

Bureau of Land Management (BLM). 2010. Yuma Field Office Record of Decision and Approved Resource Management Plan. Yuma Field Office. Signed January 29, 2010.

Cochran, C. 1991. Soil Survey of the U.S. Army Yuma Proving Ground, Arizona-parts of La Paz and Yuma Counties in 1991. Yuma, AZ. U.S. Natural Resources Conservation Service.

Carpenter, Christina M., and Steven G. Dosh. 2008. *Cultural Resources Survey of 3,994 Acres in the Airborne Detection Range on the Kofa Firing Range, U.S. Army Yuma Proving Ground, Yuma County, Arizona*. [YPG-R-187]

Demaagd, Holly, and Barbara S. Macnider. 2000. *Cultural Resource Survey of the Parker to Gila 161 KV Transmission Line Structures 74-6 to 116-5 Yuma and La Paz Counties, Arizona*. Archaeological Consulting Services, Ltd. Submitted to Western Area Power Administration. On file, Environmental Sciences Division, U.S. Army Garrison Yuma Proving Ground. [YPG-R-111]

Dosh, Steven G. 1994. *Cultural Resources Inventory Survey of the Proposed Test Vehicle Access Roads to the Kofa Dust Course and Gun Position 20, U.S. Army Yuma Proving Ground, Arizona*. Northland Research, Inc. Flagstaff, Arizona. Submitted to U.S. Army Yuma Proving Ground, Contract No. DAAD01-90-D-0220. On file, Environmental Sciences Division, U.S. Army Garrison Yuma Proving Ground. [YPG-R-068]

Dosh, Steven G. 2009. *Archeological Survey of 3,583 Acres West of Firing Front Road on the Kofa Range, U.S. Army Yuma Proving Ground, Yuma County, Arizona. Northland Research, Inc. Flagstaff, Arizona*. On file, Environmental Sciences Division, U.S. Army Garrison Yuma Proving Ground. [YPG-R-190]

EA Engineering, Science, and Technology, Inc. 2015. Final Operational Range Assessment Program Phase I Qualitative Assessment Report Addendum – Yuma Proving Ground, Arizona.

Environmental Noise Branch, Environmental Health Sciences Division, Defense Centers for Public Health – Aberdeen, Aberdeen, Maryland, June 2023.

Glover, John. Personal Communication. Ecologist, Environmental Sciences Division - Directorate of Public Works, Yuma Proving Ground. March 15, 2022.

Gutierrez Canales Engineering. 2006. U.S. Army Garrison Evaluation of Explosive and Metal

Concentrations in Washes Downgradient of 08/00 Operations. Report on file at Environmental Sciences Division, U.S. Army Garrison, Yuma Proving Ground, Yuma, Arizona.

Gutierrez Palmenberg, Inc. and Jason Associates Corporation. 2001. Final Range Wide Environmental Impact Statement, U.S. Army Yuma Proving Ground, Yuma and La Paz Counties, Arizona. Command Technology Directorate. July.

Harris, Zachary. 2022. *Class III Cultural Resources Survey of 6.7 Acres for Two New Roads on the Kofa Firing Range Yuma Proving Ground, Yuma County, Arizona*. On file, Environmental Sciences Division, U.S. Army Garrison Yuma Proving Ground. [YPG-R-312]

Hendricks, D. M., P. R. Krausman, R.W. Mannan, F.D. Hole., H.W. Pierce, S.J. Levine, D.F. Post, C.W. Guernsey, Y.H. Havens, J.E. Jay, and M.L. Richardson. 1985. Geologic Framework of Arizona. In *Arizona Soils*. Richard A. Haney, Jr. Editor. College of Agriculture, University of Arizona, Tucson, Arizona.

James, Karla. 2006. *Cultural Resources Survey of 2.5 Acres for the Proposed Expansion of Gun Pad 3835Z on the Kofa Range of the United States Army Yuma Proving Ground, Yuma County, Arizona*. On file, Environmental Sciences Division, U.S. Army Garrison Yuma Proving Ground. [YPG-R-135]

Kade, A., and S.D. Warren. 2002. Soil and plant recovery after historic military disturbances in the Sonoran Desert, USA. Arid Land Research and Management, 16(3), 231-243.

Marmaduke, William S., and Steven G. Dosh. 1994. *The Cultural Evolutionary Context of "Sleeping Circle" Sites in the Lower Colorado River Basin*. Northland Research, Inc. Flagstaff, Arizona. Submitted to U.S. Army Yuma Proving Ground, Contract No. DAAD01-90D-0220. On file, Environmental Sciences Division, U.S. Army Garrison Yuma Proving Ground. [YPG-R-063]

Middleton, N.J. 2017. Desert dust hazards: A global review. Aeolian research, 24, 53-63.

Moreno, Jerryll, James Potter, Holly DeMaagd, and Barbara S. Macnider. 1997. *Archaeological Survey of the Parker to Gila 161 kV Transmission Line, San Bernardino County, California to Yuma County, Arizona*. Archaeological Consulting Services, Ltd., Tempe, Arizona. Submitted to Woodward-Clyde Federal Services and Western Area Power Administration. On file, Environmental Sciences Division, U.S. Army Garrison, Yuma Proving Ground. [YPG-R-105]

Morris, G.M., C. Kline and S.M. Morris, PSM, PhD. 2015. Status of Danaus plexippus in Arizona, Journal of the Lepidopterists' Society 69(2), 2015, 91–107.NWRC. 2019. Groundwater Age Dating Monitoring and Production Wells. U.S. Army Garrison Yuma Proving Ground. August 2019.

North Wind Resource Consulting 2019

Rebman, J.P. 1996. Survey for Nichol's Turk's Head Cactus, *Echinocactus horizonthalonius var. nicholii*, on Yuma Proving Ground. Yuma, Arizona: Gutierrez-Palmenberg, Inc.

Rubke, C.A. and D. J. Leavitt. 2017. INRMP Required Species Monitoring: Sonoran Desert Tortoise (*Gopherus morafkai*) Habitat Evaluation of the Tank Mountains and Radio-Telemetry Tracking in the Dome Rock Mountains and Trigo Peaks of the U.S. Army Yuma Proving Ground. Final Report. Arizona Game and Fish Department. Phoenix, Arizona.

Shreve, F., and I.L. Wiggins. 1964. Vegetation and flora of the Sonoran Desert, volume 1. Stanford, California: Stanford University Press.

Turner, R.M., and D.E. Brown. 1994. Sonoran desertscrub. In Biotic Communities: Southwestern United States and Northwestern Mexico. Salt Lake City, Utah: University of Utah Press.

Tyree, K. D. 2015. *Archaeological Survey of 45.2 Acres for the Proposed GP-2 West Observation Mound on Kofa Range of U.S. Army Yuma Proving Ground, Yuma County, Arizona*. On file, Environmental Sciences Division, U.S. Army Garrison Yuma Proving Ground. [YPG-R-269]

USACHPPM. 1999. Firing Range Study No. 32-EE-5813-99, Field Investigation Report, Munition Test Range Environmental Assessment 39 IED Test Environment Management Project, Yuma Proving Ground, Arizona. September 1999.

U.S. Fish and Wildlife Service (USFWS). 2022a. Information for Planning and Conservation (IPaC) system. Consultation Code: 2022-0019503. March 14, 2022.

USFWS. 2022b. National Wetland Inventory (NWI) Wetlands Mapper, U.S. Fish & Wildlife Service (fws.gov).

USFWS. 2021. Species information: monarch butterfly (Danaus plexippus). https://ecos.fws.gov/ecp/species/9743.

Wegener, Robert M., and Matt C. Bischoff. 2002. *Class III Cultural Resources Inventory of the Proposed Countermine Facility Extension, Kofa Firing Range, Yuma Proving Ground, Arizona*. [YPG-R-119]

Yuma Proving Ground (YPG). 2020. Impact Area A Expansion Environmental Assessment. Yuma Proving Ground, Arizona.

YPG 2017 YPG's Integrated Natural Resource Management Plan (INRMP

YPG. 2016. Programmatic Environmental Impact Statement for Activities and Operations at Yuma Proving Ground, Arizona.

YPG. 2015. Need this reference.

YPG. 2013. Long Range Munitions Environmental Assessment. Yuma Proving Ground, Arizona.

YPG. 2011. Cibola Impact Areas Environmental Assessment. Yuma Proving Ground, Arizona.

YPG. 2010. Impact Areas Expansion Environmental Assessment. Prepared by: Environmental Sciences Division Directorate of Public Works.

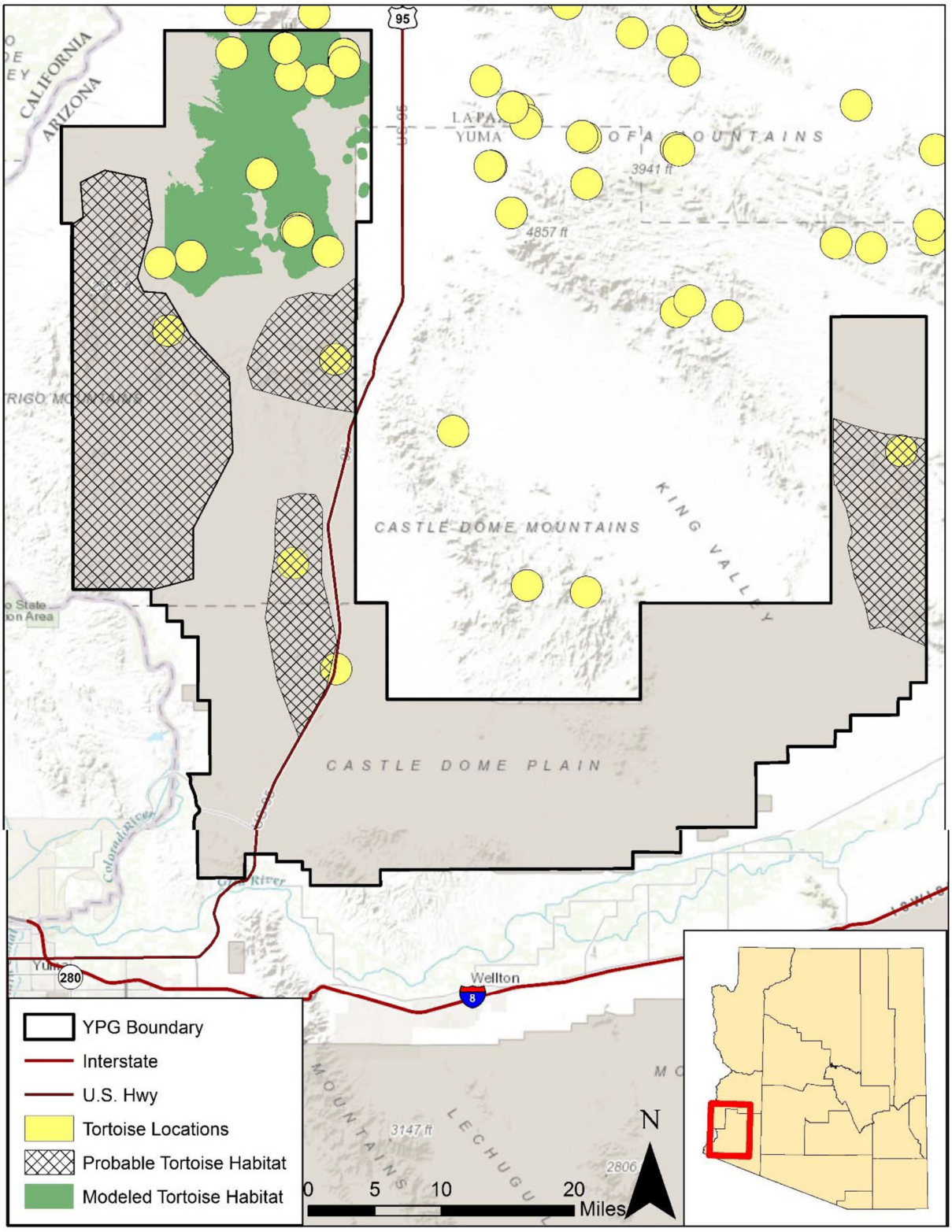
APPENDIX A – USFWS AND AZGFD SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Summary of Federally Listed Species Identified by the IPaC System and Arizona Environmental Online Review Tool and Their Potential to Occur within the Proposed Project Area

Species Name	Status	Habitat Requirements	Potential to Occur within the Proposed Impact Area
Mammal Species			
Sonoran Pronghorn *Antilocapra americana sonoriensis*	E Exp BLMS	Found exclusively in the Lower Colorado River Valley and the Arizona Upland subdivisions of the Sonoran Desert Scrub Biome and currently occur in southwestern Arizona and northwestern Sonora, Mexico.	Nonessential experimental population released from Kofa NWR. More than 250 pronghorn now occupy the refuge and portions of YPG's Kofa Range. There is occasional pronghorn movement onto YPG north Cibola ranges. Documented within 10 miles of the project area.
Bird Species			
Yuma Ridgway's (clapper) Rail *Rallus obsoletus yumanensis*	E BLMS	This species is associated with dense emergent riparian vegetation. Requires wet substrate (mudflat, sandbar) with dense herbaceous or woody vegetation for nesting and foraging. Fresh-water marshes dominated by cattail or bulrush are preferred habitat.	No suitable habitat within or adjacent to the proposed impact area. No fresh-water habitat exists within the study area.
Yellow-billed Cuckoo *Coccyzus americanus*	T	Riparian cottonwood-willow galleries and to a lesser extent willows or isolated cottonwoods with tall mesquites.	No suitable habitat within or adjacent to the proposed impact area. Riparian habitat is limited to the existing intermittent washes within the project area and does not support the habitats for this species.
Southwestern Willow Flycatcher *Empidonax traillii extimus*	E	Riparian woodlands with moist microclimatic and vegetative conditions, and breed only in dense riparian vegetation near surface water or saturated soil.	No suitable habitat within or adjacent to the proposed impact area. Riparian habitat is limited to the existing intermittent washes within the project area and does not support the habitats for this species.
Insects			
Monarch Butterfly *Danaus plexippus*	C	Fields, roadside areas, open areas wet areas, or urban gardens; milkweed and flowering plants are needed for monarch habitat.	Project area is on the eastern edge of seasonal migratory corridor and has marginally suitable habitat

Species Name	Status	Habitat Requirements	Potential to Occur within the Proposed Impact Area
			present within the project area.
* E = Federally listed as Endangered under the ESA; T = Federally listed as Threatened under the ESA; C= Federally listed as Candidate under the ESA; Exp = Experimental, Non-Essential Population; BLMS = BLM Sensitive			

Insert Arizona Environmental Online Review Tool Report



Tortoise Habitat