DRAFT

Environmental Assessment for Expansion of Recreational Camping Facilities at White Sands Missile Range, New Mexico

22 September 2022

FINDING OF NO SIGNIFICANT IMPACT
White Sands Missile Range, New Mexico

NAME OF THE PROPOSED ACTION: Environmental Assessment for Expansion of Recreational Camping Facilities at White Sands Missile Range (WSMR), New Mexico.

DESCRIPTION OF THE PROPOSED ACTION: The action being proposed by the WSMR Family and Morale, Welfare and Recreation program (MWR) is to expand RV camp sites and add tent camp sites at the WSMR Main Post for the Army community, which includes soldiers, their families, civilian employees, contractors, and military retirees.

PURPOSE AND NEED: The purpose of the proposed action is to expand camping facilities at WSMR to accommodate an increase in Department of Defense patrons and increase the range of camping opportunities available at the Main Post. The proposed action is needed because the demand for recreational vehicle (RV) camping at WSMR is expected to increase to approximately 40 more sites than are currently available. Also, tent camping sites are in demand, but none are currently available at WSMR. According to MWR Outdoor Recreation staff, potential guests are routinely turned away due to lack of capacity.

ENVIRONMENTAL CONSEQUENCES: This Environmental Assessment (EA) contains the results of an impact analysis of the No-Action Alternative and three action alternatives on the affected environment, including air quality, soils, water resources and floodplains, biological resources, cultural resources, noise, recreation and aesthetics, waste and hazardous materials, infrastructure, socioeconomic and environmental justice, and greenhouse gases and climate change. No significant impacts on the environment have been identified for any of the alternatives and no significant cumulative impacts are expected. Mitigation measures and best management practices for avoiding or reducing potential impacts are described.

CONCLUSION: Alternative B, which includes 50 RV sites and 20 tent camping sites at the Ripley area, has been chosen as the Preferred Alternative of this EA. Based on the analysis in this EA and consideration of the mitigation measures listed in Section 2.4, and in accordance with the guidelines for determining the significance of proposed federal actions (32 CFR §651 [2002]; 40 CFR §1508.27) and Environmental Protection Agency criteria for initiating an Environmental Impact Statement (40 CFR §6.207), WSMR has concluded that the campground expansion described in the Preferred Alternative will not result in a significant effect on the environment. Mitigation measures include removing vegetation outside of the migratory bird nesting season, replacing every tree removed by construction with a new tree and installing appropriate irrigation, and ensuring that trash receptacles and dumpsters are wildlife-proof at the selected campground site. Applicable federal, state, and local laws and regulations would be followed. WSMR has determined that an Environmental Impact Statement pursuant to the National Environmental Policy Act is not required, and this Finding of No Significant Impact is hereby submitted.

DRAFT AVAILABILITY AND POINTS OF CONTACT: White Sands Missile Range invites members of the public to comment on the draft EA. The draft EA and FNSI are available digitally at https://home.army.mil/wsmr/index.php/about/garrison/directorate-public-works-dpw/environmental.
Hard copies are available to the public by sending a request using the contact information below, or at the following public repositories.

Alamogordo Public Library
920 Oregon Avenue
Alamogordo, New Mexico 88310

Richard Burges – El Paso Public Library
9600 Dyer Suite C
El Paso, Texas 79924

Thomas Branigan Memorial Library
575 S Alameda Blvd.
Las Cruces, New Mexico 88005

White Sands Missile Range Library
White Sands Missile Range, New Mexico 88002

Written comments concerning the draft EA should be directed to the White Sands Missile Range Garrison Environmental Division. The publication of this notice serves as the start of the 30-day comment period. All comments must be received no later than 30-days after publication to the following address, e-mail or fax.

U.S. Army Garrison White Sands
Directorate of Public Works, Environmental Division
Attn: Customer Support, Expansion of Recreational Camping Facilities
Building 163
White Sands Missile Range, New Mexico 88002
Email: USARMYGarrisonWSMREnvironmentalAssessments@army.mil
Fax: (575) 678-2048

ACRONYMS AND ABBREVIATIONS

ABA	Architectural Barriers Act
AR	Army Regulation
BMP	Best Management Practice
CFR	Code of Federal Regulations
DPW	Department of Public Works at White Sands Missile Range
EA	Environmental Assessment
EIS	Environmental Impact Statement
FONSI	Finding of No Significant Impact
HIIT	High-intensity interval training
MWR	Family and Morale, Welfare and Recreation Program
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
ROI	Region of influence
RV	Recreational vehicle
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service, Department of the Interior
WSMR	White Sands Missile Range

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1. INTRODUCTION

This environmental assessment (EA) evaluates potential effects on the human and natural environment associated with expansion of recreational camping facilities at the White Sands Missile Range (WSMR) Main Post, located in east-central Doña Ana County, New Mexico (Figure 1). The action is proposed by the WSMR Family and Morale, Welfare and Recreation (MWR) Program. This EA has been prepared to fulfill the requirements of the National Environmental Policy Act (NEPA, 42 USC §§4321-4370d) in accordance with regulations of the Council on Environmental Quality (40 CFR §1500-1508, 16 July 2020) and U.S. Army (32 CFR §651, 29 March 2002).

1.1 Background

White Sands Missile Range is an approximately 2.2 million-acre installation in south-central New Mexico (Figure 1), initially established in 1941 as White Sands Proving Grounds. The missile range was expanded in 1952 to roughly its current size (White Sands Missile Range, 2009: 1-1). The installation provides for testing and development of weapons and equipment for military use (Department of the Army, 2005). The mission of WSMR is to provide "...Army, Navy, Air Force, DoD, and other customers with high quality services for experimentation, test, research, assessment, development, and training in support of the Nation at war" (https://www.wsmr.army.mil/testcenter/Pages/home.aspx, accessed on 18 February 2022). The installation is managed by the U.S. Army Garrison WSMR. The Main Post of WSMR, which encompasses approximately 1,530-acre area at the southern end of the installation (Figure 1), contains the base headquarters, administrative offices, the operations control center, and other technical facilities. Approximately 1,651 people live in the 2020 Census Zip Code Tabulation Area ZCTA5 88002, which includes the Main Post (https://data.census.gov/cedsci/all?q=88002, accessed on 9 July 2022).

The action analyzed in this EA is being proposed by WSMR MWR. A range of resources is provided by WSMR MWR including community support, child and youth services, social and dining facilities and activities, recreation facilities (recreational vehicle [RV] camp sites, bowling alley, golf driving range, aquatic center, gym, and community center), a library, and a variety of community events. The Army MWR is a quality-of-life function that directly supports readiness by providing a variety of community, soldier, and family support activities and services (Department of the Army, 2010: Part 1-9). The range of MWR activities and services offered at Army garrisons is based on the needs of authorized patrons who work and reside there. The MWR activities and services are managed by garrison commanders within the framework of authorized and available appropriated and non-appropriated funds.

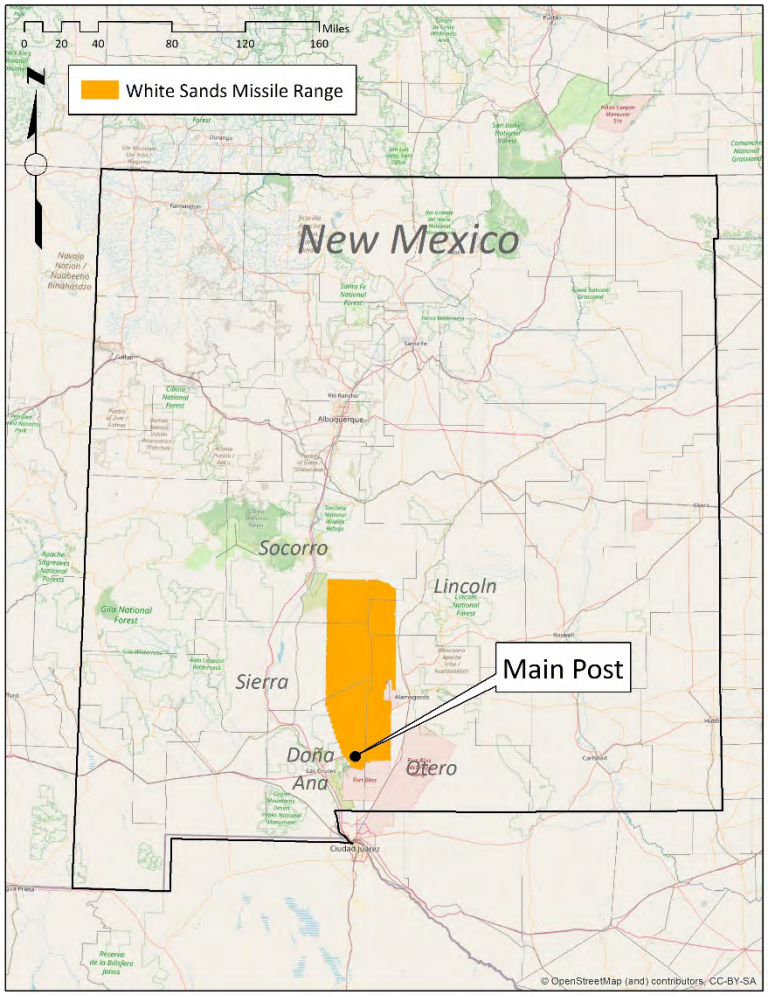


Figure 1. Location of the Main Post at White Sands Missile Range, New Mexico. Counties containing portions of the installation are labeled.

1.2 Purpose of and Need for Action

The action being proposed by WSMR MWR is to expand RV camp sites and add tent camp sites at the WSMR Main Post for the Army, Navy and Air Force communities, which includes soldiers, their families, civilian employees, contractors, and military retirees. Existing campground facilities at the WSMR Main Post are located at the Volunteer Park Travel Campsite. These facilities consist of eight full-hookup (i.e. water, electricity, and sewer) RV sites, five partial-hookup (i.e. electricity only) overflow RV sites, a building that houses a meeting room, food service area with sink, two restrooms each with a shower, and a covered picnic area. The Volunteer Park Travel Campsite encompasses approximately 2.5 acres and is located in the southwestern quadrant of the Main Post. There currently are no tent sites on the Main Post.

1.2.1 Purpose of the Proposed Action

The purpose of the proposed action is to expand camping facilities at WSMR to accommodate an increase in Department of Defense patrons and increase the range of camping opportunities available at the Main Post.

1.2.2 Need for the Proposed Action

The proposed action is needed because the demand for RV camping at WSMR is expected to increase to approximately 40 more sites than are currently available. Also, tent camping sites are in demand, but none are currently available at WSMR. According to WSMR MWR Outdoor Recreation staff, potential guests are routinely turned away due to lack of capacity. For the last four consecutive fiscal years the average year-round occupancy of RV sites at the Volunteer Park Travel Campsite was 66 percent (AECOM, 2020:13). The average stay at the Volunteer Park Travel Campsite was 14 days (AECOM, 2020: 28).

1.3 Decision to be Made

The decision to be made by the WSMR Garrison Commander, on the basis of this analysis, is whether or not to expand camping facilities and opportunities at the Main Post and, if so, where to implement this expansion, as described in this EA. The EA provides information regarding potential impacts of the proposed action. A determination will be made indicating if further study is needed, which would require preparation of an Environmental Impact Statement (EIS), or if a Finding of No Significant Impact (FONSI) is warranted based on examination of the analysis in this EA.

1.4 Related Environmental Documentation

Existing, relevant environmental documents have been reviewed and used in the analysis of the proposed action in this EA. These documents, which have been incorporated by reference, include the following.

- *Final Environmental Impact Statement for Development and Implementation of Range-Wide Mission and Major Capabilities at White Sands Missile Range, New Mexico* (White Sands Missile Range, 2009)

  In 2009, WSMR completed this Final Environmental Impact Statement (EIS) examining the environmental effects of developing new test and training capabilities to meet current and future mission requirements. The EIS was examined for material relevant to the description and analysis of resource areas considered in this EA. For example, the EIS considered how changes in mission and population associated with mission requirements could increase demand for recreation facilities (Volume 1, Section 3.14.6).

- *White Sands Missile Range Integrated Natural and Cultural Resources Management Plan and Environmental Assessment 2015-2019* (White Sands Missile Range, 2015a)

This plan is a guide for how WSMR will manage natural and cultural resources in a way that supports and sustains the operational military mission of WSMR. The plan was reviewed for information relevant to the description of existing conditions of resource areas addressed in this EA.

- *Programmatic Environmental Assessment, Bataan Memorial Death March, White Sands Missile Range* (White Sands Missile Range, 2019)

  This Programmatic EA analyzed the potential impact of a recreation event held once a year to honor service members who lost their lives during the Battle of Bataan in 1942. Capacity of the existing camping facilities at the Main Post is greatly exceeded during this recreation event. The Programmatic EA was reviewed and referenced as it covers numerous resource areas on the Main Post that are relevant to the analysis in this EA.

- *Final Environmental Assessment for Water Reclamation and Biosolids Composting, White Sands Missile Range, New Mexico* (White Sands Missile Range, 2020)

  This EA addressed sustainable best management practices for water conservation, reuse of wastewater, and reducing the demand on the potable water supply. It contains substantial information on existing conditions of resource areas considered in this EA, and was referenced accordingly. For example, it discussed wastewater reuse for management of vegetation at the old golf course area.

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Project Components

Camping facility components that may be included in the project alternatives are described below. Inclusion of all of the design components described below would require a minimum area of approximately 10 acres (i.e. 5.0 acres for up to 50 RV sites, 1.0 acres for 20 tent sites, and 0.5 acres for pavilions, comfort station, and miscellaneous, 3.5 acres for internal campground roads).

2.1.1 Recreational Vehicle Sites

Recreational vehicle site dimensions would match those at the existing Volunteer Park Travel Campsite. Sites would be 50 feet wide between utility pedestals and 80 feet long on the orthogonal (i.e. 4,000 ft^2 or approximately 0.1 acres). Sites would be angled between 55 and 60 degrees for ease of access (AECOM, 2020: 36). The RV sites would be designed in compliance with MWR RV site standards and with the National Fire Protection Association 1194 Standard for RV parks and campgrounds. Sites would be surfaced with six inches of compacted gravel or, for Architectural Barriers Act (ABA) compliant sites, with level concrete (United States Access Board, 2014).

Each RV site would include a covered picnic area consisting of an eight-foot by 15-foot concrete pad with a built-in grill and a pre-cast picnic table. Each site would have a concrete three-foot by five-foot utility pedestal to provide water, electricity, and coaxial cable hookups. Sewage disposal would be provided in each action alternative but through different means (see section 2.2). Each RV site would provide at least one vehicle parking space in addition to the area for RV parking (Figure 2; AECOM, 2020: 35-36).

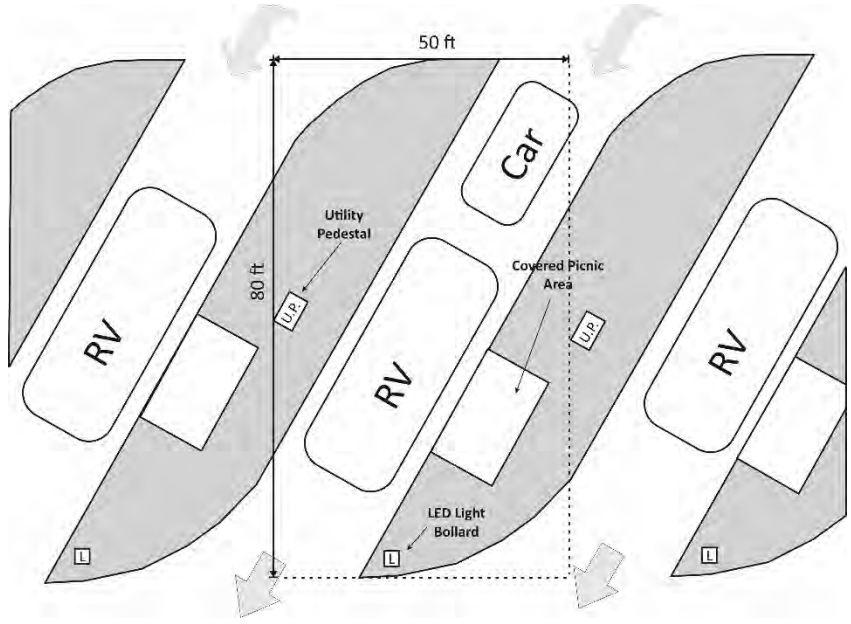


Figure 2. Recreational vehicle site schematic layout, adapted from figure 18 in AECOM (2020: 35). Drawing is not to scale.

The existing Volunteer Park Travel Campsite has a density of eight full-hookup (i.e. electricity, water, and sewer) RV sites in an area encompassing about 1.3 acres, which includes a buffer of 24 feet on all four sides (Figure 3).

Figure 3. Aerial view of the Volunteer Park Travel Campsite RV sites.

2.1.2 Tent Sites

Tent sites would be level, 20-foot by 20-foot compacted-earth pads enclosed with suitable lumber. Each site would also include a 10-foot wide, 25-foot long concrete pad with a covered picnic table, grill, and lantern hanger. Two vehicle parking spaces would be provided at each tent site. A minimum buffer of 10 feet would be provided around each tent site (AECOM, 2020: 36).

With an estimated footprint of 40 feet by 50 feet (2,000 ft^2 or 0.05 acres) for each tent site (Figure 4) and adequate spacing between sites, 20 tent sites would require an area of approximately 1.0 acres.

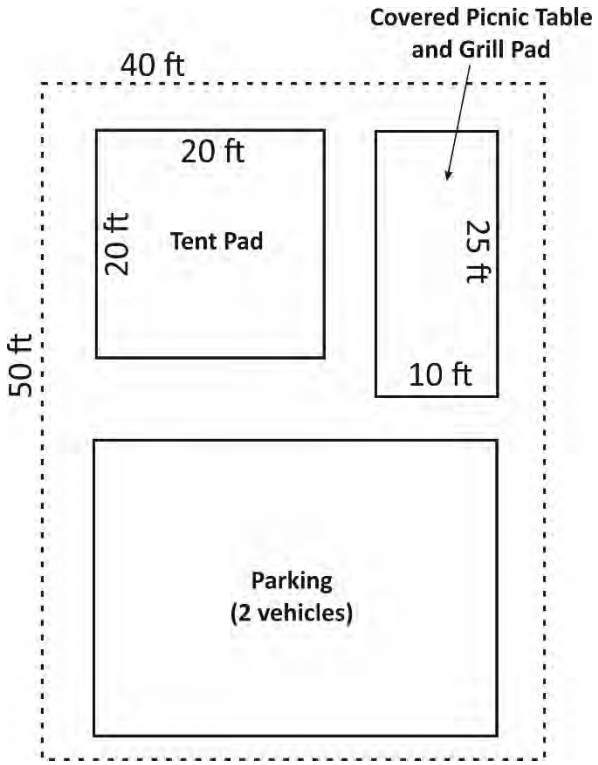


Figure 4. Tent site schematic layout. Drawing is not to scale.

2.1.3 Comfort Station

The campground expansion area would include an approximately 2,500 square-foot comfort station. This building would house a laundry, showers, toilets, and dish cleaning station for camper use. The facilities would be ABA-accessible. The comfort station would also include administrative areas such as janitorial, storage, and mechanical rooms. A fire hydrant would be installed at the comfort station. A concrete pad would be constructed adjacent to the comfort station for an external dumpster. The dumpster area would be enclosed with a concrete masonry unit wall. The comfort station would be constructed as a pre-engineered metal building with modifications to the envelope design to meet WSMR installation planning standards (White Sands Missile Range, 2005; White Sands Missile Range 2015b), with a concrete stem wall base and a finished floor six inches above finished grade. The building would have an ABA-accessible ramp at the main entry. The comfort station building would require utility services including electricity, water, and sewer. The building footprint, associated parking, and dumpster area would encompass approximately 0.1 acres.

2.1.4 Pavilions

The campground expansion would include up to three pavilions for group gatherings. Each pavilion would consist of a concrete pad measuring 30 feet by 40 feet with a fire pit and grill, tables, a water fountain, and safety lighting. A canopy designed to withstand the high wind loads common in the area would be

constructed over the pad (AECOM, 2020: 36). Each pavilion structure would encompass an area of approximately 0.03 acres.

2.1.5 Campground Roads

New two-way roads required in any of the alternatives would be 30 feet wide, and new one-way roads would be 24 feet wide (AECOM, 2020: 34). Turning radii would be a minimum of 30 degrees to accommodate large RVs. New roads would be surfaced with appropriate material such as gravel, asphalt, or pavers.

2.2 Alternatives Considered

2.2.1 No Action

Analysis of a no action alternative is required by Army NEPA regulation (32 CFR §651.34). The No Action Alternative would maintain the Volunteer Park Travel Campsite in its existing condition. No RV site expansion or tent site construction would occur with this alternative. Also, no comfort station or pavilions would be constructed. Consequently, camping opportunities would be limited to the eight full hookup and five overflow RV sites present at the Volunteer Park Travel Campsite. The Volunteer Park Travel Campsite also includes a building that houses a meeting room, food service area with sink, and two restrooms (male and female), each with a shower. There is also a covered picnic area at the Volunteer Park Travel Campsite.

2.2.2 Alternative A – Desert Emerald Area

Alternative A consists of expanding camping facilities by adding up to 50 RV sites and up to 20 tent sites, as described in section 2.1, at the Desert Emerald area located in the southwestern portion of the former golf course (Figure 5). Recreational vehicle sites would have hookups for electricity and water, but there would not be sewer service to each RV site. Electricity and water utilities would have to be extended to the campground from the Outdoor Recreation Building 1338. A central dump station that ties in directly to the sanitary sewer system, as opposed to individual sewer hookups, is proposed. The dump station would be located on the south side of Martin Luther King Boulevard between Ripley Street and the golf driving range. Potable water spigots would be located in tent camping areas. Alternative A includes up to three pavilions, as described above in section 2.1.4. Alternative A would also include a comfort station, as described above in section 2.1.3. A scale drawing of the conceptual layout of the campground in Alternative A, based on the proposed site layout in the Project Validation Assessment (AECOM, 2020: 33), is shown to scale in Figure 6. The conceptual layout in Figure 6 encompasses about 18 acres and includes 4.6 acres of roads, 5.0 acres of RV sites, 1.0 acres of tent sites, 0.1 acres of pavilions, and 0.1 acres for the comfort station.

Figure 5. Location of the campground expansion alternatives, the existing Volunteer Park Travel Campsite, and other features in the vicinity of the project area.

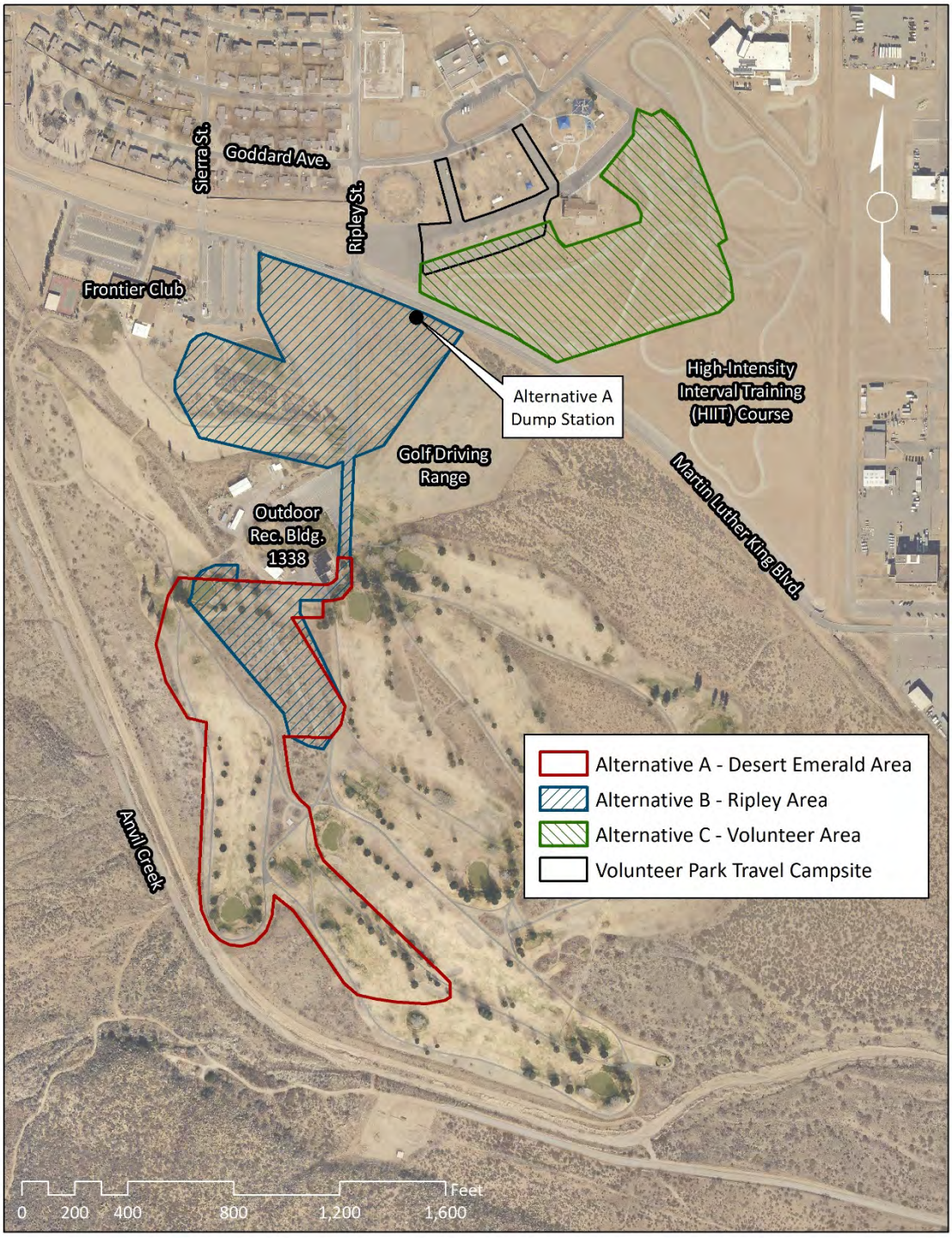
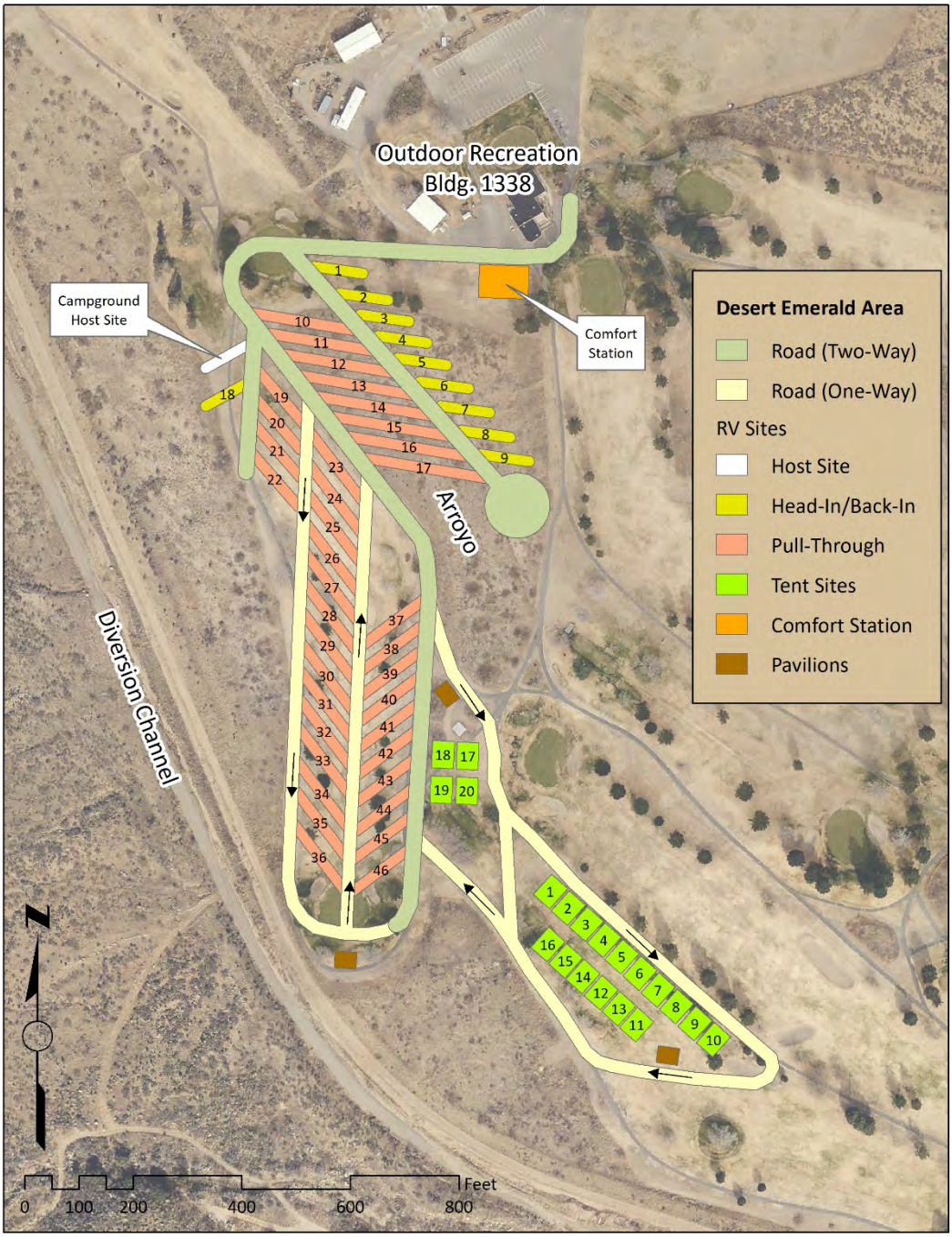


Figure 6. Conceptual layout of the campground in Alternative A, the Desert Emerald area. RV and tent sites are numbered for reference purposes only. Components are drawn to scale as follows. One-way roads are 24 feet wide; two-way roads are 30 feet wide; RV sites are 20 feet wide and 90 feet long; tent sites are 40 feet by 50 feet; pavilions are 30 feet by 40 feet; and the comfort station area is 90 feet by 60 feet. A central dump station would be located near the intersection of Ripley Street and Martin Luther King Boulevard (see Figure 5). Scale is 1:2,500.



2.2.3 Alternative B – Ripley Area

Alternative B would expand camping facilities by adding up to 50 RV sites in the Ripley area, which includes portions of the Desert Emerald and the area on both sides of Ripley Street south of Martin Luther King Boulevard (Figure 5). This alternative would include up to 20 tent sites and would spatially segregate tent and RV sites (Figure 7). The RV sites would have full hookups with water, sewer, and electricity. Consequently, no dump station would be required. Existing water, sanitary sewer, and electric utility lines are located within the Ripley area. Potable water spigots would be located in tent camping areas. Alternative B also includes a comfort station, as described in section 2.1.3, and four pavilions (see section 2.1.4). Alternative B also includes a separate, stand-alone restroom building in addition to the comfort station. The stand-alone restroom building was estimated to be half the size of the comfort station and would include men's and women's toilets, each with hand-washing sinks. A conceptual layout of camping facility components in Alternative B, which includes the same quantity of components as described in Alternative A as well as an additional pavilion and an additional stand-alone restroom, is shown to scale in Figure 7. The conceptual layout in Figure 7 encompasses about 17 acres and includes 3.3 acres of roads, 5.0 acres of RV sites, 1.0 acres of tent sites, 0.12 acres of pavilions, 0.05 acres for the stand-alone restroom building, and 0.1 acres for the comfort station.

2.2.3 Alternative C – Volunteer Area

Alternative C would expand camping facilities by adding up to 50 RV sites in the Volunteer area, which is located in a portion of the existing High-Intensity Interval Training (HIIT) track area immediately adjacent to the existing Volunteer Park Travel Campsite (Figure 5). This alternative would therefore require either reconfiguring the HIIT track at the existing site or moving it to another location, such as the Desert Emerald Park. Alternative C would include up to 20 tent sites, and would spatially segregate tent and RV sites (Figure 8). As in Alternative B, the RV sites would have full hookups with water, sewer, and electricity. Consequently, no dump station would be required. All RV sites would be pull-through in Alternative C. Existing water, sanitary sewer, and electric utility lines are located within the Volunteer area. Potable water spigots would be located in tent camping areas. Alternative C also includes a comfort station, as described in section 2.1.3, and three pavilions (see section 2.1.4). A conceptual layout of camping facility components in Alternative C, which includes the same quantity of components as described in Alternative A, is shown to scale in Figure 8. The conceptual layout in Figure 8 encompasses about 12 acres and includes 2.6 acres of roads, 5.0 acres of RV sites, 1.0 acres of tent sites, 0.1 acres of pavilions, and 0.1 acres for the comfort station.

Figure 7. Conceptual layout of the campground in Alternative B, the Ripley area. RV and tent sites are numbered for reference purposes only. Components are drawn to scale as follows. The one-way roads are 24 feet wide; two-way roads are 30 feet wide; RV sites are 20 feet wide and 90 feet long; tent sites are 40 feet by 50 feet; pavilions are 30 feet by 40 feet; and the comfort station area is 90 feet by 60 feet. All RV sites would have full hook-ups tied to the existing sanitary sewer system. Scale is 1:2,500.

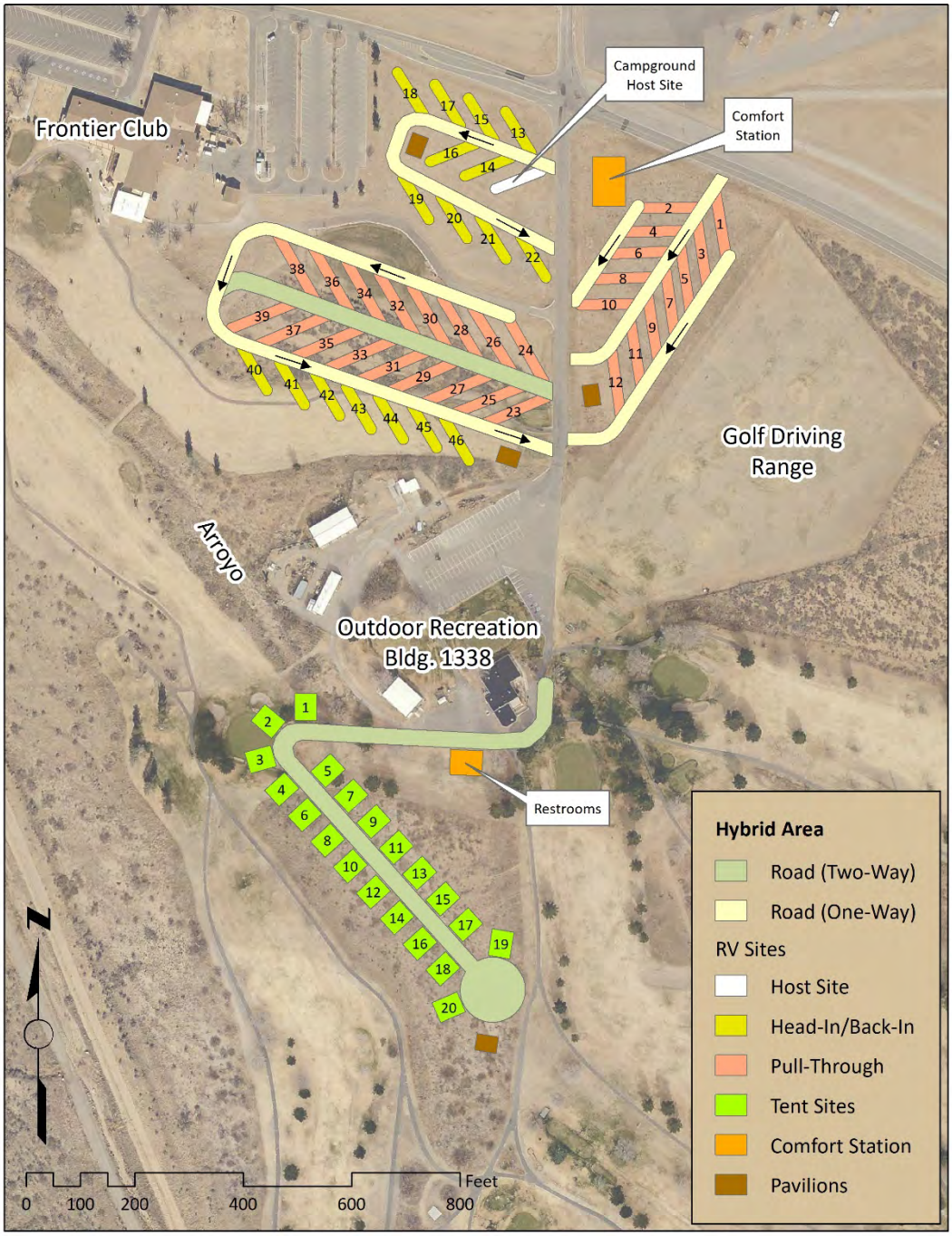


Figure 8. Conceptual layout of the campground in Alternative C, the Volunteer area. RV and tent sites are numbered for reference purposes only. Components are drawn to scale as follows. The one-way roads are 24 feet wide; two-way roads are 30 feet wide; RV sites are 20 feet wide and 90 feet long; tent sites are 40 feet by 50 feet; pavilions are 30 feet by 40 feet; and the comfort station area is 90 feet by 60 feet. All RV sites would have full hook-ups tied to the existing sanitary sewer system. Scale is 1:2,500.

2.2.5 Summary of Campground Components in Each Alternative

Campground components in each alternative were quantified based on the conceptual layouts in figures 6, 7 and 8 and are summarized in Table 1. New utility lines were laid out in each alternative by tying-in to the nearest location of existing utilities and then extending the lines based on the conceptual layouts. Consequently, the new electrical, water and sewer line figures should be considered as rough estimates for comparison purposes only.

Table 1. Summary of campground components in each alternative.

Alternative	No Action	Alternative A Desert Emerald	Alternative B Ripley	Alternative C Volunteer
RV sites – electricity, water, sewer	8	0	47	47
RV sites – electricity, water	0	47	0	0
RV sites – electricity only	5	0	0	0
RV sites – total (incl. host site)	**13**	**47**	**47**	**47**
Dump stations	0	1	0	0
Tent sites	0	20	20	20
Pavilions	1	3	4	3
Comfort station with restroom	1	1	1	1
Stand-alone restroom	0	0	1	0
New electrical line (feet)	0	8,900	7,900	6,700
New water line (feet)	0	8,900	7,700	6,900
New sewer line (feet)	0	300	7,100	5,900
New roads (feet)	0	7,600	5,500	4,500
New recreation facilities (acres)*	0	6.2	6.3	6.2
Total campground area (acres)	2.5	17.8	17.0	12.3

*New recreation facilities acreage includes the areas for RV and tent sites, pavilions, restrooms and comfort stations combined.

2.3 Alternatives Eliminated from Detailed Analysis

Two other areas for expansion of camping facilities were considered but were subsequently eliminated from detailed analysis. The Goddard area, bounded by Goddard Avenue on the north, Sierra Street on the west, Martin Luther King Boulevard on the south, and Ripley Street on the east (Figure 5), encompasses only about 3.7 acres. Therefore, it is too small to meet the purpose and need of the proposed action. Also, this area would place camping facilities next to existing housing, which was determined to be undesirable for both housing residents and campers.

Also considered was locating all expansion components in the area along both sides of Ripley Street south of Martin Luther King Boulevard, extending east from the eastern parking lot for the Frontier Club to the golf driving range (Figure 5). However, the geometry of this area constrained RV and tent site layout such that RV and tent sites were in close proximity, and no pull-through RV sites would fit into the layout. These considerations resulted in a determination that Ripley Street area was not feasible as a location for camping facility expansion.

2.4 Mitigation Measures and Best Management Practices

Best management practices (BMPs) are standard practices that are implemented as part of the proposed action to minimize or avoid adverse impacts. Mitigation measures are specific actions that would rectify or compensate for unavoidable adverse environmental effects that could be significant without mitigation.

1. Wet exposed soils during construction to control fugitive dust and minimize soil loss from wind erosion.
2. Install soil erosion barriers such as silt fence or coir rolls where appropriate to prevent off-site movement of soil and sediment.
3. Re-vegetate areas with appropriate herbaceous species where plant cover has been removed and no hard surfacing is proposed.
4. Stockpile any organic topsoil material encountered during construction to use as surface material in final grading and re-contouring.
5. To minimize noise disturbance to residents and wildlife, construction would be prohibited between 10:00 PM and 7:00 AM.
6. Consider increasing the height of the existing yard wall at the Ripley Street – Martin Luther King Boulevard intersection residential housing area to increase the level of privacy and reduce potential noise impacts from campground development at either the Alternative B – Ripley area or the Alternative C – Volunteer area.
7. Plant Afghan pine and other appropriate tree species such as Arizona cypress, Mexican elder and desert willow, in campground expansion areas to provide shade and improve campground aesthetics. Install adequate, efficient irrigation to new plantings.
8. Develop and implement a plan for renovating the existing irrigation in Desert Emerald Park to provide adequate water for at least all of the existing Afghan pine trees. This measure should be implemented as soon as possible due to the potential for mortality of many of the mature Afghan pines at Desert Emerald Park, particularly in the southeastern portion of the area that currently is not irrigated. This measure addresses bird habitat, campground aesthetics, and carbon sequestration.
9. If Alternative C – Volunteer is selected, relocate the HIIT track by either moving it to the Desert Emerald Park or by reconfiguring it at the existing site adjacent to the expanded campground area.
10. Make all trash receptacles and dumpsters wildlife-proof at the selected campground expansion site.
11. Vegetation will be removed outside of migratory bird nesting season. If vegetation is removed during migratory bird nesting season, the proponent or contract representative will need to coordinate with the Environmental Division to have a survey completed by a qualified wildlife biologist. Construction activities may be delayed if there is an active nest.
12. Sewer will not be installed within the Desert Emerald Park to protect drinking water supplies.
13. A new tree will be planted for any tree removed during construction.

2.5 Synopsis of Environmental Consequences of the Alternatives

Table 2 provides a synopsis, by resource category, of the primary environmental consequences of each of the alternatives, as discussed in detail in Chapter 3. The table provides a comparative overview of the environmental consequences of the alternatives.

Table 2. Synopsis of environmental consequences of each alternative, by resource category.

Resource	No Action	A - Desert Emerald	B - Ripley	C - Volunteer
Air Quality	No change, elevated particulates occur during episodic, high-wind events	Fugitive dust during construction in 17.8-acre project area	Fugitive dust during construction in 17.0-acre project area	Fugitive dust during construction in 12.3-acre project area
Soils	No change to existing soil erodibility and soil loss conditions and trends	Estimated maximum wind erosion of 512 tons (average soil depth of 0.22 inches) during and following construction	Estimated maximum wind erosion of 666 tons (average soil depth of 0.24 inches) during and following construction	Estimated maximum wind erosion of 529 tons (average soil depth of 0.27 inches) during and following construction
Water Resources and Floodplains	No impacts to floodplains No impacts to groundwater No changes in potential flooding impacts	No impacts to floodplains No impacts to groundwater Extensive flooding during 100- and 500-year events	No impacts to floodplains No impacts to groundwater Moderate flooding during 100- and 500-year events	No impacts to floodplains No impacts to groundwater No flooding during 100-year event, negligible flooding during 500-year event
Biological Resources	Ongoing decline and loss of mature Afghan pine with subsequent adverse effects on avifauna Ongoing, adverse human-wildlife interactions No changes to other biological resource conditions	Loss of 45 mature Afghan pines from construction Greatest potential impact to avifauna from tree loss Greatest impact to wildlife from human disturbance (noise, activity, lights)	Loss of 8 mature Afghan pines from construction Moderate potential impact to avifauna from tree loss Moderate impact to wildlife from human disturbance (noise, activity, lights)	No loss of mature Afghan pines from construction No impact to avifauna from tree loss Negligible impact to wildlife from human disturbance (noise, activity, lights)

Resource	No Action	A - Desert Emerald	B - Ripley	C - Volunteer
		Loss of some potentially suitable habitat for Common Ground-Dove (state-threatened)	Loss of some potentially suitable habitat for Common Ground-Dove (state-threatened)	No potentially suitable habitat for Common Ground-Dove (state-threatened) would be affected
Cultural Resources	No effect	No cultural resources are in the alternative area WSMR will follow the standard operating procedures for cultural resource management	No cultural resources are in the alternative area WSMR will follow the standard operating procedures for cultural resource management	No cultural resources are in the alternative area WSMR will follow the standard operating procedures for cultural resource management
Noise	No change to existing noise conditions and trends	Substantial increase in noise would likely be disruptive to current users of Desert Emerald Park and wildlife that frequent the area	Residences and Frontier Club patio area may be affected by noise from RV sites along Ripley Road south of Martin Luther King Boulevard	Potential for some noise effect to residential area near Ripley Street – Martin Luther King Boulevard
Recreation and Aesthetics	Recreational camping facilities would not be expanded	Expansion of recreational facilities would occur (50 RV sites, 20 tent sites) No sewer hookups for RVs, single dump station for RVs Long walk to comfort station – restrooms Safety issues with pedestrians and vehicles sharing road, emergency access to campground (single road in and out), highest concerns	Expansion of recreational facilities would occur (50 RV sites, 20 tent sites) Full RV hookups including sewer Short walk to restrooms, moderate walk to comfort station Safety issues with pedestrians and vehicles sharing road, moderate concerns with hazard trees and flood potential	Expansion of recreational facilities would occur (50 RV sites, 20 tent sites) Full RV hookups including sewer Short walk to comfort station - restrooms Negligible safety issues with pedestrians and vehicles no concerns with hazard trees, negligible safety concerns with flood potential

Resource	No Action	A - Desert Emerald	B - Ripley	C - Volunteer
		with hazard trees and flood potential Greatest disruption of existing recreation uses at Desert Emerald Park HIIT track and Volunteer Park Travel Campsite would not be affected	Moderate disruption of existing recreation uses at Desert Emerald Park HIIT track and Volunteer Park Travel Campsite would not be affected	No disruption of existing recreation uses at Desert Emerald Park Disruption of utilities or use of Volunteer Park Travel Campsite may occur during construction Reconfiguration or relocation of HIIT track would be required
Waste and Hazardous Materials	No effect	Previously remediated pesticide spill site is in construction zone, may need additional testing and remediation	No effect	No effect
Infrastructure	No changes to location and condition of existing utilities and facilities that are maintained on the Main Post	Utility extensions required: Electrical 8,900 ft Water 8,900 ft Sewer 300 ft (+ dump station) Roads required: Two-lane 3,300 ft One-lane 4,300 ft	Utility extensions required: Electrical 7,900 ft Water 7,700 ft Sewer 7,100 ft (+ restroom) Roads required: Two-lane 2,200 ft One-lane 3,200 ft	Utility extensions required: Electrical 6,700 ft Water 6,900 ft Sewer 5,900 ft Roads required: Two-lane 500 ft One-lane 4,000 ft
Socioeconomic Conditions and Environmental Justice	No beneficial regional and local economic effects to from campground construction, maintenance, and spending by campground users No environmental justice impacts	Highest estimated cost of construction Economic benefits to local and regional economies No disproportionate impacts to minority or low-income populations	Moderate estimated cost of construction Economic benefits to local and regional economies No disproportionate impacts to minority or low-income populations	Lowest cost of construction Economic benefits to local and regional economies No disproportionate impacts to minority or low-income populations

Resource	No Action	A - Desert Emerald	B - Ripley	C - Volunteer
Greenhouse Gas Emissions and Climate Change	No change to current conditions and trends	Estimated total of 19.6 metric tons of greenhouse gases emitted by construction (would occur in one year) Well below significant impact threshold of 25,000 metric tons per year	Estimated total of 19.6 metric tons of greenhouse gases emitted by construction (would occur in one year) Well below significant impact threshold of 25,000 metric tons per year	Estimated total of 19.6 metric tons of greenhouse gases emitted by construction (would occur in one year) Well below significant impact threshold of 25,000 metric tons per year

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing physical, biological, social, and economic conditions that occur within the region of influence (ROI) of the proposed action and potential effects on those resources from the alternatives. The ROI defines the geographic extent of potential impacts from the alternatives on the important elements of the valued ecosystem components (VECs; see section 3.1 below) that were analyzed. The existing condition information provides a baseline for evaluating the potential environmental consequences of the alternatives.

The ROI for description of existing conditions and analysis of environmental consequences was defined by a 300-foot buffer around the combined area of the action alternatives (Figure 9). Some VECs, such as air quality and economics, also included a larger geographic area in the analysis due to the nature of the resource in question. The time-frame for the analysis was defined as 20 years.

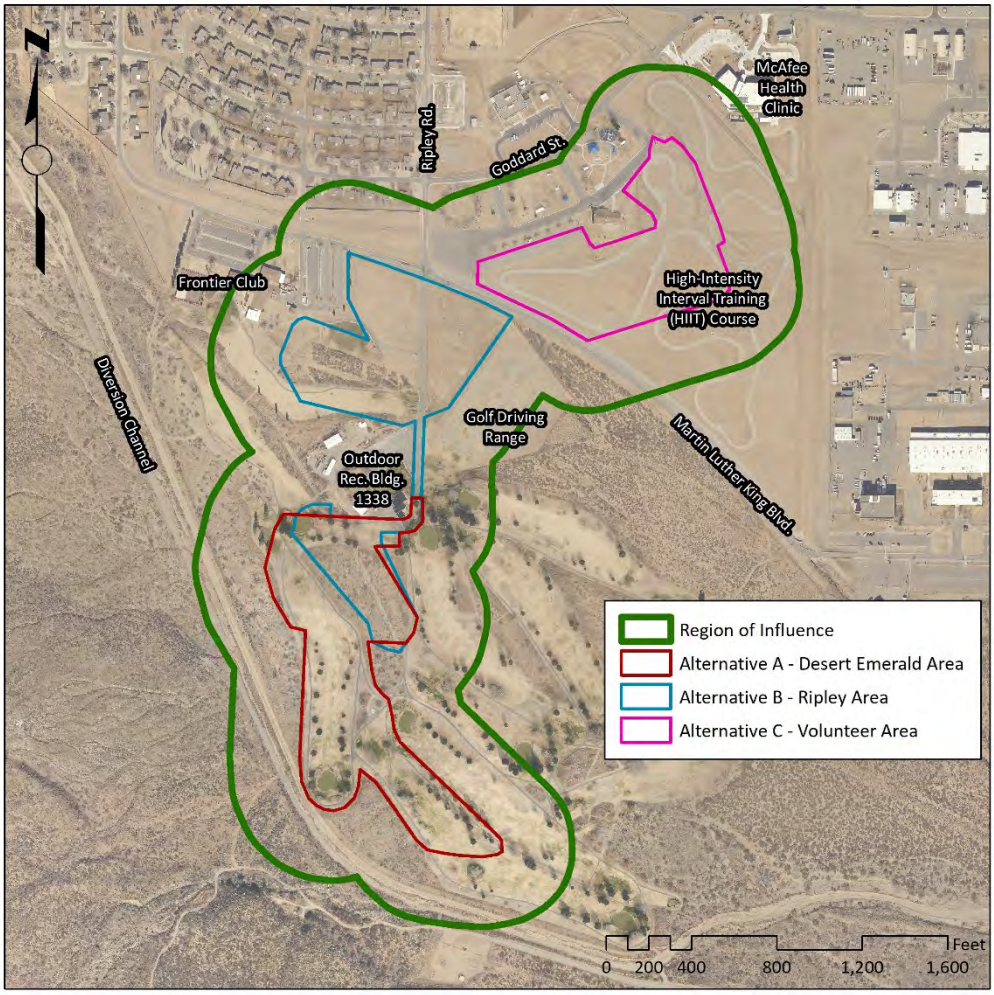


Figure 9. The region of influence for the analysis.

3.1 Valued Environmental Component (VEC) Analysis

Valued environmental components (VECs) are aspects of the physical, biological or socioeconomic environment (e.g. air quality, water, soil, vegetation, wildlife habitat, recreation) that may be affected by a proposed project. This EA applies a VEC analysis method described in the Army's NEPA Analysis Guidance Manual (U.S. Army Environmental Command, 2007). The VEC analysis serves to focus the environmental assessment on areas where impacts are most likely to occur given the nature of the proposed action and the geographic area where the action would occur. Participants involved in the VEC analysis included subject matter experts at WSMR who have extensive knowledge of the various resources on the installation.

The VEC analysis produced a qualitative rating of potential effects of the action alternatives on each of the ecosystem components that was considered. Ratings, which were averaged over the three action alternatives for each VEC, were classified as no effect, low, moderate, or high. A no effect rating indicated that the VEC would not be affected by the proposed action, and therefore were not analyzed in this EA. A low rating indicated that potential impacts to the VEC were considered to be negligible or nonexistent. Consequently, VECs with a low rating are discussed briefly but are not analyzed in detail in this EA. Ratings of medium or high suggested that substantial impacts to the VEC were likely. Therefore, VECs with medium or high ratings are analyzed in detail in this EA. A summary of the VEC analysis and resulting ratings is shown in Table 3.

Table 3. Summary of Valued Ecosystem Component (VEC) analysis.

VEC	Rating	Rationale and Special Considerations
Air Quality	Medium	Short-term, localized effects related to construction (dust, vehicle exhaust) and potential for some persistent post-construction effects associated with some small areas of project-related denuded ground and increased motor vehicle use in area.
Airspace	No Effect	Action alternatives do not include any airspace operations and none would impede existing airspace use or management.
Soils	Medium	Localized impacts in small areas including soil compaction, hard surfacing, exposure to erosion until vegetation re-establishes, some potential for soil contamination by RV black water, motor oil, gasoline.
Water Resources and Floodplains	Medium	Alternatives are in sole-source aquifer, some potential for localized water quality impacts during construction and from campground use. Mapped floodplains, flood hazard areas or storm-water basins are in action area.
Biological Resources	Medium	Some potential to affect migratory birds or nesting habitat and to increase wildlife-human interactions, vegetation changes would occur, increased requirements for control of weeds or nuisance wildlife may occur.
Cultural Resources	Low	Areas have been surveyed and no cultural resources are known to occur in the action area.
Noise	Medium	Noise associated with operation and maintenance may potentially affect wildlife such as breeding birds and nearby residents.

VEC	Rating	Rationale and Special Considerations
Waste and Hazardous Materials	Low	Disposal of RV black water at dump station may have potential to contaminate soils or groundwater, hazardous waste remediation site in one alternative area.
Traffic and Transportation	Low	Potential for increased traffic volume and traffic flow issues, including during construction.
Recreation	High	Potential to impact existing recreational uses. Action alternatives would increase camping capacity and opportunities.
Utilities and Infrastructure	Medium	Alternatives would require extension of water, electricity, and sewer lines.
Socioeconomic Conditions and Environmental Justice	Low	Potential aesthetic impacts to residents of housing area and Frontier Club events, no minority or low-income populations would be affected.
Greenhouse Gas Emissions and Climate Change	Medium	Emissions associated with construction equipment, RVs and cars operated by campground users.

3.2 Air Quality

Thresholds for protection of air quality are defined by New Mexico statute (Ambient Air Quality Standards, Environmental Improvement Board, 20.2.3.110-111 NMAC [10/31/2002]) and federal law (Clean Air Act, 42 USC §7401 et seq.) for nine pollutants (Table 4).

Table 4. Pollutant thresholds for ambient air quality established by the State of New Mexico (a) or the federal Environmental Protection Agency (b). Particulate pollutants are defined as airborne particles 2.5 μm or less in diameter (PM-2.5) and airborne particles 10 μm or less in diameter (PM-10).

Pollutant	Threshold
Carbon monoxide (8-hr average)[a]	8.7 ppm
Carbon monoxide (1-hr average) [a]	13.1 ppm
Nitrogen dioxide (annual mean) [a]	0.05 ppm
Nitrogen dioxide (24-hr average) [a]	0.10 ppm
Ozone (8-hr average)[b]	0.075
Lead (quarterly average) [b]	1.5 $\mu g/m^3$
PM-2.5 fine particulates (annual mean) [b]	15 $\mu g/m^3$
PM-2.5 fine particulates (24-hr average) [b]	35 $\mu g/m^3$
PM-10 particulates (24-hr average)*	150 $\mu g/m^3$
Sulfur dioxide (annual mean) [a]	0.02 ppm
Sulfur dioxide (24-hr average) [a]	0.10 ppm
Sulfur dioxide (3-hr average) [b]	0.50 ppm
Hydrogen sulfide (1-hr average) [a]	0.10 ppm
Total reduced sulfur (0.5-hr average) [a]	0.003 ppm

The project area is located in Air Quality Control Region 153, the El Paso – Las Cruces – Alamogordo Interstate region. This geographic area consists of Doña Ana, Otero, Lincoln and Sierra counties in New

Mexico and Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, and Presidion counties in Texas (40 CFR §81.82). Air Quality Control Regions are areas where there is the potential for exceeding national air pollutant thresholds because of projected population growth rates and existing air quality.

Specific stationary sources of air pollution that have the potential to emit more than 100 tons per year of a regulated pollutant are required to be permitted pursuant to Title V of the Clean Air Act, as amended in 1990 (40 CFR §70). In addition, sources that have the potential to emit greater than 10 tons per year of a single Hazardous Air Pollutant or 25 tons per year of any combination of these hazardous pollutants are required to obtain a Title V permit. Title V permitting in New Mexico is implemented by the Air Quality Bureau of the New Mexico Environment Department (Environmental Protection, Environmental Improvement Board, 20.2.70.201 NMAC [02/06/2013]).

White Sands Missile Range is permitted under Title V (Title V Operating Air Permit no. P085R1, renewed on 17 November 2017). This permit specifies allowable emissions from stationary sources for nitrogen oxides, carbon monoxide, volatile organic compounds, sulfur dioxide, total suspended particulate matter, particulate matter less than 10 microns, and particulate matter less than 2.5 microns. Emission limits for stationary sources are also specified for Hazardous Air Pollutants. Stationary sources of emissions identified in the permit include aggregate processing, concrete production, natural gas boilers, fuel dispensing, fuel equipment leaks, fuel loading racks, internal combustion, fuel storage, surface coating, and wood-working dust.

3.2.1 Existing Conditions

Ambient air quality in the project area is generally considered good, with the exception of occasional high concentrations of particulate matter as a result of seasonal, localized blowing dust. The entire geographic area of WSMR, including the Main Post, is in attainment for all of the regulated hazardous pollutants and other air pollutants listed in Table 4 (White Sands Missile Range, 2009: page 3-22). The nearest non-attainment areas for 2022 are Las Cruces (8-hr ozone exceedance) and Anthony (PM-10 exceedance; https://www3.epa.gov/airquality/greenbook/anayo_nm.html). There are no regulated stationary sources of air pollutant emissions in the project area.

Exceedances of the PM-10 standard in Doña Ana County (which includes the ROI) are associated with high-velocity winds, which commonly occur from late winter through spring. Prevailing winds during these events are from the west to southwest. A plan to address high airborne particulate concentrations during these episodic, natural events was developed by the Air Quality Bureau of the New Mexico Environment Department, in conjunction with stakeholders (New Mexico Environment Department, 2005). However, military installations are exempt from dust control regulations (Environmental Protection, Environmental Improvement Board, 20.2.23.108.B(4) NMAC [01/01/2019]).

There are no housing units within the ROI, and only small portions of the Frontier Club and McAfee Health Clinic are contained therein (Figure 9). However, due to the nature of air quality, a larger area that encompasses the entire Main Post is relevant for the air quality analysis. In general, the area to the west of the ROI is primarily undeveloped, native vegetation. However, the Youth Center Basketball Court, some family housing units, and the Frontier Club are immediately west of the ROI. South of the ROI is undeveloped land. The area north of the ROI on the Main Post includes the McAfee Health Clinic, Youth Center, family housing, White Sands School, and a few other buildings. East of the ROI, in the direction

of prevailing west to southwest winds, are WSMR permanent facility buildings that house a variety of functions.

3.2.2 Environmental Consequences

3.2.2.1 No Action

The No Action alternative would not change or affect existing air quality in the ROI or vicinity. Existing episodic high-wind events that increase airborne dust and particulates from sparsely vegetated areas within the ROI, such as the HIIT track, would continue to occur. Exhaust emissions from RVs entering and exiting the Volunteer Park Travel Campsite (up to eight RVs at full capacity) would continue to occur. Generator use by RV campers at the Volunteer Park Travel Campsite is rare because electricity is provided at all existing RV camp sites, which eliminates the need to run generators. Consequently, emissions from generators associated with RV campers has a negligible effect on air quality.

3.2.2.2 Action Alternatives

Locally elevated levels of dust and blowing particulates may occur during construction in areas where the soil has been disturbed and vegetation has been removed, particularly when there are high winds (New Mexico Environment Department, 2005: page 5). Mitigation of fugitive dust during construction would be accomplished by watering down areas of surface disturbance. The proposed action does not include any stationary air-pollution emission sources. Overall, no long-term increases in airborne particulates are expected because development in the project area would result in paved or built areas and establishment of landscaping and vegetation. The ROI and vicinity are an attainment area for airborne particulates, carbon monoxide, nitrogen dioxide, sulfur dioxide, and ozone. Proposed developments associated with any of the action alternatives would not change attainment status.

The extent of soil disturbance and resulting potential for increases in wind-borne dust and particulates would vary among the alternatives. For the purpose of this analysis, it was assumed that the entire area in each action alternative, as shown in Table 1, would be subject to surface disturbance and therefore potentially contribute to airborne particulate concentration during high-winds. Surface disturbance area would be greatest for Alternative A – Desert Emerald and smallest for Alternative C – Volunteer (Table 5).

Table 5. Surface disturbance acreages for each action alternative.

Alternative	Surface Disturbance Acreage
A – Desert Emerald	17.8
B – Ripley	17.0
C – Volunteer	12.3

All of the action alternatives would result in increased emissions in the ROI from RV and passenger vehicles operated by campers. This localized increase in emissions would essentially be the same for all action alternatives because the number of camp sites is the same in all action alternatives. With 50 RV sites in each action alternative, assuming an average annual camp-site occupancy of 60 percent and an average stay of three days (AECOM, 2020: Table 19 on page 41), there would be approximately 3,660 round trips from U.S. Highway 70 to the ROI (a one-way distance of approximately six miles) per year, equating to about

44,000 miles of RV travel per year associated with each action alternative. Similarly, assuming 30 percent occupancy and average stay duration of three days for the 20 tent camping sites (AECOM, 2020: Table 19 on page 41), there would be another 732 round trips equating to about 9,000 miles of passenger vehicle travel per year associated with each action alternative. These estimates of RV and passenger vehicle usage associated with the action alternatives would result in relatively small total emissions of air pollutants, as shown in Table 6.

Emissions associated with construction would also be similar among the three action alternatives. Construction-related vehicle emissions were estimated by assuming operation of four heavy-duty diesel construction vehicles (e.g. backhoe, front-end loader) over a two-month period, averaging about four miles each per day with a five-day work week, equating to a total of approximately 650 miles. Total emissions associated with the estimated construction vehicle operation are also shown in Table 6.

Table 6. Estimated emissions from RVs, passenger vehicles, and construction equipment. Emission data (g/mile = grams per mile) are from the Bureau of Transportation Statistics (https://www.bts.gov/content/estimated-national-average-vehicle-emissions-rates-vehicle-vehicle-type-using-gasoline-and).

Pollutant	Class A RV (heavy-duty vehicle)		Passenger Vehicle (light-duty vehicle)		Construction Equipment (heavy-duty diesel)	
	g/mile	lbs/yr	g/mile	lbs/yr	g/mile	total lbs
Total hydrocarbons	1.264	123	0.280	6	0.296	0.4
Exhaust carbon monoxide	16.406	1,591	4.152	80	2.092	3
Exhaust nitrogen oxides	1.165	113	0.192	4	4.580	7
Exhaust PM-2.5	0.028	3	0.004	0.07	0.126	0.2

The small amounts of emissions associated with construction and campground use with any of the three action alternatives would not result in exceedance of pollutant thresholds. None of the action alternatives would result in WSMR, including the Main Post, being in non-attainment for any of the regulated hazardous pollutants or other air pollutants shown in Table 4. Total vehicle emissions associated with potential RV and tent campers that may use the expanded campground facilities at WSMR Main Post would not result in an overall increase in pollutants in Air Quality Control Region 153. This is because these campers would most likely use other facilities in the region (e.g. existing campsites at WSMR, Holloman Air Force Base, Fort Bliss, campsites on public lands, private facilities) in the absence of expanded facilities at WSMR.

3.2.2.3 Cumulative Effects

The effects of past and present, ongoing actions on air quality in the ROI and vicinity are represented by the existing conditions that, as discussed above in section 3.2.2.1, are characterized by good air quality except for seasonal, natural increases in dust associated with strong winds. There are currently no planned or proposed actions within the ROI that would affect air quality. Emissions of regulated pollutants from the proposed action would not exceed thresholds shown in Table 4 and, consequently, would not trigger a conformity determination under Section 176(c) of the Clean Air Act. The negligible effects on air quality from the proposed action, when added to existing effects in the ROI and vicinity, would result in a minute percentage increase of overall air emissions in the region.

3.3 Soils

Soil properties considered in this analysis were wind erodibility and suitability for camp site development. These properties were described in Natural Resources Conservation Service soil mapping for the ROI (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed on 14 June 2022). Susceptibility of soils to wind erosion was evaluated using wind erodibility group (WEG) rating and wind erodibility index. Suitability of soils for camp site development was evaluated using the Soil Data Explorer information for Recreational Development – Camp Areas.

A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in areas subject to surface disturbance. Wind erodibility group ratings are qualitative and range from 1 (most susceptible to wind erosion) to 8 (least susceptible to wind erosion). The wind erodibility index is a numerical value indicating the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction.

Camp site areas require site preparation, such as shaping and leveling RV, tent, and vehicle parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camping areas are typically subject to heavy foot traffic and localized vehicular traffic.

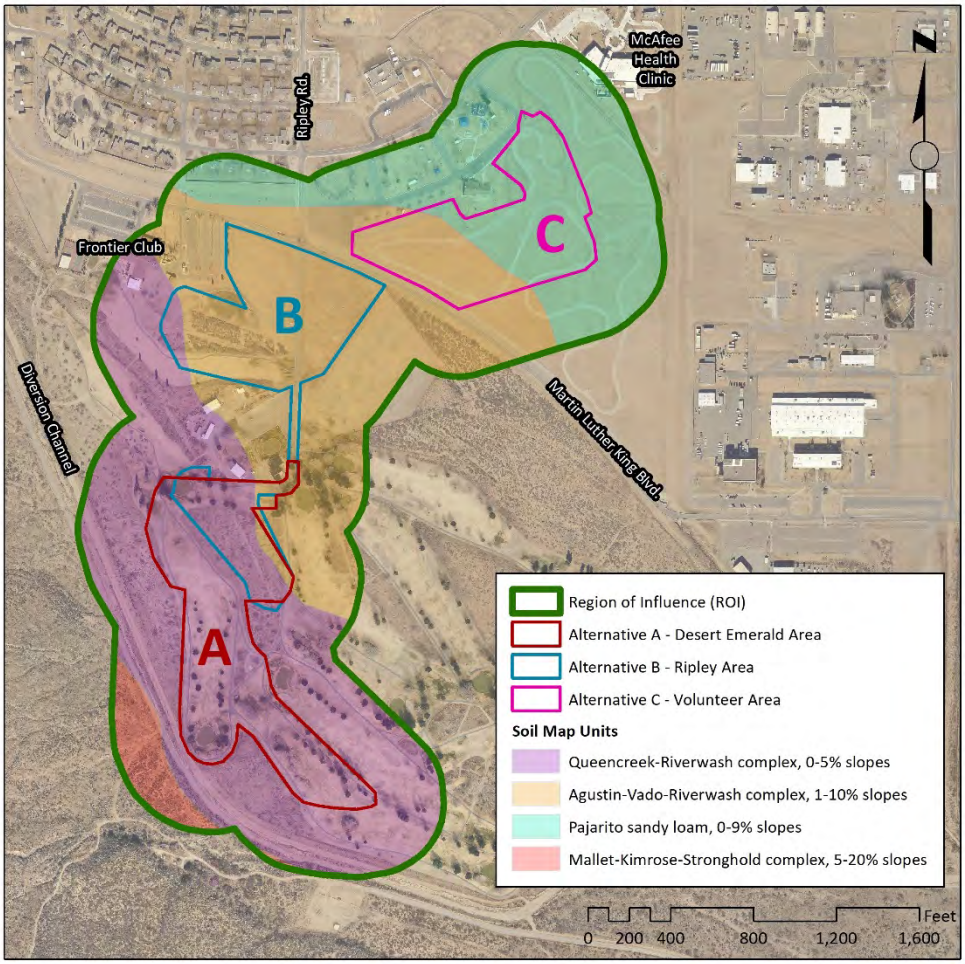
The ratings for camping areas are based on the soil properties that affect the ease of developing camp sites and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence ability to withstand foot and vehicle traffic and promote the growth of vegetation, especially in heavily used areas. For good ability to withstand foot and vehicle traffic the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence ability to withstand traffic are texture of the surface layer, depth to a water table, ponding, flooding, saturated hydraulic conductivity, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, saturated hydraulic conductivity, and toxic substances in the soil.

Suitability ratings indicate the extent to which the soils are limited by all of the soil features that affect development. A rating of "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. A rating of "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. A "Very limited" rating indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. Numerical ratings indicate the severity of individual limitations. The ratings range from 0 (no limitation) to 1 (greatest limitation for camp site use).

3.3.1 Existing Conditions

The ROI includes four soil map units (Figure 10). The Queencreek-Riverwash complex soils, which are found in the southwest portion of the ROI, are derived from sandy and gravelly alluvium. The typical profile is extremely gravelly sand from the surface to a depth of 60 inches. These soils are excessively drained. Queencreek-Riverwash complex soils make up about 41 percent of the ROI. The next most extensive soil map unit is Agustin-Vado-Riverwash complex, which comprises about 33 percent of the ROI and occurs through the middle third of the area (Figure 10). The parent material of this soil map unit is gravelly alluvium. Soil texture from the surface to a depth of about 30 inches ranges from coarse sandy loam to very gravelly sandy loam. Soils in the Agustin-Vado-Riverwash complex map unit are somewhat excessively drained. Pajarito sandy loam, which makes up about a quarter of the ROI in the northern portion of the area, is derived from coarse-loamy alluvium. The typical soil profile is sandy loam to a depth of eight inches, then fine sandy loam from eight to 60 inches depth. Pajarito sandy loam is well drained.

Figure 10. Soil map units in the ROI. Data are from the U.S. Department of Agriculture, Natural Resources Conservation Service – Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed on 14 June 2022).



The fourth soil map unit is Mallet-Kimrose-Stronghold complex, which comprises about three percent of the ROI and occurs on the west side of Anvil Creek along the southwestern edge of the ROI (Figure 10). These soils are derived from mixed alluvium and range from loamy sand to very gravelly sandy loam and are well drained to somewhat excessively drained. In relative terms, the Queencreek-Riverwash complex and Mallet-Kimrose-Stronghold complex soils are more resistant to wind erosion than the Agustin-Vado-Riverwash complex and Pajarito sandy loam soils (Table 7).

Table 7. Wind erosion characteristics of soils in the ROI. The Wind Erodibility Group (WEG) rating ranges from 1 (most susceptible to wind erosion) to 8 (least susceptible to wind erosion). The Wind Erodibility Index (WEI) is a numerical value indicating the tons per acre per year that can be expected to be lost to wind erosion. Data are from the Natural Resources Conservation Service – Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed on 14 June 2022).

Symbol	Map Unit Name	WEG Rating	WEI (tons/ac/yr)	Acres in ROI	Percent of ROI
4	Agustin-Vado-Riverwash complex, 1-10% slopes	3	86	45.7	32.9%
59	Pajarito sandy loam, 0-9% slopes	3	86	32.4	23.3%
67	Queencreek-Riverwash complex, 0-5% slopes	5	56	56.6	40.8%
48	Mallet-Kimrose-Stronghold complex, 5-20% slopes	5	56	4.0	2.9%

With respect to suitability for campground development, Pajarito sandy loam is rated as somewhat limited because of the low potential (a score of 0.02) for generation of dust (Table 8). The other two soil map units where campground development could occur, Agustin-Vado-Riverwash complex and Queencreek-Riverwash complex, are rated as very limited. This rating is based primarily on high scores for flooding potential, sandy soil texture, gravel content, and large stone content (Table 8).

Table 8. Suitability of soils in the ROI for campground development. Data are from the Natural Resources Conservation Service – Web Soil Survey (https://websoilsurvey.nrcs. usda.gov/app/WebSoilSurvey.aspx, accessed on 14 June 2022).

Map Unit Name	Rating	Reasons for Rating
Agustin-Vado-Riverwash complex, 1-10% slopes	Very limited	Flooding (1.00) Dusty (0.05) Gravel content (1.00) Large stone content (0.19)
Pajarito sandy loam, 0-9% slopes	Somewhat limited	Dusty (0.02)
Queencreek-Riverwash complex, 0-5% slopes	Very limited	Flooding (1.00) Too sandy (1.00) Gravel content (1.00) Large stone content (1.00)

3.3.2 Environmental Consequences

3.3.2.1 No Action

The No Action alternative would not change or affect existing soil conditions in the ROI. Existing bare or sparsely vegetated areas within the ROI would continue to be subject to wind erosion. Existing patterns of soil disturbance from uses such as temporary event parking (e.g. during the Bataan Memorial Death March event; White Sands Missile Range, 2019: page 3-31 to 3-32) or infrastructure maintenance would continue.

3.3.2.2 Action Alternatives

Grading, trenching, backfilling and construction access would disturb soils in the alternative areas. Total area of soil disturbance would be greatest in Alternative A – Desert Emerald (17.8 acres) and least with Alternative C – Volunteer (12.3 acres; Table 9). Soil disturbance would include removal of vegetation, excavation and backfilling, and soil compaction. Assuming that soil disturbance would result in exposure to wind erosion for a period of six months, the estimated amount of soil loss due to wind erosion, based on the ratings in Table 7, would be 512 tons for Alternative A, 666 tons for Alternative B, and 529 tons for Alternative C. Using a weight of 1.2 tons per cubic yard for loamy sand, these figures equate to 427 cubic yards of wind-eroded soil for Alternative A (or an average depth of about 0.22 inches over the 17.8-acre area of Alternative A), 555 cubic yards for Alternative B (an average depth of about 0.24 inches over the 17-acre area), and 441 cubic yards for Alternative C (an average depth of about 0.27 inches over the 12.3-acre area).

Table 9. Soils affected by the action alternatives.

Soil Map Unit	Soil Map Unit Acreages for each Alternative		
	A - Desert Emerald	B - Ripley	C - Volunteer
Queencreek-Riverwash complex	16.9 ac (94.7%)	4.6 ac (26.9%)	0
Agustin-Vado-Riverwash complex	0.9 ac (5.3%)	12.5 ac (73.1%)	4.8 ac (39.1%)
Pajarito sandy loam	0	0	7.5 ac (60.9%)
Total Acres	17.8 ac	17.0 ac	12.3 ac

Soil suitability for campground development is best in Alternative C – Volunteer, where about 61 percent of the area is rated as somewhat limited due to potential for dusty conditions. The remaining 39 percent of the Alternative C area, as well as all of the Alternative A and Alternative B areas, are rated as very limited suitability for campground development. However, design elements such as paving, gravel surfacing, landscaping, and irrigation would overcome all of the soil suitability limitations. Soil wetting during construction and other appropriate best management practices would be implemented to reduce soil loss in disturbed areas.

3.3.2.3 Cumulative Effects

Past and ongoing actions that have influenced soil erodibility in the ROI include construction and operation of the now-decommissioned Desert Emerald Golf Course, activities associated with the annual Bataan Death March event (White Sands Missile Range, 2019: pages 3-31 to 3-32), and mowing and other disturbance of vegetation cover. There are currently no other planned future actions in the ROI that may

affect soil erosion. Worst-case soil loss estimates resulting from the proposed action, coupled with effects from past, present and planned future actions, would not result in significant cumulative soil-loss impacts in the ROI. Implementation of soil BMPs identified in section 2.4 would reduce the potential for soil loss to well below the worst-case estimates described above. Consequently, cumulative impacts to soils in the ROI would be insignificant.

3.4 Water Resources and Floodplains

Water resource features considered in this analysis included floodplains, flood potential, and groundwater quality. The State of New Mexico has established contaminant thresholds for protection of groundwater with less than 10,000 mg/L total dissolved solids (Environmental Protection, Water Quality Control Commission, 20.6.2.3103 NMAC [12/21/2018]). These regulations specify numerical standards for 56 contaminants and a standard for all toxic pollutants. Groundwater with total dissolved solids concentration less than 10,000 mg/L is considered a drinking water source (White Sands Missile Range, 2009: page 3-72). Groundwater used for potable water supply at the Main Post is drawn from a local aquifer with total dissolved solids concentration less than 1,000 mg/L (White Sands Missile Range 2020: page 30).

Executive Order 11988 (42 Federal Register 26951, 24 May 1977) addresses floodplain management. This Executive Order requires federal agencies to determine if proposed actions will affect floodplains and, if so, to avoid adverse effects to floodplains.

3.4.1 Existing Conditions

There are no perennial surface water bodies or wetlands in the ROI or immediate vicinity. However, the ROI is located within the watersheds of several ephemeral drainages. The largest of these is the Anvil Creek – Rock Springs Canyon watershed, which encompasses approximately 6,466 acres, and drains the east side of the Organ Mountains from the Rabbit Ears southeast along the Needles to Sugarloaf Peak (Figure 11). The next largest is the Maple Springs Canyon watershed which drains a 1,326-acre area on the north side of Granite Peak. The Texas Canyon watershed, immediately east of Maple Springs Canyon, drains an area of approximately 819 acres. Finally, a small un-named drainage with a watershed area of about 326 acres, is located along the northeastern edge of the Anvil Creek – Rock Springs Canyon watershed (Figure 11). Combined, these four watersheds encompass about 8,937 acres.

Hydrologic analysis of similar sized ephemeral watersheds on the west side of the Organ Mountains provide a rough approximation for project-area watersheds of peak storm-water runoff flows and associated water volumes for a range of annual storm probabilities (Table 10; U.S. Army Corps of Engineers, 2011). For example, a storm with a one-percent chance of occurring in any given year is referred to as a “100-year” event, a storm with a four-percent chance of occurring in any given year is referred to as a “25-year” event, and a storm with a 20-percent chance of occurring in any given year is referred to as a “5-year” event. A 100-year storm event in the Alameda Arroyo watershed on the west side of the Organ Mountains had an estimated peak flow of 6,235 cubic feet per second (cfs) and an associated flood volume of 1,532 acre-feet (Table 10). If a direct proportionality is assumed for the Anvil Creek – Rock Springs Canyon watershed on the east side of the mountains, the peak flow for a 100-year event would be approximately 3,865 cfs and the total flood volume would be about 950 acre-feet.

Figure 11. Ephemeral drainage watersheds in the project area.

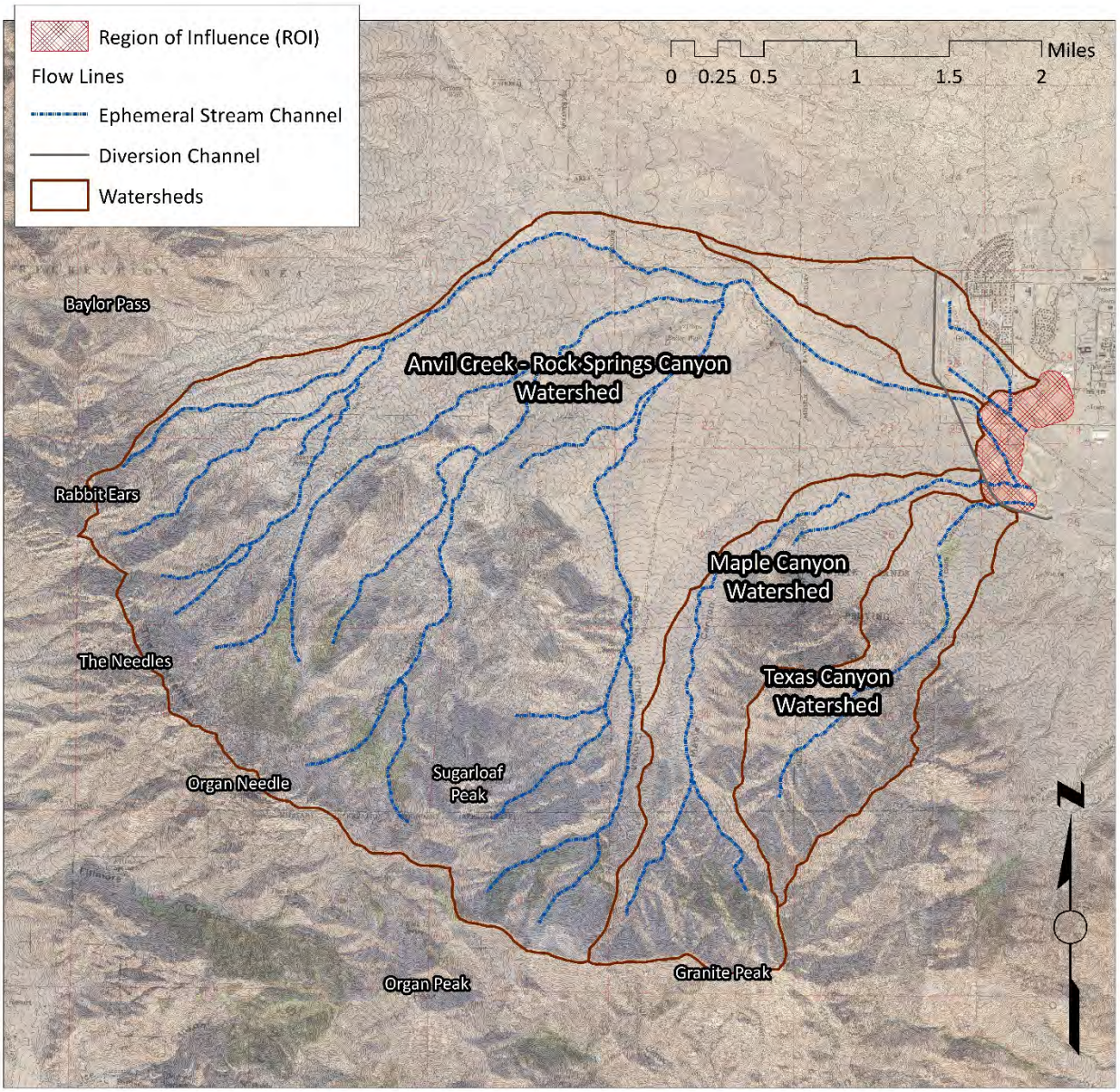


Table 10. Peak storm-water runoff flows associated with a range of storm events for watersheds on the west side of the Organ Mountains (U.S. Army Corps of Engineers, 2011: page 13). These watersheds are rough analogs for project-area watersheds, as indicated.

Organ Mountains West-Side Watershed	Analog for Project-Area Watershed	Annual Chance of Storm Occurrence	Peak Discharge (cfs)	Volume (acre-feet)
Alameda Arroyo (10,439 ac)	Anvil Creek – Rock Springs Canyon (6,466 ac)	50%	504	124
		20%	1,475	399
		10%	2,163	629
		4%	3,190	956
		2%	4,447	1,219
		1%	6,235	1,532
North Fork Las Cruces Arroyo (3,873 ac)	Maple Canyon and Texas Canyon (2,145 ac)	50%	255	57
		20%	710	167
		10%	1,043	257
		4%	1,494	386
		2%	1,837	492
		1%	2,179	605

Special Flood Hazard Areas (SFHA), defined as areas subject to inundation by the one-percent annual chance flood, have been mapped in the project area by the Federal Emergency Management Agency (Figure 13). The mapping classifies all SFHAs in the project area as Zone A, which means that water depths for the one-percent annual chance flood (i.e. 100-year flood) have not been determined (Federal Emergency Management Agency, 2016). The SFHA mapping shows all except about the northeastern quarter of the ROI as being in SFHA Zone A (Federal Emergency Management Agency, 2016).

Detailed mapping of flood-water depths associated with large storm events in the project area based on hydraulic modelling has been conducted (Bell et al., 2018). This modelling and mapping used detailed topography data that incorporated modifications of the levee along the western perimeter of the Main Post that were made in 2016. The modelling evaluated the 100-year storm event (a 2.85-inch rain over 6 hours) and a 500-year event (a 3.70-inch rain event over 6 hours). The analysis showed overtopping of the levee in the ROI at the Anvil Creek channel on the northwestern edge and along the southwestern edge with the 100-year event. In the 500-year event, levee overtopping occurred all along the western side of the ROI (Bell et al., 2018).

There are no active floodplains in the project area. A remnant segment of the Anvil Creek ephemeral channel is located in the ROI (Figure 12). The remnant Anvil Creek channel segment in the ROI runs discontinuously from the diversion channel levee west of the Frontier Club southeast to just north of the old golf course restroom building (Building 1343). This channel segment was cut off by the levee and diversion channel along the western perimeter of the Main Post.

Potable water for the Main Post is drawn from 15 wells completed in the basin-fill aquifer. Water from the supply wells is pumped to the Main Post Water Treatment Plant, and from there it is held in five storage tanks before being distributed as treated, potable drinking water. Eleven of the water supply wells are

located on the Main Post and are recharged by the Sotol Creek drainage (White Sands Missile Range, 2020: page 32), which is a tributary in the Anvil Creek – Rock Springs Canyon watershed. The other four wells are located in the Soledad Canyon drainage located about 10 miles south of the Main Post (Lewis, 2016: page 6). The depth to water in these supply wells ranges from about 300 to 500 feet below the land surface (Myers and Sharp, 1992: page 18). Natural groundwater recharge rates in the project area vary with climate cycles and fluctuations in annual precipitation amounts. An average recharge rate for the area around the Main Post supply wells has been estimated at 1,920 acre-feet per year, which accounts for both periods of drought and surplus precipitation (White Sands Missile Range, 2009: page 3-77). Groundwater movement through the Main Post area is to the southeast (White Sands Missile Range, 2009: page 3-73).

There are no known occurrences of contamination of groundwater in the ROI. However, the old golf course restroom (Building 1343), which was on a septic system with a leach field, was decommissioned to protect underlying groundwater. The WSMR environmental review process would be followed in accordance with 32 CFR §651 before any action is taken to demolish the existing restroom and septic components.

Figure 12. The lower part of the remnant Anvil Creek channel segment in the ROI. View is looking downstream (south) down the arroyo towards the old golf course restroom building (Building 1343).

3.4.2 Environmental Consequences

3.4.2.1 No Action

The No Action Alternative would not result in any impacts to floodplains as no campground expansion developments would be implemented. No changes in developments or infrastructure potentially affected by flooding from extreme events would occur. No impacts water quality of groundwater, including the water-supply aquifer would be likely to occur in the ROI.

3.4.2.2 Action Alternatives

As with the No Action Alternative, none of the action alternatives would affect floodplains because no active floodplains occur in any of the alternative areas. Similarly, none of the action alternatives are likely to affect groundwater quality. Two of the Main Post water supply wells (15A and 21) are near or down-gradient from the ROI. Well 15A is located about 680 feet north of the McAfee Health Clinic and well 21 is about one mile due west of the southeastern edge of the ROI. All of the other Main Post water supply wells are up-gradient from the ROI. Potential contaminants that may be accidentally released during construction and during use of the campground expansion facilities include small amounts of petroleum products (e.g. oil, fuel, lubricants) from construction equipment, RVs, or passenger vehicles. However, the small volumes involved and the depth to groundwater in the area indicate that the potential for any impacts to the drinking water aquifer are remote. Also, sewage handling at the dump station in Alternative A could potentially involve accidental discharges of small volumes of liquid waste. However, these instances would likely be infrequent and of small volume and duration, again indicating that potential impacts to the drinking water aquifer would be unlikely.

The area susceptible to flooding from large storm events in the ROI watersheds would vary by alternative (Figures 13 and 14). None of the Alternative C – Volunteer area would flooded in a 100-year event (i.e. a storm event that has a one-percent chance of occurring in any given year). In contrast, the southern third of the Alternative A – Desert Emerald area would be subject to inundation by flood waters associated with a 100-year storm event. Flowing flood water throughout much of this inundated area would be about 1.5 to 2.5 feet deep. The arroyo that crosses through the southern end of the Alternative B – Ripley area would carry flood water to a depth of about 0.5 feet during the 100-year storm event (Figure 13).

In the 500-year storm event scenario, about three-quarters of the Alternative A – Desert Emerald area would be covered by flowing floodwaters ranging from 0.5 to about 3.0 feet deep (Figure 14). In the Alternative B – Ripley area, flood water would flow down the arroyo in the southern part of the area to a maximum depth of about one foot. There would also be shallower flooding through a low-lying swale across the northern part of the area (Figure 14). The Alternative C – Volunteer area would be subject to shallow flooding, up to a maximum depth of about 0.5 feet, during the 500-year event. However, most of the flooding in the Alternative C area would be less than six inches deep in the 500-year event scenario.

Figure 13. Flood-water depths associated with a 100-year storm event in the project area watersheds (adapted from Bell et al., 2018). The ROI is indicated by the black outline and the alternative areas (A, B and C) are shown with white outlines.

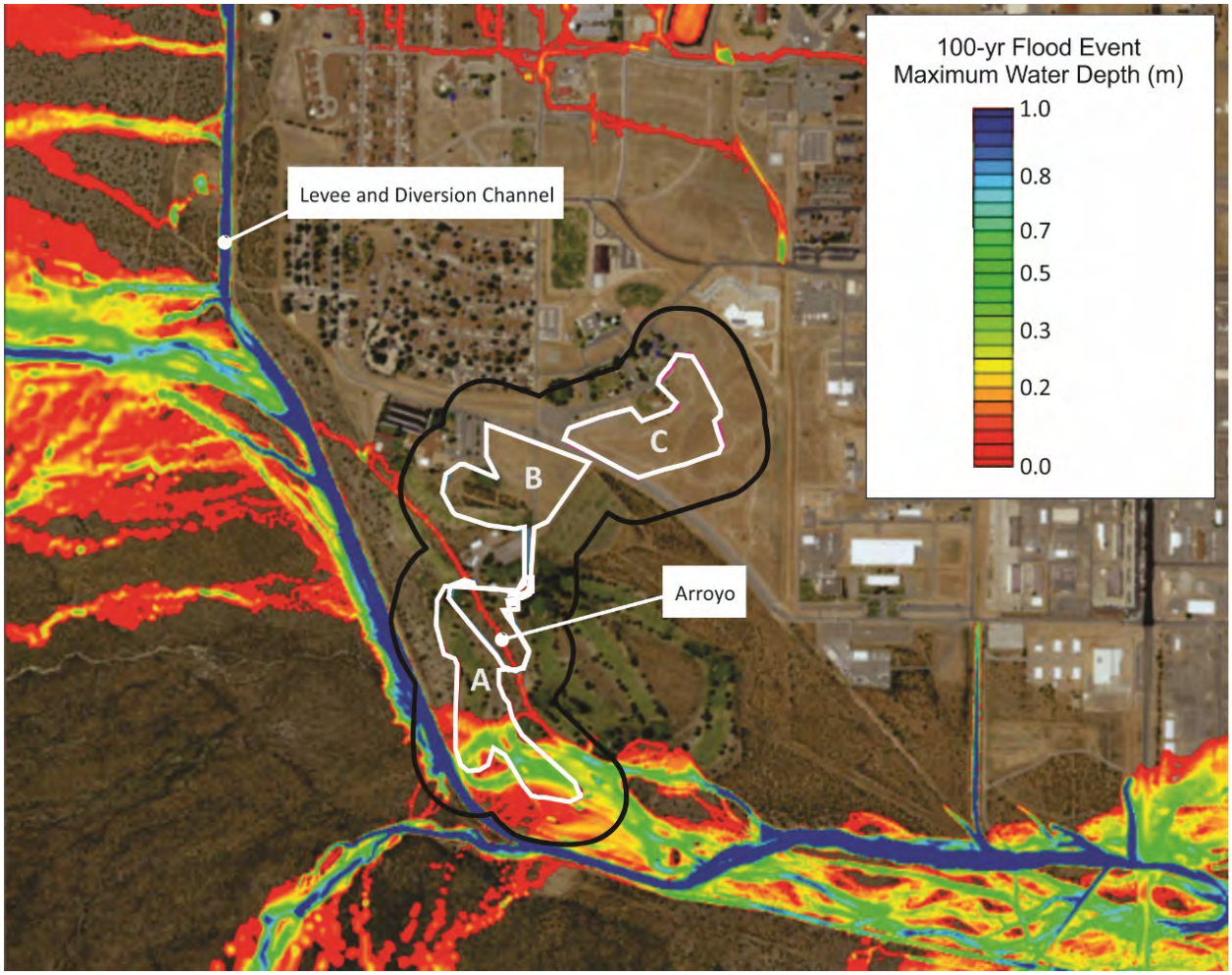
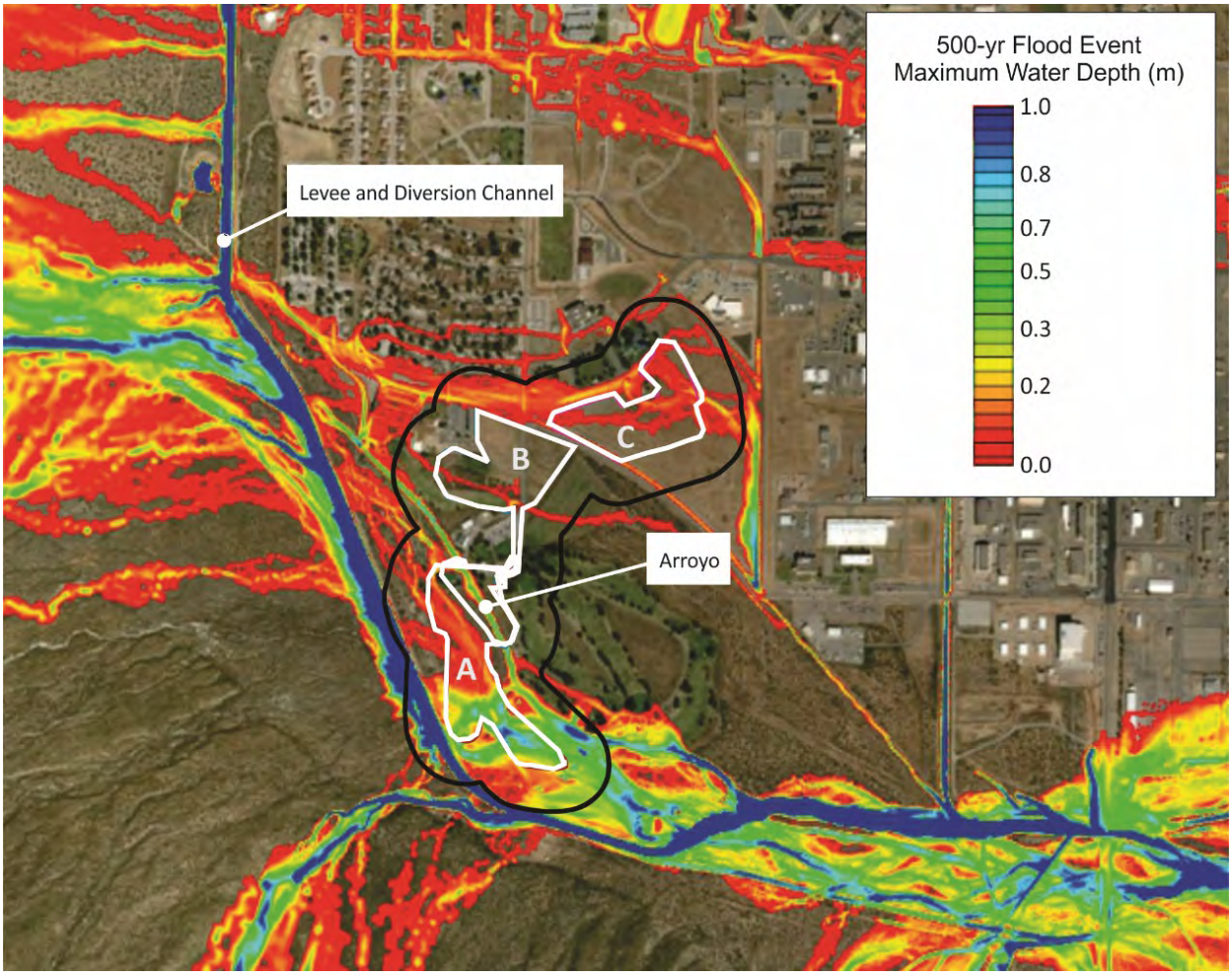


Figure 14. Flood-water depths associated with a 500-year storm event in the project area watersheds (adapted from Bell et al., 2018). The ROI is indicated by the black outline and the alternative areas (A, B and C) are shown with white outlines.



3.4.2.3 Cumulative Effects on Water Resources and Floodplains

Past and ongoing actions that have influenced floodplains and flooding potential in the ROI include construction and maintenance of the diversion channel and levee along the western perimeter of the Main Post. The levee and diversion channel have altered runoff flows through area and isolated segments of natural channels with remnant floodplains. Also, land surface grading and contouring associated with construction of golf course and other facilities (e.g. roads, utility infrastructure) have altered flood-flow routes (e.g. flood waters flowing down Martin Luther King Boulevard in the 500-year flood simulation shown in Figure 14). Potential levee improvements (i.e. levee modification alternative 2C in Bell et al., 2018) could alleviate flood potential in the ROI, but this measure may or may not be implemented. None

of the action alternatives would affect floodplains or flood potential in the ROI. Consequently, the proposed action would not have any cumulative effects on floodplains or flood potential.

The current condition of groundwater quality in the ROI and immediate vicinity, which is good, is indicative of the aggregate effects of past and ongoing actions in the area. Potential effects to groundwater quality from the proposed action are unlikely to occur, and if there are small accidental releases of petroleum product or liquid waste contaminants associated with any of the action alternatives, their effect on groundwater (which occurs 300 feet or more below the ground surface) would be negligible. Therefore, cumulative effects to floodplains, flooding potential, and groundwater quality would be insignificant.

3.5 Biological Resources

Analysis of biological resources in this EA focuses on vegetation types and wildlife habitat, important categories of wildlife (i.e. nesting birds, animal species commonly involved in wildlife-human interactions in the area), and special-status species. For the purpose of this EA, special-status species include plant and animal species listed by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act, species identified under different levels of concern by the State of New Mexico, and species considered sensitive by WSMR.

3.5.1 Existing Conditions

Eight biologically sensitive Special Natural Areas that warrant special management practices are found on WSMR (White Sands Missile Range, 2015: page 3-49). Also, 22 plant associations that occur on WSMR are considered imperiled (conservation rank G2) and another 41 are considered vulnerable (conservation rank G3; Muldavin et al., 2000: page 13). None of these Special Natural Areas or plant associations of conservation concern occur in the ROI or immediate vicinity. The Main Post area, including the ROI, is mapped as "Human and Military Disturbance" cover type, which prior to development of the cantonment was desert shrub and desert grassland vegetation (White Sands Missile Range, 2015a: page 3-54). Desert Emerald Park and recreational fields are currently characterized as artificial habitats that are dominated by non-native grasses, shrubs and trees (White Sands Missile Range, 2020: page 16).

3.5.1.1 Vegetation

Vegetation in the ROI includes park and landscaped areas with trees and primarily nonnative grasses, areas dominated by weedy herbaceous species, and remnants of native arroyo riparian/desert wash vegetation (Figure 15). Some common plant species in the park and landscaped-area vegetation include nonnative grasses such as Bermudagrass (*Cynodon dactylon*), annual bluegrass (*Poa annuum*), and smooth brome (*Bromus inermis*) and a variety of mostly nonnative tree species including Afghan pine (*Pinus eldarica*), green ash (*Fraxinus pennsylvanica*), Chinese pistache (*Pistacia chinensis*), and tree-of-heaven (*Ailanthus altissima*). The park and landscaped-area vegetation covers about 46 percent of the ROI (Figure 15). The park vegetation includes the old Desert Emerald Golf Course, which was constructed around 1962 and was closed due to budget constraints in November 2016 (Alamogordo Daily News, 2016). Afghan pines in the old golf course area were planted sometime after 1966 (White Sands Missile Range, 1966), so the oldest trees are at most 56 years old and possibly considerably younger. There are 112 trees within the "footprint" of the combined alternative areas within the ROI, 52 of which are Afghan pine (Figure 16). The condition

of 20 of these 52 Afghan pines has been assessed; 19 of them were considered to be in excellent condition and one was considered to be in fair condition. Condition of the remaining 32 Afghan pines in the alternatives area has not been professionally assessed.

Figure 15. Vegetation cover in the ROI.

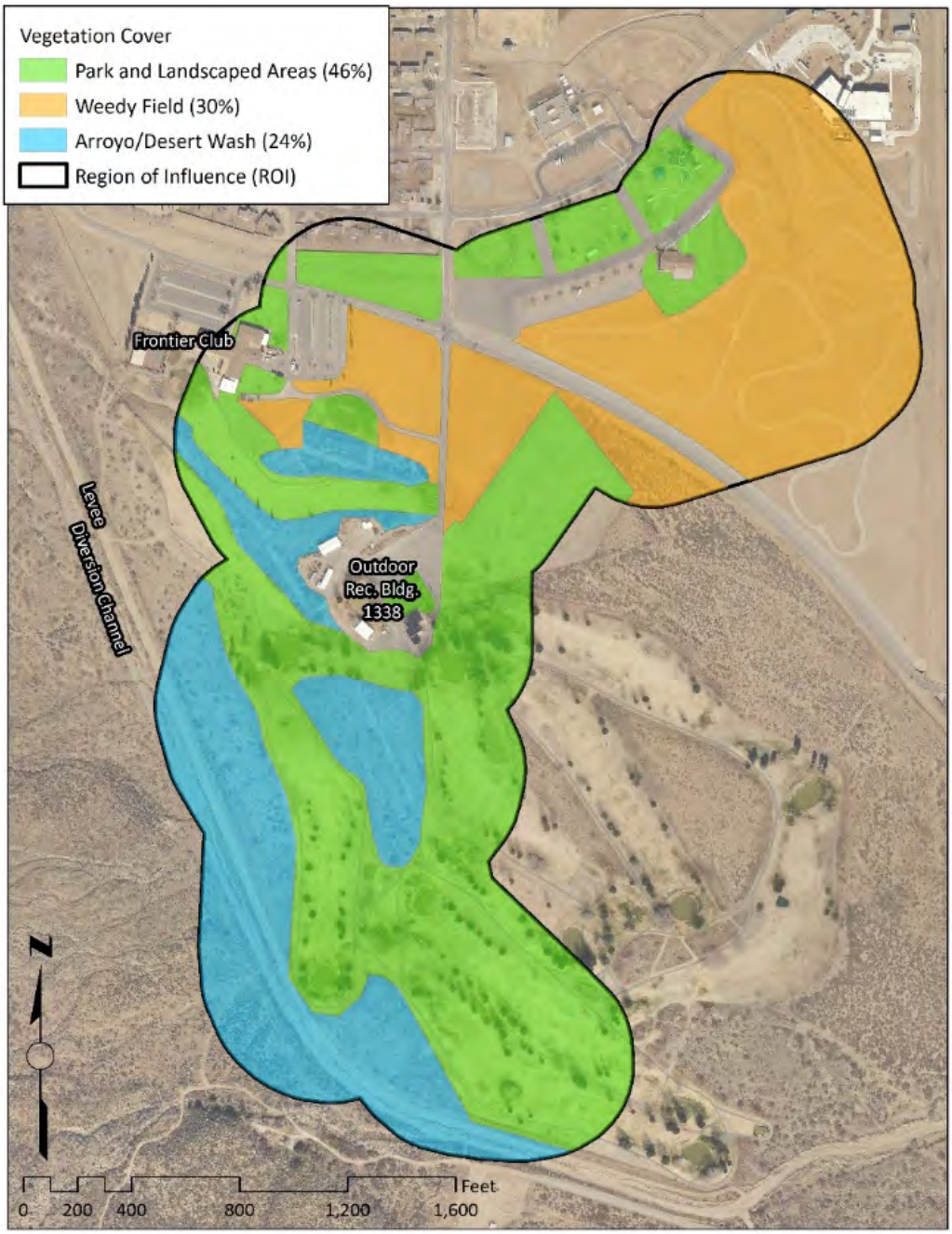


Figure 16. Afghan pine in Desert Emerald Park.

The next most abundant vegetation cover in the ROI is weedy fields, which encompasses about 30 percent of the ROI. Common plant species in the weedy field vegetation include common sandbur (*Cenchrus spinifex*), Russian thistle (*Salsola tragus*), desert dandelion (*Malacothrix fendleri*), silverleaf nightshade (*Solanum elaeagnifolium*), and purple mat (*Nama hispidum*).

Arroyo/desert wash vegetation covers about 24 percent of the ROI. Common plant species in this vegetation cover include honey mesquite (*Prosopis glandulosa*), desert willow (*Chilopsis linearis*), soaptree yucca (*Yucca elata*), Mormon tea (*Ephedra trifurca*), prickly pear (*Opuntia phaeacantha*), snakeweed (*Gutierrezia sarothrae*), alkali sacaton (*Sporobolus airoides*), Mexican poppy (*Escholtzia californica mexicana*), scorpionweed (*Phacelia integrifolia*), thicksepal hiddenflower (*Cryptantha crassisepala*), whitestem stickleaf (*Mentzelia albicaulis*), combleaf evening primrose (*Oenothera coronopifolia*), wool star (*Erastrum diffusum*), and low lupine (*Lupinus pusillus*).

3.5.1.2 Avifauna including Migratory Birds

The old golf course at Desert Emerald Park is a very important bird habitat area on WSMR, as it consistently supports some of the highest numbers of bird species on the entire range (https://www.wsmr.army.mil/fn/ /Pages/WSMRAttactsVarietyOfBirds.aspx, accessed on 27 June 2022). Annual surveys conducted in the golf course area from 2015 through 2020 have recorded 130 species, and the area is likely the most important site in the state for nesting Vermillion Flycatcher (*Pyrocephalus rubinus*). The nesting season

for Vermillion Flycatcher likely extends from March 15 through August 15 with peak activity from late April through late June.

The presence of large, mature Afghan pine, adjacent native desert scrub and arroyo riparian habitat, and the relatively undisturbed, quiet conditions in Desert Emerald Park provide high-quality nesting habitat for numerous bird species. For example, 53 and 39 bird species, many of which may nest in the area, were recorded during spring and summer surveys at the old golf course area in 2015 and 2016, respectively (Hartsough et al., 2015; Hartsough et al., 2016). The U.S. Fish and Wildlife Service identified seven migratory bird species that are of particular concern and that may occur in the ROI (Appendix B). Three of these seven species are known to occur in the Desert Emerald Park area of the ROI (Table 11).

Table 11. Migratory bird species of concern in the ROI from the U.S. Fish and Wildlife Service list (Appendix B). Observation records from eBird.org were reviewed for occurrence of species in the ROI. All observation records were from the Desert Emerald Park portion of the ROI.

Common Name	Scientific Name	Most Recent Observation	Breeding Season
Cassin's Sparrow	*Aimophila cassinii*	Mar 2020	Aug 1 to Oct 10
Ferruginous Hawk	*Buteo regalis*	Mar 2021	Mar 15 to Aug 15
Virginia's Warbler	*Vermivora virginiae*	Aug 2020	May 1 to Jul 31

3.5.1.3 Other Wildlife

Other wildlife species including mule deer (*Odocoileus hemionus*), javelina (*Tayassu tajacu*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), desert cottontail (*Sylvilagus audubonii*), and Botta's pocket gopher (*Thomomys bottae*) are frequently observed in the ROI, particularly in the old golf course area at Desert Emerald Park. Human interactions with some of these species have become problematic. For example, feeding of coyotes at Desert Emerald Park is causing concern about habituating these animals to humans and creating the potential for negative interactions. Also, subsurface, easily-collapsed cavities associated with pocket gopher activity may create potential hazards for people walking off the paved paths in the park. Similarly, rattlesnakes (*Crotalus* spp.) are occasionally encountered on the paved paths in the Desert Emerald area during summer evenings. Some species, such as Common Raven (*Corvus corax*), raccoon (*Procyon lotor*), and coyote, may also become habituated to foraging in dumpsters and trash receptacles for food.

3.5.1.4 Special-Status Species

Twenty-three special status species, which includes federal-listed and candidate species and state-listed species, were identified as potentially occurring in the ROI or vicinity (Appendix A). Only one of these species, Common Ground-Dove (*Columbina passerina*, state threatened) has suitable habitat in the ROI and has been recorded from there (see evaluation in Appendix A). Common Ground-Dove was observed on 29 September 2015 in the old golf course area at the Desert Emerald Park (eBird.org mapping tool, accessed on 29 June 2022). There are no other documented observations of the species in the ROI. Common Ground-Dove is a resident species, or at most a short-distance migrant that may move from higher elevation to slightly lower elevation in late fall and winter (Corman and Wise-Gervais, 2005: page 196). Preferred habitats include mesquite thickets near washes or human-modified areas such as pastures, fields,

and turf, often with surface water nearby (New Mexico Department of Game and Fish, 2020: page 45; Corman and Wise-Gervais, 2005: page 196). Diet of Common Ground-Dove is primarily small seeds but also includes insects to a lesser extent.

3.5.2 Environmental Consequences

3.5.2.1 No Action

The No Action Alternative would not result in any changes to existing biological resources conditions or trends in the ROI as no campground expansion developments would be implemented. The 52 mature Afghan pines in the combined alternatives area would not be affected by construction associated with campground expansion. However, there is concern that these trees are declining due to lack of water because irrigation has been sporadic since the golf course was closed in November 2016. Decline or loss of the mature Afghan pine component of the Desert Emerald Park would have a concurrent adverse effect on avifauna in the area, particularly nesting Vermillion Flycatcher and the migratory bird species of concern (Table 11), as well as other bird species that use these area. Deciduous ornamental trees planted in the ROI are also susceptible to drought stress.

In the Phoenix area, Dr. Chris Martin (Professor Emeritus of Horticulture, Arizona State University) observed that "*... the single biggest problem with Afghan pines in Phoenix landscapes is tree decline and sudden dieback of larger mature trees during late summer and early fall, which is related to the failure of people to increase the volume of supplemental irrigation given to trees over time as they mature and become larger in size*" (https://www.public.asu.edu/~camartin/plants/Plant%20html%20files/pinuseldarica.html, accessed on 30 June 2022). He noted that regular, supplemental irrigation is definitely needed during the summer months to avoid branch and shoot die-back and sudden mortality of mature trees. Consequently, a lack of adequate summer irrigation in the Desert Emerald Park area would likely lead to increasing mortality of Afghan pine in the future. In the Las Cruces area, supplemental irrigation of up to 600 mm/yr (24 inches/yr) was estimated to support rapid growth of Afghan pine (Phillips et al., 1986). Also, the species tolerates moderately brackish irrigation water and responds favorably to irrigation with municipal waste water (Tabari et al., 2011).

Ongoing measures to reduce adverse interactions between humans and wildlife in the Desert Emerald Park area would continue to occur with the No Action alternative. Wildlife use in the ROI, which is primarily in Desert Emerald Park, would continue (apart from the aforementioned effects on avifauna from decline of Afghan pine). Potentially suitable habitat for Common Ground-Dove in Desert Emerald Park would be unchanged with the No Action alternative.

3.5.2.2 Action Alternatives

For the purpose of this analysis all of the vegetation within each alternative area was assumed to be affected by campground construction. The acreage of each vegetation cover type affected varies by alternative. Park and landscaped area vegetation makes up most of the affected area in Alternative A whereas none of this cover type is affected in Alternative C. Conversely, the weedy field cover type makes up most of the affected area in Alternative C but only a very small part of affected vegetation in Alternative A (Table 12).

Table 12. Acres of vegetation cover affected by each alternative.

Alternative Area	Vegetation Cover Type		
	Park-Landscaped (acres)	Arroyo/Desert Wash (acres)	Weedy Field (acres)
A – Desert Emerald	13.74	3.88	0
B – Ripley	3.87	4.87	7.16
C – Volunteer	0.70	0	11.49

The number of Afghan pine trees potentially affected was estimated for a construction zone defined as the footprint of the constructed features (RV sites, tent sites, comfort station, pavilions, roads, and restroom buildings) and a 15-foot buffer around those features. A 15-foot buffer was used to reflect potential effects on the root zone of mature trees from soil compaction and root damage. The number of Afghan pine trees potentially affected would be greatest in Alternative A. Alternative C would have no effect on Afghan pine trees in the ROI (Table 13).

Table 13. Number of Afghan pine trees potentially affected by each alternative.

Alternative Area	Total Number of Trees in Alternative Area	Number of Afghan Pines in Alternative Area	Number of Afghan Pines in Construction Zone
A – Desert Emerald	87	48	45
B – Ripley	25	14	8
C – Volunteer	12	0	0

Impacts to bird species would be greatest with Alternative A because of the effects on Afghan pine trees and arroyo/desert wash vegetation, which are habitats most used by bird species in the project area. Notably, removal of Afghan pine trees in Alternative A would have a substantial negative impact on nesting Vermillion Flycatcher. Impacts to bird species would be less with Alternative B, and there would be negligible effects to bird species with Alternative C due to the poor-quality habitat that would be affected in that area. Similarly, the effects of human disturbance (i.e. engine noise, noise and activity from campground users, night-time lighting) on bird species would be greatest with Alternative A, less so with Alternative B, and negligible with Alternative C.

Human-wildlife interactions would likely become more common and problematic with Alternative A as a result of more people and their pets being in the Desert Emerald Park area and for much longer periods of time, including at night. This would be less of a problem with Alternative B and most likely would be concentrated in the tent camping area. Human-wildlife interactions would be less common with Alternative C due to its location and poor quality habitat in and adjacent to the area. In all of the action alternative areas, foraging of wildlife in trash receptacles, dumpsters, and camp sites would increase likelihood of adverse human-wildlife interactions and potentially habituate wildlife to these areas. Providing wildlife-proof trash receptacles and wildlife awareness educational signs and brochures at the campgrounds would help to reduce this problem.

Potentially suitable habitat for Common Ground-Dove in the ROI may be negatively affected by alternatives A and B through conversion of vegetation cover to campground facilities and by human

disturbance associated with campground use. Alternative C would have no effect on the species because suitable habitat is not present in that area.

3.5.2.3 Cumulative Effects on Biological Resources

The effect of past and current actions on biological resources in the ROI is represented by the existing conditions. Actions that have affected and are currently affecting biological resources in the ROI include development and closing, 54 years later, of the golf course; construction and maintenance of roads and facilities in the area; and human use of the Desert Emerald Park. Alternative A, and to a lesser extent Alternative B, would add incrementally to effects on biological resources from these past and ongoing actions.

Establishment of Afghan pine in the Desert Emerald Park area has had a beneficial effect on bird species. However, it seems likely that current management of the park may be jeopardizing these trees, and this potential for Afghan pine decline and loss would be greatly accelerated with Alternative A. With all of the action alternatives, planting and appropriate irrigation of Afghan pine and other suitable tree species, such as Arizona cypress (*Cupressus arizonica*), Mexican elder (*Sambucus mexicana*) and desert willow, would benefit not only bird species but also campground users. Additionally, renovation of the irrigation system at Desert Emerald Park to provide sufficient water to maintain the existing, mature Afghan pines would stop the current decline of trees in the area. Implementation of these actions would result in a beneficial cumulative effect on biological resources in the ROI.

Alternative A and, to a lesser extent, Alternative B would add incrementally to human disturbance of wildlife in the Desert Emerald Park area, and also to issues of human-wildlife interactions. None of the cumulative effects on biological resources associated with any of the action alternatives is likely to be significant. The cumulative effect of accelerating loss of mature Afghan pine in Alternative A on bird species, most notably nesting Vermillion Flycatcher, is arguably the most severe impact. However, this cumulative effect is not likely to result in significant effects on population size or viability of the species in the region.

3.6 Cultural Resources

The occurrence of historic properties in the ROI was used to analyze the effects of the proposed action on cultural resources. Cultural resources that are eligible for inclusion in the National Register of Historic Places (NHRP) pursuant to the criteria in 36 CFR §60.4 are known as “historic properties.” Cultural resources may also be important to American Indian or other traditional groups as outlined in the American Indian Religious Freedom Act (AIRFA), Native American Graves Protection and Repatriation Act (NAGPRA), and Executive Order 13007. A historic property must usually be more than 50 years old, although exceptions can occur. For example, more recent historic resources on a military installation, such as WSMR, may be considered significant if they are of exceptional importance in understanding the Cold War, or if the resource has exceptional scientific or technical importance.

3.6.1 Existing Conditions

An electronic search of the Archaeological Records Management System (ARMS), WSMR archaeological maps, WSMR historic structure data, and WSMR GIS database was conducted to identify any previously-recorded historic properties within the boundaries of the proposed alternatives. Records show that an area which includes the current ROI was surveyed for historic properties in 1985 by Human Systems Research, Inc. (NMCRIS Number 24872). No previously-recorded historic properties, which include prehistoric archaeological sites and historic structures, are within these areas.

3.6.2 Environmental Consequences

As there are no cultural resources within the ROI, there would be no effect on cultural resources with any of the alternatives. There are several archaeological sites and historic properties (Building numbers 1326, 1327, 1330) very close to the proposed construction sites for alternatives A and C. However, these sites and structures have been determined "Not Eligible" for the NRHP and will not be affected by the proposed project. There are two eligible archaeological sites approximately 500 feet east of Alternative A, but these will not be affected by the proposed project.

If archaeological materials or human remains are discovered on or below the soil surface, stop all activities and contact DPW at 575-678-2225 immediately to provide information on location. WSMR will follow the standard operating procedures for cultural resource management (SOP 15 and SOP 16) contained in the Integrated Natural and Cultural Resources Management Plan dated September 2015. SOP 15 refers to Archaeological Resources Protection Act (ARPA) compliance while SOP 16 addresses the Native American Graves Protection and Repatriation Act (NAGPRA) compliance. If human remains are discovered, all work shall stop immediately and the project manager must contact DPW-Environmental Section archaeological personnel. DPW-Environmental Section will contact WSMR Police and work with them to determine if human remains are part of a crime scene, and if so, WSMR Police will conduct whatever investigation is deemed necessary. If the human remains are Native American, DPW-Environmental Section will begin NAGRPA compliance procedures and wok can resume thirty (30) days after confirmation that NAGPRA has been completed.

3.7 Noise

The number and location of noise-sensitive receptors in the ROI and proximity of those receptors to each alternative campground area was used to evaluate the potential effects of alternatives on this resource.

3.7.1 Existing Conditions

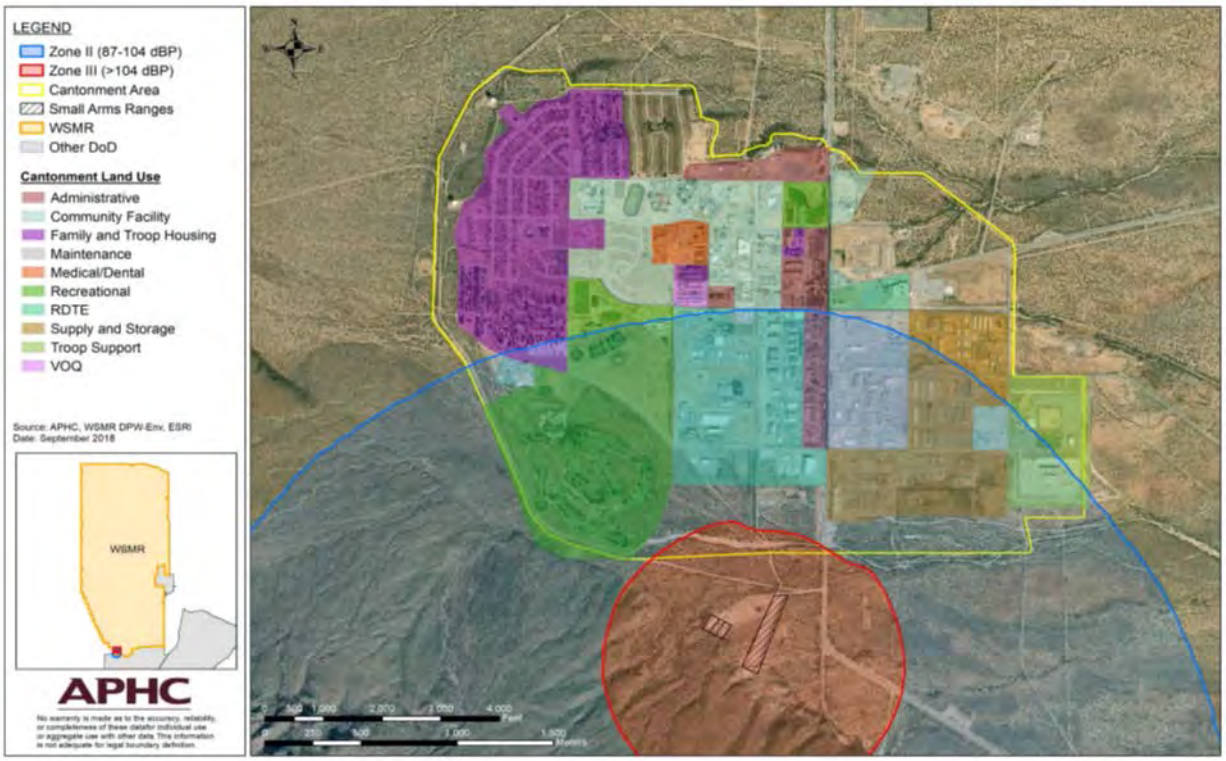
Army Regulation (AR) 200-1 lists housing, schools, and medical facilities as examples of noise-sensitive land uses. On the Main Post, noise-sensitive receptors in the ROI include part of family housing area along Goddard Avenue, visiting officers' quarters, a medical clinic, and after-school care facility. The backyards of the closest homes currently have an approximately four-foot high concrete block wall. This wall provides some privacy between the homes and the Frontier Club but is too short to block noise.

Noise levels in the ROI emanate from a variety of sources common to any community: use of a playground and picnic area, special events, an RV campground, grounds maintenance, vehicles on local streets, etc. Streets in the ROI are currently utilized by a variety of motorized transportation, including passenger vehicles, military vehicles, and RVs. Within Desert Emerald Park, the former golf cart paths were not constructed for and do not support routine vehicle travel through the park other than from maintenance workers' vehicles accessing the site or equipment such as lawn mowers.

A particular source of sound that may be part of the ROI baseline noise emits from military operations at the Small Arms Ranges where weapons of .50 caliber or less are discharged. Small arms weapons utilized at WSMR include rifles, machine guns, pistols, and shotguns with various ammunition. In 2019 a noise study was conducted to assess the effects of various military activities on WSMR (Army Public Health Center, 2019). The study showed that activities at the Small Arms Range located just south of the Main Post result in the ROI for the three campground alternatives falling within Noise Zone II (Figure 17).

Army guidance for land use planning purposes state that noise-sensitive land uses are acceptable within the Noise Zone I, generally not compatible in Noise Zone II, and not recommended (incompatible) in Noise Zone III. The Small Arms Ranges near the Main Post complex has been in use for decades and is utilized year-round, depending upon training or test mission requirements and/or the unit being trained.

Figure 17. Noise zones associated with the Small Arms Range (excerpted from Army Public Health Center, 2019).



3.7.2 Environmental Consequences

3.7.2.1 No Action

The No Action alternative would not change or affect existing noise conditions in the ROI and vicinity because there would not be any construction and operation of new campgrounds. Noise from the Small Arms Range would continue to potentially affect existing sensitive noise receptors in Zone II.

3.7.2.2 Action Alternatives

Temporary (construction) and long-term (operation) noise associated with campground expansion would not exceed federal noise thresholds for sensitive noise receptors in any of the alternatives

Construction of the campground would increase the level of noise in the area for approximately two months. The construction noise would result from equipment (i.e. earth-moving machines, graders, jack hammers, concrete trucks), vehicles, and humans working on site. The work would generally be conducted during daytime hours, possibly starting quite early in hot summer months. To minimize noise disturbance to residents and wildlife, construction would be prohibited between 10:00 PM and 7:00 AM.

Operation of the campground would result in considerably more noise at any of the three alternative areas than currently exists. Increased noise would result from vehicles driving into and out of the campground and parking and setting up camp. Many of these RVs may tow passenger vehicles to use for getting in and out of camp after the RV is parked, but some RV users would drive their vehicle for area trips to restaurants, grocery stores, gas stations, and sight-seeing. Campers at tent sites would also be likely to leave their camp site one or more times each day for recreational activities, eating out, and even to access the comfort station, depending on campground layout. Campground operation and maintenance would require multiple daily vehicle trips from the Outdoor Recreation building to the campground as well for cleaning, maintenance, and repairs.

Human activities associated with campground users, such as traveling to and from the comfort station, cooking and eating outdoors, loud voices, slamming car doors, and use of personal electronic devices would result in an increase in noise within and around any campground location. The residential housing near the Ripley Street – Martin Luther King Boulevard intersection would be most likely to be affected by campground development and operation if Alternative B is chosen. Potential noise impacts to residences near the Ripley Street – Martin Luther King Boulevard intersection could be mitigated by building a full-height noise wall at these residences.

Within Desert Emerald Park, the substantial increase in noise with Alternative A would likely be a disturbance to current Park users and wildlife that use the area. This would be a greater effect on recreationists and wildlife for Alternative A than for the other alternatives since the type of recreation uses in the Park are more solitary and quiet (e.g. birding, walking, running) than in other parts of the ROI. More wildlife disturbance would also be likely with this alternative than others due to the better wildlife habitat present at this site. Given that there would be a slight uphill climb to exit the campground, vehicles leaving the site may generate more noise than on more level roads that would serve either of the other two alternative areas.

The McAfee Health Clinic is located nearest to the Alternative C area. The clinic is approximately 300 feet from the northeastern edge of the proposed campground, and the closest part of the campground to the clinic would be the tent area. RVs would be located at the western end of the campground. The clinic may experience some increase in traffic on the streets bordering it, but the increase would not be sufficient to result in noise levels that exceed the federal threshold for sensitive noise receptors. No other noise effects, other than those described for all alternatives, would be anticipated from locating the proposed campground at the Alternative C area.

3.7.2.3 Cumulative Effects on Noise

The noise generated from construction and operation of the campground, combined with on-going noise from the Small Arms Range would cumulatively have a greater effect for areas in closer proximity to the Small Arms Range. Alternative A, being closest to the Small Arms Range, would have the greatest effect on increased noise impacts to recreationists and wildlife. However, cumulative effects on noise would not be significant with any of the action alternatives.

3.8 Recreation and Aesthetics

Factors related to recreation and aesthetics that are used in this section for comparison of alternatives include: campground amenities such as access to water, sewer, and electricity; convenience of access to restrooms, showers, and laundry facilities; noise and disturbance levels; campground access and safety conditions; impacts to existing recreation uses; and visual impacts.

3.8.1 Existing Conditions

Existing camping facilities at WSMR are located within the ROI and are limited to the Volunteer Park Travel Campsite ("Campground") which is managed by the WSMR Outdoor Recreation Center (Figure 18). The Campground consists of eight RV sites with electricity, sewer and water (i.e. full hook-up sites) and five overflow RV sites with electricity only. Camping is available year-round, and the maximum stay is 21 days. Extensions may be granted for special situations. Reservations are accepted up to 60 days in advance. There are no dedicated tent camping sites on the Main Post. Authorized users of the Campground include active duty, National Guard, Reservists, retired Military, Disabled Veterans, Purple Heart recipients, former Prisoners of War, Veteran caregivers, Department of Defense civilians, and contractors working on the Main Post.

On the east side of the Campground, there is a community center with a meeting room and men's and women's restrooms, each with one shower stall. The building's roof extends over a large concrete slab to provide a covered activity area. Several picnic tables and grills are located under this covered area. There is also a playground located across Goddard Avenue to the north of the community center, and a small grassy area with young trees and benches is adjacent to the south side of the community center. This latter area and the Campground to the west are bounded on the south by an approximately 30-acre area where a 1.5-mile high-intensity interval training (HIIT) track, which was constructed in 1982, is located. The track is surfaced with crusher fines, and the remaining undeveloped area is a mowed, sparsely vegetated field (Figure 19). Some mature coniferous and deciduous trees are scattered around the community center and playground with a few smaller trees located in the Campground.

Figure 18. The Volunteer Park Travel Campsite. View is looking west toward the Organ Mountains from the east end of the campground.

Figure 19. View southwest of the HIIT track and adjacent mowed field from near the start of the course. The trees visible in the center-right of the photo are located on the south side of the community center building.

Other recreation activities within the ROI are associated with Desert Emerald Park. Mature trees and former golf cart paths provide residents, employees, and visitors with opportunities for walking, running, birding, and bicycling. Pedestrians frequently have been observed walking dogs or pushing strollers with small children. Part of the former golf course is currently used for Frisbee golf with facilities set up for that purpose. There is also a golf driving range at the intersection of Martin Luther King Boulevard and Ripley Road, across from the empty lot proposed for Alternative B.

The annual Bataan Memorial Death March event (a 26.2-mile marathon route and 14.2-mile honorary March) is hosted each spring by WSMR and is attended by up to 10,000 participants (White Sands Missile Range, 2019). The event brings a large number of overnight visitors to the Main Post, with 4,000 to 5,000 vehicles having been recorded as passing through the Las Cruces Gate. Many participants use on-Post lodging (i.e. the Army hotel) and camping opportunities. The Volunteer Park Travel Campsite quickly becomes fully booked, and overflow RV camping with no hook-ups is available at various locations on the Main Post. Tent camping is allowed at Desert Emerald Park for event participants. The Outdoor Recreation Center rents camping and outdoor recreation equipment (White Sands Missile Range, 2019).

The Organ Mountains to the south and southwest of the ROI provide exceptionally scenic views for current campers at the Volunteer Park Travel Campsites. Such views are obtained throughout the ROI. Looking southwest from the Alternative C – Volunteer area and from the north portion of the Alternative B – Ripley area, the Organ Mountains, with Sugar Loaf Mountain, the Needles and Rabbit Ears in the center, can be clearly viewed in the background (Figures 19 and 20). In the middle-ground are some utility poles and wires, the golf driving range net, Outdoor Recreation buildings and facilities at the entrance to Desert Emerald Park, and large trees in the Park. From the Alternative A and southern portion of Alternative B areas in Desert Emerald Park, the mountains are closer to the viewer, but large trees in the foreground can partially obscure views of the mountains depending on the position of the viewer (Figure 21). Near the proposed tent area for Alternative B, the viewer would need to be on the golf cart path furthest to the southwest in order to obtain an unobscured view of the mountains. The least obstructed and most expansive views of the mountains are from the Alternative C – Volunteer area and the northern portion of the Alternative B – Ripley area.

Figure 20, View southwest to the Organ Mountains from the Alternative C area.

Figure 21. Mountain view obstructed by trees in Desert Emerald Park View is looking southwest from the southern portion of the Alternative B area, which is also included as part of the RV campsite area in Alternative A.

3.8.2 Environmental Consequences

3.8.2.1 No Action

This alternative would not expand the availability of RV camp sites on the Main Post or develop camping opportunities by adding tent sites. The existing eight full-service utility RV sites and five overflow RV sites would remain as the only formal camping opportunities on the Main Post. No dump station would be available for campers at RV overflow sites (i.e. those sites without sewer hook-ups).

During the annual Bataan Memorial Death March event, visitors arriving in RVs without a reservation for the Volunteer Park Travel Campsite would be relegated to camping in vacant lots and along streets designated for such purposes. Tent campers would find a spot within the designated temporary camping area at Desert Emerald Park. No parking or other use of the northern portion of the Alternative B – Ripley area during the Bataan event would be affected with the No Action alternative.

Desert Emerald Park would remain in its current state or may be used for other recreation events on the Main Post. Concerts, outdoor movies, and other fund-raising activities are being considered by MWR for part of the Desert Emerald Park.

3.8.2.2 Action Alternatives

Noise Impacts to Campers All of the alternatives are within Noise Zone II for the Small Arms Range located south of the Main Post (refer to Section 3.7 Noise). It is possible that visitors to any of the alternative campground locations could experience noise from the Small Arms Range. For Alternative A – Desert Emerald, the closest noise receptor would be a tent site, which is located about 2,900 feet from the Small Arms Range. Similarly, the closest noise receptor for Alternative B – Ripley would be a tent site about 3,800 feet from the Small Arms Range. For Alternative C – Volunteer the closest camping site would be an RV site that is located about 4,500 feet from the Small Arms Range.

Access to Sewer, Electricity and Water Electricity and water hook-ups would be provided for every RV site in all three alternatives, as would several potable water spigots in the tent camping areas. Alternatives B and C would also include sewer hook-ups at every RV site. In contrast, RV sites in Alternative A – Desert Emerald would not have sewer hook-ups. Instead, a sewage dump station on Martin Luther King Boulevard would service RV campers. The lack of sewer hook-ups at RV sites in Alternative A – Desert Emerald may dissuade potential campers, who may choose to use other military campgrounds in the area that have full hook-ups, such as at Holloman Air Force Base or Fort Bliss.

Comfort Station Siting Location of the comfort station relative to RV and tent sites varies by alternative. The comfort station location in Alternative A – Desert Emerald is at the far north end of the campground area (Figure 22). This location was necessary both for connection to an existing sewer line and in order to achieve positive flow of sewage. The tent sites in Alternative A are at the south end of the area. Consequently, tent campers, who probably would have the greatest need for the facilities in the comfort station, would have a good distance to walk to that building. For example, a camper using the southernmost tent site would have to walk almost ½ mile along the campground road to get to the comfort station.

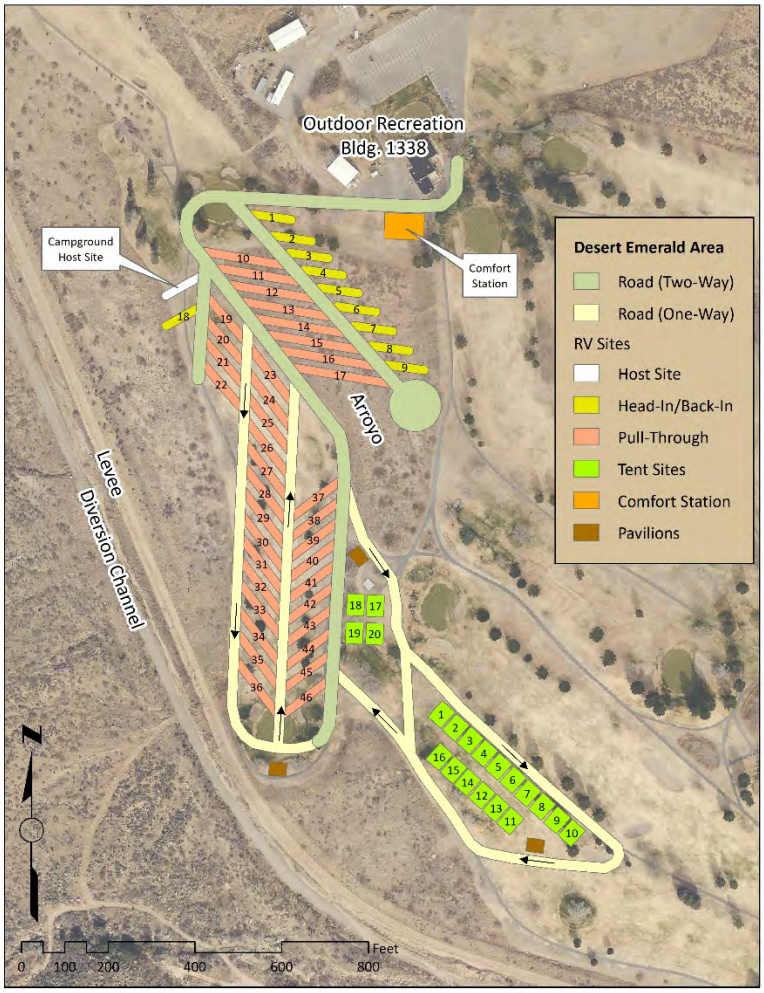


Figure 22. Campground layout in the Alternative A – Desert Emerald area.

The distant location of the comfort station in Alternative A may encourage tent campers to dispose of dishwashing water on the ground near their site, which could encourage unwanted scavenging by wildlife. The inconvenient location of the toilets in Alternative A is also likely to encourage tent campers to "go behind a bush" after dark instead of walking to the toilets. Or tent campers may resort to driving every time there is a need to use those facilities. Even some RV campers, especially those located towards the south end of the RV area in Alternative A, may use an extra vehicle that they have towed for the purpose of getting to the comfort station. Resulting extra driving trips through the campground to access the comfort station would contribute to increased noise and activity in the campground and greater risk to pedestrians in Alternative A.

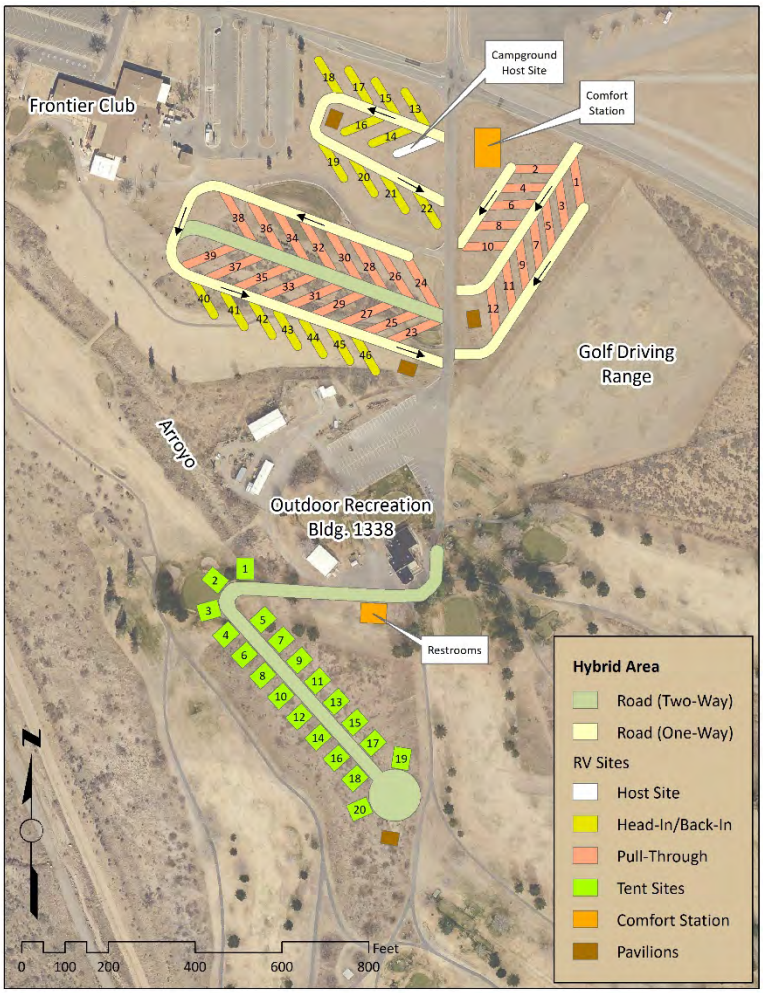


Figure 23. Campground layout in the Alternative B – Ripley area.

In contrast to Alternative A, maximum walking distance to the restroom building (near the tent area) for Alternative B – Ripley is about 930 feet (0.2 miles). However, the comfort station in Alternative B (near the RV area) is still a fair distance from the tent sites, with a maximum walking distance of about 0.4 miles from the southern-most tent site to the comfort station (Figure 23). The comfort station in Alternative B is much closer to the RV sites, with a maximum road distance of about 0.2 miles from the farthest RV site to the comfort station. Tent campers wishing to use showers, dishwashing facilities, or laundry would likely drive to the comfort station if this alternative is selected.

The most centrally-located comfort station of the alternatives is in Alternative C – Volunteer (Figure 24). The maximum distance from the farthest tent site to the comfort station in Alternative C is about 860 feet (0.2 miles). This is roughly the same as the distance from the farthest tent site to the restroom in Alternative B, but in Alternative C the tent camper would also have access not just to toilets but to showers, laundry, trash and recycling bins, and dishwashing sinks. Similarly, an RV camper using the RV site farthest from the comfort station would have a maximum walk of about 0.2 miles to get to the comfort station.

Figure 24. Campground layout in the Alternative C – Volunteer area.

Access and Safety Vehicle access to the Alternative A – Desert Emerald area would be via Ripley Street at the Outdoor Recreation Building (Figure 22). This would be the only route into and out of the area (Figure 22). This limited access could pose a hazard in the event of emergency evacuation of the campground. It may also pose difficulties for emergency service vehicle access. The narrow, two-lane road with a sharp turn (near the Outdoor Recreation Building, see Figure 22) could become blocked by an RV trying to evacuate in an emergency, stranding all those campers who are stuck behind it. An RV stuck in the road on any occasion could hamper emergency service access should the need arise at the same time that the road is obstructed. Eleven of the RV sites in Alternative A are head-in/back-in (Figure 22).

The campground in Alternative B – Ripley is accessed by Ripley Street and Martin Luther King Boulevard (Figure 23). As with Alternative A, access to the tent sites via Ripley Street at the Outdoor Recreation Building would be the only way in and out. Although access to the RV sites is better than with Alternative A, the narrow, curving road access to the tent sites may still pose a hazard in the event of emergency evacuation of that portion of the campground. It may also pose difficulties for emergency service vehicles access. Eighteen of the RV sites in Alternative B are head-in/back-in (Figure 23).

The Alternative C – Volunteer area is accessed via Ripley Street, Goddard Avenue, and Martin Luther King Boulevard (Figure 24). This location would allow for several access points into and out of the campground, ensuring easy access for emergency vehicles and multiple exit points for campers in case of emergency evacuation of the campground. All of the RV sites in Alternative C are pull-through sites, which would maximize the efficiency of traffic flow through the campground compared to the other two action alternatives.

The location and layout of the Alternative A – Desert Emerald area would create potential pedestrian safety concerns. Pedestrian use in Desert Emerald Park would increase substantially with the addition of tent and RV campers in the area. Pedestrians sharing the same roads with RVs, cars, trucks, trailers and maintenance vehicles to access the Desert Emerald area or within the site (e.g., campers walking to the comfort station) would be a safety concern. Pedestrian use of Desert Emerald Park would also increase with Alternative B. However, the separation of RV and tent camp sites and the location of RV sites outside of the Park would reduce potential pedestrian safety concerns. Pedestrian safety concerns would be considerably lower with Alternative C – Volunteer than with alternatives A and B because of the reduced distance to the comfort station and separation of tent and RV camping; tent camping pedestrians would not use RV camping roads to reach the comfort station (Figure 24).

Safety concerns associated with potential flooding are greatest for Alternative A. With this alternative, roughly the southern half of proposed campground (where tent sites would be located) would be subject to inundation during a 100-year flood. Flowing flood water throughout much of the inundated area would be about 1.5 to 2.5 feet deep through the tent sites, and some flooding would occur in the southern-most RV sites. During the 500-year flood, about three-quarters of the campground in Alternative A would be covered by flowing flood water ranging from about 0.5 to 3.0 feet deep (see Section 3.4.2.2). With Alternative B, the arroyo that crosses through the proposed tent site area would carry flood water to a depth of about 0.5 feet deep during a 100-year flood. The RV sites in the Alternative B design would not be subject to flooding during the 100-year flood. During a 500-year flood event, flood water would flow down the arroyo to a maximum depth of about 1.0 foot. There would also be shallower flooding through a swale in the RV site area. With Alternative C, there is no potential flooding during a 100-year event. There is a potential for shallow flooding of portions of the Alternative C area, up to a maximum depth of about six inches, during a 500-year flood event.

Safety concerns associated with large branches or entire trees falling are greatest in Alternative A, which has the largest number of mature Afghan pines in the campground area compared to the other action alternatives (see Table 13 in Section 3.5.2.2). Falling branches or entire trees may damage infrastructure or vehicles or result in injuries to campers. Hazard tree issues would be of greatest concern during periods of high winds. Annual inspection of tree condition and appropriate maintenance actions would be required in Alternative A to address potential hazard tree issues. Hazard tree concerns would be reduced in Alternative B, where only the tent sites would potentially be affected. There are no potential hazard tree issues with Alternative C.

Effects on Existing Recreation Uses Camping facilities and capacity would be substantially improved for the annual Bataan Death March event with selection of any of the action alternatives. Construction of the proposed dump station in Alternative A would displace some of the RV parking for the event that is located along Martin Luther King Boulevard. However, the availability of a dump station may be an added benefit for RV campers in overflow areas during the event.

Construction of Alternative C may result in short-term effects to the adjacent Volunteer Travel Campsite resulting from noise, fugitive dust, and the presence of construction equipment and workers. Additionally, short-term disruption of water, sewer, and electricity service to the existing RV sites at the Volunteer Park Travel Campsite may occur during construction of Alternative C. Construction activities may even require temporary closure of the existing campground if Alternative C is selected.

Alternative A would impact current recreational uses of Desert Emerald Park. Conversion of the former golf cart paths to roads within the Alternative A area, introducing vehicle traffic into an area that currently has none, and the associated noise and human activity in the currently quiet and peaceful area would be adverse effects on existing recreational use of the Park. Current users may be displaced from the Park with no alternative location with similar amenities. The existing Frisbee golf course would need to be reconfigured as part of it would be converted to campground. Impacts to existing recreation uses would be similar in character with Alternative B, but would be less extensive because only the 20 tent camping sites would be located in the Park. The RV sites would be located outside the park on both sides of Ripley Street between the Outdoor Recreation Building and Martin Luther King Boulevard (Figure 23). Consequently, impacts from vehicle traffic and noise would be less severe in Alternative B compared to Alternative A.

Alternative C may cause a small increase in pedestrian use of Desert Emerald Park resulting from an increased number of campers. However, the Alternative C campground would not cause any traffic or campground noise and disturbance impacts to Desert Emerald Park because the entire campground would be located outside the Park. Alternative C would be constructed on a portion of the existing 1.5-mile HIIT track. Therefore, the track would either need to be relocated entirely or reconfigured on the 18 acres of the 30-acre area that would not be used as campground. One relocation option may be to move the HIIT track to Desert Emerald Park, using the existing golf cart paths and reinstalling the exercise stations there. Currently, running and jogging are common uses of the golf cart paths in Desert Emerald Park.

Views and Aesthetics Campground development at Desert Emerald Park with alternatives A and B would alter the relatively natural, landscaped appearance of the Park through removal of trees and other vegetation and replacement with roads, camp sites, and structures including pavilions and comfort stations. This would likely detract from the current visual appeal of the Park. This effect would be greatest with Alternative A, which is located entirely within the Park. Additionally, the north end of the RV camping area in Alternative A would be visible from the patio behind the Frontier Club where official ceremonies are held, changing the current foreground view from that location of trees and landscaped areas. The RV sites in Alternative B would not likely be visible from the patio area behind the Frontier Club. However, the visual presence of the RV camping area in Alternative B may be considered undesirable by nearby residents, patrons of the restaurant, or recreationists passing the site to go to Desert Emerald Park. Alternative C would have a negligible visual impact because the area is currently barren and would be primarily in the view of only the existing RV campers at the Volunteer Park Travel Campsite. Recreationists using Desert Emerald Park would not encounter the expanded campground at the Alternative C site, and residents near the Ripley Street – Martin Luther King Boulevard intersection would have only an oblique view of the western edge of the RV site portion of the campground (Figure 24).

3.8.2.3 Cumulative Effects on Recreation and Aesthetics

All of the action alternatives would incrementally affect recreation by adding existing campground capacity, including tent camping sites, at the Main Post. This would have a beneficial cumulative effect on recreation, particularly during high-use periods such as the annual Bataan Death March event. Existing recreation uses of Desert Emerald Park have been developed primarily since the golf course was closed in 2017. Proposed campground in the Park with alternatives A and B would have negative cumulative effects on recreation. However, these cumulative effects would not be significant.

3.9 Waste and Hazardous Materials

Regulated waste and hazardous materials are defined in the Resource Conservation and Recovery Act as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that could or does pose a substantial hazard to human health or the environment (40 CFR §239 through §282).

3.9.1 Existing Conditions

One location at Desert Emerald Park had a pesticide spill that has been remediated (B. Avalos, Restoration Manager, WSMR DPW, personal communication, 7 April 2022). No other waste or hazardous materials sites are known to be present in the ROI.

3.9.2 Environmental Consequences

3.9.2.1 No Action

The No Action Alternative would not change the existing waste and hazardous materials conditions in the ROI.

3.9.2.2 Action Alternatives

With Alternative A, the remediated site at Desert Emerald area would be in the construction zone and may need additional testing and possible further remediation. If this alternative is selected, the DPW Restoration Manager would need to be consulted to determine if additional action needs to be taken at the site. Alternatives B and C would have no effect on waste and hazardous materials.

3.9.2.3 Cumulative Effects on Waste and Hazardous Materials

The aggregate effect of past and present actions on waste and hazardous materials in the ROI is represented by the existing condition. There are no planned future actions in the ROI, other than the proposed action, that would affect waste and hazardous materials conditions. The No Action Alternative and action alternatives B and C would not result in cumulative impacts to waste and hazardous materials because there is no effect associated with these alternatives. Alternative A may potentially have a beneficial effect if additional remediation of the pesticide spill site is found to be needed and is subsequently conducted.

3.10 Infrastructure

This section addresses infrastructure that may be affected by proposed campground construction, operation, and maintenance. Existing recreational camping facilities and all of the alternatives for expanding recreational camping facilities are located on the Main Post. The Main Post is the urbanized portion of WSMR and encompasses approximately 1,530 acres. The Main Post serves as the center of operations for most organizations and tenants on WSMR. Administrative and technical complex includes WSMR Headquarters, the Range Operations Control Center, administrative offices, technical laboratories and work areas, warehouses, and service centers. There also is military and family housing, shopping facilities, medical clinics, emergency and fire services, educational and recreational facilities, and churches. The primary infrastructure components involved in the proposed action include potable water pipelines, electrical service, sewer lines, roads, trash and recyclable material collection, emergency services (i.e. police, fire, and ambulance), grounds and facility maintenance by DPW, and MWR Outdoor Recreation management of campground reservations and users.

3.10.1 Existing Conditions

Water, electric, and sewer utilities throughout the Main Post, including the ROI, are provided by the WSMR Department of Public Works (DPW) which funds utility services through its operating budget. Construction and maintenance of utility infrastructure is currently performed by DPW through outside contracts. Water, sewer, and electricity line are present in the areas for Alternative C – Volunteer and the northern portion of Alternative B – Ripley. Existing utility lines are not present in the area for Alternative A – Desert Emerald. Sufficient potable water is available to meet the demand of proposed campground expansion (B. Nickel, Water Quality Section, WSMR DPW, personal communication, 7 April 2022). Similarly, the Main Post sewer and wastewater system has sufficient capacity to handle waste that would be generated from the proposed action (J. Smith, Compliance Chief, WSMR DPW, personal communication, 7 April 2022).

Road maintenance on the Main Post is conducted by DPW. The existing Volunteer Park Travel Campsite, the Alternative C—Volunteer area, and the northern portion of the Alternative B – Ripley area containing the RV site are accessed via existing paved roads on the Main Post. There are no existing paved roads beyond the Outdoor Recreation Building to the Alternative A – Desert Emerald area and the southern portion of the Alternative B – Ripley area. All campground users in RVs and passenger vehicles must enter and exit the Main Post through either the Las Cruces Gate or the El Paso Gate. This access point is configured with a serpentine exit lane that some RV drivers, particularly those who are relatively inexperienced, may have difficulty maneuvering.

Trash and recycling collection services on the Main Post are provided through an Intergovernmental Support Agreement with the South Central Solid Waste Authority. Trash and recycling dumpsters are provided and are emptied regularly by the contractor. Maintenance of campground infrastructure and the community building at the Volunteer Park Travel Campsite is currently performed by DPW. Grounds-keeping throughout the Main Post, including Desert Emerald Park, the HIIT track, and various undeveloped lots is accomplished through contracts administered and funded by DPW.

3.10.2 Environmental Consequences

3.10.2.1 No Action

The No Action Alternative would retain the status quo for location and condition of existing utilities and facilities that are maintained on the Main Post. No new utilities or facilities would be added for an expanded campground area, so existing utility maintenance contracts would not be altered. No additional trash disposal and recycling services would be needed for recreational camping. With no recreational camping expansion, there would be no need to construct new roadway in Desert Emerald Park. Existing trends and volumes of RV traffic through the Las Cruces and El Paso gates and roads on the Main Post would not change.

3.10.2.2 Action Alternatives

None of the action alternatives would result in exceeding the available capacity of water, sewer or electricity utilities on the Main Post. Provision of utility service infrastructure would vary by alternative. Alternative A – Desert Emerald would require more utility line installation than the other two alternatives because there are no existing utility lines in the area. Alternative A – Desert Emerald would not have individual sewer hook-ups at each RV site, but the alternative includes construction of an RV sewage dump station on the south side of Martin Luther King Boulevard along an existing sewer line. Alternative B – Ripley also includes construction of an additional, separate restroom building in the tent camping area. Utility line extensions would generally be shortest with Alternative C – Volunteer (Table 14). When construction occurs, existing utility pipes and wires may be found to need replacement or upgrading to accommodate new, increased use or to comply with more recent construction standards.

Table 14. Estimated utility line extensions required for each alternative.

Utility	Alternative A Desert Emerald (feet)	Alternative B Ripley (feet)	Alternative C Volunteer (feet)
Electrical	8,900	7,900	6,700
Water	8,900	7,700	6,900
Sewer	300 (+ dump station)	7,100 (+ restroom)	5,900

Linear feet of new paved roads would also vary by alternative. Road construction in all of the alternatives would require preparation of suitable road base and installation of road paving material. Alternative A – Desert Emerald would require construction of an estimated 3,300 linear feet of 30-foot wide road and 4,300 linear feet of 24-foot wide road (7,600 linear feet total). Alternative B – Ripley would require 2,200 linear feet of 30-foot wide road and 3,200 linear feet of 24-foot wide road (5,400 linear feet total). Finally, Alternative C – Volunteer would require 500 linear feet of 30-foot wide road and 4,000 linear feet of 24-foot wide road (4,500 linear feet total).

All of the action alternatives would increase the administrative and maintenance workload for DPW staff. For example, the increase in the volume of trash and recycling produced by campground users would likely necessitate additional trash dumpsters and recycling bins. The elevated DPW workload would require

budget increases for service contracts for maintenance and upkeep and would entail more time for personnel to administer such contracts.

Alternatives A and B would have a greater campground maintenance burden than Alternative C – Volunteer. This is because alternatives A and B are not adjacent to the existing Volunteer Park Travel Campsite, so maintenance workers would have two or three separate areas, respectively, to service with each of these alternatives. In contrast, Alternative C – Volunteer, would be adjacent to the existing Volunteer Park Travel Campsite. With Alternative C, campground maintenance workers would have one larger area to service which would be more efficient than maintenance required with alternatives A and B.

No potential traffic or safety issues associated with the action alternatives were identified during internal scoping, except for the important issue of proximity of RVs to pedestrians in alternatives A and B due to the absence of sidewalks and vehicles and pedestrians sharing the same road (J. Morgan, Chief, WSMR Engineering Services Division, e-mail communication, 23 May 2022). Each of the action alternatives would increase RV and passenger vehicle traffic. This increase in vehicle traffic on the Main Post, especially large RVs, may result in a higher potential for vehicle accidents and accidental damage to infrastructure (e.g. maneuvering through the Las Cruces Gate), damage to vegetation, injuries to pedestrians and pets.

3.10.2.3 Cumulative Effects on Infrastructure

The aggregate effects of past and ongoing actions on infrastructure in the ROI are represented by the existing conditions. The proposed action would increase infrastructure to be maintained within the ROI through construction of new roads and extension of water, electricity and sewer utilities. Additional campground facilities would also elevate the administrative and maintenance workload for DPW staff. If adequate funding is not provided to DPW, the cumulative effect of the proposed action on infrastructure may be a decrease in the level of administrative and maintenance service throughout the Main Post.

3.11 Socioeconomic Conditions and Environmental Justice

This section discusses social and economic conditions on the Main Post, focusing on those that could be affected by the proposed action. Aspects of socioeconomic conditions and environmental justice related to the proposed action that are used in this section for comparison of alternatives are: economic costs and benefits of expanding camping facilities on the Main Post; and the potential for negative effects on low-income and minority populations from implementation of the alternatives.

3.11.1 Existing Conditions

Based on the most recent data available, the population of the Main Post is 5,621 people (Table 15). Economic benefit is provided by WSMR to a region primarily to the south and west of the Range boundaries, most notably Las Cruces, New Mexico, and El Paso, Texas. There are numerous small enterprises and facilities on the Main Post that provide for residents and employee basic needs (i.e. gasoline, groceries, eating establishments, Post Exchange [PX]) and leisure (e.g. movie theater, bowling alley, swimming pool).

Table 15. Workforce of the WSMR Main Post in 2022 (https://asp.army.mil, accessed on 22 June 2022).

Category	Population
Total Military	841
Total Civilians	4,780
Total Base Population	**5,621**

Other businesses and services that provide for the other needs of employees on- and off-Post include shopping for clothing, household goods, transportation (i.e. vehicle purchase, maintenance, repair, and fuel), more extensive grocery and restaurant offerings, and medical care are located in nearby communities, particularly Las Cruces.

Fees from the Volunteer Park Travel Campsite are collected by WSMR MWR. Campground rates are $15 per day for full hook-up sites and $10 per day for overflow sites. For the last four consecutive fiscal years the average year-round occupancy of RV sites at the Volunteer Park Travel Campsite was 66 percent (AECOM, 2020:13). The average stay at the Volunteer Park Travel Campsite was 14 days (AECOM, 2020: 28).

There are two other military-only RV parks in the vicinity, including one at Fort Bliss in El Paso, Texas and another at Holloman Air Force Base near Alamogordo, New Mexico. These RV parks are about 75 miles and 45 miles from the WSMR Main Post, respectively. At the Fort Bliss RV Park and Family Campground, amenities include 133 pull-through, full-hookup spaces complete with electricity, water, and sewer. Other conveniences at that campground include a playground, dump station, laundry, kitchen facilities, showers, toilets, lounge-family room with TV and free wireless internet access, exercise equipment, pavilions with grills, and a dog park. Fees range from $19 to $25 per night or $114 to $150 per week, depending on military status. There is a 60-day stay limit. At Holloman Air Force Base, rates are $20 per night, $100 per week or $400 per month with a 30-day stay limit. Amenities at these RV sites include sewer, water, electricity hookups, cable TV, and wireless internet. Other available amenities on Holloman Air Force Base are a dump station, laundry, showers, playground, picnic area, golf course, and library.

Executive Order 12898, "Federal Actions to Address Justice in Minority Populations and Low-Income Populations" requires that federal actions be evaluated for their potential to have disproportionally high and adverse human health or environmental effects on minority and low-income populations. The estimated percentage of people living below the poverty level in the 2020 Census Zip Code Tabulation Area ZCTA5 88002 was 1.7 percent. People of color make up 35.4 percent of the population in 2020 Census Zip Code Tabulation Area ZCTA5 88002 (https://data.census.gov/cedsci/all?q=88002, accessed on 9 July 2022)

3.11.2 Environmental Consequences

3.11.2.1 No Action

Selection of the No Action Alternative would not increase camping opportunities at the WSMR Main Post. No construction contracts would be issued for building of new facilities. The number of camping sites would remain at 13, so no additional revenues from camping fees would be accrued by MWR. No purveyors of services needed or desired by campers (i.e. food, gasoline, supplies, entertainment and recreation) would experience increased revenues from campers occupying up 70 more camp sites each day.

This alternative would not alter the status quo, so no low-income or minority populations would be adversely affected.

3.11.2.2 Action Alternatives

The estimated cost for construction of Alternative A – Desert Emerald is approximately $3.8 million (AECOM, 2020: Appendix C). Construction costs for alternatives B and C were not estimated because no alternatives to the Desert Emerald area were developed at the time the Project Validation Assessment was conducted. It is reasonable to assume, however, that the cost of alternative B and C would be less than Alternative A due to less road construction and utility extensions for these alternatives (see Section 3.10.2.2).

All three action alternatives would result in one or more construction contracts for building the new campground, which would directly benefit local area contractors and their subcontractors and material suppliers as well as associated area services such as sellers of fuel, food/meals, and possibly lodging. Additionally, when the campground is complete and operational, contractors currently providing services such as utility, road, and grounds maintenance and trash and recycling collection would experience an increase in volume of work and corresponding increase in contract payments for servicing the campground.

Construction of new campground would be expected to result in local economic benefits to the Main Post with the addition of campers in the area. More purchases would likely be made by campers at the Main Post gas station, restaurants and cafes, PX and convenience store, and recreation and entertainment venues, such as the swimming pool, theater, and bowling alley. There would likely be additional economic benefits to businesses outside of the Main Post, such as at restaurants in Las Cruces. The WSMR MWR program would benefit through increased revenues.

For all of the alternatives, there would be only minor effects to Main Post residents as described for noise, existing recreation uses, and visual-aesthetic conditions. Therefore, none of the action alternatives would have disproportionate negative effects on low-income or minority populations.

3.11.2.3 Cumulative Effects on Socioeconomic Conditions and Environmental Justice

All of the action alternatives would incrementally add to the beneficial economic impact of WSMR in the region encompassing the missile range. None of the action alternatives would have a disproportionate effect on low-income or minority populations. Consequently, there would be no cumulative impacts to environmental justice.

3.12 Greenhouse Gas Emissions and Climate Change

The largest source of greenhouse gas emissions globally is the combustion of fossil fuels. There is no formally adopted EPA threshold for greenhouse gas emissions for use in analyzing environmental consequences of an action. However, guidance issued by the Council on Environmental Quality states that direct emission of 25,000 metric tons or more of CO_2-equivalent greenhouse gas emissions on an annual basis is a threshold for detailed analysis of effects on climate change (Council on Environmental Quality, 2010).

3.12.1 Existing Conditions

Greenhouse gas emissions in the ROI are currently associated with mobile sources including passenger and military vehicle traffic through the area, RV campers at the Volunteer Park Travel Campsite, and operation of maintenance equipment such as garbage trucks and mowers. Maximum greenhouse gas emissions associated with the annual Bataan Memorial Death March event, when there is a large influx of visitors to the Main Post, were estimated to be approximately 460 metric tons per year (White Sands Missile Range 2019: pages 3-7 through 3-10). Total estimated greenhouse gas emissions in New Mexico in 2018 were 113,600,000 metric tons of CO_2-equivalent gases (Energy and Environmental Economics, Inc., 2020: page 4).

3.12.2 Environmental Consequences

3.12.2.1 No Action

The No Action Alternative would not change the current conditions and trends in existing greenhouse gas emissions in the ROI and vicinity.

3.12.2.2 Action Alternatives

All of the action alternatives would cause greenhouse gas emissions during construction as a result of operating construction equipment. Emissions associated with RV and passenger vehicle use by campground users was not considered because it was assumed campers would likely use other campgrounds in the region. Greenhouse gas emissions associated with construction were estimated by assuming that construction would involve four pieces of equipment (e.g. front-end loader, backhoe) operating for eight hours per day, five days per week, for two months, which equates to 1,280 hours total of construction equipment operation.

Using an hourly fuel consumption rate of 1.5 gallons of diesel fuel per hour, estimated total diesel fuel consumption is 1,920 gallons of diesel. The hourly fuel consumption rate of 1.5 gallons per hour is a median value for light-duty use of a backhoe loader such as a Caterpillar model 415F2, where light duty is described as intermittent cycles in light to medium soils with trenching depths of six feet or less (Caterpillar, 2019: page 25-23). Estimated emissions associated with combustion of one gallon of diesel fuel were 10.21 kg CO_2 (carbon dioxide), 0.57 g CH_4 (methane), and 0.26 g NO_2 (nitrous oxide; U.S. Environmental Protection Agency, 2016: pages 15 and 23). Using these figures, a conservative estimate of greenhouse gas emissions from construction is 19,605 kg or 19.6 metric tons. This is well below the CEQ guidance

threshold of 25,000 metric tons per year and represents 0.000017 percent of total statewide greenhouse gas emissions in New Mexico in 2018. Consequently, none of the action alternatives would have a significant effect on climate change.

3.12.2.3 Cumulative Effects on Greenhouse Gas Emissions and Climate Change

None of the action alternatives would contribute significantly to total greenhouse gas emissions in New Mexico. Furthermore, planting trees at the campground expansion area, regardless of the alternative selected, as well as renovation of irrigation to maintain the existing, mature Afghan pines at Desert Emerald Park, would serve to sequester carbon. The quantities of sequestered atmospheric carbon associated with these measures cannot be estimated due to unknown growth rates and numbers of trees that may be planted. In a 2015 study, accumulated above- and below-ground carbon in a 17-year old, very dense Afghan pine monoculture was found to be about 15 metric tons per acre (Sohrabi et al., 2015).

3.13 Summary of Potential Consequences of the Action Alternatives

Potential environmental consequences of the action alternatives are summarized and compared, qualitatively, in Table 16. The summary table groups VECs into decision factors, and uses a color-coding scheme where red represents the greatest impact or largest quantity, yellow represents a comparatively moderate impact or quantity, and green represents the lowest impact or quantity of the three action alternatives. The No-Action Alternative would not change existing conditions or trends in the ROI. Consequently, no impacts to resource areas analyzed in this EA are expected with the No Action Alternative.

Table 16. Summary of environmental consequences of the action alternatives. The relative impact level for each decision factor is color-coded as red = the greatest impact or largest quantity, yellow = a comparatively moderate impact or quantity, and green = the lowest impact or quantity of the three action alternatives.

Decision Factor	Alternative A – Desert Emerald	Alternative B – Ripley	Alternative C – Volunteer
Life, Health, and Safety			
100-Year Flood Event Hazard			
500-Year Flood Event Hazard			
Ability to Create Emergency Access			
Tree Fall Hazard			
Pedestrian Safety Hazards			
Human-Wildlife Interactions			
Environmental			
Soil Impacts			
Migratory Bird Treaty Act Impacts			
Habitat Removal			
Nuisance Wildlife Conflicts			
Environmental Cleanup Conflicts			
Aesthetic and Recreational			
Full Utility Hookup Availability			
Dump Station Availability			
Walking Distance to Nearest Comfort Station			
Afghan Pine Removal			
Organ Mountains View Obstructions			
Mission Noise Impacts to Campers			
Disruption to Existing Recreational Activities			
Infrastructure			
Nearest Water Connection to Comfort Station			
Nearest Electrical Connection to Comfort Station			
New Road Construction			

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5. LIST OF PREPARERS

This EA was prepared by Blue Earth Ecological Consultants, LLC (Blue Earth) for WSMR. Individuals from WSMR and Blue Earth that were involved in preparation of the EA, or who contributed information for development of the EA, are listed below.

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- John Pittenger, Ecologist
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6. CONSULTATION

Reviewing agencies encompass federal, state, and local government agencies and tribes which have a vested interest in the planning area and wish to collaborate with WSMR to implement the requirements of NEPA. Federal and state agencies and local and tribal governments have qualified as reviewing agencies because of proximity or land ownership within the planning area or by legal jurisdiction or special expertise.

Collaboration can be used to describe a wide range of external and internal working relationships, including the relationship between reviewing agencies. WSMR strongly supports the engagement of reviewing agencies in developing EAs.

APPENDIX A. SPECIAL-STATUS SPECIES EVALUATION

Official species lists were obtained for the ROI from the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) site (Appendix B), and for Doña Ana County from the New Mexico Department of Game and Fish's Biota Information System of New Mexico (BISON-M) database (Appendix C), and the New Mexico Rare Plant list for Doña Ana County. These lists identified 23 species (Table A1).

Table A1. Special-status species that may potentially occur in the ROI or Doña Ana County, summarized from the official species lists in Appendix B. Codes are E = endangered, T= threatened, C = candidate for listing, and (CH) = critical habitat has been designated for the species.

Common Name	Scientific Name	Federal Status	State Status
Sneed Pincushion Cactus	*Coryphantha sneedii* var. *sneedii*	E	E
Doña Ana Talussnail	*Sonorella todseni*	–	T
Monarch Butterfly	*Danaus plexippus*	C	–
Brown Pelican	*Pelecanus occidentalis*	–	E
Neotropic Cormorant	*Phalacrocorax brasilianus*	–	T
Common Black-Hawk	*Buteogallus anthracinus*	–	T
Bald Eagle	*Haliaeetus leucocephalus*	–	T
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	EXPN	E
Peregrine Falcon	*Falco peregrinus*	–	T
Least Tern	*Sternula antillarum*	–	E
Common Ground-Dove	*Columbina passerina*	–	E
Yellow-billed Cuckoo	*Coccyzus americanus*	T (CH)	–
Buff-collared Nightjar	*Antrostomus ridgwayi*	–	E
Broad-billed Hummingbird	*Cynanthus latirostris*	–	T
Violet-crowned Hummingbird	*Leucolia violiceps*	–	T
Costa's Hummingbird	*Calypte costae*	–	T
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	E (CH)	E
Bell's Vireo	*Vireo bellii*	–	T
Gray Vireo	*Vireo vicinior*	–	T
Varied Bunting	*Passerina versicolor*	–	T
Baird's Sparrow	*Centronyx bairdii*	–	T
Reticulate Gila Monster	*Heloderma suspectum suspectum*	–	E
Mottled Rock Rattlesnake	*Crotalus lepidus lepidus*	–	E

The standard for determining whether activities are likely to result in incidental take is whether take is "reasonably certain" to occur in considering both the direct and indirect impacts of the proposed action (U.S. Fish and Wildlife Service and National Marine Fisheries Service, 2016: page 3-2). Application of the "reasonable certainty" standard is done in the following sequential manner in light of the best available

scientific and commercial data to determine if incidental take is anticipated (U.S. Fish and Wildlife Service and National Marine Fisheries Service, 2016: page 3-3):

1. A determination is made regarding whether a listed species is present within the area affected by the proposed federal action;
2. if so, then a determination is made regarding whether the listed species would be exposed to stressors caused by the proposed action (e.g. noise, light, ground disturbance, removal of vegetation); and
3. if so, a determination is made regarding whether the listed species' biological response to that exposure corresponds to the statutory and regulatory definitions of take.

Species presence in the area potentially affected by the proposed action was evaluated using information in IPaC or the BISON-M database and, when necessary, more detailed information on habitat associations and distribution provided in the U.S. Fish and Wildlife Service's Environmental Conservation Online System (ECOS) species profiles or the New Mexico Department of Game and Fish's BISON-M database. Using these sources, it was determined that 21 of the 23 listed species in Table A1 do not occur in the area potentially affected by the proposed action, and thus would not to be subject to incidental take from the proposed action. Following is a synopsis of the determinations for these 21 species.

- Sneed pincushion cactus grows in cracks on vertical limestone cliffs or ledges which are not found in the ROI.
- The distribution of Doña Ana talussnail does not include the ROI. The species is restricted to the Doña Ana Mountains.
- Monarch butterfly oviposits on milkweed (*Asclepias* spp.) plants, none of which are known to occur in the ROI. Records from Doña Ana County are from near Radium Springs of larva and teneral (recently emerged from cocoon) adults on horsetail milkweed, *Asclepias subverticillata* (Tolliver et al., 1994). The only milkweed found in the ROI during field surveys conducted in 2022 was the climbing milkweed *Funastrum cynanthoides*.
- Brown Pelican and Neotropic Cormorant are associated with perennial aquatic habitat, which does not occur in the ROI.
- Common Black-Hawk is an obligate riparian species that nests that along perennial drainages. Suitable habitat for this species does not occur in the ROI.
- Bald Eagle may occur throughout the state during migration and in winter near large aquatic habitats. Suitable wintering or nesting habitat for the species is not found in the ROI.
- Northern Aplomado Falcon is associated with grassland plains habitat with interspersed shrubs such as yucca. Suitable habitat for this species does not occur in the ROI.
- Breeding territories of Peregrine Falcon center on cliffs that are in wooded or forested habitats, with large gulfs of air nearby in which these predators can forage. The species has not been reported from the ROI in annual surveys conducted from 2015 through 2020.
- Least Tern is associated with aquatic habitats. No aquatic habitats are present in the ROI.
- Yellow-billed Cuckoo is associated with relatively large patches of mature riparian forest, which are not found in the ROI.
- Key habitat in New Mexico for Buff-collared Nightjar is in Guadalupe Canyon in Hidalgo County. A single vagrant was observed in the Doña Ana Mountains. The species is typically associated

with rocky, shrubby desert canyons. Buff-collared Nightjar has not been reported from the ROI and suitable habitat for the species is not found there.

- Broad-billed and Violet-crowned hummingbirds are known from riparian woodlands (principally in Guadalupe Canyon, Hidalgo County), and the species are considered rare in Doña Ana County where they have been reported as a transient species from along the Rio Grande. Neither of these hummingbird species has been reported in annual surveys conducted in the ROI from 2015 through 2020, and suitable habitat for these species is not found in the ROI.
- Costa's hummingbird has been reported from WSMR and San Andres National Wildlife Refuge, but not as a breeding bird. The species has not been observed in the ROI, and suitable habitat for it is not found there.
- Southwestern Willow Flycatcher is an obligate riparian species. Habitat for the species is not found in the ROI.
- Bell's Vireo is associated with dense, shrubby vegetation and woodland edges, often with mesquite, and frequently near perennial or intermittent drainages or other water sources. Suitable habitat for Bell's Vireo is not found in the ROI.
- Gray Vireo nests most often in relatively open, arid vegetation commonly with juniper. Gray Vireo has not been reported from the ROI in annual surveys conducted from 2015 through 2020 and suitable nesting habitat for the species is not found there.
- Varied Bunting has not been reported from the ROI in annual surveys conducted from 2015 through 2020, and is considered an accidental species on WSMR (Kamees and Burkett, 1996). In New Mexico, Varied Bunting typically are found in dense mesquite stands in canyon bottoms. Suitable habitat for Varied Bunting is not found in the ROI.
- Baird's Sparrow breeds in grassland habitat and may rarely occur on WSMR as a migrant (Kamees and Burkett, 1996). Suitable habitat for Baird's Sparrow is not found in the project area.
- There is one record of Reticulate Gila Monster from Doña Ana County, at Kilbourne Hole. The species is not known to occur on WSMR (Burkett, 2016; Degenhardt et al., 1996).
- On WSMR, Mottled Rock Rattlesnake is most often found in steep rock slides at over 6,000 ft elevation in montane habitat (Burkett, 2016). This type of habitat is not found in the ROI.

One special-status species, Common Ground-Dove, was carried forward to step 2 of the sequential screening. Common Ground-Dove is a state endangered species. It was determined to potentially be present in the ROI and, consequently, subject to effects of the proposed action. Common Ground-Dove has been observed at Desert Emerald Park. The species prefers open or sparsely wooded habitat near washes, drainages, and human-modified areas. Common Ground-Dove feeds primarily on small seeds (DeGraaf et al., 1991). It typically nests in a small tree or shrub, often within six feet of the ground (Corman and Wise-Gervais, 2005: page 196). The proposed action may affect Common Ground-Dove in the Desert Emerald Park area through removal or vegetation, noise and ground disturbance during construction, and human disturbance by campground users following completion of construction.

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APPENDIX B. U.S. FISH AND WILDLIFE SERVICE SPECIES LIST

United States Department of the Interior
FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
Phone: (505) 346-2525 Fax: (505) 346-2542

In Reply Refer To: June 27, 2022
Project Code: 2022-0058318
Project Name: WSMR Campground Expansion EA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of New Mexico wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act as amended (16 USC 668-668(c)). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area, and to recommend some conservation measures that can be included in your project design.

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the ESA of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the ESA is to provide a means whereby threatened and endangered species and

the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (NEPA; 42 USC 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

Candidate Species and Other Sensitive Species

A list of candidate and other sensitive species in your area is also attached. Candidate species and other sensitive species are species that have no legal protection under the ESA, although we recommend that candidate and other sensitive species be included in your surveys and considered for planning purposes. The Service monitors the status of these species. If significant declines occur, these species could potentially be listed. Therefore, actions that may contribute to their decline should be avoided.

Lists of sensitive species including State-listed endangered and threatened species are compiled by New Mexico State agencies. These lists, along with species information, can be found at the following websites.

Biota Information System of New Mexico (BISON-M): www.bison-m.org

New Mexico State Forestry. The New Mexico Endangered Plant Program: https://www.emnrd.nm.gov/sfd/rare-plants/

New Mexico Rare Plant Technical Council, New Mexico Rare Plants: nmrareplants.unm.edu

Natural Heritage New Mexico, online species database: nhnm.unm.edu

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html, integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

In addition to responsibilities to protect threatened and endangered species under the ESA, there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the Service (50 CFR 10.12 and 16 USC 668(a)). For more information regarding these Acts see https://www.fenws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a Federal nexus) or a Bird/Eagle Conservation Plan (when there is no Federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php. We also recommend review of the Birds of Conservation Concern list (https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php) to fully evaluate the effects to the birds at your site. This list identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent top conservation priorities for the Service, and are potentially threatened by disturbance, habitat impacts, or other project development activities.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 thereby provides additional protection for both migratory birds and migratory bird habitat. Please visit https://www.fws.gov/migratorybirds/pdf/management/executiveordertoprotectmigratorybirds.pdf for information

regarding the implementation of Executive Order 13186.

We suggest you contact the New Mexico Department of Game and Fish, and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division for information regarding State protected and at-risk species fish, wildlife, and plants.

For further consultation with the Service we recommend submitting inquiries or assessments electronically to our incoming email box at nmesfo@fws.gov, where it will be more promptly routed to the appropriate biologist for review.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- Migratory Birds

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Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
(505) 346-2525

Project Summary

Project Code: 2022-0058318
Event Code: None
Project Name: WSMR Campground Expansion EA
Project Type: Recreation - New Construction
Project Description: Environmental assessment for proposed campground expansion on Main Post
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@32.37370145,-106.49485927490278,14z

Counties: Doña Ana County, New Mexico

06/27/2022

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Aplomado Falcon *Falco femoralis septentrionalis* Population: U.S.A (AZ, NM) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1923	Experimental Population, Non-Essential
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Sneed Pincushion Cactus *Coryphantha sneedii var. sneedii*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/4706

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Black-chinned Sparrow *Spizella atrogularis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9447	Breeds Apr 15 to Jul 31
Cassin's Sparrow *Aimophila cassinii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9512	Breeds Aug 1 to Oct 10

NAME	BREEDING SEASON
Ferruginous Hawk *Buteo regalis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6038	Breeds Mar 15 to Aug 15
Grace's Warbler *Dendroica graciae* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 20 to Jul 20
Long-billed Curlew *Numenius americanus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5511	Breeds elsewhere
Mexican Whip-poor-will *Antrostomus arizonae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Virginia's Warbler *Vermivora virginiae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9441	Breeds May 1 to Jul 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence

in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

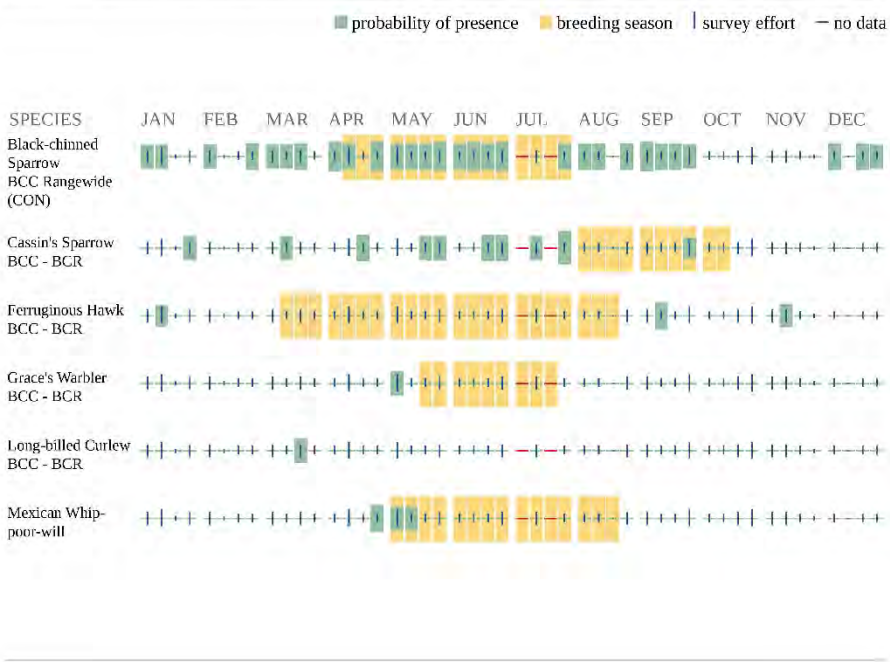
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

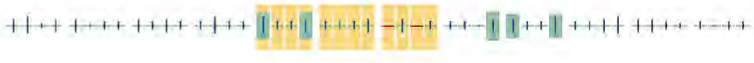
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



BCC Rangewide (CON)

Virginia's Warbler BCC Rangewide (CON)



Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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IPaC User Contact Information

Agency: Blue Earth Ecological Consultants LLC
Name: John Pittenger
Address: 408 Estrella Court
City: Santa Fe
State: NM
Zip: 87501-1235
Email be_ecological@blueearthecological.com
Phone: 5059868424

APPENDIX C. NEW MEXICO DEPARTMENT OF GAME AND FISH SPECIES LIST

Federal or State Threatened/Endangered Species
Dona Ana

Taxonomic Group	# Species	Taxonomic Group	# Species
Birds	19	Lepidoptera; moths and butterflies	1
Mammals	4	Molluscs	1
Reptiles	2		

TOTAL SPECIES: 27

Common Name	Scientific Name	NMGF	US FWS	Critical Habitat	SGCN	Photo
Western Yellow Bat	Dasypterus xanthinus	T			Y	View
Spotted Bat	Euderma maculatum	T			Y	View
Penasco Least Chipmunk	Neotamias minimus atristriatus	E	P		Y	View
Organ Mountains Colorado Chipmunk	Neotamias quadrivittatus australis	T			Y	View
Common Ground Dove	Columbina passerina	E			Y	View
Yellow-billed Cuckoo (western pop)	Coccyzus americanus occidentalis		T	Y	Y	View
Buff-collared Nightjar	Antrostomus ridgwayi	E				No Photo
Costa's Hummingbird	Calypte costae	T			Y	View
Broad-billed Hummingbird	Cynanthus latirostris	T			Y	View
Violet-crowned Hummingbird	Leucolia violiceps	T			Y	View
Least Tern	Sternula antillarum	E			Y	View
Neotropic Cormorant	Phalacrocorax brasilianus	T			Y	View
Brown Pelican	Pelecanus occidentalis	E				View
Bald Eagle	Haliaeetus leucocephalus	T			Y	View
Common Black Hawk	Buteogallus anthracinus	T			Y	View
Mexican Spotted Owl	Strix occidentalis lucida		T	Y	Y	View
Aplomado Falcon	Falco femoralis	E	E		Y	View
Peregrine Falcon	Falco peregrinus	T			Y	View
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	E	Y	Y	View
Bell's Vireo	Vireo bellii	T			Y	View
Gray Vireo	Vireo vicinior	T			Y	View
Baird's Sparrow	Centronyx bairdii	T			Y	View
Varied Bunting	Passerina versicolor	T			Y	View
Reticulate Gila Monster	Heloderma suspectum suspectum	E			Y	No Photo

6/27/2022 (E=Endangered, T=Threatened) Page 1 of 2

Federal or State Threatened/Endangered Species
Dona Ana

Common Name	Scientific Name	NMGF	US FWS	Critical Habitat	SGCN	Photo
Mottled Rock Rattlesnake	Crotalus lepidus lepidus	T			Y	View
Dona Ana Talussnail	Sonorella todseni	T			Y	No Photo
Monarch Butterfly	Danaus plexippus		C			View

6/27/2022 (E=Endangered, T=Threatened) Page 2 of 2